THE RECIPROCAL EFFECT OF SINGAPORE'S SELECTED ECONOMIC INDICATORS BY USING COINTEGRATION TEST AND IMPULSE RESPONSE FUNCTIONS FOR PERIOD

1960-2015 (AN ECONOMETRICS STUDY)

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Abstract*: Singapore is a center of global business attractiveness due to the compatible environment. It has been able to achieve rapid growth rates as well as its reliance on human resources development, encouraging the pattern of manufacturing, adopting modern technology and fostering scientific talents and innovations, thus enabling it to enter the field of competition with developed countries such as America, Germany, Japan and Korea. The importance of paper the Asian miracle (Singapore) is a successful development experience it can be modeled for underdevelopment countries to keep outgap of economic backwardness of Third World countries, because its achieved good growth rates in a short run. The problem of paper focused on The decline in international oil prices, which caused the problems of the Singapore economy as a decrease in growth rates after having been rising continuously for the previous period, due to the part of exports depends on the export of equipment and machinery for the extraction of oil industry, which led to a shock following the shock above, As well as the exit of Britain from the European Union lead to the decline of business activities and create a state of uncertainty in the global financial markets, while the hypothesis of paper that "there is a positive relationship and the long term between GDP and foreign trade variable", and the other side paper aimsto analyze the economic indicators studied by using the quantitative method to know of nature relationship between the variables selected through the unit root, the co-integration test, the VAR model and Impulse response functions of the time series studied, and showed the results of the econometrics analysis co-integration relationship in the 1st difference for all across long runthat the one side, And othersthe results shows the foreign trade variable did not respond to the GDP variable, and thus rejected the research hypothesis, which states that there is a relationship between GDP and foreign trade, while the results shows a response to the local capital variable for GDP up to the seventh and long run periods, that it indicates the development and increasing dependence at local investment in order to achieve longrun economic benefits, and keep the GDP of Singapore.

***Key words*:Successful development experience,Econometrics,Co-integration test.**

1. INTRODUCTION

Singapore is one of the four Asian Tiger nations that has been able to achieved of growth rates in short run as it has moved towards sustainable development that has been the starting point of human development through the development of education systems and the promotion of innovations, inventions and embosom of the talent on the one hand, And other hand thework about capital accumulation and domestic savings, as well as the specialization of modern technology that directly or indirectly affect the cost reduction and productivity increase, providing a competitive ideal environment is not easy, but it happened with Singapore when the World Bank classified in its report that first terms Ranked of global business activities quality in 2016, making it a global center for the digital economy and technological innovations.

Singapore has adopted the principle of industrialization and exportation the importance to achieve growth rates and create a trade surplus. This is achieved through the tax facilities provided to global companies, making them more capable and competitive than developed countries such as Japan, Korea, the United States and Germany.

The move from Third World countries to the developed countries necessitate for studying the reasons and situationswhich contributed to building an economy capable of external competitiveness. It is possible to identify the behavior of some of the economic indicators chosen by Singapore across its historical path, there area many of the challenges faced the Singaporean economy due the globally oil prices decline, the most important of which is the slowdown in growth rates, because the part of the

Singaporean economy exports depends on the export extraction of oil industry that led to its stagnation atgloballyoil prices. As well as, UK exit from the European Union contributed directly or indirectly to the decline growth rates in business for Singapore economy activities which affected by uncertainty in the global financial markets. Singapore is also one of the three signatories to the Asian Economic Commission Which provides for the adoption of free trade policies and make the Singaporean economy adopting the open door policy,and therefore any damage to the world economy must be moved to the Singapore economy, as this coincided with the protectionism pattern adopted by many countries to save its economies.

2. TIME SERIES AND STUDY REGION

Depend time series of 1960-2015, and the position limits represented by the Republic of Singapore.

3. DESIGN THE ECONOMETRICES MODEL

To identify the relationship between the variables studied, it is necessary to characterize them and the nature of their impact on the model as in the following table:

Table (1) Design the econometrics model

Indicators	Design
GDP	dependent
TRADE	Independent
SAVE	Independent
CFORM	Independent

The regression equation was it's as follows:

$$GDP = \beta_0 + \beta_1 TRADE + \beta_2 SAVE + \beta_3 CFORM$$

4. METHODOLOGY

The quantitative method was used to analyze the relationships among the economic indicators of Singapore. In order to obtain realty results, the data was processed using the Eviews 9.0 package and the time series andtransfer to stationary, and to achieving aims of papernecessary use as a following:

- Analysis of the indicators (under study) of the Singapore economy.
- The use of econometrics models to determine the relationship among GDP and other variables and in the long run must be used the co-integration test, VAR model, impulse Response Functions.
- Test results and their significance statistically, and affect the response of variables to each other.

4.1 UNIT ROOT TEST[1]

It is known that most of the time series are no stationary, so willsubjugation the time series to the unit root test and through the augmentedDickey Feller test and work to refining the studied data, fluctuations and correlation with time factor as GDP, trade variable, local saving variable and local capital formation variable also for period (1960-2015).

4.2 CO-INTEGRATION TEST[2]

This test indicates the identification of long-term relationship between the variables studied and the variables under study must be basically unstable and then integrated in the same rank or in other words the same difference for all variables, it's the theoretical basis of the Co-integration, depend into tests 1st Trace test and 2nd the Maximum value of Eigen.

4.3 VARMODEL[3]

We can obtain a good statistically results a cross VAR model and this test depend about optimal lag period according to Co-integration test. The VAR model deals with the dynamic of time seriesand contrary to the least squares methodwhich dealing with static of time series.

4.4 IMPULSE RESPONSE FUNCTIONS[4]

The response functions are shown the effect of independent variables on the dependent variable and vice versa through a many of curves which showing the scatter points effects of time lag when declined impulse response functions value to zero, also it's part of the VAR model and we can measured it's effect by one standard deviation.

5. RESULTS OF STATIONRY TEST

generally, the idea of Co-integration is that the data are in the same difference will be stability [5], The results it shown the strength and consistency of the model and rejecting the null hypothesis which states that the studied variables are not integrated and accept the alternative hypothesis which refer toconsist Co-integration within 1st level depend VAR model[6]and it determined 8th lag period as a follows:

A. The trace test which it's shown co-integration of studies variables within 1st degree at 5% as significant and was results trace test(144.4185) were greater than the critical value of (40.17493), which is a clear indication that the previous variables are integrated in the 1st difference in the long run.

B. Test of the maximum value of Eigen [7]: Also the test in this test exceeds the maximum value of Eigen, which amounted to (65.23033) and critical value (24.15921) at a significant level of 5%, which indicates the existence of co-integration of the 1st degree and the long run.

It is also noted that all the results of the significance of the integrationsand highest of the critical values of the trace test and maximum value of Eigen, and we show that in Appendix (1)

5.1THE VARMODEL

The VAR test is based on the two steps: 1. it given lag periods of gradually as the 1st lag period, and noted the results achieved, then the 2nd lag period and else …, to achieved lowestthe Akaike.valuedepend about previous method achieved the 8th lag periodwhich the lowest value reaching (-11.72180) compared to the second and third lag periods in the sequence according to the Akaike standard (9.085392) and (9.107516) This method confirmed that the 8th period according to the value of the AIC standard (-11.72180), which is the lowest value over the previous lag periods, see Appendixes (4.3.2)

5.2 IMPULSE RESPONSE FUNCTIONS

The Impulse response function model can explain the shock response, whether positive or negative, by one standard deviation of the studies variables, in other words, the dependent variable response and vice versa, depending on the output statistical program and prediction for 10 future periods, The graphs are arranged symmetrically to show the effect of the response as shown in the table below[8]:

Table (2) Impulse Response Functions of econometrics model

Periods / **Response of Shock**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
GDP to TRADE	**0**	**-0.01**	**-0.01**	**-0.01**	**-0.02**	**-0.04**	**-0.05**	**-0.06**	**-0.05**	**-0.05**
GDP to SAVE	**0**	**0.01**	**-0.01**	**-0.03**	**-0.03**	**-0.04**	**-0.01**	**0.01**	**0.03**	**0.04**
GDP to CFORM	**0**	**-0.02**	**-0.01**	**-0.02**	**-0.03**	**-0.05**	**-0.04**	**-0.04**	**-0.03**	**-0.03**
TRADE to GDP	**0.1**	**0.9**	**0.02**	**0.04**	**0.03**	**-0.02**	**-0.05**	**-0.1**	**-0.13**	**-0.14**
TRADE to SAVE	**0**	**0.02**	**0**	**-0.05**	**-0.04**	**-0.04**	**0.01**	**0.04**	**0.07**	**0.04**
TRADE to CFORM	**0**	**-0.04**	**-0.03**	**-0.04**	**-0.04**	**-0.07**	**-0.04**	**-0.04**	**-0.02**	**-0.02**
SAVE to GDP	**0.09**	**0.09**	**0.08**	**0.11**	**0.09**	**0.04**	**-0.03**	**-0.08**	**-0.12**	**-0.16**
SAVE to TRADE	**0**	**-0.02**	**0.01**	**0.02**	**-0.02**	**-0.04**	**-0.07**	**-0.06**	**-0.06**	**-0.06**
SAVE to CFORM	**0**	**-0.02**	**-0.01**	**-0.02**	**-0.04**	**-0.06**	**-0.05**	**-0.05**	**-0.04**	**-0.03**
CFORM to GDP	**0.14**	**0.12**	**0.1**	**0.12**	**0.11**	**0.11**	**0.04**	**-0.03**	**-0.09**	**-0.13**
CFORM to TRADE	**0**	**-0.01**	**0.01**	**0.02**	**-0.01**	**0.01**	**-0.04**	**-0.05**	**-0.05**	**-0.05**
CFORM to SAVE	**0**	**0.04**	**0.02**	**-0.05**	**-0.02**	**-0.09**	**-0.03**	**-0.04**	**0.02**	**0.03**

Source: Data of Study & Eviews's Results

The graphical forms are as follows:

Response to Cholesky One S.D. Innovations ± 2 S.E.

Fig. (1)

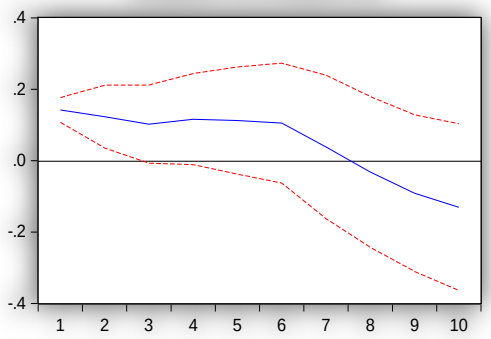


Fig. (2)

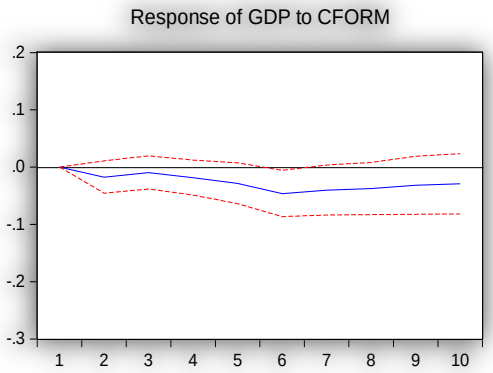
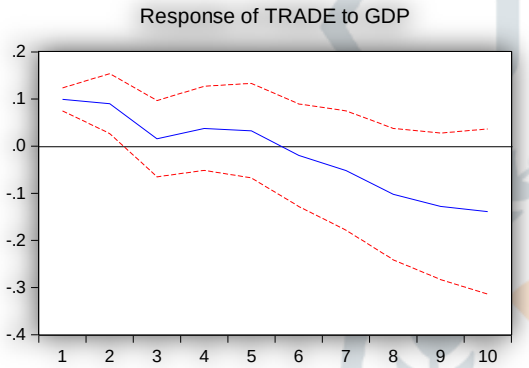


Fig. (3)Fig. (4)



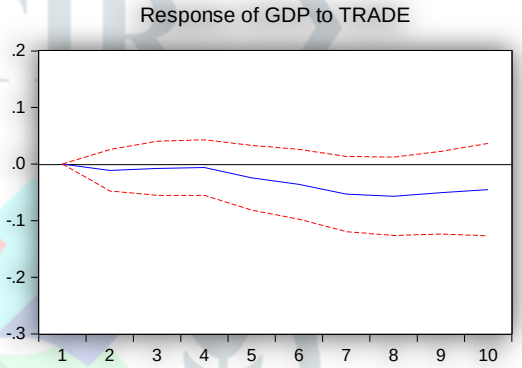
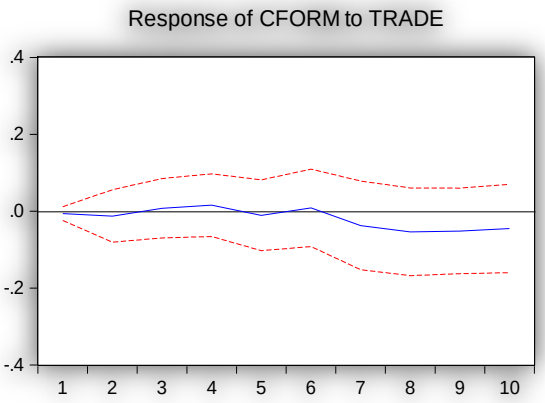


Fig. (5)Fig. (6)



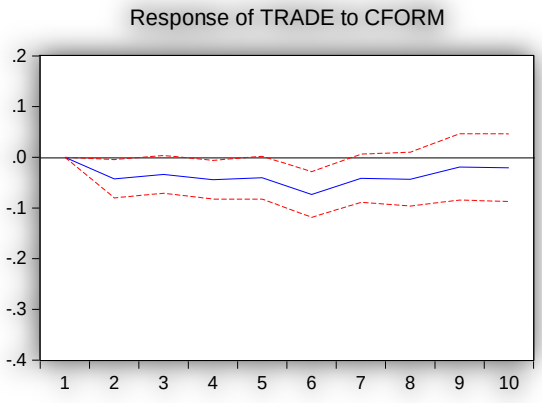
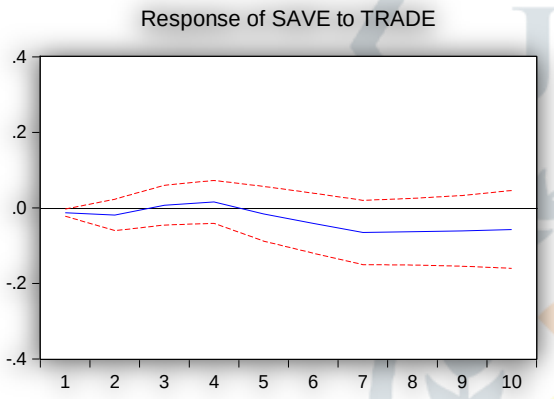


Fig. (7)Fig. (8)

Fig. (9)Fig. (10)



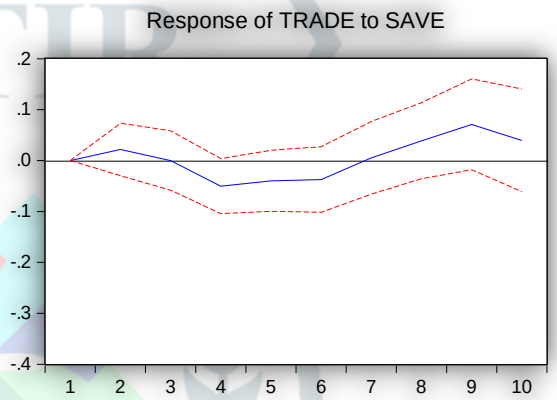
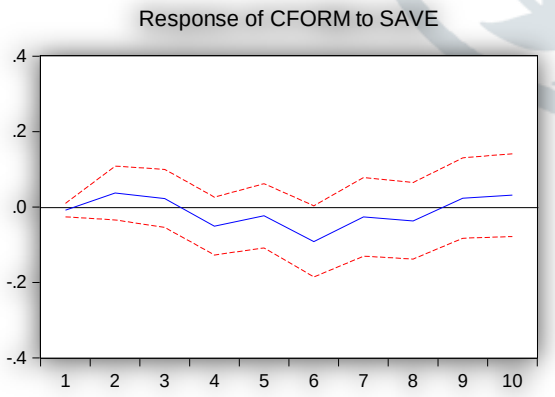
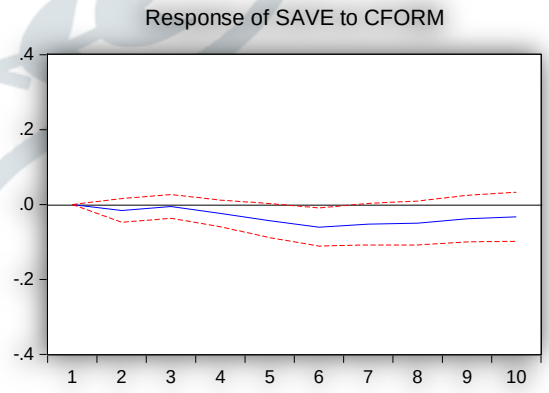


Fig. (11)Fig.(12)





Source: Data of Study & Eviews'sResults

6. RESULTS OF IMPULSE RESPONSE FUNCTIONS

The Impulse response functions shown reactions for indicators each as the GDP, trade, domestic savings, and local capital formation with others,and it ignore the response relationship of variables with itself, because it not signification, thefigure (1) explained response the formation of local capital to GDP, it positive response when it's exposed a random shock withone of standard deviation, but starts with the negative response in the 8th period and continues to the 10th period, The response of the positive, As a complement to the above the trade variable explained positive response to GDP whento fact the random shock of a one standard deviation, it was a positive with and up to the 5th period, This is illustrated in figure (3), as is the response of the local saving variable of the GDP. The response was up to the 6th period, eitherthe figure (11)which shows the response the capital formation to domestic savings for 3rd periods only and then turns the curve towards negative values. As for the other response functions, they were mostly negative.

7. THE CONCLUSIONS

From results we are getthere is a relationship of co-integration of the 1st to all variables in long run, i.e. the time series forall its stationary in 1st difference, and Impulse response functions model, its explained the GDP variable didn't respond to the foreign trade variable in long run, but there are reflex response for trade variable of GDPin the long run, while the VAR model it shown a relationship between the local savings and the GDP variable over the long run with a standard deviation of one to the 7th period, finally, add to above that response oflocal capital formation to the GDP variable after the7th period and its highest response when we comparative with others variables, it's a good indicator, refer to the Singapore economy is it towards the development of domestic investment under the near future.

8. REFERNCES

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APPENDIES

Appendix (1) the results of Co-integration test

Date: 11/09/17 Time: 00:34
Sample (adjusted): 1971 2015
Included observations: 45 after adjustments
Trend assumption: No deterministic trend
Series: GDP TRADE SAVE CFORM
Lags interval (in first differences): 1 to 8

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.765327	144.4185	40.17493	0.0000
At most 1 *	0.672320	79.18814	24.27596	0.0000
At most 2 *	0.381351	28.98085	12.32090	0.0000
At most 3 *	0.151089	7.371042	4.129906	0.0079

Trace test indicates 4 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 *	0.765327	65.23033	24.15921	0.0000
At most 1 *	0.672320	50.20729	17.79730	0.0000
At most 2 *	0.381351	21.60981	11.22480	0.0006
At most 3 *	0.151089	7.371042	4.129906	0.0079

Max-eigenvalue test indicates 4 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 Cointegrating Coefficients (normalized by b'*S11*b=I):

GDP	TRADE	SAVE	CFORM
27.66572	6.033462	-46.90595	16.87610
53.03718	4.463476	-56.97756	6.164697
-8.192157	15.46867	0.141152	-9.875830
0.237219	14.27607	-10.83114	-4.623701

Unrestricted Adjustment Coefficients (alpha):

D(GDP)	0.009995	0.013226	0.011965	0.01554...
D(TRADE)	0.007597	0.037000	0.009689	0.01893...
D(SAVE)	0.021106	0.018126	0.018448	0.01381...
D(CFORM)	-0.015455	0.012447	0.035108	0.02490...

Appendix (2) VAR of two lags

Vector Autoregression Estimates
Date: 11/09/17 Time: 00:23
Sample (adjusted): 1964 2015
Included observations: 52 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	GDP	TRADE	SAVE	CFORM
GDP(-1)	1.892018	1.213946	2.113258	1.775462
	(0.29738)	(0.47701)	(0.45095)	(0.58057)
	[6.36223]	[2.54489]	[4.68625]	[3.05814]
GDP(-2)	-0.946338	-1.036075	-2.020028	-1.852543
	(0.27757)	(0.44523)	(0.42090)	(0.54189)
	[-3.40939]	[-2.32706]	[-4.79928]	[-3.41869]
TRADE(-1)	-0.219310	0.626374	-0.247661	-0.428212
	(0.16844)	(0.27018)	(0.25542)	(0.32883)
	[-1.30203]	[2.31836]	[-0.96963]	[-1.30221]
TRADE(-2)	0.221434	0.111842	0.540370	0.567398
	(0.15908)	(0.25516)	(0.24122)	(0.31056)
	[1.39200]	[0.43831]	[2.24014]	[1.82703]
SAVE(-1)	0.148341	0.295827	0.440536	0.180853
	(0.06160)	(0.09881)	(0.09341)	(0.12026)
	[2.40805]	[2.99383]	[4.71600]	[1.50380]
SAVE(-2)	-0.008978	-0.021368	0.176784	0.073020
	(0.06584)	(0.10560)	(0.09983)	(0.12853)
	[-0.13638]	[-0.20234]	[1.77082]	[0.56813]
CFORM(-1)	-0.276270	-0.556671	-0.378323	0.323521
	(0.10410)	(0.16698)	(0.15785)	(0.20323)
	[-2.65393]	[-3.33381]	[-2.39667]	[1.59192]
CFORM(-2)	0.140292	0.295953	0.393257	0.253550
	(0.10587)	(0.16982)	(0.16054)	(0.20669)
	[1.32511]	[1.74272]	[2.44954]	[1.22672]
C	1.172383	3.157078	-0.737237	2.324394
	(0.63522)	(1.01892)	(0.96325)	(1.24012)
	[1.84563]	[3.09845]	[-0.76537]	[1.87433]
R-squared	0.998589	0.996832	0.997849	0.994508
Adj. R-squared	0.998327	0.996243	0.997449	0.993487
Sum sq. resids	0.229936	0.591612	0.528726	0.876365
S.E. equation	0.073126	0.117296	0.110887	0.142761
F-statistic	3805.107	1691.311	2493.708	973.3945
Log likelihood	67.16634	42.59505	45.51695	32.37883
Akaike AIC	-2.237167	-1.292117	-1.404498	-0.899186
Schwarz SC	-1.899452	-0.954402	-1.066783	-0.561471
Mean dependent	23.99473	29.78883	27.61874	27.46228
S.D. dependent	1.787801	1.913573	2.195489	1.768920

Determinant resid covariance (dof adj....	7.13E-10
Determinant resid covariance	3.33E-10
Log likelihood	272.2202
Akaike information criterion	-9.085392
Schwarz criterion	-7.734531

Appendix (3) VAR of three lags

Vector Autoregression Estimates
Date: 11/09/17 Time: 00:25
Sample (adjusted): 1965 2015
Included observations: 51 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	GDP	TRADE	SAVE	CFORM
GDP(-1)	1.952996	1.306655	1.936654	1.098151
	(0.40407)	(0.61060)	(0.61096)	(0.78334)
	[4.83330]	[2.13994]	[3.16985]	[1.40189]
GDP(-2)	-1.530000	-2.284495	-2.518139	-1.979836
	(0.49090)	(0.74181)	(0.74224)	(0.95166)
	[-3.11674]	[-3.07962]	[-3.39260]	[-2.08041]
GDP(-3)	0.494420	1.080624	0.586637	0.805706
	(0.37048)	(0.55985)	(0.56018)	(0.71822)
	[1.33452]	[1.93020]	[1.04724]	[1.12181]
TRADE(-1)	-0.274029	0.386993	-0.419209	-0.464712
	(0.18399)	(0.27804)	(0.27820)	(0.35669)
	[-1.48934]	[1.39186]	[-1.50685]	[-1.30284]
TRADE(-2)	0.331214	0.555388	0.784367	0.580810
	(0.24427)	(0.36912)	(0.36934)	(0.47354)
	[1.35593]	[1.50461]	[2.12370]	[1.22652]
TRADE(-3)	-0.098155	-0.345554	-0.190903	-0.258079
	(0.18205)	(0.27510)	(0.27526)	(0.35292)
	[-0.53917]	[-1.25610]	[-0.69353]	[-0.73126]
SAVE(-1)	0.247060	0.638614	0.812484	0.727507
	(0.20429)	(0.30871)	(0.30889)	(0.39604)
	[1.20935]	[2.06864]	[2.63031]	[1.83694]
SAVE(-2)	-0.059358	-0.157165	0.073557	-0.092823
	(0.08415)	(0.12717)	(0.12724)	(0.16314)
	[-0.70534]	[-1.23588]	[0.57808]	[-0.56897]
SAVE(-3)	0.032576	0.016256	-0.050647	0.013374
	(0.07861)	(0.11878)	(0.11885)	(0.15238)
	[0.41443]	[0.13686]	[-0.42614]	[0.08776]
CFORM(-1)	-0.255535	-0.503690	-0.343599	0.372712
	(0.10935)	(0.16524)	(0.16534)	(0.21199)
	[-2.33686]	[-3.04819]	[-2.07815]	[1.75819]
CFORM(-2)	0.215426	0.274303	0.312898	0.400515
	(0.14276)	(0.21572)	(0.21585)	(0.27675)
	[1.50904]	[1.27154]	[1.44961]	[1.44721]
CFORM(-3)	-0.119406	-0.072928	0.001492	-0.367827
	(0.11945)	(0.18051)	(0.18061)	(0.23157)
	[-0.99962]	[-0.40402]	[0.00826]	[-1.58841]
C	1.563593	4.183034	0.110200	4.512745
	(0.87652)	(1.32454)	(1.32531)	(1.69923)
	[1.78386]	[3.15810]	[0.08315]	[2.65575]
R-squared	0.998616	0.997241	0.997846	0.994549
Adj. R-squared	0.998180	0.996369	0.997165	0.992828
Sum sq. resids	0.209374	0.478110	0.478668	0.786870
S.E. equation	0.074228	0.112169	0.112234	0.143900
F-statistic	2285.661	1144.450	1466.681	577.7675
Log likelihood	67.76833	46.71250	46.68275	34.00784
Akaike AIC	-2.147777	-1.322059	-1.320892	-0.823837
Schwarz SC	-1.655351	-0.829633	-0.828466	-0.331411
Mean dependent	24.06108	29.86013	27.71317	27.53806
S.D. dependent	1.739730	1.861556	2.107984	1.699139

Determinant resid covariance (dof adj....	5.50E-10
Determinant resid covariance	1.69E-10
Log likelihood	284.2416
Akaike information criterion	-9.107516
Schwarz criterion	-7.137811

Appendix (4) VAR of eight lags

Vector Autoregression Estimates
Date: 11/09/17 Time: 00:27
Sample (adjusted): 1970 2015
Included observations: 46 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	GDP	TRADE	SAVE	CFORM
GDP(-1)	1.702855	1.003704	1.136593	0.485612
	(1.08495)	(1.42522)	(1.22045)	(2.02745)
	[1.56953]	[0.70424]	[0.93129]	[0.23952]
GDP(-2)	-1.058306	-1.575934	-0.959210	-2.832388
	(1.53077)	(2.01086)	(1.72195)	(2.86055)
	[-0.69136]	[-0.78371]	[-0.55705]	[-0.99015]
GDP(-3)	1.553580	2.708762	2.233164	5.102929
	(1.48821)	(1.95496)	(1.67408)	(2.78104)
	[1.04392]	[1.38558]	[1.33396]	[1.83490]
GDP(-4)	0.149868	-0.554878	0.329833	-2.989424
	(1.58070)	(2.07645)	(1.77812)	(2.95386)
	[0.09481]	[-0.26722]	[0.18550]	[-1.01204]
GDP(-5)	-0.356755	-0.297876	-0.282289	1.322288
	(1.10014)	(1.44518)	(1.23754)	(2.05585)
	[-0.32428]	[-0.20612]	[-0.22810]	[0.64318]
GDP(-6)	-0.924776	-0.849875	-1.434474	0.385800
	(1.14970)	(1.51028)	(1.29329)	(2.14846)
	[-0.80436]	[-0.56273]	[-1.10916]	[0.17957]
GDP(-7)	0.453259	1.042145	0.246766	-0.574184
	(0.90659)	(1.19092)	(1.01982)	(1.69415)
	[0.49996]	[0.87507]	[0.24197]	[-0.33892]
GDP(-8)	-0.258314	-0.792893	-0.481271	-0.856796
	(0.61495)	(0.80782)	(0.69176)	(1.14917)
	[-0.42005]	[-0.98152]	[-0.69572]	[-0.74558]
TRADE(-1)	-0.246093	0.643482	-0.254823	0.022103
	(0.40803)	(0.53599)	(0.45899)	(0.76248)
	[-0.60313]	[1.20054]	[-0.55519]	[0.02899]
TRADE(-2)	0.349604	0.234243	0.669267	0.852804
	(0.56214)	(0.73844)	(0.63234)	(1.05047)
	[0.62192]	[0.31721]	[1.05839]	[0.81183]
TRADE(-3)	-0.342081	-0.242789	-0.458266	-1.314787
	(0.61187)	(0.80377)	(0.68828)	(1.14340)
	[-0.55908]	[-0.30206]	[-0.66581]	[-1.14990]
TRADE(-4)	-0.116810	-0.567660	-0.169211	0.096292
	(0.53799)	(0.70672)	(0.60518)	(1.00534)
	[-0.21712]	[-0.80323]	[-0.27960]	[0.09578]
TRADE(-5)	0.162469	0.733338	0.117557	0.885479
	(0.42477)	(0.55799)	(0.47782)	(0.79377)
	[0.38249]	[1.31425]	[0.24603]	[1.11554]
TRADE(-6)	0.473350	0.310903	0.713057	0.235086
	(0.45307)	(0.59516)	(0.50965)	(0.84665)
	[1.04477]	[0.52238]	[1.39911]	[0.27767]
TRADE(-7)	-0.209758	-0.238097	-0.096336	-0.355901
	(0.43295)	(0.56874)	(0.48702)	(0.80906)
	[-0.48448]	[-0.41864]	[-0.19780]	[-0.43989]
TRADE(-8)	-0.121334	-0.176998	-0.240568	0.416036
	(0.29490)	(0.38739)	(0.33173)	(0.55108)
	[-0.41144]	[-0.45690]	[-0.72519]	[0.75494]
SAVE(-1)	0.161183	0.496372	0.737084	1.141255
	(0.61391)	(0.80646)	(0.69059)	(1.14722)
	[0.26255]	[0.61550]	[1.06733]	[0.99480]
SAVE(-2)	-0.221159	-0.198904	-0.674293	0.020016
	(0.78554)	(1.03191)	(0.88365)	(1.46794)
	[-0.28154]	[-0.19275]	[-0.76308]	[0.01364]
SAVE(-3)	-0.233785	-0.632285	-0.493105	-1.930210
	(0.84760)	(1.11343)	(0.95346)	(1.58391)
	[-0.27582]	[-0.56787]	[-0.51718]	[-1.21864]
SAVE(-4)	-0.382019	-0.147482	-0.516079	1.298064
	(0.76836)	(1.00934)	(0.86432)	(1.43584)
	[-0.49719]	[-0.14612]	[-0.59709]	[0.90405]

Appendix (5) follows the VAR of eight lags

SAVE(-5)	0.521534	0.634979	0.465260	-1.062282
	(0.53105)	(0.69760)	(0.59737)	(0.99237)
	[0.98209]	[0.91024]	[0.77885]	[-1.07045]
SAVE(-6)	0.204262	-0.172973	0.405575	-0.178407
	(0.45546)	(0.59831)	(0.51235)	(0.85113)
	[0.44847]	[-0.28910]	[0.79160]	[-0.20961]
SAVE(-7)	0.008412	0.171473	0.079222	0.453677
	(0.24155)	(0.31731)	(0.27172)	(0.45139)
	[0.03483]	[0.54039]	[0.29155]	[1.00506]
SAVE(-8)	0.079201	0.048381	0.167707	-0.437718
	(0.20260)	(0.26614)	(0.22790)	(0.37860)
	[0.39093]	[0.18179]	[0.73587]	[-1.15616]
CFORM(-1)	-0.289327	-0.703965	-0.270224	-0.126918
	(0.23199)	(0.30475)	(0.26096)	(0.43352)
	[-1.24716]	[-2.30999]	[-1.03549]	[-0.29276]
CFORM(-2)	0.169233	0.227557	0.225069	0.794843
	(0.30661)	(0.40278)	(0.34491)	(0.57297)
	[0.55195]	[0.56497]	[0.65255]	[1.38724]
CFORM(-3)	-0.160605	-0.242233	-0.161289	-0.248452
	(0.24490)	(0.32171)	(0.27549)	(0.45765)
	[-0.65579]	[-0.75295]	[-0.58546]	[-0.54288]
CFORM(-4)	-0.094792	0.242835	-0.103733	0.340788
	(0.22888)	(0.30066)	(0.25746)	(0.42771)
	[-0.41416]	[0.80767]	[-0.40291]	[0.79678]
CFORM(-5)	-0.174370	-0.509705	-0.167242	-0.450727
	(0.25191)	(0.33091)	(0.28337)	(0.47074)
	[-0.69219]	[-1.54029]	[-0.59019]	[-0.95748]
CFORM(-6)	-0.090006	0.177449	-0.221569	-0.496185
	(0.27834)	(0.36563)	(0.31310)	(0.52013)
	[-0.32337]	[0.48532]	[-0.70766]	[-0.95396]
CFORM(-7)	0.102426	-0.178374	0.171273	0.629533
	(0.29238)	(0.38408)	(0.32890)	(0.54638)
	[0.35032]	[-0.46442]	[0.52075]	[1.15220]
CFORM(-8)	0.069001	0.268122	0.267840	0.433403
	(0.31961)	(0.41985)	(0.35953)	(0.59726)
	[0.21589]	[0.63861]	[0.74497]	[0.72565]
C	4.399718	6.923617	2.875480	-3.494462
	(4.11332)	(5.40339)	(4.62705)	(7.68659)
	[1.06963]	[1.28135]	[0.62145]	[-0.45462]
R-squared	0.999090	0.998610	0.999142	0.996064
Adj. R-squared	0.996849	0.995188	0.997029	0.986377
Sum sq. resids	0.088796	0.153229	0.112361	0.310081
S.E. equation	0.082647	0.108567	0.092969	0.154442
F-statistic	445.8384	291.8255	472.9448	102.8192
Log likelihood	78.48011	65.93154	73.06645	49.71877
Akaike AIC	-1.977396	-1.431806	-1.742019	-0.726903
Schwarz SC	-0.665545	-0.119955	-0.430168	0.584949
Mean dependent	24.39913	30.22603	28.15230	27.91071
S.D. dependent	1.472245	1.565059	1.705677	1.323208

Determinant resid covariance (dof adj....	4.81E-11
Determinant resid covariance	3.07E-13
Log likelihood	401.6015
Akaike information criterion	-11.72180
Schwarz criterion	-6.474399

Appendix (6) Differences of model's variables

	UNIT ROOT TEST	CRITICAL VALUES AT LEVEL		VARIABLES			
		5%	1%	CFORM	SAVE	TRADE	GDP
Level	Intercept	2.926622	3.581152	3.595952	2.36887	4.939631	4.467549
	Trend & Intercept	3.51074	4.170583	0.330088	1.005388	3.574426	2.067453
	None	1.94814	2.616203	4.622211	2.49767	4.765157	4.785302
1st Difference	Intercept	2.916566	3.557472	5.838673	4.216494	0.142204	3.659806
	Trend & Intercept	3.51074	4.170583	6.864303	3.247937	1.616664	5.753471
	None	1.947248	2.610192	5.520645	3.777057	1.024729	1.732558
2nd Difference	Intercept	2.918778	3.562669	12.94609	4.248309	4.72137	8.886266
	Trend & Intercept	3.498692	4.144584	12.91333	4.157799	4.739105	8.854424
	None	1.947248	2.610192	13.05665	4.159782	4.426071	8.981601