Import, Export and Economic Growth of Nepal: Empirical Analysis

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Abstract: *This paper aims to explore the relationship between exports, imports, and economic growth of Nepal. To attain this purpose, annual time series data for the periods between financial years 1974/1975 to 2016/2017 were tested using Johansen Cointegration approach, Error Correction Model and Granger Causality test. The result showed that no short-run and long-run relationship running from import and exports to GDP. On the other hand, it was found strong evidence for bidirectional causality between export and economic growth. However, unidirectional causality was found from economic growth to import without any causality between imports to export in long-run. These results suggest exports are the main source of economic growth of Nepal in long run.*

Key Words: *Economic Growth, Exports, Imports, Unit-root, Cointegration*

1. Introduction

Import and export of any country play significant role in economic development. Many theoretical and empirical research and studies emphasis on role of import on economic growth, export on economic growth and relationship between import, export and economic growth of any particular country. In most of the studies, export of goods and services is being main pillar of social and economic development of nations as it requires innovation, improve service and product quality for international standard to maintain the market share. Export also enhance the positive balance of payment and aggregate sales, profit of the nation. Export also condenses the dependency of indigenous market, increase the foreign share of market, helps in market expansion, and promotes nationalisms. In other side, export curtail the impact of market instability by functioning in comprehensive market. Company becomes more confined to economic change, changing customer demand, and seasonal variation in native economy. The main advantage of export of goods and services to increase the access of foreign currencies, which has high contribution to national income, turnover and profit of the nation. This

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ultimately enhance the living standard of the people of a country. High custodian of foreign currency reserve improves the economic growth and sustainability of the economy of the nation. Exports don't always contribute the economic development of nation, the condition of international market, global competition is higher than expected, taxation policy of targeted country, political instability due to civil war, and weak media coverage, unpopularity of the product etc. also have a great impact on export policy of country which eventually might have negative impact on the economic growth of nation. The major export of Nepal includes, beverages (spirits), textile floor coverings, manmade staple fibers, coffee, tea, spices, clothing, plastic, plastic articles, knit or crochet clothing, iron, steel, footwear, food industry waste, animal fodder etc. In other hand, service industries and tourism industries also have huge contribution to the GDP of Nepal.

Contrary to the export, import generally reflects the weakness of the state in accomplishing its necessities. Imports make country dependent and at the mercy of foreign countries. Unlike export, import reduces foreign currency reserve and exit of local currency and weaken the trade balance resulting weak economic growth. However, if imports are being for capital investment like plant, machinery, etc. which helps to improve capital formation and long term return, produce innovative product, it contributes to positive economic growth. When imports add value to the exiting scenarios it will be highly desirable for economic growth. But, if large amount of money is used to import of luxury and consumable products, it will not contribute to the economic growth of the country. The major imports of Nepal are petroleum items, machinery items, electronic items, vehicles, agriculture products etc.

Nepal is a small economic landlocked country of south Asia between two world largest emerging economy India and China. World Bank has listed Nepal in the list of least develop countries (LDC). Nepal is aiming to promote into developing country from least develop country within 2022 AD. Having a small size of GDP with NPRs 2500 billion, it is very rigorous to achieve this aim because many indicators like human development index, corruption index, per capita income etc. need to be substantially improved. The world economy in 2018 estimated that economic growth will increase by 3.6% (World Bank, 2018) whereas ADB (2017) forecasted it will be 6.9% and 4.7% of in 2017 & 2018 respectively for Nepal. Due to the devastating earthquake in 2015, economic growth remained at 0.4%, otherwise it was in between 3% to 6% since last 10 years. The current status of foreign trade of Nepal has been demonstrated in table No. 1.

Table No. 1

Foreign Trade Direction F.Y. 2016/17

Amount in NPR '000'

Trade Indicator	**F.Y. 2016/2017**	**F.Y. 2015/2016**	**% change**
Imports	984,302,948	774,712,277	27.05
Exports	73,036,244	70,254,165	3.96
Trade Deficit	911,266,704	704,458,112	29.36
Total Foreign	1,057,339,191	844,966,442	25.13
Imports/Exports ratio	13.48	11.03	22.21
Exports share to total trade (%)	6.91	8.31	-16.92
Imports share to total trade (%)	93.09	91.69	1.53

Source: *Nepal Foreign Trade Statistics 2016/2017*

During the fiscal year 2016/2017, Nepal involved in foreign trade with more than 165 countries around the world. The trade balance is negative with around 130 countries and positive with only around 35 countries. Among them, largest trade dependency of Nepal was with India consisting imports of Rs. 641,423,632,000 and exports of Rs. 41,640,226,000 with the trade deficit of Rs. 599,783,406,000. Similarly other countries with high trade dependency were China, UAE, France, Indonesia, Argentina, Thailand etc. respectively.

This paper, therefore, aims to econometrically investigate the linkage between trade and economic growth of Nepal using the yearly time series data from financial year 1974/1975 to 2016/2017. Particularly, this research paper purpose to find out an answer for the question of whether exports lead to economic growth or imports lead to economic growth or economic growth lead to export and import.

2. Literature Review

Different studies and researches were done by scholars and policy maker for exports, imports and economic growth. A variety of studies shows different results about the relationship of these three variables. Michelis & Zestos (2004) found that strong evidence of bi-directional causality from GDP to exports and imports, there exists strong evidence of Granger causality from the foreign sector to GDP for all the countries of sampled, imports were found to have an adverse outcome on economic expansion in the long-term (Makun, 2017).

Hameed, Athar, & Devi (2012) investigates the causality between exports and economic growth of Pakistan, through the application of econometric technique Granger causality by using real exports of Pakistan, real GDP of Pakistan, and real terms of trade of Pakistan and found that unidirectional causality from GDP to exports in Pakistan but not vice versa.

Saaed & Hussain (2015) used the pairwise Granger Causality to determine the direction of causality among the variables, at least in the short run and the results showed unidirectional causality between exports and imports and between exports and economic growth.

Turan & Karamanaj (2014) found an equilibrium relationship between exports, imports and GDP in the long term. However, Kartikasari (2017) found that partially, export had an insignificant negative effect on economic growth, while import had a significant negative impact.

Ali, Ali, & Dalmar, (2018) found unidirectional causality between exports and economic growth and also bidirectional Granger Causality between import and export.

Bakari (2016) used Johansen co-integration analysis of Vector Auto Regression Model and the Granger-Causality tests to identify relationship between exports, imports, and economic growth in Canada using the data ranging from 1990 to 2015 and it was determined that there is no relationship between exports, imports and economic growth in Canada and also they found that there is a strong evidence of bidirectional causality from imports to economic growth and from exports to economic growth.

Bakari & Mabrouki (2017) used Johansen co-integration analysis of Vector Auto Regression Model and the Granger-Causality tests to investigate the relationship between exports, imports, and economic growth in Panama and it was found that there is no relationship between exports, imports and economic growth in Panama and they also found that there is a strong evidence of bidirectional causality from imports to economic growth and from exports to economic growth.

Kim, Lim, & Park (2007) investigated the relationship between exports, imports, and economic growth using quarterly data from 1980 to 2003 and results indicate that imports have a significant positive effect on productivity growth but exports do not.

3. Data and Methodology

Secondary data were used for the analysis in this study. Annual data on Real GDP, exports, and imports from 1974/1975 to 2016/2017 are used for this paper. Real GDP, exports and imports data are collected from ministry of finance's website of Nepal. All the data used in this study are in natural logarithmic form. Log transformation reduces the problem of heteroscedasticity in time series data (Gujarati, Porter, & Gunasekar, 2012). We use LY, LX,

and LM for real GDP, exports and imports respectively. The main purpose of this study is to investigate the effect of export (LX) and import (LM) on economic growth (LY) in Nepal. The model specification for the econometric analysis is shown in Eq. (1).

$$LY_t = \beta_0 + \beta_1 LX_t + \beta_2 LM_t + \varepsilon_t \quad (1)$$

Where

Y= Log of Annual Real GDP

X= Log of Annual Real Exports

M= Log of Annual Real Imports

β_0= Intercept

β_1 and β_2 = Coefficients

ε_t= Stochastic error term

In regression model (1), GDP is used as a dependent variable. GDP, exports and imports are measured in ten million of Nepalese rupees. Data were analyzed using EViews 9 software.

Unit Root Test:

At first, we determined that whether our variables used are stationary or not. Autocorrelation results because the underlying time series is nonstationary (Gujarati, Porter, & Gunasekar, 2012a). If variables are non-stationary, in such case the issue is to what degree they are integrated. We use Augmented Dickey-Fuller (ADF) test to test the stationarity of the variables. If the calculated statistic is less then critical value, then variables (X) are said to be stationary or integrated to order zero or can be written as I(0).

If data are non stationary at I(0), then ADF test is executed on the first difference of X (i.e. ΔX). If ΔX is found to be stationary, then the series is said to be integrated to order 1 i.e I(1). The macro economic factors faced the huge structural and political changes during the study period. Thus, the use of ADF test for checking the stationary property of the variables might mislead the results. A strucutral change in the mean of a stationary variable tends to bias the standard ADF test toward non-rejection of a hypothesis of a unit root (Perron, 1989). Therefore, we performed the Phillips Perron (PP) unit root test also to check the stationarity of the data set used in the study.

Cointegration Test

After integrating all variables used in multivariate model of order one i.e. I(1), we need to find whether they are cointegrated or not using Johansen's framwork. Gujarati, Porter, & Gunasekar, (2012) told that two variables will be cointegrated if they have long-term relationship between

them. Consider an unrestricted VAR model up to k lags in which the process X_t, for tiven values of X_{-k+1}……..X_0, is defined by

$$X_t = \alpha + \Pi_1 X_{t-1} + \ldots\ldots\ldots + \Pi_k X_{t-1} + \varepsilon_t \qquad (2)$$

Where ε_t is independently and identically distributed white noise error term, X_t is a vector of I(1) variables and α is a vector of constant. Since, X_t non stationary, the above equation can be expressed in first differenced error-correction form.

$$\Delta X_t = \alpha + \Gamma_1 X_{t-1} + \ldots\ldots\ldots + \Gamma_{k-1} \Delta X_{t-k-1} + \Pi_k X_{t-k} + \varepsilon_t \qquad (3)$$

Where

$\Gamma_I = -(1 - \Pi_1 - \ldots\ldots..\Pi_i)$, i= 1, 2,3….. k-1 $\Pi = -(1 - \Pi_1 - \ldots\ldots\ldots\Pi_k)$

Eq. (3) is expressed as a traditional first difference VAR model except the term ΠX_{t-k}. The coefficient matrix Π contains information about long run relationship between variables in the data vector. These are 3 possible cases. If the rank of Π equals *p,* i.e. the matrix Π has full rank; the vector process X_t is stationary. If the rank of Π equals 0, the matrix Π is a null matrix and the above equation corresponds to a traditional differenced vector time series model. Finally, if 0<r<p there exist r co-integrating vectors; in that case Π=αβ', where α and β are p × r matrices. The cointegrating vectors β have the property that $\beta' X_t$ have is stationary even though X_t itself is non-stationary. In this case Eq. (3) can be interpreted as an error-correction model.

Johansen (1988) and Johansen & Juselius (1990) derived the likelihood ratio test for the hypothesis of r cointegrating vectors or Π = αβ'. The co-integrating rank, r, can be tested with two statistics, namely *Trace* and *Maximal Eigen Value.* The likelihood ratio test statistics for the null hypothesis that there are most r co-integrating vectors against the alternative of more than r co-integrating vectors is the trace test and is computed as;

$$Trace = -T \sum_{i=r+1}^{p} Ln(1 - \lambda_i) \qquad (4)$$

Where $\hat{\lambda}_{r+1}$ ……$\hat{\lambda}_p$ are *p-r* smallest estimated Eigen values. The likelihood ratio test statistic for the null hypothesis of r cointegrating vectors against the alternative of r+1 cointegrating vectors is the Maximal Eigen value test and is given by

$$\lambda_{max} = -T[\ln(1-\lambda_i)] \qquad (5)$$

Here, T is the sample size and λ_i is the i^{th} largest correlation. The trace test tests the null hypothesis of n co-integrating vectors. The maximum Eigen value test tests the null hypothesis of cointegration vectors against the alternative hypothesis of r+1 cointegrating vectors.

Error Correction Model:

If cointegration is established to exist, then the third step entails the construction of error correction mechanism to model dynamic relationship. The purpose of the error correction

model is to designate the speed of adjustment from the short-run equilibrium to the long-run equilibrium state. The greater the co-efficient of the parameter, the higher the speed of adjustment of the model from the short-run to the long-run. We represent equation (6) with an error correction form that allows for inclusion of long-run information thus, the Error Correction Model (ECM) can be formulated as follows;

$$\Delta LYt = \sum_{i=1}^{n} \alpha_0 \Delta LY_{t-1} + \sum_{i=1}^{n} \alpha_1 \Delta LX + \sum_{i=1}^{n} \alpha_2 \Delta LM + \delta_1 EC1_{t-1} + \varepsilon_t \qquad (6)$$

Where Δ is the difference operator; n, is the numbers of lags, α_1 and α_2 are short-run coefficients to be estimated, $EC1_{t-1}$ represents the error correction term derived from the long-run co integration relationship and ε_{1t} the serially uncorrelated error terms in equation (6).

4. Study Results and Discussion

Unit Root Test Result:

As a first step, non-stationarity of data set is addressed using a standard Augmented Dickey-Fuller (ADF) test. The ADF unit root test was applied on two sets, being constant and constant with trend. The result of ADF test is presented in table No. 2.

Table No: 2

Augmented Dickey Fuller (ADF) Test

Variables	ADF (Constant)		ADF (Constant & Trend)	
	Level	1st Diff.	Level	1st Diff.
LY	-0.3769	-6.4524***	-1.6271	-6.3766***
LX	-2.7988	-5.1835***	-2.3887	-2.6028
LM	-1.1791	-2.3972	-2.3363	-2.5384

*Superscripts ***,** and * indicate rejection of null hypothesis at 1%, 5% & 10% level of significance*

Table No: 3

Philips Perron (PP) Test

Variables	PP (Constant)		PP (Constant & Trend)	
	Level	1st Diff.	Level	1st Diff.
LY	-0.0746	-6.4511***	-2.0508	-6.3764***
LX	-1.3596	-5.1924***	-0.3273	-5.3246***
LM	-0.9159	-5.8148***	-1.5375	-5.8596***

*Superscripts ***,** and * indicate rejection of null hypothesis at 1%, 5% & 10% level of significance*

The results show that GDP(LY), Export (LX) and Imports (LM) variables are non-stationary at level in both ADF and PP tests. The ADF test shows that GDP (LY) is stationary at first

difference in constant and constant & trend both. Export (LX) is stationary at first difference in constant, however, it is not stationary when constant and trend are taken. Import (LM) is not stationary in any cases of ADF test.

PP test result shows that all the variables are non-stationary at level. All three variables are found stationary at first difference for all cases of PP test at 1% level of signification. Optimal lag lengths are selected using the Akaike's Information Criterion (AIC). Thus we conclude that, considering the PP test, all the variable are stationary at their first difference and integrated of order 1 i.e. I(1).

Johensen Cointegration Test Results:

The optimal lag length of the level VAR system is determined 4 lag using the Akaike's Information Criterion (AIC) (ANNEX I). Further the Correlogram analysis also supports the facts that all the variables used in the model are non-stationary at level and when they converted into first difference then all became stationary (Annex II). That mean all our 3 variables are integrated of same order. Now, the door opened for Johensen test of cointegration.

Since, all variables are integrated of order 1, i.e. *I* (1), we can test whether they are cointegrated or not (Engle & Granger, 1987). We here test for the number of cointegrating relationship using the approach proposed by Johansen (1988) and Johansen & Juselius (1990).

Table No. 4

Johansen Cointegration Test

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.455772	32.02035	29.79707	0.0273
At most 1	0.195011	8.901640	15.49471	0.3746
At most 2	0.017178	0.658446	3.841466	0.4171

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.455772	23.11871	21.13162	0.0259
At most 1	0.195011	8.243194	14.26460	0.3545
At most 2	0.017178	0.658446	3.841466	0.4171

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

The table No. 4 depicted the results of Johansen Cointegration test. Results of both Trace and Maximum Eigenvalue tests reject the null hypothesis of no cointegrating relation. It suggests that the existence of at least 1 cointegrating relationship among the variables in the series at 5% level of significance. This implies that the series under consideration are driven by at least 1 common trend. Hence, the long run equilibrium relationship between GDP (LY), Import (LM) and Export (LX).

Error Correction Model (ECM):

Since, variables have long run relationship, ECM model is eligible for further analysis. The term error-correction relates to the fact that last-period deviation from a long-run equilibrium, the error, influence its short-run dynamics. Imposing known unit roots and known cointegration restrictions ECM may improve the power of statistical test such as Granger causality test (Lütkepohl & Reimers, 1992). This study uses ECM model as reconfirmation of the cointegrating relationship among the variables to estimate the long run causality between GDP, import and export.

Table No. 5

ECM Test Result

Sample (adjusted): 6 43
Included observations: 38 after adjustments
D(LY) = C(1)*(LY(-1) + 0.0688347399031*LX(-1) - 0.924119053428*LM(-1) - 2.52545132026) + C(2)*D(LY(-1)) + C(3)*D(LY(-2)) + C(4)*D(LY(-3)) + C(5)*D(LY(-4)) + C(6)*D(LX(-1)) + C(7)*D(LX(-2)) + C(8)*D(LX(-3)) + C(9)*D(LX(-4)) + C(10)*D(LM(-1)) + C(11)*D(LM(-2)) + C(12)*D(LM(-3)) + C(13)*D(LM(-4)) + C(14)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.004140	0.127160	0.032560	0.9743
C(2)	0.038763	0.220068	0.176139	0.8617
C(3)	-0.309783	0.243763	-1.270838	0.2160
C(4)	0.419641	0.222688	1.884431	0.0717
C(5)	0.100066	0.188190	0.531728	0.5998
C(6)	0.134625	0.067292	2.000615	0.0569
C(7)	-0.074118	0.072279	-1.025441	0.3154
C(8)	0.115524	0.067281	1.717050	0.0989
C(9)	-0.065769	0.065628	-1.002148	0.3263
C(10)	0.062594	0.113414	0.551904	0.5861
C(11)	0.074201	0.125829	0.589701	0.5609
C(12)	-0.068080	0.114488	-0.594648	0.5576
C(13)	0.029943	0.130722	0.229059	0.8208
C(14)	0.065120	0.040840	1.594515	0.1239

R-squared	0.444449	Mean dependent var	0.121051
Adjusted R-squared	0.143526	S.D. dependent var	0.056862
S.E. of regression	0.052623	Akaike info criterion	-2.774006
Sum squared resid	0.066461	Schwarz criterion	-2.170685
Log likelihood	66.70611	Hannan-Quinn criter.	-2.559349
F-statistic	1.476952	Durbin-Watson stat	1.321667
Prob(F-statistic)	0.197305		

In the above table No. 5, C(1) is error correction term or speed of adjustment towards equilibrium. The coefficient C(1) is positive and insignificant, this implies that there is no long run causality running from export (LX) and import (LM) to GDP (LY). It shows that the result did not conform to our prior expectation. The adjustment coefficient or the speed of adjustment of GDP is deviated from its long run equilibrium is EC term 0.004140 and P-value is 0.9743 which is greater than 0.05 level of significant.

Wald Test

Wald test is used to determine the short run causality from individual independent variable to dependent variables. The result of Wald test are depicted and discussed below.

H_0: There is no short run causality running from import to GDP

H_1: There is short-run causality running from import to GDP.

Table No. 6

Wald Test Result

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	0.354517	(4, 24)	0.8383
Chi-square	1.418067	4	0.8410

Table No. 6 shows that we cannot reject null hypothesis as the probability values of F-statistic and Chi-square are greater than 0.05. This results that there is no short run causality running from import to GDP.

H_0: There is no short run causality running from Export to GDP.

H_1: There is short-run causality running from Export to GDP.

Table No. 7

Wald Test Result

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	1.469283	(4, 24)	0.2426
Chi-square	5.877130	4	0.2085

Table No. 7 displays that we cannot reject null hypothesis as the probability values of F-statistic and Chi-square are greater than 0.05. This results that there is no short run causality running from export to GDP.

Granger Causality Test:

Series X causes Y if the past values of X can more accurately predict Y than simply the past values of Y (Granger, 1969). Here, the directions of causality between GDP & Export, GDP & Import, and Export & Import have been tested using Granger Causality test.

Table No: 8

Granger Causality Test

Null Hypothesis	**F-Statistics**	**P-value**
LX does not Granger Cause LY	3.05517	0.0317**
LY does not Granger Cause LX	2.42116	0.0701*
LM does not Granger Cause LY	0.94010	0.4543
LY does not Granger Cause LM	4.83511	0.0039***
LM does not Granger Cause LX	0.46156	0.7633

LX does not Granger Cause LM	0.16143	0.9562

*Superscripts ***,** and * indicate rejection of null hypothesis at 1%, 5% & 10% level of significance*

The above Table No. 8 indicates that the causality transfers from GDP to export since the null hypothesis is rejected at 10% level of significance. Similarly Export causes the GDP in long run as the p-value of corresponding F-statistic rejected the null hypothesis that LX doesn't Granger Cause LY at 5% level of significance. Similarly, no causality is found from Import to GDP as the p-value of corresponding F-statistic fails to reject the null hypothesis of LM doesn't Granger Cause LY. However, causality found from GDP to Import as F-statistic corresponding P-value rejects the null hypothesis of LY does not Granger cause LM.

5. Conclusion

In this study, we examined the dynamic causal relationship among Economic Growth, Export and Import for Nepal in the period of 1974/1975-2016/2017. For the existence of long run relationship among variable, Johansen Cointegration test was used, while directional causality was tested with Granger Causality test. The result of cointegration test showed that there is 1 cointegration vector which clarifies the existence of long-run relationship among the variables. It mean import and export have significant effects of economic growth of Nepal. Similarly, VECM and Wald test result shows the no short-run and long run causality running from export and import to GDP. The result of Granger causality test shows that there is bidirectional relationship between Economic growth and export. It supports the export-led hypothesis. But there is no any causality between import and export. This also explored that the unidirectional relationship from GDP to import. This study suggests for policy making that Nepal must focus on export lead economic growth. Currently Nepal has high trade deficit and economy is fully depended upon the import. Since, imports don't cause economic growth in long run, the balance of payment must be positive.

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ANNEX I: LAG LENGTH SELCTION

VAR Lag Order Selection Criteria
Endogenous variables: LY LX LM
Exogenous variables: C
Date: 06/08/18 Time: 17:36
Sample: 1 43
Included observations: 39

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-64.83542	NA	0.006507	3.478739	3.606706	3.524652
1	111.4691	316.4439	1.23e-06	-5.100977	-4.589112*	-4.917324
2	120.2097	14.34358	1.25e-06	-5.087676	-4.191912	-4.766283
3	131.6380	16.99598	1.13e-06	-5.212206	-3.932543	-4.753074
4	149.0896	23.26875*	7.68e-07*	-5.645619*	-3.982057	-5.048747*

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

ANNEX II: STATIONARITY OF DATA

For first variable GDP (LY)

Level

Sample: 1 43
Included observations: 43

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.935	0.935	40.316	0.000
		2	0.870	-0.042	76.026	0.000
		3	0.800	-0.070	106.97	0.000
		4	0.729	-0.047	133.33	0.000
		5	0.663	-0.002	155.68	0.000
		6	0.591	-0.085	173.93	0.000
		7	0.518	-0.051	188.38	0.000
		8	0.449	-0.023	199.52	0.000
		9	0.381	-0.031	207.79	0.000
		10	0.317	-0.025	213.69	0.000
		11	0.255	-0.029	217.63	0.000
		12	0.197	-0.027	220.05	0.000
		13	0.140	-0.037	221.31	0.000
		14	0.085	-0.030	221.79	0.000
		15	0.033	-0.037	221.87	0.000
		16	-0.018	-0.042	221.89	0.000
		17	-0.067	-0.046	222.23	0.000
		18	-0.112	-0.011	223.19	0.000
		19	-0.153	-0.035	225.09	0.000
		20	-0.192	-0.027	228.18	0.000

1st differences

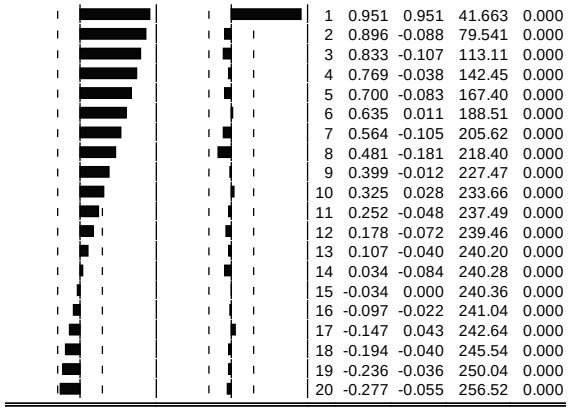
Sample: 1 43
Included observations: 42

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.018	-0.018	0.0144	0.904
		2	-0.164	-0.164	1.2531	0.534
		3	0.290	0.292	5.2413	0.155
		4	0.155	0.142	6.4028	0.171
		5	-0.076	0.018	6.6892	0.245
		6	-0.067	-0.123	6.9229	0.328
		7	0.002	-0.110	6.9230	0.437
		8	-0.111	-0.167	7.5982	0.474
		9	-0.044	-0.000	7.7046	0.564
		10	-0.063	-0.043	7.9311	0.636
		11	-0.148	-0.076	9.2422	0.600
		12	-0.214	-0.239	12.071	0.440
		13	0.010	-0.021	12.078	0.521
		14	-0.110	-0.141	12.871	0.537
		15	-0.067	0.096	13.177	0.589
		16	-0.146	-0.198	14.697	0.547
		17	-0.007	0.015	14.700	0.617
		18	0.085	-0.041	15.253	0.645
		19	-0.041	0.024	15.389	0.698
		20	-0.003	-0.049	15.390	0.754

For Second variable Export (LX)

Level

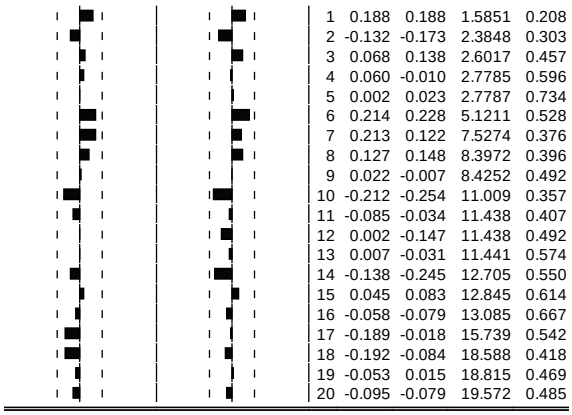
Sample: 1 43
Included observations: 43



Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.951	0.951	41.663	0.000
		2	0.896	-0.088	79.541	0.000
		3	0.833	-0.107	113.11	0.000
		4	0.769	-0.038	142.45	0.000
		5	0.700	-0.083	167.40	0.000
		6	0.635	0.011	188.51	0.000
		7	0.564	-0.105	205.62	0.000
		8	0.481	-0.181	218.40	0.000
		9	0.399	-0.012	227.47	0.000
		10	0.325	0.028	233.66	0.000
		11	0.252	-0.048	237.49	0.000
		12	0.178	-0.072	239.46	0.000
		13	0.107	-0.040	240.20	0.000
		14	0.034	-0.084	240.28	0.000
		15	-0.034	0.000	240.36	0.000
		16	-0.097	-0.022	241.04	0.000
		17	-0.147	0.043	242.64	0.000
		18	-0.194	-0.040	245.54	0.000
		19	-0.236	-0.036	250.04	0.000
		20	-0.277	-0.055	256.52	0.000

1st difference

Sample: 1 43
Included observations: 42

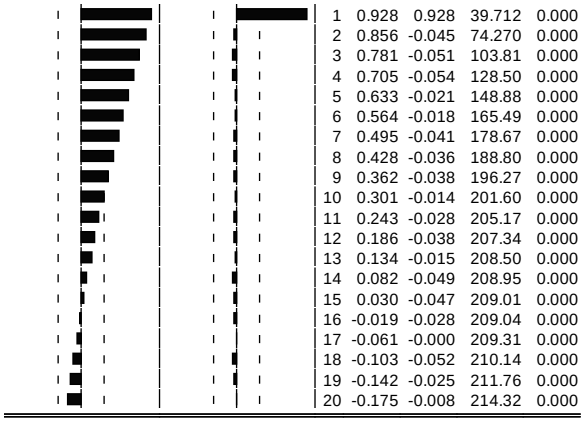


Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.188	0.188	1.5851	0.208
		2	-0.132	-0.173	2.3848	0.303
		3	0.068	0.138	2.6017	0.457
		4	0.060	-0.010	2.7785	0.596
		5	0.002	0.023	2.7787	0.734
		6	0.214	0.228	5.1211	0.528
		7	0.213	0.122	7.5274	0.376
		8	0.127	0.148	8.3972	0.396
		9	0.022	-0.007	8.4252	0.492
		10	-0.212	-0.254	11.009	0.357
		11	-0.085	-0.034	11.438	0.407
		12	0.002	-0.147	11.438	0.492
		13	0.007	-0.031	11.441	0.574
		14	-0.138	-0.245	12.705	0.550
		15	0.045	0.083	12.845	0.614
		16	-0.058	-0.079	13.085	0.667
		17	-0.189	-0.018	15.739	0.542
		18	-0.192	-0.084	18.588	0.418
		19	-0.053	0.015	18.815	0.469
		20	-0.095	-0.079	19.572	0.485

For Second variable Import (LM)

Level

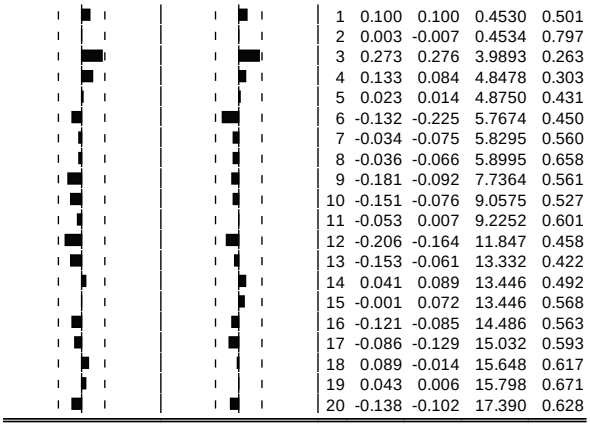
Sample: 1 43
Included observations: 43



Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.928	0.928	39.712	0.000
		2	0.856	-0.045	74.270	0.000
		3	0.781	-0.051	103.81	0.000
		4	0.705	-0.054	128.50	0.000
		5	0.633	-0.021	148.88	0.000
		6	0.564	-0.018	165.49	0.000
		7	0.495	-0.041	178.67	0.000
		8	0.428	-0.036	188.80	0.000
		9	0.362	-0.038	196.27	0.000
		10	0.301	-0.014	201.60	0.000
		11	0.243	-0.028	205.17	0.000
		12	0.186	-0.038	207.34	0.000
		13	0.134	-0.015	208.50	0.000
		14	0.082	-0.049	208.95	0.000
		15	0.030	-0.047	209.01	0.000
		16	-0.019	-0.028	209.04	0.000
		17	-0.061	-0.000	209.31	0.000
		18	-0.103	-0.052	210.14	0.000
		19	-0.142	-0.025	211.76	0.000
		20	-0.175	-0.008	214.32	0.000

1st difference

Sample: 1 43
Included observations: 42



Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.100	0.100	0.4530	0.501
		2	0.003	-0.007	0.4534	0.797
		3	0.273	0.276	3.9893	0.263
		4	0.133	0.084	4.8478	0.303
		5	0.023	0.014	4.8750	0.431
		6	-0.132	-0.225	5.7674	0.450
		7	-0.034	-0.075	5.8295	0.560
		8	-0.036	-0.066	5.8995	0.658
		9	-0.181	-0.092	7.7364	0.561
		10	-0.151	-0.076	9.0575	0.527
		11	-0.053	0.007	9.2252	0.601
		12	-0.206	-0.164	11.847	0.458
		13	-0.153	-0.061	13.332	0.422
		14	0.041	0.089	13.446	0.492
		15	-0.001	0.072	13.446	0.568
		16	-0.121	-0.085	14.486	0.563
		17	-0.086	-0.129	15.032	0.593
		18	0.089	-0.014	15.648	0.617
		19	0.043	0.006	15.798	0.671
		20	-0.138	-0.102	17.390	0.628