The Determinants of the Demand for Imports in GCC Countries

Mohamed Abdullah Aljebrin
College of Administrative Sciences and Humanities, Majmaah University
PO Box 11952, Majmaah, Saudi Arabia
Tel: 966-55-535-3536 E-mail: maljebrin@mu.edu.sa

Mohamed Abbas Ibrahim (Corresponding author)
College of Administrative Sciences and Humanities, Majmaah University
PO Box 11952, Majmaah, Saudi Arabia
Tel: 966-56-298-8354 E-mail: m.a.ibrahim@mu.edu.sa

Received: December 11, 2011 Accepted: January 5, 2012 Published: March 1, 2012
doi:10.5539/ijef.v4n3p126 URL: http://dx.doi.org/10.5539/ijef.v4n3p126

The research is financed by Human and Administrative Sciences Center, Majmaah University Saudi Arabia

Abstract

This study empirically estimates the critical parameters of import demand determinants for GCC countries (Bahrain, United Arab Emirates, Kuwait, Oman Qatar and Saudi Arabia) by using annual time series-cross section data (1994-2008) and by applying panel Seemingly Unrelated Regression (SUR) model. The empirical results confirm that, in both long run and short run, there are positive and significant relationships between the demand for imports and real income, private consumption, international reserves and gross capital formation. On the other hand, there are negative and significant relationships between the demand for imports and the relative price of imports to domestic price and government consumption in the long run, but negative and insignificant relationships in the short run.

Keywords: Import demand, Trade policy, SUR Model, Gulf Cooperation Council (GCC)

1. Introduction

The Gulf Cooperation Council (GCC) is considered one of the most open economies in the world, While in the GCC countries the share of total external trade to GDP (almost 100 percent in 1992-94) is probably among the highest in the world, and per capita exports (US$4,000 in 1994) reach the levels of industrial countries, these measures of openness are heavily influenced by oil trade (http://www.imf.org/external/pubs/ft/policy/3oilmkt.htm). As it shown in Table 1, foreign trade (in 2000 constant prices) increased from $ 201.49 billion in 1994 to $ 930.36 billion in 2008 according a yearly average growth rate of approximately 11.55%. So, the high level contribution of foreign trade in the economic structure of the GCC countries motivated economists to study the demand for imports determinants in each country. So, this study concentrates on studying the import demand determinants of the GCC economies.

Insert Table 1 Here

2. Imports Structure in GCC Countries

Table 2 indicates that the imports of GCC countries increased from $ 89.7 billion in 1994 to $ 349.66 billion in 2008 at constant prices (2000=100), with yearly average growth rate about 10.21 percent This rate is considered of one of the highest growth rates of imports in the world, these growth rates are accompanied by increases in foreign exchange revenues from oil exports and intermediate and capital goods that have been demanded for development process during that period.

Insert Table 2 Here

Figure 1 illustrates the changes of the structure of GCC's imports by country during the period 1994-2008. What can be seen in the figure is that the shares of most countries did not witness obvious changes over the period of review. Figure 1 also illustrates that, total sum of import shares in Saudi Arabia and the United Arab Emirates form the highest share of GCC's imports for 1994 and 2008, with ratios of 74 percent and 78 percent respectively.

Insert Figure 1 Here

Table 3 presents the structure of imports by sector in 1997 and 2007; it showed that, although the shares of merchandize imports decreased slightly from 78 percent to 76 percent respectively, its value increased from 85.09 billion dollars to 226.09 billion dollars with average yearly growth rate about 10.27 percent.

Inset Table 3 Here

Table 4 and figure 2 illustrate the GCC's merchandise import structure by sector. The data indicates that, the total sum of machinery & transport sector and manufacturers sector form 67.96 percent of total merchandise imports in 1997. This percent did not change a lot in 2007, however as shown in Table 5 and Figure 2, it had reached 69 percent. machinery & transports imports represented 40 percent of GCC's merchandise imports. The high share of this sector due basically to the development process requirements in GCC's countries. Food & beverages imports also represented the third highest sector share of merchandise imports, although it decreased from 13.14 percent in 1997 to 9 percent in 2007. The high share of food & beverages imports dues to the lack of agricultural land in the GCC countries and the high levels of reclamation cost to expand it; which make the domestic prices of food & beverages sector are relatively higher than imports prices. Besides that, many exporting countries especially European countries introduce a subsidy to its food exports which makes it cheaper than domestic products in the GCC countries.

Insert Table 4 Here

Insert Figure 2 Here

3. Economic Literature

Imports play an important role in developing economies. However, through it countries can safe goods and services that can't be produced domestically. There are has many applied empirical studies estimating import demand functions for advanced countries and developing countries in order to determine economic variables that affect the behavior of import demand over time.

There are few studies estimated the import demand function in GCC countries. However Doroodian et al. (1994) estimated the import demand function for Saudi Arabia based on annual data for the period 1963-90. The results suggested a number of aspects that characterize the Saudi Arabia import demand function. First, econometric evidence showed that, for standard specifications of the import demand function, the log-linear formulation was more appropriate than the linear one. Secondly, empirical result showed that, in the case of Saudi Arabia, the relative price formulation of the traditional import demand function is inappropriate for estimating elasticities of import demand. Aldakhil K. and Al-Yousef N. (2002) analyzed Saudi Arabia's aggregate demand for imports during the period 1968-98 by using Cointegration analysis and Error Correction approach. They found that, domestic price, import price, and income are important in determining the import demand. Metwally (2004) examined the impact of the fluctuations in oil exports on GCC spending on imports and analyzed the long-run relationship between the imports of each GCC member and the macroeconomic components of final expenditure (exports, government consumption, investment and private consumption) using the Johansen multivariate cointegration analysis. He found that the demand for imports was highly elastic with respect to GDP in all GCC countries studied (with the exception of Oman) during the last three decades.

On the other hand, many authors estimated the import demand function in developing countries. For Turkey, Erlat and Erlat (1991) study on Turkish export and import performance used annual data for the period 1967-87. Export supply, export demand and import demand functions were estimated by ordinary least squares (OLS) first, and then three equations were estimated as a set of seemingly unrelated regressions (SURs). The total volume of imports was regressed on domestic real income, price of imports (including tariffs) divided by domestic prices, real international reserves and one period lagged value of the dependent variable. Two dummies were introduced for the years 1978 and 1979 to explain structural shifts. International reserves were found to be the most important variable in explaining import demand. Relative prices, however, had no significant explanatory power on import demand. Kotan and Saygili (1999) estimate an import demand function for Turkey. They incorporated two different model specifications to estimate the import demand function for Turkey. The estimation performance of the two models was compared and contrasted for the period 1987:Q1-1999:Q1 by using quarterly data. The significance of variables that affect import demand was individually and jointly tested. Also, the short run elasticities of the two models were compared. The first model estimated imports using the Engle-Granger approach. It was found that in the long run, income level, nominal depreciation rate, inflation rate and international reserves insignificantly affect imports. The second approach models import demand using the Bernanke-Sims structural vector autoregressive (VAR) method. The findings indicated that anticipated changes in the real depreciation rate and unanticipated changes in the income

growth and real depreciation rate have significant effects on import demand growth.

For Malaysia, Alias and Tang (2000) examined the long-run relationship between Malaysian aggregate imports and the components of final demand expenditure and relative prices using the Johansen multivariate cointegration analysis. An error correction model is proposed to model the short-run response of imports to its determinants. Annual data for the period 1970 to 1998 are used. The long-run relationship between aggregate imports and the macroeconomic components of final demand expenditure namely public and private consumption expenditure, investment expenditure and exports, is investigated because the different components of final demand might have different import contents. The results of the analysis showed that the components of final demand expenditure and relative prices are all important in determining aggregate demand for imports in both the long-run and the short-run.

Mohammed and Tang (2000), used the Johansen and Juselius cointegration technique and estimated the determinants of aggregate import demand for Malaysia, over the period 1970-1998. The results indicated that while all expenditure components had an inelastic effect on import demand in the long run, investment expenditure had the highest correlation (0.78) with imports followed by final consumption expenditure (0.72). Expenditure on exports was found to have the smallest correlation with imports (0.385). They also found a negative (-0.69) and inelastic relationship between relative prices and import demand. All results were found to be statistically significant at the 1 per cent level.

For India, Dutta et al. (2006) investigate the behavior of Indian aggregate imports during the period 1971-1995. In their empirical analysis of the aggregate import demand function for India, cointegration and error correction modeling approaches were used. In the aggregate import demand function for India, import volume is found to be cointegrated with relative import price and real GDP. The aggregate import volume is found to be price-inelastic, the coefficient estimate being -0.47. The value of income elasticity of demand for imports lagged two years is greater than unity (1.48 in the model), implying that the demand for imports increases more than proportionately to the increase in real GDP.

Sinha's (2001) study illustrated that the price and income demand elasticities are inelastic in India, Japan, the Philippines, Sri Lanka and Thailand.

Bahmani-Oskooee et al. (1998), investigated demand import function for 30 countries durig the period 1970-1992. They found that both price and income elasticities of import demand were high in the most cases.

For, developed countries, Carone et al (1996) tested the American demand for imports using quarterly data 1970 to 1992 based on the cointegration and error correction approaches. They found a statistically significant long-run relationship between the import demand function and real income and relative prices. Stirbock (2006) presented a single error-correction analysis of German total, euro-area (intra) and non-euro-area (extra) import demand for the 1980-2004 period and found that, German import demand is driven largely by domestic and foreign demand and less by changes in relative prices.

4. The Model and the Methods

We estimate a SUR model to explain the demand for imports in GCC countries by using data from the six GCC countries.

Accordingly, the estimated demand function for imports in GCC countries involves the following variables;

$$\log RM_{i,t} = \alpha_i + \beta_1 \log RGDP_{i,t} + \beta_2 \log RFR_{i,t} + \beta_3 \log RINV_{i,t} + \beta_4 \log RPC_{i,t} + \beta_5 \log RGC_{i,t} + \beta_6 \log PMPD_{i,t} + \xi_{i,t} \quad (1)$$

Where RMi,t is the real value of imports of the GCC member country i during year t, RGDPi,t is the real gross domestic product i of GCC member country i during year t; RFRi,t is the value of international reserves of GCC member country i during year t; $RINV_{i,t}$ is the real value of gross capital formation of GCC member country i during year t; $RPC_{i,t}$ is the real value of private consumption expenditure of GCC member country i during year t; $RGC_{i,t}$ is the real value of public consumption expenditure of GCC member country i during year t; The relative price variable $PMPD_{i,t}$ is given by the indicative ratio of foreign country import price index (proxied by consumer price index of United States) to consumer price index of the GCC member country i during year t.

$$PMPD_{i,t} = (CPI_{USA,t} / CPI_{i,t}) \quad (2)$$

Where, CPIUSA,t is the consumer price index of USA in year t, CPIi,t is the consumer price index of GCC member country i in year t.

We expect β1, β2, β3, β4 and β5 to be positive, only β6 expected to be negative. The log linear form is chosen, since it is found to be the most appropriate function form for demand functions in many empirical studies (Doroodian et al.

(1994), Bahmani-Oskooee et al. (1998), Alias and Tang (2000), Aldakhil K. and Al-Yousef N. (2002)). It also has the added advantage of reducing hetroskedasticity (Maddala 1992).

5. Data and Variables

This study will use the annual data from 1994 to 2008 for GCC countries. All data in this study was obtained from World Bank Development Indicator (http://data.worldbank.org/indicator/), the data has been converted to real values (2000 constant prices) by using consumer price indices (2000=100).

6. Empirical Results

6.1 Panel Unit Root Tests

Recent advances in panel data analysis have focused attention on unit root and cointegration properties of variables observed over a relatively long span of time across a large number of cross-section units of countries. In this study, we adopt Maddala and Wu (1999); Levin, Lin, and Chu (2002) panel unit root and stationarity tests. The null hypothesis of these tests is that the panel series has a unit root (non-stationary).

Insert Table 5 Here

As can be shown in Table 5, the null hypothesis can't be rejected for levels of all variables in all tests, but the null hypothesis is rejected at least on one of the significance levels (1%, 5% or 10%) in every test for the first differences of all variables. Thus, it can be said that all variables are integrated of the first order.

6.2 Panel Cointegration Test

Having established that all variables are integrated of the first order, we proceed to test whether there is a long run relationship of the system in panel data. From the Pedroni panel cointegration test results in Table 6, we find evidence to reject the null hypothesis of no cointegration for 4 out of the 7 statistics provided by Pedroni (1999). So, there was no clear cointegration between the series in the long run. Therefore, executed another panel cointegration test to confirm the results of the cointegration analysis. The Kao's panel cointegration test is employed. The results of Kao's panel cointegration test illustrated in Table 7.

Insert Table 6 Here

Insert Table 7 Here

6.3 Panel Cointegration Estimation

Having found that the existence of the cointegrating relationship is supported, we estimate the import demand function (equation 1) by using the E-views econometric software to obtain the panel estimates of the model by the SUR Method.

In Table 8, we see the results of the long run panel SUR estimates. The explanatory power is very high (Adjusted R^2=0.998). The explanatory variables are significant at 1% level with expected sign (Log(RGDP), Log(RFR), Log(RINV), Log(RPC) and Log(PMPD), with the exception of real government expenditure "Log(RGC)" which has a negative unexpected sign. This is because governments do not spend on imports if it has a substitute effect on domestic goods and services.

On the other hand, the elasticity coefficient of real government consumption is negative, that is because an important part of real government consumption expenditure is directed basically to subsidizing domestic goods and services, which makes it cheaper than imports. The elasticity coefficient of relative import price to domestic price ln(PMPD) is negative and significant and almost equal to unity.

In the short run, we estimate equation 3. As shown in Table 8, the elasticity coefficients of real income, gross capital formation and private consumption expenditure are positive and significant while the coefficient for international reserves is positive but insignificant. On the other hand, the import elasticity of government consumption expenditure is negative but insignificant. Finally, the elasticity coefficient of relative import price to domestic price is negative but insignificant, plausibly due to the high income levelss in GCC countries, which make consumers don't pay attention to goods and services prices in the short run. The error correction is correctly negatively signed and highly significant but has a small magnitude (-0.097) suggesting a slow adjustment process, which means that, if import demand is 1 percent out of equilibrium, a 9.7 percent adjustment towards equilibrium will take place within the first year.

$$\log \Delta RM_{i,t} = \alpha_i + \beta_1 \Delta \log RGDP_{i,t} + \beta_2 \Delta \log RFR_{i,t} + \beta_3 \Delta \log RINV_{i,t} + \beta_4 \Delta \log RPC_{i,t} + \beta_5 \Delta \log RGC_{i,t} + \beta_6 \Delta \log PMPD_{i,t} + \beta_7 EC(-1) + \xi_{i,t} \quad (3)$$

Insert Table 8 Here

7. Concluding Remarks and Policy Implications

The primary objective of this study has been to estimate the critical parameters of the GCC's import demand function. The empirical results obtained show that, in both long run and short run, there are a positive and significant relationships between the demand for imports and real income, private consumption, international reserves, gross capital formation. On the other hand, there are negative and significant relationships between the demand for imports and the relative price of imports to domestic price and government consumption in the long run, but a negative and insignificant relationship in the short run.

The anticipated gradual reduction in food subsidies in the world especially the European countries is expected to raise the cost of food imports. However, the impact on the GCC countries would be relatively small as some countries are becoming increasingly self-sufficient in basic foodstuffs, or rely to increase agricultural land in the region. So, GCC countries must support the international efforts that concentrate on decreasing food subsidies in world Trade Organization (WTO). The high share of machinery & transports sector in merchandise imports which reached 40 percent in 2007 as shown in Table 4, may represent positive factor for achieving higher growth rates of development levels. That because the increases of these imports means increases of domestic capital formation which may increase economic growth by the effect of investment multiplier in the future.

References

Al-Dakhil, K., & Al-Yousef N. (2002). Aggregate import demand function for Saudi Arabia: An error correction approach. *Journal of Economic & Administrative Sciences*, *18*, 83-100

Alias, H. M., & Tang. T. C. (2000). Aggregate imports and expenditure components in Malaysia: A cointegration and error correction analysis. *ASEAN Economic Bulletin*, *17*, 257-69. http://dx.doi.org/10.1355/AE17-3B

Arab Monetary Fund (AMF). Arab monetary Fund (AMF), http://www.amf.org.ae/ctrylisten/54/Foreign%20Trade.

Bahmani-Oskooee, M. (1998). Cointegration approach to estimate the long-run trade elasticities in LDCs. *International Economic Journal*, *12*, 89-96.

Breitung, J. (2000). The local power of some unit root tests for panel data. In: Baltagi, B., Fomby, T.B., Hill, R.C. (Eds.), *Advances in econometrics: nonstationary panels*, *panels Cointegration and Dynamic Panels*, *15*, 161–78.

Carone, G. (1996). Modeling the U. S. demand for imports through cointegration and error correction, *Journal of Policy Modeling*, *18*, 1-48. http://dx.doi.org/10.1016/0161-8938(95)00058-5.

Doroodian et al. (1994). An examination of the traditional import demand function for Saudi Arabia*, Applied Economics*, *26*, 909-915. http://dx.doi.org/10.1080/00036849400000052.

Dutta, D., & Ahmed. N. (2006). An aggregate import demand function for India: A cointegration analysis. School of Economics and Political Science, University of Sydney, Australia. Retrieved from https://digitalcollections.anu.edu.au/handle/1885/40314

Engle, R.F., & C.W.J. Granger (1987). Cointegration and Error Correction: Representation, Estimation and Testing, *Econometrica*, Vol. 55, No. 2: 251-76. Retrieved from http://www.jstor.org/pss/1913236.

Erlat, G., & Erlat, H. (1991). *An empirical study of Turkish export and import function*, CBRT and METU.

Hicks A. (1994). Introduction to pooling. In T. Janoski and A. Hicks (edited by), *The Comparative Political Economy of the Welfare State* (pp. 54-92), Cambridge University Press, UK.

Intenational Monetary Fund (IMF). Policy challenges in the Gulf Cooperation Council Countries. Retrieved from http://www.imf.org/external/pubs/ft/policy/3oilmkt.htm.

Im, K. S., Pesaran, M. H., & Shin, Y. (1997). *Testing for unit roots in heterogeneous panels*, University of Cambridge, and Department of Applied Economics. U.K.

Kao, C. (1999). Spurious regression and residual-based tests for cointegration in panel data. *Journal of Econometrics*, *90*, 1-44. http://dx.doi.org/10.1016/S0304-4076(98)00023-2

Kotan Z., & Saygili M. (1999). Estimating an import demand function For Turkey, The Central Bank of the Republic of Turkey, Research Department, *Discussion paper*, no: 9909, Turkey. Retrieved from http://www.tcmb.gov.tr/research/discus/dpaper40.pdf.

Levin, A., Lin, C. F., & Chu, C. S. (2002). Unit root tests in panel data: asymptotic and finite sample properties. *Journal of Econometrics*, *108*, 1–24. http://dx.doi.org/10.1016/S0304-4076(01)00098-7

Maddala, G.S., & Wu, S. (1999). A Comparative study of unit root tests with panel data and a new simple test, *Oxford Bulletin of Economics and Statistics, 61*, 631-652. http://dx.doi.org/10.1111/1468-0084.61.s1.13

Metwalli, M. (2004). Determinants of aggregate imports in the GCC Countries. *Applied Econometrics and International Development (AEID)*, *4-3*, 59-76. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1232342.

Mohammad, H.A., &Tang, T.C. (2000). Aggregate imports and expenditure components in Malaysia: A cointegration and error correction analysis. *ASEAN Economic Bulletin*, *17*, 257-269. Retrieved from http://repo.uum.edu.my/496/.

Pedroni, P. (1997). Panel cointegration, asymptotic and finite sample properties of pooled time series tests with an application to the PPP hypothesis, *New Results*, Indiana University.

Pedroni, P. (1999). Critical values for cointegration tests in heterogeneous panels with multiple regressors, *Oxford Bulletin of Economics and Statistics*, *61*, No. 4, 653–670. http://dx.doi.org/10.1111/1468-0084.61.s1.14

Pedroni, P. (2004). Panel cointegration, asymptotic and finite sample properties of pooled time series tests with an application to the PPP hypothesis, *Econometric Theory*, *20*, 597–625. Retrieved from http://web.williams.edu/Economics/wp/pedronipanelcointegration.pdf.

Sinha, D. A Note on Trade Elasticities in Asian Countries, *The International Trade Journal*, *XV*, 221-237.

Stirböck, C. (2006). How strong is the impact of exports and other demand components on German import demand? Evidence from euro-area and non-euro-area imports. Discussion paper*, Economic studies*, *1*, Deutsche Bundesbank Frankfurt, Germany. Retrieved from http://econstor.eu/bitstream/10419/19668/1/200639dkp.pdf.

World Bank. http://data.worldbank.org/indicator/.

Table 1. Total foreign trade (2000 constant prices) and growth rates of trade in GCC countries

	Foreign Trade (Billion Dollar)			Growth Rate (%)*		
	1994	2001	2008	1994-2001	2001-2008	1994-2008
Bahrain	8.84	11.64	32.79	3.78	16.2	9.82
Emirates	62.11	89.47	264.24	5.35	16.73	10.9
Kuwait	26.21	29.91	104.21	1.9	19.52	10.36
Oman	9.92	18.79	46.83	9.55	13.93	11.72
Qatar	6.86	15.91	39.97	12.77	14.06	13.42
Saudi Arabia	87.55	122.56	442.32	4.92	20.12	12.27
GCC (Total)	201.49	288.1	930.36	5.24	18.23	11.55

Source: http://data.worldbank.org/indicator/

* calculated by the authors.

Table 2. Imports (2000 constant prices) and growth rates of imports in GCC countries

	Imports value (Billion Dollar)			Growth Rate (%)*		
	1994	2001	2008	1994-2001	2001-2008	1994-2008
Bahrain	4.21	4.85	14.23	2.04	16.62	9.09
Emirates	30.07	40.91	121.92	4.5	16.88	10.52
Kuwait	11.9	12.24	29.02	0.4	13.12	6.57
Oman	4.44	7.27	18.28	7.3	14.08	10.64
Qatar	2.85	4.52	16.21	6.82	20.02	13.23
Saudi Arabia	36.23	44,57	150	3	18.93	10.68
GCC (Total)	89.7	114.36	349.66	3.53	17.31	10.21

Source: http://data.worldbank.org/indicator/

* calculated by the authors.

Table 3. Total imports structure (2000 constant prices) in GCC countries (1997-2007)

	1997		2007		Growth Rate (%)*
	(billion dollars)	share (%)	(billion dollars)	share (%)	
Merchandise imports	85.09	78	226.09	76	10.27
Services imports	24.28	22	73.03	24	11.64
Total	109.37	100	299.12	100	10.58

Source: Arab monetary Fund (AMF), http://www.amf.org.ae/ctrylisten/54/Foreign%20Trade.

Note: The data converted to 2000 constant prices by using CPI's of GCC countries.
There are more detailed data at the Table (A-1) in the Appendix.

Table 4. Merchandise imports structure (2000 constant prices) in GCC countries (1997-2007)

	1997		2007	
	(billion dollars)	share (%)*	(billion dollars)	share (%)*
Food & Beverages	11.19	0.13	20.52	0.09
Crude materials	3.96	0.05	5.78	0.03
Mineral fuels	2.45	0.02	6.80	0.03
Chemicals	5.80	0.07	15.73	0.07
Machinery & Transports	31.73	0.37	89.85	0.40
Manufacturers	26.10	0.31	66.74	0.29
Unclassified	3.87	0.05	20.66	0.09
Total	85.09	100	226.09	100

Source: Arab monetary Fund (AMF), http://www.amf.org.ae/ctrylisten/54/Foreign%20Trade.
* Calculated by the authors.
Note: The data converted to 2000 constant prices by using CPI's of GCC countries.
There are more detailed data at the Tables (A-2) and (A-3) in the Appendix.

Table 5. Panel unit root tests

Series	K	LLC	ADF - Fisher Chi-square	PP - Fisher Chi-square
ln(RM)	level	5.49632	0.18956	0.08647
	First diff.	-5.10814***	43.8563***	42.3976***
ln(RGDP)	level	8.47614	0.00651	0.00791
	First diff.	-1.51846***	15.0767**	31.9888***
ln(RFR)	level	3.34253	0.73528	0.29999
	First diff.	-4.66543***	32.9203***	64.9998***
ln(RINV)	level	2.57173	0.70501	0.31433
	First diff.	-4.14723***	41.0165***	40.1561***
ln(RPC)	level	6.18530	0.19192	0.03916
	First diff.	-1.57948*	11.7686	23.2658**
ln(RGC)	level	3.61193	0.58033	0.15715
	First diff.	-2.97861***	23.6230**	28.9228***
ln(PMPD)	level	-0.84954	8.30095	6.98183
	First diff.	-1.59262*	13.0152	14.4498

Notes: LLC indicated Levin et al. (2002) panel unit root and stationary tests. Fisher-ADF and Fisher-PP tests denote Maddala and Wu (1999) panel unit root and stationary tests. The LLC, Fisher-ADF and Fisher-PP examine the null hypothesis of non-stationary. ***,** and* denotes 1%, 5% and 10% significance levels respectively.

Table 6. Pedroni panel cointegration test results

	Statistic	Prob.
Panel v-Statistic	-0.559091	0.7120
Panel rho-Statistic	1.568816	0.9417
Panel PP-Statistic	-4.680368	0.0000
Panel ADF-Statistic	-4.044875	0.0000
Alternative hypothesis: individual AR coefs. (between-dimension)		
Group rho-Statistic	3.184003	0.9993
Group PP-Statistic	-6.077508	0.0000
Group ADF-Statistic	-3.706903	0.0001

Source: The table has been extracted from table (A-4) in the appendix

Table 7. Kao panel cointegration test results

ADF	t-Statistic	Prob.
	-4.285755	0.0000
Residual variance	0.011792	
HAC variance	0.006521	

Source: The table has been extracted from table (A-5) in the appendix

Table 8. Estimation results for SUR model in the long run and short run (1994-2008)

Variable	Coefficient	
	Long Run	Short Run
C	-0.888876***	-0.013817
ln(RGDP)	0.983331***	0.217392***
ln(RINV)	0.245008***	0.192504***
ln(RFR)	0.112251***	-0.038492
ln(RGC)	-1.008486***	-0.032454
ln(RPC)	0.558550***	0.834956***
ln(PMPD)	-1.053413***	0.269971
Ec(-1)	-	-0.096701***
	R2 = 0.998 Durbin-Watson: 1.19	R2 = 0.69 Durbin-Watson: 1.88

Source: Table (A-6) and table (A-7) in Appendix.

- ***,** and * denotes significance level at 1%, 5% and 10% respectively.

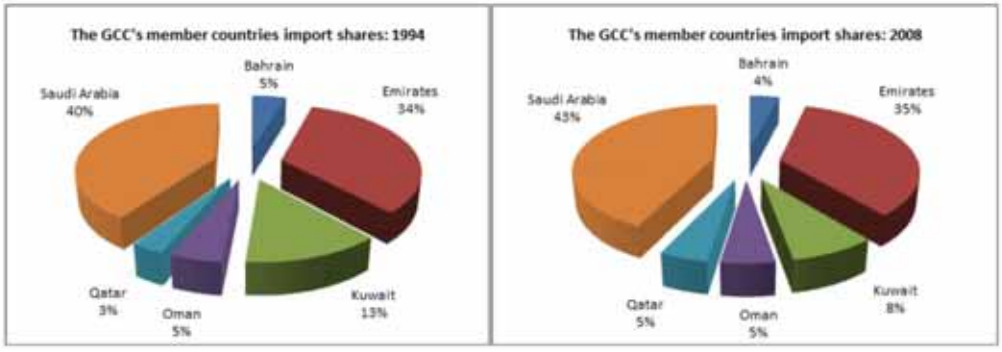

Figure 1. The GCC's member countries imports shares 1994-2008 (in %)

Source: Drawn by the authors from Table 2.

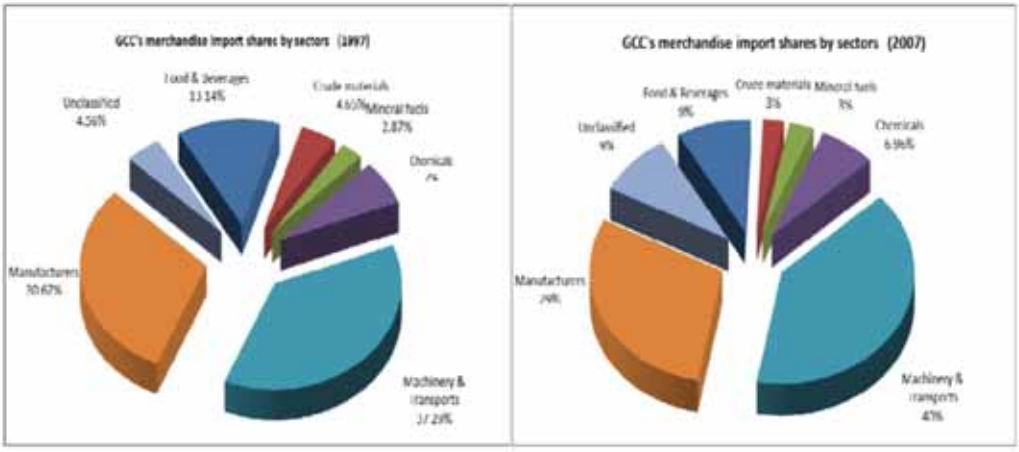

Figure 2. The GCC's merchandise imports shares by sector 1997-2007 (in %)

Source: Drawn by the authors from Table 4.

Appendix:

Table (A-1). Total imports structure (2000 constant prices) by country in GCC countries (billion dollars) (1997-2007)

	1997			2007		
	Merchandise	Services	Total	Merchandise	services	Total
Bahrain	3.93	0.38	4.31	10.42	1.01	11.43
Emirates	35.97	3.97	39.94	81.94	7.72	8.96
Kuwait	8.68	4.02	12.70	19.93	7.53	27.46
Oman	5.012	1.08	6.10	10.89	0.07	10.96
Qatar	3.55	0.78	4.33	18.84	5.32	24.16
Saudi Arabia	27.94	14.05	41.99	84.07	51.38	135.45
GCC	85.09	24.28	109.37	226.09	73.03	299.12

Source: Arab monetary Fund (AMF), http://www.amf.org.ae/ctrylisten/54/Foreign%20Trade.

Note: The data converted to 2000 constant prices by using CPI's of GCC countries.

Table (A-2). Merchandise imports structure (2000 constant prices) in GCC countries (1997) (billion dollars)

	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	Emirates	GCC
Food & Beverages	0.42	1.28	0.93	0.34	4.63	3.58	11.18
Crude materials	0.28	0.16	0.11	0.10	0.67	2.64	3.96
Mineral fuels	1.43	0.05	0.41	0.02	0.05	0.48	2.44
Chemicals	0.21	0.73	0.27	0.19	2.55	1.85	5.80
Machinery & Transports	0.74	3.35	1.29	1.80	9.71	14.84	31.73
Manufacturers	0.84	2.97	1.64	1.09	8.16	11.40	26.10
Unclassified	0.01	0.15	0.36	0.01	2.17	1.18	3.88
Total	3.93	8.69	5.01	3.55	27.94	35.97	85.09

Source: Arab monetary Fund (AMF), http://www.amf.org.ae/ctrylisten/54/Foreign%20Trade.

Note: The data converted to 2000 constant prices by using CPI's of GCC countries.

Table (A-3). Merchandise imports structure (2000 constant prices) in GCC countries (2007) (billion dollars)

	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	Emirates	GCC
Food & Beverages	0.52	2.56	0.97	0.87	10.46	5.13	20.51
Crude materials	0.75	0.50	0.28	0.52	1.97	1.76	5.78
Mineral fuels	5.42	0.11	0.38	0.10	0.18	0.61	6.80
Chemicals	0.39	1.68	0.70	0.90	7.49	4.58	15.74
Machinery & Transports	1.94	8.26	5.60	10.00	39.44	24.61	89.85
Manufacturers	1.40	6.73	2.86	6.38	23.89	25.48	66.74
Unclassified	0.01	0.10	0.10	0.06	0.64	19.76	20.67
Total	10.43	19.94	10.89	18.83	84.07	81.93	226.09

Source: Arab monetary Fund (AMF), http://www.amf.org.ae/ctrylisten/54/Foreign%20Trade.

Note: The data converted to 2000 constant prices by using CPI's of GCC countries.

ISSN 1916-971X E-ISSN 1916-9728

Table (A-4). Pedroni panel cointegration test results (1994-2008)

Pedroni Residual Cointegration Test					
Series: ln(RM) ln(RGDP) ln(RINV) ln(RFR)ln(RGC) ln(RPC) ln(PMPD)					
Date: 12/01/11 Time: 14:10					
Sample: 1994 2008					
Included observations: 15					
Cross-sections included: 6					
Null Hypothesis: No cointegration					
Trend assumption: No deterministic intercept or trend					
Automatic lag length selection based on SIC with a max lag of 1					
Newey-West automatic bandwidth selection and Bartlett kernel					
Alternative hypothesis: common AR coefs. (within-dimension)					
		Statistic	Prob.	Weighted statistic	Prob.
Panel v-Statistic		-0.559091	0.7120	-2.343878	0.9905
Panel rho-Statistic		1.568816	0.9417	2.173441	0.9851
Panel PP-Statistic		-4.680368	0.0000	-5.639966	0.0000
Panel ADF-Statistic		-4.044875	0.0000	-3.127791	0.0009
Alternative hypothesis: individual AR coefs. (between-dimension)					
		Statistic	Prob.		
Group rho-Statistic		3.184003	0.9993		
Group PP-Statistic		-6.077508	0.0000		
Group ADF-Statistic		-3.706903	0.0001		
Cross section specific results					
Phillips-Peron results (non-parametric)					
Cross ID	AR(1)	Variance	HAC	Bandwidth	Obs
BA	-0.029	0.002201	0.000877	5.00	14
EM	0.130	0.002205	0.000840	5.00	14
KU	-0.288	0.001054	0.000203	11.00	14
OM	-0.108	0.002798	0.000370	13.00	14
QA	-0.315	0.005566	0.006237	1.00	14
SA	-0.165	0.003793	0.001915	7.00	14
Augmented Dickey-Fuller results (parametric)					
Cross ID	AR(1)	Variance	Lag	Max lag	Obs
BA	-0.029	0.002201	0	1	14
EM	0.130	0.002205	0	1	14
KU	-0.288	0.001054	0	1	14
OM	-0.757	0.001947	1	1	13
QA	-0.315	0.005566	0	1	14
SA	-0.165	0.003793	0	1	14

Table (A-5). Kao panel cointegration test results (1994-2008)

Kao Residual Cointegration Test				
Series: ln(RM) ln(RGDP) ln(RINV) ln(RFR) ln(RGC) ln(RPC) ln(PMPD)				
Date: 12/01/11 Time: 14:05				
Sample: 1994 2008				
Included observations: 15				
Null Hypothesis: No cointegration				
Trend assumption: No deterministic trend				
User-specified lag length: 1				
Newey-West automatic bandwidth selection and Bartlett kernel				
ADF.			t-statistic	Prob.
			-4.285755	0.0000
Residual variance			0.011792	
HAC variance			0.006521	
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(RESID01?)				
Method: Panel Least Squares				
Date: 12/01/11 Time: 14:05				
Sample (adjusted): 1996 2008				
Included observations: 13 after adjustments				
Cross-sections included: 6				
Total pool (balanced) observations: 78				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID01?(-1)	-0.760328	0.143324	-5.304945	0.0000
D(RESID01?(-1))	0.074531	0.124404	0.599101	0.5509
R-squared	0.343024		Mean dependent var	-0.000874
Adjusted R-squared	0.334379		S.D. dependent var	0.123894
S.E. of regression	0.101080		Akaike info criterion	-1.720508
Sum squared resid	0.776501		Schwarz criterion	-1.660079
Log likelihood	69.09980		Hannan-Quinn criter.	-1.696317
Durbin-Watson stat	1.821500			

Table (A-6). Demand for imports regression results in the long run 1994-2008

Dependent Variable: ln(RM)				
Method: Pooled EGLS (Cross-section SUR)				
Date: 12/01/11 Time: 11:41				
Sample: 1994 2008				
Included observations: 15				
Cross-sections included: 6				
Total pool (balanced) observations: 90				
Iterate weights to convergence				
Convergence achieved after 210 weight iterations				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.888876	0.087062	-10.20964	0.0000
ln(RGDP)	0.983331	0.058687	16.75544	0.0000
ln(RINV)	0.245008	0.020034	12.22943	0.0000
ln(RFR)	0.112251	0.013955	8.043939	0.0000
ln(RGC)	-1.008486	0.032862	-30.68826	0.0000
ln(RPC)	0.558550	0.041003	13.62222	0.0000
ln(PMPD)	-1.053413	0.083100	-12.67644	0.0000
Weighted Statistics				
R-squared	0.998468	Mean dependent var	67.99049	
Adjusted R-squared	0.998357	S.D. dependent var	118.7347	
S.E. of regression	1.041315	Akaike info criterion	-1.291370	
Sum squared resid	89.99998	Schwarz criterion	-1.096940	
Log likelihood	65.11166	Hannan-Quinn criter.	-1.212965	
F-statistic	9017.077	Durbin-Watson stat	1.189562	
Unweighted Statistics				
R-squared	0.929592	Mean dependent var	2.734682	
Sum squared resid	6.887696	Durbin-Watson stat	0.314082	

Table (A-7). Demand for imports regression results in the short run 1994-2008

Dependent Variable: D(RM)				
Method: Pooled EGLS (Cross-section SUR)				
Date: 12/01/11 Time: 01:16				
Sample (adjusted): 1995 2008				
Included observations: 14 after adjustments				
Cross-sections included: 6				
Total pool (balanced) observations: 84				
Linear estimation after one-step weighting matrix				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.013817	0.011590	-1.192130	0.2369
D((RGDP)	0.217392	0.081667	2.661923	0.0095
D(RINV)	0.192504	0.039625	4.858158	0.0000
D(RFR)	-0.038492	0.024759	-1.554685	0.1242
D(RGC)	-0.032454	0.098451	-0.329648	0.7426
D(RPC))	0.834956	0.094383	8.846477	0.0000
D(PMPD)	0.269971	0.290522	0.929262	0.3557
EC(-1)	-0.096701	0.031376	-3.081986	0.0029
Weighted Statistics				
R-squared	0.690342	Mean dependent var	0.932794	
Adjusted R-squared	0.661821	S.D. dependent var	1.947923	
S.E. of regression	1.034607	Sum squared resid	81.35129	
F-statistic	24.20460	Durbin-Watson stat	1.881687	
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.521536	Mean dependent var	0.100358	
Sum squared resid	0.954603	Durbin-Watson stat	2.065592	

 ISSN 1916-971X E-ISSN 1916-9728