An Econometric Estimation of Feedback Effects of Trade Relationship between Oman and Other Members of the Gulf Cooperation Council

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***Abstract*—This paper attempts to extend the recent literature by empirically examining if there are any feedback effects of the trade relationship between Oman and its trading partners from GCC members. A simultaneous-equations model with double log form has been developed and used and the main finding can be illustrated as follow: there is no evidence of partial feedback effect in Oman trade with all GCC Countries accepts Bahrain. the short-range of Omani elasticity of imports from GCC with respect to its GDP appears to be higher (ranged from .75 to 1.8). Finally, the gap between the desired level of spending on Omani imports from GCC members and the actual level of spending for all cases will be closed in one period and the number of periods of adjustment is ranged between one and two years.**

***Index Terms*—Feedback effects, GCC, simultaneous equations model, sultanate of Oman, trade relationship.**

I. Introduction

The Omani economy is a member of the Gulf Cooperation Council (GCC) and Its Economy is depended heavily on the oil sector and on international trade. This dependence suggests the existence of an interaction between the Omani economy and the rest of the world. This interaction could be observed through the mechanism of trade interdependence as follows: An increase in Omani exports to its (i) partner in period (t) (▲ XO- Partner i, t) results in an increase in its incomes (▲YO,i, t). However, as incomes in Oman rise, the demand for Omani imports will increase (▲OM- Partner i, t). The increase in imports represents an increase in the incomes of those countries (▲ Y Partner i, t) that export the goods and services to Oman. This rise in the income of the exporter will, in turn, stimulate demand, i.e. increase its imports. This will result in an increase in the exports of the other partner. It is theoretically possible for part of this mechanism to occur within the current period. (See Fig. 1). The hypothesis tested in this paper is that an increase in Oman's exports to GCC contributes to growth in Omani GDP. The increase in Omani income expands its imports from GCC. This, in turn, contributed to growth in the income of the trade partners.

The main objectives of this paper are: to test if there are any feedback effects in Oman trade with other members of the GCC and to examine the patterns of Oman exports to and imports from other members of the GCC. Thus, the structure and performance of trade between Oman and its trading partners from GCC members namely (Emirates, Saudi Arabia, Qatar, Kuwait, and Bahrain) during the period 2000-2017 will be analyzed in this paper.

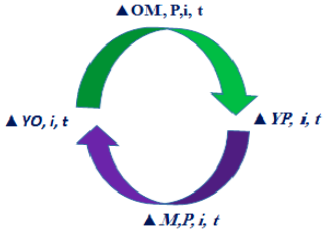

Fig. 1. The mechanism of feedback effects of trade.

The rest of this paper is divided into five sections. After this introduction, section two gives a brief review of the literature on Feedback Effects of Foreign Trade. Section three examines the magnitude of trade between Oman and it trading partners from GCC members. Section four develops a simultaneous equations model to test the interaction of international trade and the degree of feedback between Oman and GCC Members. Section five gives the regression results of the simultaneous equations model. Finally, the main conclusions are summarized in section six.

II. Literature Review of Feedback Effects of Foreign Trade

Previous literature on feedback effects of foreign trade has been subject matter for many researchers during the past three decades. One might mention to the work by [1]-[6].

Reference [1], tested the feedback impacts of trade in GCC countries with its trading countries over the period from 1970-1996. The author applied the simultaneous equation model in order to evaluate the process of interaction between the GCC and the rest of the world. The main conclusion of this study shows that there is a significant feedback effect in the trade of gulf cooperation council members with its major trading partners specifically Japan, the USA and the EU. Authors in reference [2], tested the trade interaction between the GCC and the EU. They applied a simultaneous equations model to assess if there are any feedback effects. The results of the model showed that GCC exports have been significantly influenced by the shocks in oil prices. Moreover, the results show that there is a significant feedback between GCC members and its main trading partners exists.

The Johansen multivariate co-integration technique were applied as in [3], in order to examine the long run relationship between spending on imports and instability of oil exports in

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GCC countries. The model included aggregate imports, real GDP, relative prices and lagged one year of the depended variable. The empirical results of the study show that aggregate imports of GCC countries have been significantly affected by the downturn in oil prices. In addition, investment is a key factor in aggregate imports in the long run in Kuwait and the UAE, while exports are a significant determinant of aggregate imports in Oman.

Reference [4], examined the interdependence of trade between Oman and its seven major trading partners (Emirates, the USA, Japan, the UK, South- Korea, Thailand and Mainland China) using a simultaneous-equations model. The model is estimated using the Two Stage-Square (2SLS) procedure of estimation. The results of the econometric model indicate that oil prices are not the main element of Omani exports to its major trading partners with exception of Japan and the USA. In addition, there is a significant impact (a feedback effect) between Omani and its four trading partners namely Japan, Emirates, the UK and South Korea.

The trade relationship between UAE and its three top trading partners (Japan, India and Mainland China) was tested in [5]. a simultaneous-equations model with double log form was used by [5], in order to analyze the role played by the interaction of trade and the degree of feedback effect. The main finding of the simultaneous-equations model approves that there is feedback effect of trade between UAE, Japan, and China. UAE's imports from its partner are depending on its income with a partial adjustment mechanism. The coefficient of the income variable which represents the short-term elasticity of UAE imports appears to be greater (e.g. fluctuating from .70 to 1.8) in all cases. Furthermore, the hypotheses of export as an engine of economic growth have been tested by [6]. He applied a Koyck distributed lag scheme in order to find out if there is a spread effect from Oil export sector to non-oil sectors in Oman during the period (1973 to 2014). The main results suggest that the growth rates of all Omani sectors were much higher during the periods of the rise in oil prices than during the period of oil recession. It is also indicated that there are spread effects from oil exports to the rest of the economy during the period of oil bomb. However, when the inflationary effect is excluded and a Koyck distributed lag scheme is imposed, the econometric results suggest that in Oman, real output of all sectors has not responded to the growth in oil export sector. In other words, there are no spread effects from the oil sector to the rest of the economy.

III. Magnitude of Intra Trade between Oman and Its Trading Partners from GCC Countries

The magnitude of Omani trade with other members of GCC during the last four years of this study is illustrated by Table I. the data in Table I indicate that Oman trades mostly with the industrialized countries, the U.S.A Japan, China, and India. For example, however, Oman imports over 44% from GCC countries and only 18% of its exports have been directed to GCC members in 2017. The geographical distribution of Oman's trade with Emirates and Saudi Arabia is quite significant. This trade averaged approximately 17 billion US dollars during the period 2014-2017.

The data in Table I suggests that Emeritus is the largest trade partner with Oman within the GCC region followed by Saudi Arabia. More than 85% of Oman Imports during the last four years were obtained from Emirates and around 8% were imported from Saudi Arabia. In addition, A large proportion of Omani exports (more than 64 percent) had been directed to Emirates and approximately 24%were exported to Saudi Arabia. On the other hand, imports from and exports to other GCC members were less than 5 percent of total Omani trade during that period.

The above formation suggests that the existence of trade interdependence between Oman and other members of GCC and confirm that there is a high degree of concentration of Oman exports and imports to geographical areas. Over 15% of its exports directed to only Emirates and Saudi Arabia. In addition, more than 42% of Omani imports supplied by only Emirates and Saudi Arabia. Therefore, it can be concluded that Omani imports from its trading partner within the GCC region are strongly dominated by Emirates and Saudi Arabia.

TABLE I: Omani Trade with GCC Members (Average 2014-2017)

	Value of Omani Exports (US million dollars)	% of total Omani Exports to GCC	Value of Omani imports (US million dollars)	% of total Omani Imports from GCC
Emirates	4026.7925	64.1364	10821.825	86.14827
Qatar	285.7125	4.550649	319.0825	2.54009
Kuwait	312.97	4.984789	113.47	0.90329
Saudi	1557.7775	24.8113	1038.5625	8.267585
Bahrain	95.23	1.516764	269.0325	2.141661
GCC	6278.4825	100	12561.973	100
TOTAL	34274.0125	18.31849	28356.857	44.29959

Source: [7].

IV. Specification of the Model

To study the relationship between the Oman economy and its trading partners from GCC members, a simultaneous equations model similar to that developed in [5], [8], [9], will be utilized to identify the interaction of trade relationships between Oman and other GCC members and to test if there are any feedback effects.

The following simultaneous relationships, known as structural equations, have been developed to test for feedback effects in the trade relationship between the Oman and its trading partners from GCC members.

$$ln\,YO_{,t} = \alpha_0 + \alpha_1 ln\,XO_{\text{-Partner}\,i,t} + \alpha_2 ln\,XO_{,0,t} + \alpha_3 ln\,YO_{,t-1} + \varepsilon_{1t} \quad (1)$$

$$ln\,XO_{\text{Partner}\,i,t} = \beta_0 + \beta_1 ln\,Po_{,t} + \beta_2 ln\,Y_{\text{Partner}\,i,t} + \beta_3 ln\,\boldsymbol{XO}_{\text{Partner}\,i,t-1} + \varepsilon_{2t} \quad (2)$$

$$ln\,Y_{\text{Partner}\,i,t} = \lambda_0 + \lambda_1 ln\,X_{\text{Partner}\,i0,t} + \lambda_2 ln\,OM_{,\text{Partner}\,i,t} + \lambda_3 ln\,Y_{\text{Partner}\,i,t-1} + \varepsilon_{3t} \quad (3)$$

$$ln\,OM_{\text{-Partner}\,i,t} = \delta_0 + \delta_1 YO_{,t} + \delta_3 OM_{\text{-Partner}\,i,t-1} + \varepsilon_{4t} \quad (4)$$

Endogenous variables:

$YO_{,t=Oman}$ GDP in a period (t)
$XO_{\text{-}\textbf{Partner}\,I,t}$ = *Exports of Oman to the ith members of GCC in period (t)*
$Y_{\textbf{Partner}\,i,t}$ = GDP *to the ith members of GCC* in a period (t)
$OM_{\text{-}\textbf{Partner}\,i,t}$ = *imports of Oman from the ith members of GCC* in a period (t)

Instrument (exogenous variables)*:*

$XO_{,0,t}$ = *Oman exports to countries other the ith members of GCC in a period (t)*
$YO_{,t-1}$ = *Oman GDP in period (t-1)*
$X_{\textbf{Partner}\,i0,t}$ = *Exports of the ith ith members of GCC in period (t) to other countries than Oman*
$OM_{\text{-}\textbf{Partner}\,i,t}$ = *Oman imports from the ith members of GCC in a period (t-1)*
$Po_{,t}$ = *nominal oil price in a period (t)*

The first equation tests the relationship between Omani income and its exports to each member of the Gulf Cooperation Council as well as the rest of the world. It is assumed that Oani GDP depends on these exports. It is also assumed that there is a partial adjustment mechanism in the income-export relationship. The variable with lagged mechanism gives the equation a dynamic character, permitting for partial adjustment following a Koyck geometrically declining weight scheme [10]-[13].

The second equation examines the relationship between Omani exports to each GCC members and the level of the partner's GDP. It is expected that the growth in the partner's economy, would result in an increase in its imports from Oman. It is also assumed that Omani exports depend on the price of oil. It is expected that an increase in oil prices leads to an increase in the export proceeds of the Omani economy, given the quantities exported. It also expected that the coefficient (β_1) will carry a positive sign and the coefficient (β_3) of lagged variable $\boldsymbol{XO}_{\textbf{partner}}$ will be ranged from zero to one. The third equation examines the relationship between the Omani economy and its trading partners from GCC countries.

It is expected that the level of GDP of each trading partner depends on its exports to Oman and to the rest of the world. This equation is also dynamic.

If there is a significant feedback effect, we would expect the coefficients (γ_2) to be statistically significant. For only then, would we be able to say that increased imports from Oman, results in an increase in the GDP of its trading partner of GCC members? [5], [8].

The last equation is an import function. This function tests the hypothesis that Oman's imports from other GCC members depend on Oman's GDP with a partial adjustment mechanism. This completes the logical sequence for the feedback effect.

In each equation, the dependent variable is regressed against past values of itself and of other variables. following a Koyck geometrically declining weight scheme which allowing for partial adjustment gives the equations a dynamic character, (or lagged effects) [10], [13], [14].

The above model has as many equations as endogenous variables and in this sense is mathematically complete. Applying the order and rank conditions for identification we find that all three equations are over-identified. It is appropriate, therefore, to use the method of two-stage least squares (2SLS) to estimate the parameters of the equations as in [13], [15].

V. Result and Discussion of the Simultaneous-Equations Model

This paper uses data covering the period from 2000 –2017, which was obtained from [7], [16], [17]. E-Views package version 10 was used to carry out the estimations of all equations in the model.

The results of the simultaneous model are given in tables 2-6. As shown in these tables, the four equations are appropriate, as evident from the values of adjusted and the "t" statistics (shown under each coefficient). However, during the period 2000 – 2017, the Durbin Watson (DW) statistic does not show any significant problem of serial correlation at the five percent level of significance. Overall, the model is suitable as evident by the fact that the F test and the coefficients of the lagged variables lie between zero and one in all cases as suggested in [10], [14].

TABLE II: Regression Results of the Simultaneous Equations Model of Oman Trade with Emirates

EQ.N		R	F	DW
1	$\ln YO_{,t} = \underset{2.06}{1.28} + \underset{0.7}{0.086}\ln XO_{\text{-}\textbf{Ei},t} + \underset{4.1}{0.42}\ln XO_{,0,t} + \underset{4.6}{0.42}\ln YO_{,t-1}$	.95	97	2.7
2	$\ln XO_{\textbf{Ei},t} = \underset{3.2}{1.5} + \underset{4.8}{0.54}\ln Po_{,t} - \underset{-1.7}{0.04}\ln Y_{\textbf{Ei},t} + \underset{7.3}{0.59}\ln \boldsymbol{XO}_{\textbf{E}\,i,t-1}$	.90	42	2.3
3	$\ln Y_{\textbf{Ei},t} = \underset{0.05}{1.15} + \underset{3.9}{5.71}\ln X_{\textbf{E}\,i0,t} - \underset{-1.8}{3.8}\ln OM_{,\textbf{E}\,i,t} - \underset{-0.6}{2.14}\ln Y_{\textbf{Ei},t-1}$	.57	6.13	1.5
4	$\ln OM_{\text{-}\textbf{Ei},t} = \underset{-2.25}{-3.3} + \underset{2.9}{0.75}YO_{,t} + \underset{2.59}{0.44}OM_{\text{-}\textbf{E}\,i,t-1}$	.91	30	2.5

The regression results for Emirates are given in Table II. These results suggest:

Omani income is not significantly affected by Omani oil exports to Emirates. It is strongly affected by Omani exports to the rest of the world. The "t" value of the coefficient of the variable "XO- Ei, t" which represents Omani exports to Emirates, is not statistically significant; even at the 10 percent level of significance. This may be due to the fact that Omani exports to Emirates have been a very small proportion of Oman total exports over the last two decades. However, inspection of the coefficient (YO, t-1) suggests the existence of a significant spread effects of Omani income.

The results of the second equation suggest that Omani exports to Emirates are strongly influenced by oil prices.

However, Emirates GDP does not affect the Omani Exports. Oil prices have a slightly greater effect on Omani exports to Emirates than the Emirates income.

The results of the second equation suggest that Omani exports to the Emirates are affected by the level of Emirates GDP. The Emirates income is a major determinant of Omani exports to that country. A rise in Emirates income by US$1 results in an increase in Omani exports to Emirates by approximately US$ 1.87. However, Omani exports to the UAE do not seem to be influenced by the instability of oil prices. This could be explained by the fact that the Omani has signed several trade agreements with the Emirates the UAE. The results of Emirates GDP function in equation 3 suggest the absence of feedback effects. This may be due to the fact that the value of Omani imports from Emirates is a very small proportion of total Emirates exports. The estimated results in equation four indicate that Omani imports from the Emirates are confidently correlated with its GDP. The estimated coefficient δ_1 represents the short-term elasticity, while the long-term elasticity is given by $\delta_1 / [1- \delta_2]$, [9], [12].

The short-term elasticity of Omani imports from the Emirates with respect to Omani income is approximately .75, while its long-run elasticity is approximately 1.33

This suggests that an increase in Omani income by US$1 results in an increase in Omani imports from Emirates by 75 US Cents in the short term and by approximately 133 US Cents in the long term.

The value of the coefficient of the variable OM- E i, t-1 (0.44) suggests that approximately 0.56 of the gap between the desired level of spending on imports from Emirates and the actual level of spending will be closed in one period and the number of periods of adjustment is approximately one and two-third year.

TABLE III: REGRESSION RESULTS OF THE SIMULTANEOUS EQUATIONS MODEL OF OMAN TRADE WITH QATAR

EQ. N		R	F	DW
1	$\ln YO_{,t} = 1.44 + 0.039 \ln XO_{-Qatarr\ i,t} + 0.48 \ln XO_{,0,t} + 0.41 \ln YO_{,t-1}$ 1.8 0.68 7.1 3.9	.98	347	2.2
2	$\ln XO_{Qatarr\ i,t} = -2.3 + 0.17 \ln Po_{,t} + 0.36 \ln Y_{Qatarr\ i,t} + 0.5 \ln \boldsymbol{XO}_{Qatarr\ i,t-1}$ -0.9 0.53 0.9 2.05	.90	42	1.7
3	$\ln Y_{Qatarr\ i,t} = -1.03 + 0.51 \ln X_{Qatarr\ i0,t} + -0.12 \ln OM_{,Qatarr\ i,t} + 0.5 \ln Y_{Qatarr\ i,t-1}$ -2.08 8.8 -3.6 8.0	.99	838	2.4
4	$\ln OM_{-Qatarr\ i,t} = -17.1 + 1.88 YO_{,t} + 0.28 OM_{-Qatarr\ i,t-1}$ -2.3 2.5 1.3	.91	30	2.4

The regression results in the fourth equation suggest that Omani imports from Qatar are positively dependent on GDP within a partial adjustment mechanism (Table III). The short-term elasticity of Omani imports from Qatar with respect to Omani income is approximately 1.88, while its long-run elasticity is approximately 2.6. This suggests that an increase in Omani income by US$1 results in an increase in Omani imports from Qatar by 1.88 US Cents in the short term and by approximately 2.6 US Cents in the long term. The value of the coefficient of the variable OM- Qatar i, t-1 (0.28) suggests that approximately 0.72 of the gap between the desired level of spending on imports from Qatar and the actual level of spending will be closed in one period and the number of periods of adjustment is approximately one and one-third year.

The regression results for KUWAIT are given in Table IV. These results suggest:

Omani income is not significantly affected by Omani exports to Kuwait. It is strongly affected by Omani exports to the rest of the world. The "t" value of the coefficient of the variable "XO- Ki, t", which represents Omani exports to Kuwait, is not statistically significant even at the 10 percent level of significance. This may be due to the fact that Omani exports to Kuwait have been a very small proportion of Omani total exports over the last two decades. However, inspection of the coefficient (YO, t-1) further suggests the existence of significant spread effects.

TABLE IV: REGRESSION RESULTS OF THE SIMULTANEOUS EQUATIONS MODEL OF OMAN TRADE WITH KUWAIT

EQ		R	F	DW
1	$\ln YO_{,t} = 1.39 + 0.033 \ln XO_{-Ki,t} + 0.49 \ln XO_{,0,t} + 0.39 \ln YO_{,t-1}$ 2.01 0.7 7.1 4.3	.98	324	1.9
2	$\ln XO_{K\ i,t} = 0.22 + 0.82 \ln Po_{,t} - 0.15 \ln Y_{K\ i,t} + 0.61 \ln \boldsymbol{XO}_{Kr\ i,t-1}$ 0.17 2.3 -1.33 3.7	.79	17	2.7
3	$\ln Y_{K\ i,t} = 14.4 + 1.91 \ln X_{K\ i0,t} + 0.7 \ln OM_{,K\ i,t} - 2.4 \ln Y_{K\ i,t-1}$ 1.16 1.38 0.99 -1.24	.28	1.17	1.5
4	$\ln OM_{-Ki,t} = -6.15 + 0.77 YO_{,t} + 0.49 OM_{-K\ i,t-1}$ -1.18 1.3 2.04	.65	13	1.5

The results of the second equation suggest that the relatively small amount of Omani exports to Kuwait is strongly influenced by oil prices. Oil prices would seem to have more effect on Omani exports to Kuwait than the Kuwaiti income.

The results of the Kuwait GDP function in equation 3 suggest the absence of feedback effects. This may be due to the fact that the value of Omani imports from Kuwait is a very small proportion of Kuwait exports.

The regression results in the fourth equation suggest that Omani imports from Kuwait are positively dependent on its GDP within a partial adjustment mechanism. The regression results also show that the elasticity of Oman imports from Kuwait is approximately .77 in the short term and around 1.5 in the long-run. Hence, an increase in Omani GDP by US$1 cause to a rise in Omani imports from Qatar by.77 US Cents in the short term and by roughly 1.5 US Cents in the long term.

The value of the coefficient of the variable 0.49 OM- Ki, t-1 (0.49) suggests that approximately 0.51 of the gap between the desired level of spending on imports from Kuwait and the actual level of spending will be closed in one period and the number of periods of adjustment is approximately two years.

The regression results for Saudi Arabia are given in Table V. These results suggest:

Omani income is not significantly affected by Omani exports to Saudi Arabia. It is strongly affected by Omani exports to the rest of the world. The "t" value of the coefficient of the variable "XO- KS i, t", which represents Omani exports to Saudi Arabia, is not statistically significant even at the 10 percent level of significance. This may be due to the fact that Omani exports to Saudi Arabia have been a very small proportion of Omani total exports over the last two decades. However, inspection of the coefficient (YO, t-1) further suggests the existence of significant spread effects.

The results of the second equation suggest that the relatively small amount of Omani exports to Saudi Arabia is influenced by oil prices. The Saudi Arabia income is not a major determinant of Omani exports to that country. Oil prices would seem to have more effect on Omani exports to Saudi Arabia than the Saudi Arabia income.

TABLE V: REGRESSION RESULTS OF THE SIMULTANEOUS EQUATIONS MODEL OF OMAN TRADE WITH SAUDI ARABIA

EQ.		R	F	DW
1	$\ln YO_{,t} = 1.04 + 0.011 \ln XO_{\text{-}KS\,i,t} + 0.49 \ln XO_{,0,t} + 0.43 \ln YO_{,t-1}$ 1.25 0.18 7.4 3.6	.98	320	2.0
2	$\ln XO_{KS\,i,t} = -1.6 + 0.34 \ln Po_{,t} - 0.14 \ln Y_{KS\,i,t} + 0.76 \ln \boldsymbol{XO}_{KS\,i,t-1}$ -0.36 1.2 0.27 4.5	.79	17	2.3
3	$\ln Y_{KS\,i,t} = 1.3 + 0.32 \ln X_{KS\,i0,t} + 0.05 \ln OM_{,KS\,i,t} 0.57 \ln Y_{KS\,i,t-1}$ 0.88 4.8 0.41 3.3	.98	221	1.6
4	$\ln OM_{\text{-}KS\,i,t} = -9.7 + 1.1 YO_{,t} + 0.27 OM_{\text{-}KS\,i,t-1}$ **-2.9** 3.3 1.4	.89	58	2.1

The coefficient λ_2 in the Saudi Arabia GDP function is not significant, which suggests the absence of feedback effects. This may be due to the fact that the value of Omani imports from Saudi Arabia is a very small proportion of Saudi Arabia exports.

The short-term elasticity of Omani imports from Saudi Arabia with respect to Omani income is approximately 1.1, while its long-term counterpart is approximately 1.5. This suggests that an increase in Omani income by 1% results in an increase in Omani imports from Saudi Arabia by approximately 110% percent in the short term and by 150% percent in the long term. The value of the coefficient of the variable $OM_{\text{-}KS\,i,t-1}$ (0.27) suggests that approximately 0.73 of the gap between the desired level of spending on imports from Saudi Arabia and the actual level of spending will be closed in one period and the number of periods of adjustment is approximately one and one third year.

The regression results for Bahrain are given in Table VI. These results indicate that Omani income is strongly influenced by Omani exports to the other countries rather than Bahrain. The "t" value of the coefficient of the variable "$XO_{\text{-}\boldsymbol{Bah}i,t}$", which represents Omani exports to Bahrain, is not significant even at the ten percent level of significance. However, the significant value of the coefficient α_3 would suggest the existence of significant spread effects.

TABLE VI: REGRESSION RESULTS OF THE SIMULTANEOUS EQUATIONS MODEL OF OMAN TRADE WITH BAHRAIN

EQ.N		R	F	DW
1	$\ln YO_{,t} = 1.4 + 0.05 \ln XO_{\text{-}\boldsymbol{Bah}i,t} + 0.51 \ln XO_{,0,t} + 0.36 \ln YO_{,t-1}$ 1.38 0.46 7.1 2.3	.98	311	1.8
2	$\ln XO_{\boldsymbol{Bah}\,i,t} = -4.7 - 0.05 \ln Po_{,t} + 0.6 \ln Y_{\boldsymbol{Bah}\,i,t} + 0.53 \ln \boldsymbol{XO}_{\boldsymbol{Bah},,t-1}$ -1.11 -0.16 1.8 2.1	.82	20	1.4
3	$\ln Y_{\boldsymbol{Bah}\,i,t} = 1.5 + 0.25 \ln X_{\boldsymbol{Bah}\,i0,t} + 0.11 \ln OM_{,\boldsymbol{Bah}\,i,t} 0.54 \ln Y_{\boldsymbol{Bah}i,t-1}$ 3.3 2.18 1.5 5.5	.98	295	1.6
4	$\ln OM_{\text{-}\boldsymbol{Bah}\,i,t} = -6.1 + 1.08 YO_{,t} - 0.07 OM_{\text{-}\boldsymbol{Bah}\,i,t-1}$ -2.1 2.9 -0.26	.66	13.9	1.9

The results of the second equation suggest that the GDP of Bahrain is a major determinant of Omani exports to Bahrain, while oil price does not have any significant impact on Omani exports to Bahrain. A rise in the GDP of Bahrain by US$1 results in an increase in Omani exports to Bahrain by approximately 6 US cents. The coefficient λ_2 in the Bahrain GDP function is statistically significant, which suggests the existence of feedback effects. This is obviously from the fact that Omani imports from Bahrain indicate a big amount of total Bahrain Exports. Although, the coefficient λ_1 in the Bahrain GDP function is statistically significant at five percent level, which suggests that the Bahrain exports to the countries other than Oman are also another key determinant of the Bahrain GDP.

The regression results in the fourth equation suggest that Omani imports from Bahrain are positively related to the Omani GDP within a partial adjustment mechanism.

The short-term elasticity of Omani imports from Bahrain. With respect to Omani income is approximately 1.08, while its long-term counterpart is not statistically significant. This suggests that an increase in Omani income by 1% results in an increase in Omani imports from Bahrain by approximately108% in the short term. The value of the coefficient of the variable OM- Bah i, t-1 (-0.07) suggests that approximately 1.07 of the gap between the desired level of spending on imports from Bahrain and the actual level of spending will be closed in one period and the number of periods of adjustment is approximately one year.

VI. Conclusion and Recommendations

A. Conclusion

The main conclusions of this paper may be summarized in the following:

There is a high degree of concentration of Oman exports and imports to geographical areas and as result, Omani imports from its trading partner within the GCC region are strongly dominated by Emirates and Saudi Arabia.

There is a weak relationship between Oman's income and its exports to each of the GCC members. The coefficient of the lagged GDP variable of Oman is statistically significant at five percent level in all cases which suggest the existence of strong spread effects from the export sector to the rest of the Omani economy

The price of oil does not seem to be the major determinant of Omani exports to only Emirates and Kuwait. This might be explained by the fact that the Omani economy strongly affected by its oil revenue; hence, it is necessary for Oman to continue exporting its oil independently of oil prices. In contrast, the GDP of Oman's trading partners is not a major determinant of Omani exports to GCC members.

The GDP of the GCC members is not influenced by their exports to Oman.

Oman imports from GCC members seem to have a significant impact (a feedback effect) on the level of GDP of only Bahrain

Omani income has a strong impact on its imports from its trading partners of GCC with a significant level of the partial adjustment mechanism. Further, the short-term elasticity of Omani imports from GCC with respect to its income seems to be higher (e.g. ranging from .75 to 1.8) in all cases.

B. Recommendations

The Gulf Cooperation Council was established in 1981 with ultimate aim of creating a political and commercial union between its six members. However, for Oman, there is no evidence of feedback effect of trade between Oman and other GCC members accept Bahrain. Therefore, Oman must hold a dynamic view while evaluating its benefits from the GCC customs union. In addition, Oman must reassess its trade performance with GCC members spicily with Kuwait, Qatar Saudi Arabia and has to explore various means to promote its trade with those countries. Further, Oman needs to widen its industrial base in order to increase the percentage of its exports to its GCC partners. Finally, it is very clear that Oman depends on the outside world to meet the needs of goods and services, which is normal for most countries, but the problem facing the Sultanate is the occurrence of economic dependence of a limited number of countries such as the UAE. It is not logical to continue this policy which may affect their trade safety and food security at any time. Therefore, Oman must enhance its trade balance with other members of GCC rather than UAE.

Conflict of Interest

The author declares no conflict of interest.

Author Contributions

Abdusalam F. Yahia composed the whole work.

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