An Appraisal of Exports and Imports Nexus for Pakistan

Ehtsham U. Jarral
AJ&K Department of Higher Education (Colleges)

Dawood Khan Abbasi
AJ&K Department of Higher Education (Colleges)

Nabila Saddaf
The Federal Urdu University of Arts, Science and Technology (FUUAST)

Abstract
The trends of imports and exports possess a well-built role in the development of the economy of a country. Pakistani is a developing country and has been facing the deficit in its foreign trade balances since its emergence in 1947. In this paper, it has been strived to explore the time series appearance of the variables of import and export in Pakistani economy. The period for the research work covers forty-seven years from 1970 to 2016. In the analysis of exports and imports nexus, the unit root test shows that data is not stationary. Secondly, the Johansen co-integration test indicates that only one co-integration equation exists between imports and exports which portray the long run relationship in the variables. Then the Granger causality test illustrates bi-directional causality in long- run for Pakistani imports and exports. The findings of this paper predict that Pakistani trade is on its right way of getting long term equilibrium but disequilibria in trade balances prevail in the short periods. Hence the present study suggests modifications in the foreign trade policy to increase the export import ratio and raise the volume of trade so that the short-term imbalances could be improved.

Keywords: Imports, exports, equilibrium, unit root, co-integration, causality, trade policy.
JEL Codes: B17, F13

I. Introduction

Pakistan is the 26th major economy of the world as per criterion of purchasing power parity (PPP). The per capita GDP of Pakistan in 2015 was $1513. Agriculture sector is a backbone of the Pakistan's economy. Pakistan is a high importing but less exporting nation so that the balance of trade (BOT) is unfavorable for the country. The high trade deficits of the country are affecting severely the entire economic role of the nation amongst the economies of the world (Pakistan Economic Survey, 2016). History shows that the economy of Pakistan has ever been facing many challenges since the time of independence. In 1971, East Pakistan (Bangladesh) separated from West Pakistan (Pakistan). The separation of Bangladesh badly hit the economy, exports divided into two parts. There was an export shortage period in the history of Pakistan. Decline in the exchange rate was overcome by devaluing the currency (Rupees) of Pakistan. The 1978-1983 was the period of prosperity and stability for the economy of Pakistan. The exports grew at a reasonable rate, imports along with exports showed an upward trend (Pakistan Economic Survey, 1995).

In the period of 1983 to 1991, there was a food shortage period for Pakistan due to the arrival of Afghan immigrants in millions. Remittances started declining and foreign debt elevated to 16 billion dollars. The Government of Pakistan announced foreign exchange reforms in 1990. Free inflow and outflow of foreign exchange, opening of foreign currency accounts without deduction of Zakat and income tax on deposits were incontestable. This all brought uplift in the trade sector of the country. The sanctions on Pakistan in 1998, because of nuclear explosion tests, fetched substantial hurdles in widening the exports of Pakistan. Unfortunately, the political conditions in Pakistan did not remained steady from 1989 to 1999. Many political changes appeared in Pakistan during this era. There were successive falls of the governments of Benazir Bhutto and Nawaz Sharif. In 1999, General Musharaf took over the government of Nawaz Sharif in Pakistan which enhanced the instability in the political circles of the country. The trade policies of the country fluctuated a lot due to the political unrest. The political instability badly hit the export sector. Then the financial crisis of 2008 adversely affected the economy of Pakistan and pushed the economy of Pakistan in the state of Balance of Payment (BOP) crisis. High rate of inflation, trade deficit and terrorism as an after effect of 9/11 are also spreading the negative impacts on the economy.

Pakistani exports in bulk contain raw materials to the international markets; for example raw cotton, rice, yarn, linens, tobacco, leather, wheat etc; which have low prices as compared to manufacturing goods. The existing problems with Pakistani exports are their highly fluctuating prices in the international markets. The amount of total export in 2015 was 234.315 billion dollar. Pakistan mainly imports the raw material of industry and capital goods for example palm oil, coal briquettes and petroleum etc. The prices of these items often keep on an increasing trend in the international markets; so that TOT and BOP frequently stay unfavorable for Pakistan (Pakistan Economic Survey, 2006). The amount of total imports in 2015 was 37.23 billion US dollars (Pakistan Economic Survey, 2016). Pakistan is still in adverse condition of BOPs, so there is a need to reduce the trade deficit by initiating the export promotion strategies. In these days, there is a wave of privatization of major government enterprises in the country. This is done in view of increasing the inland and foreign investments and decreasing the budget deficit. The present study is done to perpetuate a relationship between imports and exports in Pakistani economy. The study is aimed at to visualize the effective trade policies for Pakistani trade concerns.

II. Objectives

1- To locate relationship between exports and imports of Pakistan.
2- To find possible causality between exports and imports of Pakistan.

For substantiating the objectives, the study has been conducted with the recent data on exports and imports of Pakistan. Empirical analysis is executed and the results are elaborated for making a prolific effort for the required concerns. The rationale behind the execution of the study is to obtain a recent appraisal of Pakistani trade and a search of possible causality between exports and imports for trade policy regulations. The novelty of the study is a bi-dimensional analysis of exports and imports in the economy of Pakistan. The introduction of the study along with a bird eye view of trade history of Pakistan is given in the first section. The second section of the paper contains the relative review of the literature and third section is regarding the data and methodology. Fourth section is comprised of the results and discussion and the last section is devoted to the conclusion as well as the policy recommendations in the light of present research

Jarral, E. U. Abbasi, D. K. and Saddaf, N. (2019*). An Appraisal of Exports and Imports Nexus for Pakistan. *Bulletin of Business and Economics,* 8(1), 6-15.

III. Review of Literature

There are many studies of exports and imports relationships in both developed and underdeveloped countries which are available in the existing literature. To establish a conceptual and theoretical setting for conducting the present work, many related articles and books were revised and reviewed. An evaluation of the reviews of some of these works has been made a part of the literature.

Oskee and Rhee (1997) found a co-integration relation between Korean's exports and imports by using quarterly data. The study explained the solid condition of trade promotion. According to the empirical review, the long run relationship exists in imports and exports of a country which may represent the macroeconomic policies and devaluation must be applied for softening the trade imbalances. The devaluation of the currency is a tool to enhance the trades but this causes balance of payments problems.

Irandoust and Ericsson (2004) went through a concise work on many specific policy implications in developing and developed both countries for motivation of a long run relationship in the export and import of any economy. In developing countries, where the relation between imports and exports is found, the co-integration prevails in the relation of imports and exports. The results showed that exports are positively linked with economic growth. Economic growth is definitely improved through the promotions in the trade balances.

Tang and Muhammad (2005) examined the co integration relationship for the organization of Islamic conference member countries of two variables (import, export) by using unit root test with unknown level of shift and the co integration test with the structural break. It was verified that a co-integration exists between imports and exports and it investigates the relationship between the trade variables. Exports and imports increase simultaneously in line of each other in the international trade scenario.

Kenya and Sing (2008) explored the condition of balanced relationship in imports and exports of India in a specific time period from 1994-1950 and 2004-2005 by using the annual data tactics. Both variables of exports and imports were expressed and measured in current prices and were also exhibited both in Indian national currency (Rupee) and US currency (dollar). For India trade, these variables do not show co-integration relationship as India exhibits deviation in its international budget constraints.

Ali and Chani (2013) investigated the disaggregated import demand functions for Pakistan over the period of 1972 to 2009. They found that imports of Pakistan are income elastic and not price elastic. The overall results indicate that long run relationship exist among import demand, household consumption and exports in Pakistan. Furthermore, imports demand of Pakistan is highly elastic for final consumption of household and exports of Pakistan but it is inelastic in case of investment as well as relative prices in long run.

Siddiqi et al. (2014) analyzed the import demand impact of economic development and trade liberalization in Pakistan. The results indicated that trade liberalization in Pakistan positively influences income elasticity of imports demand. Similarly, price elasticity of imports demand in Pakistan is positively related to level of economic development in the country. This displays the fact the trade liberalization causes to flourish the economy.

Chaudhary and Qaisrani (2002) have investigated the role of trade instability on investment and economic growth in the economy of Pakistan. The results show that export instability does not directly affect economic growth and investment in Pakistan. According to them infrastructure, income differences and exchange rate are important determinants for trade flows to assess the trade potential of the country.

The few works reviewed in the above lines provide the theoretical orientations and conceptual background for executing the work. We find that trade components move in line with one another. Trade may be either price elastic or income elastic or it is affected both by incomes and prices altogether. Trade determinants are income differences, price fluctuations, exchange rates and consumption trends. Keeping in view the so visualized concepts, the work is being done on the exports and imports of Pakistan to analyze their mutual causality as well as the relationship between them. The study concurrently analyzes the short as well as the long run relations between exports and imports which is specific with the study to carry on.

Jarral, E. U. Abbasi, D. K. and Saddaf, N. (2019). An Appraisal of Exports and Imports Nexus for Pakistan. *Bulletin of Business and Economics,* 8(1), 6-15.

IV. Data and Methodology

The present study is an empirical analysis of the time series data regarding the trade variables of exports and imports in the economy of Pakistan. Various econometric techniques have been used for the in-depth analysis of the data. The vector error correction model (VECM) has been run to analyze the long-run and short-run relationships between exports and imports of Pakistan. To check the causality, the Engle and Granger causality test is applied on the data. Imports of goods and services (as percentage of GDP) represent the value of all goods and other market services received from the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fee and other services such as communication, construction, information, business, personal and government services. They exclude consumption of employ and investment income and transfer payments (World Bank, 2016).

Table 1: Trade Data

Variables	Time period	Source
Imports of goods and services (% of GDP)	1970 to 2016	World Development Indicators
Exports of goods and services (% of GDP)	1970 TO 2016	World Development Indicators

This is about the time series data of exports (EXP) of goods and services of Pakistan and import (IMP) of goods and services of Pakistan taking from 1970 to 2016. Collection of the data of Pakistani exports and imports has been taken from the World development indicators. Conversion of the data of Pakistani exports and imports from 1970-2016 has been made into the log form. Following the methodologies of Ali and Rehman (2015), Ali (2015), Ali and Naeem (2017) and Mehmood et al., (2013), the model of the study is set as following:

$$Exports = f (Imports)$$

Econometric version of the model will be as scribed as under:

$$EXP = \alpha + \beta\ IMP + \varepsilon \text{ -- (1)}$$

Where EXP and IMP are the variables of exports and imports, α is the intercept, β is slope co-efficient of imports and ε is error term of model (1).
To make the model linear, the variables are converted into their logarithm form:

$$LEXP = \alpha + \beta\ LIMP + \varepsilon \text{ --- (2)}$$

Afterwards, the following tests and models with respective patterns and procedures are executed:
(I). Augmented Dickey Fuller test is applied for detecting the stationary of the data.
(II). Johansen Co-integration Approach is used for checking the long-run association of the variables.
(III). Vector Error Correction Model is employed for tracing the short run embedded pattern of model analysis.
(IV). Engle Granger Causality Test is exercised to assess the cause-effect association between the variables.

V. Results and Discussion

The methodology of the study is virtually applied accordingly in order to reach the findings. The results are presented and conversed briefly in the following lines:

V.I. Graphical View

The graphical pattern of data of exports and imports is displayed in the chart. The variables show a positive trend in the long run but there are numerous fluctuations in the short run patterns.

Figure 1. Graphical Pattern of Exports and Imports
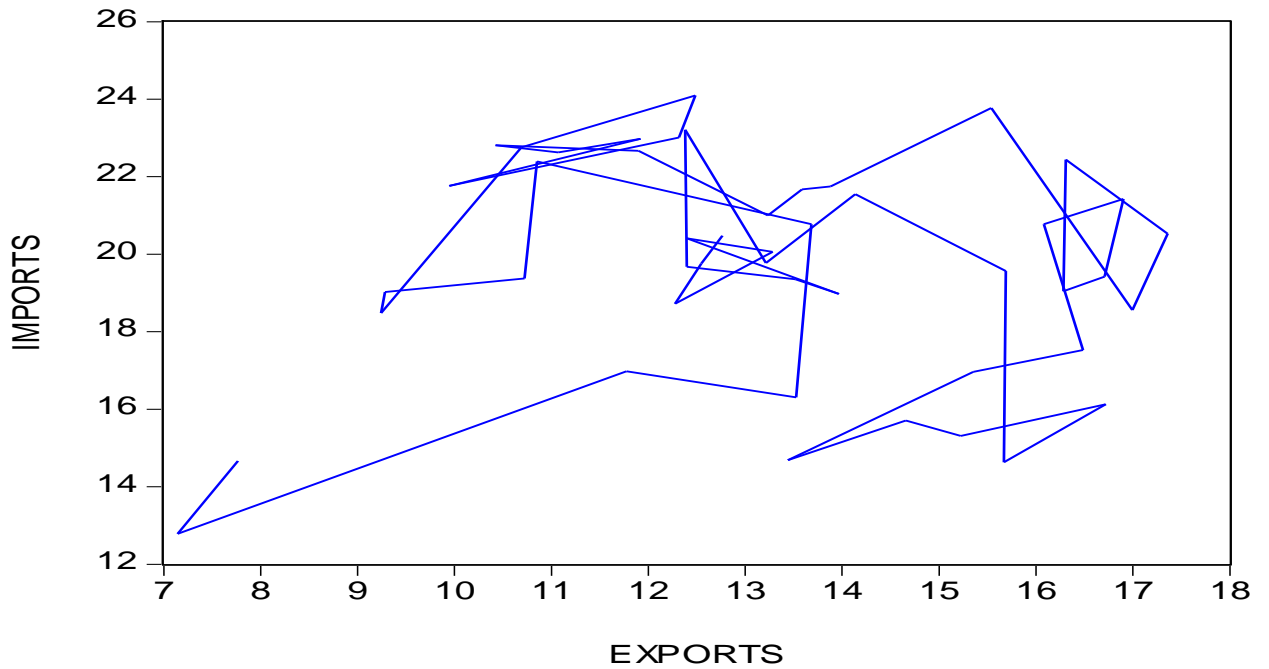
V. II. Unit Root Test

To test the existence of unit root in the time series data and co-integration relation between the EXP (exports) and IMP (imports). Unit root test help us to find that data is stationary or not. This study helps for finding the existence or absence of random walk. The ADF is written as:

$$\Delta Xt \ = \ \mu \ + \ \beta t \ - 1t \ + \ \sum_{i=1}^{n} \gamma \Delta Xt - i \ \ + \epsilon t \ \text{--- (3)}$$

Table 2: ADF Unit Root Test Statistics

Variables	At Levels		At First Difference		Result
	intercept	intercept and trend	intercept	Intercept and trend	
Exp	1.1611	-1.3896	-7.1103	-7.6145	I(1)
Imp	0.8806	-1.7705	-7.5011	-7.9956	I(1)

Applying the unit root test on variables for testing the data being stationary or non-stationary, we find that Imports and exports are not stationary at level but become stationary at 1st difference.

V. III. Johansen co-integration test

Johansen co-integration test is used for watching that whether there is any long-run relationship between imports and exports of Pakistan (1970-2016) exist or not. Appropriate lag length of the model for running Johansen Co-integration Test is computed by minimizing the well-known Akaike Information Criterion (AIC) (Akaike 1974), Schwaz Information Criterion (SIC) (Schwarz 1978) and Hannan Quinn Information Criterion (HQIC) (Hannan and Quinn 1979).

Table3: Lag Length Selection Criteria
(Maximum lags = 4)

Lags	AIC	SIC	HQIC
0	20.6108	20.7144	20.6707
1	12.7756	13.5785*	13.0749
2	12.2292*	13.6745	12.7679*
3	12.4129	14.5006	13.1911

Jarral, E. U. Abbasi, D. K. and Saddaf, N. (2019*). An Appraisal of Exports and Imports Nexus for Pakistan*. *Bulletin of Business and Economics,* 8(1), 6-15.

4	12.2532	14.9833	13.7209

*indicates lag selected by the criterion.

Henceforth the Co-integration test was conducted on the basis of lag order equal to 2 as selected by AIC and HQIC.

Table 4: Co-integration Trace Test

Hypothesis	Trace statistic	5 % critical value	Probability
None*	28.39865	15.49471	0.0003
At most 1	3.66576	3.84146	0.0555

The critical value is less than trace statistic value and probability Value shows its significant at 5% (0.05) level, hence we rejected the hypothesis of no co-integration at 5% level and thus assure that there exists co-integration bearing single equation between exports and imports.

V. IV. Error Correction Model

Since the Johansen co-integration test indicates the existence of the long run relationship between the two variables of Imports and Exports, thus we run the error correction model. The VECM for the variables is expressed as under:

D(LEXP) = C(1) + C(2) (LEXP(-1) + 0.805 − 1.155 LIMP(-1)) + C(3) LEXP(-1) + C(4) LEXP(-2) + C(5) LIMP(-1) + C(6) LIMP(-2) ----------------(4)

Table5: The ECM Analysis
(Dependent Variable: LEXP)

Variable	Degree of Freedom	Wald Test Statistic	Prob.
LIMP	2	4.205*	0.0124
	Coefficient	t-statistic	Prob.
ECT_{t-1}	-0.748	-2.926*	0.0327

Regarding the short run coexistence between the variables, the Wald test predicts that there is no short run relationship between the variables as with the probability of 1.24% being less than 5% it cannot be rejected the hypothesis of no short run association. The ECM shows long run relationship between imports and exports because the probability value for error term is less than 5% level which shows that it is significant and it has negative value (-0.748). The value of error correction term is -0.748. This tells us that there is a speed of 74.8% in the error term for adjustment towards equilibrium.

V.V. Granger Causality

The granger causality test is applied for detecting the cause and effect association between the variables of the model.

Table6: Granger Causality Test

Null Hypothesis	F-Statistic	Prob.
Exports does not granger cause imports	1.34265	0.0356
Imports does not granger cause exports	3.94751	0.0449

Granger Causality indicates that exports granger cause imports (p-value is 0.0356 < 0.05) and also imports does granger cause exports (p-value is 0.0449 > 0.05). This predicts two ways causality, Then for the confirmation of the results of the model and checking the validity of the results, diagnostic tests were performed. A precise summary of the tests is tabulated as following:

Table 7: Diagnostic Tests

Jarral, E. U. Abbasi, D. K. and Saddaf, N. (2019*). An Appraisal of Exports and Imports Nexus for Pakistan. *Bulletin of Business and Economics,* 8(1), 6-15.

Goodness of Fitness of Model:	$R^2 = 0.8745$	Adjusted $R^2 = 0.8251$
Overall Significance of Model:	F-statitic = 4.2691	Prob. = 0.0328
Serial Correlation LM Test:	Observed $R^2 = 0.1851$	Prob. = 0.2034
Hetroskedasticity Test (Bruesch Paragan Godfrey):	Observed $R^2 = 7.9510$	Prob. = 0.1134
Normality Test:	JB = 0.3619	Prob. = 0.8345

The value of R-square indicates that 87.45 % variation is covered in the model and thus the model is good fitted. Probability of F statistic is 3.28 % which is less than 5 %, so it proves overall significance of the model. The probability of serial correlation LM test is 20.34% which is more than 5% and this guides us not to reject the null hypothesis of no serial correlation. Hetroskedasticity test has probability value of 11.34% > 5% indicating that we cannot reject the null hypothesis of homoskedasticity. The probability of Jarque Berra is 83.45% which is more than 5% and shows that we cannot reject the null hypothesis of normality of the residuals. Hence all the above tests show that the model is good and its results are reliable.

VI. Conclusions

The Johansen co-integration test on the export-import model indicates that there is existing only one co-integration equation which finds that there exists a long-term mutual relation between imports and exports of Pakistan. Also there exists the bi-directional causality in long run from imports to exports and exports to imports. In short run, there is an unstable situation because no relationship was predicted between exports and imports in the short run. This concludes that the macro level policies of Pakistan regarding imports and exports will be effective in long run. The economy of Pakistan is facing the problem of deficit in its trade balances from the earlier times of its existence. It is so because we are importing the expensive materials like machinery and petroleum from other countries and exporting low price materials or raw form goods to the other countries of the world. We haven't developed our manufacturing sector of our economy as per the requirements. The labor productivity of the country is low due to unskilled labor force. Pakistan can fill up the trade deficit in future only if effective and export promotion economic policies are adopted and implemented. In this line we must seek the ways to reduce our trade unfavorable balance. Reduction in deficit trade balance doesn't mean that trade volume should be shrunk. It is the need of the hour to increase the quality as well as quantity of our exports-oriented goods and services. We have to find more markets in the world for increasing the exports and we should improve our technological standards to promote the manufacturing sector.

References

Akaike, H. (1974). A new look at the statistical model identification. *IEEE Transactions on Automatic Control* 19(6), 716–723.

Ali, A. & Chani, M. (2013). Disaggregated import demand function: a case study in Pakistan. *International Journal of Economics and Empirical Research,* 1(1), 1-14.

Ali, A. & Naeem, M. Z. (2017). Trade Liberalization and Fiscal Management of Pakistan: A Brief Overview. *Policy Brief-Department of Economics*, PU, Lahore. 1(1), 1-6.

Ali, A. (2015). *The impact of macroeconomic instability on social progress: an empirical analysis of Pakistan* (Doctoral dissertation, National College of Business Administration & Economics Lahore).

Ali, A., & Rehman, H. U. (2015). Macroeconomic instability and its impact on gross domestic product: An empirical analysis of Pakistan. *Pakistan Economic and Social Review*, 285-316.

Chaudhary, A. & Qaisrani, A (2002). Instability, Investment and Economic Growth in Pakistan. *Pakistan Economic and Social Review,* XL(1), 57-73.

Dickey, D. & Fuller, W. (1981). Likelihood Ratio Tests for Autoregressive Time Series with a Unit Root. *Econometrica,* 49(4), 057-107.

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

Hannan, E. & Quinn, B. (1979). The Determination of the order of an auto-regression. *Journal of the Royal Statistical Society,* 41, 190-195.

Irandoust, M. & Ericsson, J. (2004). Are imports and exports co-integrated? *An International Comparison, Macroeconomics*, 55(1), 49-64.

Johansen, S. (1991). Estimation and Hypothesis Testing of Co integrated Vectors in Gaussian VAR Models. *Econometrica, 59(6),* 1551-1580.

Jarral, E. U. Abbasi, D. K. and Saddaf, N. (2019*).* An Appraisal of Exports and Imports Nexus for Pakistan. *Bulletin of Business and Economics,* 8(1), 6-15.

Konya, L. & Sing, J. (2008). Are Indian exports and imports co-integrated? *Applied Econometrics and International Development,* 8 (2), 177-186.

Mehmood, H., Ali, A., & Chani, M. I. (2013). Determination of Aggregate Imports Function: Time Series Evidence for Tunisia. *International Journal of Economics and Empirical Research (IJEER)*, *1*(6), 74-82.

Oskooee M. & Rhee, H. (1997). Are imports and exports of Korea co-integrated? *International Economic Journal*, 11, 109-114.

Pakistan Economic Survey (1995). Pakistan Bureau of Statistics; Government. of Pakistan Islamabad.

Pakistan Economic Survey (2006). Pakistan Bureau of Statistics; Government. of Pakistan Islamabad.

Pakistan Economic Survey (2016). Pakistan Bureau of Statistics'; Government. of Pakistan Islamabad.

Schwarz, G. (1978). Estimating the dimension of a model*, Annals of Statistics 6, 461–464.*

Siddiqi, M., Ali, A. & Chani, M. (2014). Import demand, economic development and trade liberalization in Pakistan: an empirical analysis. *Bulletin of Business and Economics*, 3(2), 131-141.

Tang, T. & Mohammad, A. (2005). Are Imports and Exports of OIC Member Countries Co-integrated? An Empirical Study. *Labuan Bulletin of International Business& Finance*, 3, 33-47.

World Bank (2016). World Development Indicators.

Appendix (A)

A-1

Breusch-Godfrey Serial Correlation LM Test:

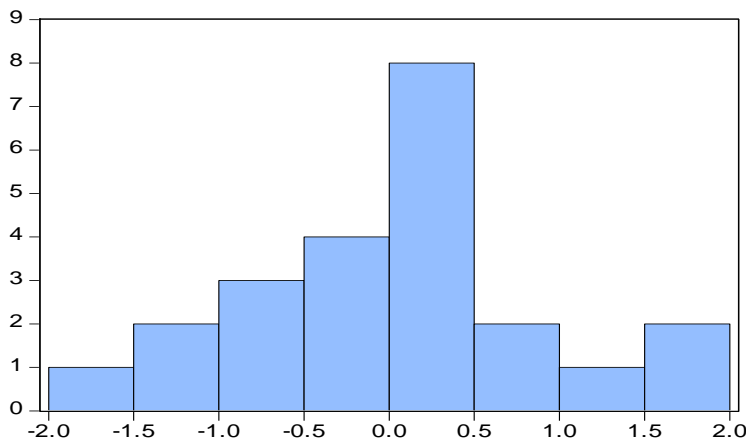|			
F-statistic	1.482723	Prob. F(2,38)	0.2399
Obs*R-squared	3.185114	Prob. Chi-Square(2)	0.2034

A-2

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.150476	Prob. F(4,39)	0.0928
Obs*R-squared	7.951023	Prob. Chi-Square(4)	0.1134

A-3   Normality Test
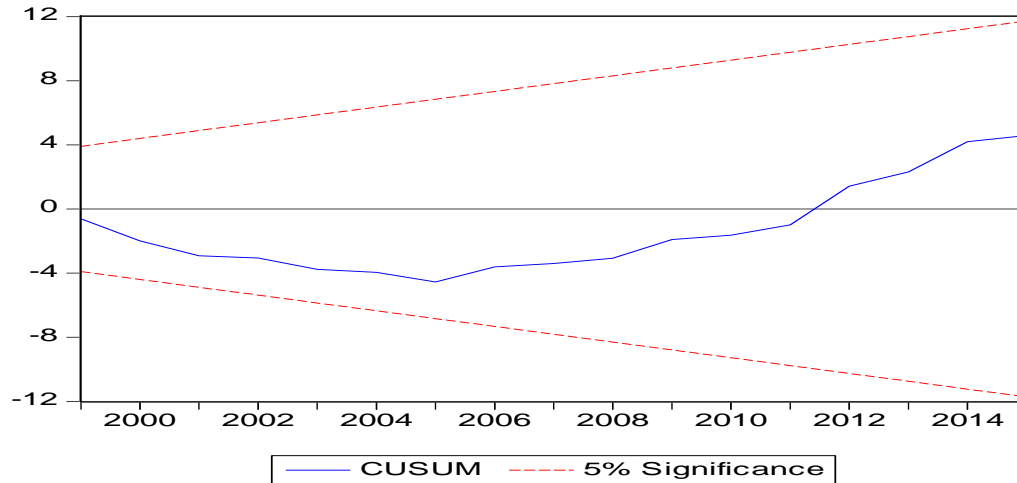

Series: Residuals
Sample 1993 2015
Observations 23

Mean	1.93e-17
Median	0.075522
Maximum	1.845805
Minimum	-1.612639
Std. Dev.	0.896019
Skewness	0.234578
Kurtosis	2.603076
Jarque-Bera	0.361920
Probability	0.834469

Jarral, E. U. Abbasi, D. K. and Saddaf, N. (2019*). An Appraisal of Exports and Imports Nexus for Pakistan. *Bulletin of Business and Economics,* 8(1), 6-15.

A-4   Test for Stability of Model (Cusum Test)

Appendix (B)
B-1 Data Set

fy	exp(curUS$ mil)	Imp(cur US$ mil)	log(exp)	log(imp)
1970	0.449	1.471	-0.34775	0.167613
1971	0.492	1.356	-0.30803	0.13226
1972	1.345	1.581	0.128722	0.198932
1973	1.069	1.031	0.028978	0.013259
1974	1.195	1.823	0.077368	0.260787
1975	1.055	2.539	0.023252	0.404663
1976	1.197	2.584	0.078094	0.412293
1977	1.213	2.877	0.083861	0.45894
1978	1.634	3.293	0.213252	0.517592
1979	2.465	4.485	0.391817	0.651762
1980	2.622	5.709	0.418633	0.75656
1981	2.881	6.466	0.459543	0.810636
1982	2.042	6.687	0.310056	0.825231
1983	3.085	6.593	0.489255	0.819083
1984	2.564	7.048	0.408918	0.848066
1985	2.746	7.105	0.438701	0.851564
1986	3.387	7.231	0.529815	0.859198
1987	4.172	7.005	0.620344	0.845408
1988	4.524	8.337	0.655523	0.92101
1989	4.717	8.736	0.673666	0.941313
1990	5.623	9.351	0.749968	0.970858
1991	6.569	8.435	0.817499	0.926085
1992	7.357	9.984	0.866701	0.999305
1993	6.723	9.155	0.827563	0.961658

Jarral, E. U. Abbasi, D. K. and Saddaf, N. (2019*)*. An Appraisal of Exports and Imports Nexus for Pakistan. *Bulletin of Business and Economics,* 8(1), 6-15.

1994	7.411	9.883	0.869877	0.994889
1995	8.029	11.777	0.904661	1.071035
1996	9.365	13.567	0.971508	1.132484
1997	8.758	12.972	0.942405	1.113007
1998	8.514	10.901	0.930134	1.037466
1999	8.424	10.684	0.925518	1.028734
2000	9.028	10.862	0.955592	1.03591
2001	9.238	11.361	0.965578	1.055417
2002	9.913	11.073	0.996205	1.044265
2003	11.931	13.424	1.076677	1.127882
2004	13.379	14.337	1.126424	1.156458
2005	16.051	21.423	1.205502	1.33088
2006	16.931	29.577	1.228683	1.470954
2007	17.838	30.146	1.251346	1.47923
2008	20.323	39.478	1.307988	1.596355
2009	17.523	33.086	1.243608	1.519644
2010	21.417	34.333	1.330759	1.535712
2011	25.383	40.556	1.404543	1.608055
2012	24.567	45.848	1.390352	1.66132
2013	25.121	46.362	1.400037	1.666162
2014	24.714	45.619	1.392943	1.659146
2015	25.123	47.824	1.400071	1.679646
2016	26.248	51.665	1.435278	1.697234

B-2 Traces of Variables