

Evaluating the Trade Integration Among the Gulf Cooperation Council Countries (GCC) After the Establishment of the Customs Union (2003): Gravity Model Analysis ¹

Atef Alrashidi and Youssef Saidi
Saudi Central Bank Gulf Monetary Council

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Introduction

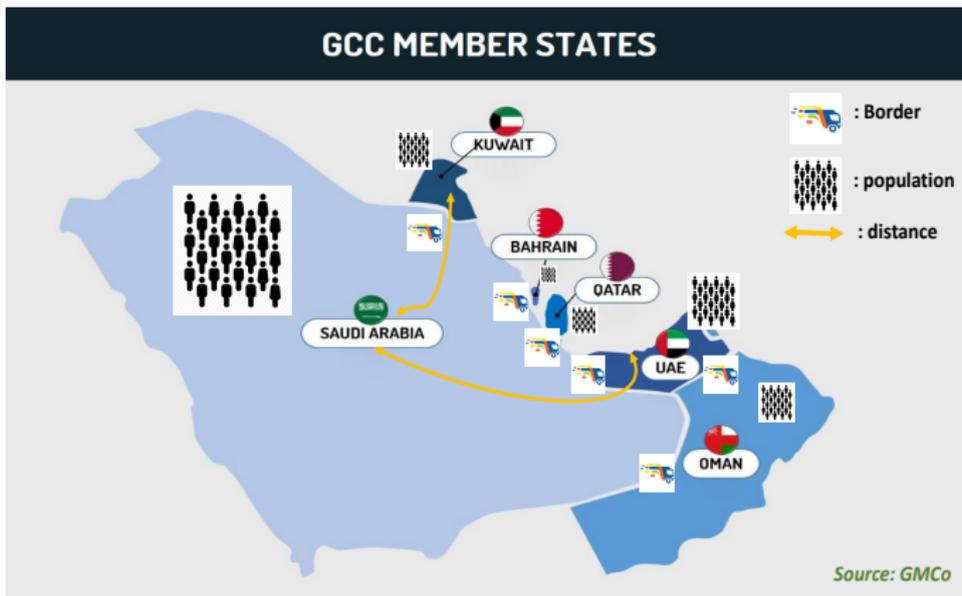
Context

- Over the last decades, bilateral trade agreements have increased considerably in number and economic relevance.
- The GCC States have established a **Free Trade Area** since 1983. As of January 1, 2003, that area is transformed into a **Customs Union**.
- An transitional period (2003-2009) allowed Member States to adapt with some aspects of the Customs Union²:
 - Joint collection of duties and distribution of customs revenues
 - Tariff protection for certain GCC industrial products
 - Continuation of protection of local agent
 - Continuation of some customs functions at the Intra-GCC border offices
 - Joint excise of customs revenues.

²Source: GCC-SG website

Introduction

Context



Does the impact of GCC Customs Union Agreement of 2002, on GCC bilateral trade, depends on the size, distance, land border between GCC countries?

Introduction

Motivations

The aim of this work is to :

- **evaluate empirically the impact of the GCC Customs Union Agreement (GCC-CUA, 2002) on Bilateral Trade between the six GCC countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates) using the Panel Gravity Model;**
- **The idea is to assess the expected effect of the GCC-CUA (2002) taking account size (population, GDP) and distance/Border between GCC countries.**

Literature review

Related works to gravity model framework

- Since its introduction by Tinbergen (1962), the **gravity model** has been widely used for explaining flows of international trade.
- Tinbergen (1962) used an analogy with Newton's universal law of gravitation³ to describe the patterns of bilateral aggregate trade flows between two countries A and B as "proportional to the gross national products of those countries and inversely proportional to the distance between them,"

$$T_{A,B} \propto \frac{(GDP_A)^\alpha (GDP_B)^\beta}{(Dist_{AB})^\delta} \quad (1)$$

³The equation for universal gravitation thus takes the form $F = \frac{m_1 m_2}{r^2}$ where F is the gravitational force acting between two objects, m_1 and m_2 are the masses of the objects, r is the distance between the centers of their masses, and G is the gravitational constant.

Literature review

Related works to gravity model framework

- **Tinbergen, J. (1962)**,
New York: The Twentieth Century Fund,
"Shaping the World Economy: Suggestions for an International Economic Policy".
- **Bergstrand, J. H. (1985)**,
The Review of Economics and Statistics,
"The Gravity Equation in International Trade: Some Microeconomic Foundations and Empirical Evidence".
- **Anderson. J. E. (2011)**,
Annual Review of Economics,
"The Gravity Model".
- **Al-Rashidi A., Bidisha Lahiri B. (2013)**,
Applied Economics Letters,
"The effect of exchange rate volatility on trade: correcting for selection bias and asymmetric trade flows".

Data and Methodology

Data Perimeter

The countries, methodology and variables of our Study

- The six Gulf Cooperation Council (GCC) countries are included in our analysis: [Bahrain](#), [KSA](#), [Kuwait](#), [Oman](#), [Qatar](#) and [UAE](#)
- Period: from 1980 to 2022 (annual data)
- Methodology: Panel Gravity Model of Trade

Data and Methodology

Econometric tools - Gravity Model

Presentation of the Model: we use the **Panel Gravity Model** to explain the bilateral flow of trade $\ln(\text{Trade}_{ijt})$ of each GCC country "i" by:

- $\ln(\text{GDPpc}_{it})$, $\ln(\text{GDPpc}_{jt})$: GDP per capita of source country "i" and destination country "j"
- $\ln(\text{POP}_{it})$, $\ln(\text{POP}_{jt})$: Population in sources country "i" and destination country "j"
- $\ln(\text{DIST}_{ij})$ The geographical distances (Km) between the economic centres of source "i" and host "j" countries
- BORDER_{ij} (dummy that takes value one if a source "i" and host "j" countries share a land border and zero otherwise)
- CUAGCC_t (dummy that takes value one starting first year of Customs Union Agreement of GCC (CUAGCC), 2003, and zero before)

Data and Methodology

Econometric tools - Gravity Model

The estimated gravity model of trade is expressed as follows:

$$\begin{aligned} \ln(\text{Trade}_{ijt}) = & \beta_0 + \beta_1 \ln(\text{GDPpc}_{it}) + \beta_2 \ln(\text{GDPpc}_{jt}) + \beta_3 \ln(\text{POP}_{it}) \\ & + \beta_4 \ln(\text{POP}_{jt}) + \beta_5 \ln(\text{DIST}_{ij}) + \beta_6 \text{BORDER}_{ij} \\ & + \beta_7 \text{CUAGCC}_t + \sum_{d=1,2} \gamma_d \text{Dummy}_t^d + e_{ijt} \end{aligned} \quad (2)$$

where β_0 indicates the intercept and $(\beta_k)_{k=1,\dots,7}$ designate the coefficients of determinants. To take account the 1991 Gulf war effect and statistical bias of Oman Trade data in 1980s, we add two dummy variables with coefficients $(\gamma_d)_{d=1,2}$. We estimate the model using Generalised Linear Models (GLM) method; e_{ijt} is (1×5) vectors of idiosyncratic errors. We assume that the innovations have the following characteristics: $E[e_{ijt}] = 0$, $E[e'_{ijt} e_{ijt}] = \Sigma$ and $E[e'_{ijt} e_{ijs}] = 0$ for all $t > s$.

Data and Methodology

Econometric tools - Gravity Model

The gravity model of trade, presented in equation 2, is the log-linear conversion of the basic form gravity model as:

$$\begin{aligned}
 Trade_{ijt} &= \exp(\beta_0) * \exp(\beta_1 \ln(GDPpc_{it})) * \exp(\beta_2 \ln(GDPpc_{jt})) \\
 &\quad * \exp(\beta_3 \ln(POP_{it})) * \exp(\beta_4 \ln(POP_{jt})) * \exp(\beta_5 \ln(DIST_{ij})) \\
 &\quad * \exp(\beta_6 BORDER_{ij}) * \exp(\beta_7 CUAGCC_t) * \exp\left(\sum_{d=1,2} \gamma_d Dummy_t^d\right) \\
 &= \exp(\beta_0) * (GDPpc_{it})^{\beta_1} * (GDPpc_{jt})^{\beta_2} * (POP_{it})^{\beta_3} * (POP_{jt})^{\beta_4} \\
 &\quad * (DIST_{ij})^{\beta_5} * \exp(\beta_6 BORDER_{ij}) * \exp(\beta_7 CUAGCC_t) \\
 &\quad * \exp\left(\sum_{d=1,2} \gamma_d Dummy_t^d\right)
 \end{aligned}
 \tag{3}$$

Data and Methodology

Econometric tools - Gravity Model

- GDP per capita of a country may affect trade in two different ways. A large GDP per capita may promote economies of scale in production, hence promoting the desire to export in a greater variety of goods. However, a large GDP per capita income may indicate a large domestic market, high level of self sufficiency and less need for imports. Thus, the estimated coefficients β_1 , β_2 of GDP per capita income are indeterminate.
- The effect of population size on trade of the source/destination country can be positive/negative if the country is exporter/importer net (economies scale effect/absorption effect) and vis-versa. Therefore, the estimated coefficients β_3 , β_4 for this variable are indeterminate.

Data and Methodology

Econometric tools - Gravity Model

- Distance increases transport costs thereby impeding the flow of exports across countries. The coefficient β_5 (distance coefficient) is expected to have negative sign in average.
- The coefficient β_7 which measures the effect of GGC-CUA will be discussed according to the economic and geographic specificities of each GCC country.

Data and Methodology

Econometric tools - Gravity Model

- Cross-border road transportation has several benefits when compared to sea transportation for intra-GCC trade.
- However, due to differentiated implementation of the laws stated by the GCC Customs Union across country members, the lack of harmonized procedures across cross the GCC member states can cause long waiting times and queues of trucks.
- Therefore, the estimated coefficient β_6 of the variable Border is expected to have a positive or negative sign depending to the improvement degree of land transportation border crossing system between GCC countries.



Image source *Gulfnews.com*: "Trucks line at UAE-Saudi border stretches to 22km Tuesday afternoon", Published article in April 03, 2012.

Empirical results

Panel Unit Root Tests

- Common and individual unit root tests of Levin, Lin and Chu (2002) and Im, Pesaran and Shin (2003) are used to check the cointegration hypothesis in the Gravity estimated models.
- Our results show that all non-deterministic panel variables ($\ln(\text{Trade}_{ijt})$, $\ln(\text{GDPpc}_{it})$, $\ln(\text{GDPpc}_{jt})$, $\ln(\text{POP}_{it})$, $\ln(\text{POP}_{jt})$) seem to have a **common and individual** unit roots.
- Cointegration processes are stationary which confirm the existence of cointegration relationship in all estimated gravity models.

Empirical results

Panel Unit Root Tests (cont'd)

Table 1: Panel unit root tests

2) Panel IPS *W-Stat* individual unit root test

Variables	Bahrain	KSA	Kuwait	Oman	Qatar	UAE
Trade _{ij}	-10.1065 ***	-9.1033***	-8.1417***	-10.6903***	-8.4734***	-7.6944***
GDPpc _i	-7.4209***	-4.8804***	-10.2998***	-4.4491***	-6.6600***	-6.2119***
GDPpc _j	-6.5002***	-7.0083***	-5.9244***	-4.4490***	-6.6524***	-6.7420***
Pop _i	-2.9226***	-4.5234***	-8.7074***	-5.0048***	-2.6996***	-4.4880***
Pop _j	-4.6545***	-4.3382***	-3.4982***	-4.2387***	-4.6998***	-4.3421***

The null hypothesis of this test is that the panel series has individual unit root (nonstationary series). ***, **, * denote rejection significance of null hypothesis at the 1%, 5% and 10% level respectively for the first difference of log-transformed panel series. IPS: Im, Pesaran and Shin (2003). Our calculations related to the individual unit root test of ADF (PP)-Fisher: Cho i (2001) (not presented here) corroborates the conclusion of the IPS unit root test presented in this table.

3) Panel Hadri unit root test

Variables	Bahrain	KSA	Kuwait	Oman	Qatar	UAE
C.I process	0.2132	0.1297	1.3201*	0.5781	1.5711*	1.3845*

The Cointegration processes of estimated GCC gravity models were tested for stationarity in level. The null hypothesis of this test is that the panel series is stationary. ***, **, * denote rejection significance of null hypothesis at the 1%, 5% and 10% level respectively.

Empirical results

Gravity Model Estimation

For each GCC country (Bahrain, Kuwait, KSA, Oman, Qatar, UAE), we estimated a gravity model of trade presented as follows:

$$\begin{aligned} \ln(\text{Trade}_{ijt}) = & \beta_0 + \beta_1 \ln(\text{GDPpc}_{it}) + \beta_2 \ln(\text{GDPpc}_{jt}) + \beta_3 \ln(\text{POP}_{it}) \\ & + \beta_4 \ln(\text{POP}_{jt}) + \beta_5 \ln(\text{DIST}_{ij}) + \beta_6 \text{BORDER}_{ij} \\ & + \beta_7 \text{CUAGCC}_t + \sum_{d=1,2} \gamma_d \text{Dummy}_t^d + e_{ijt} \end{aligned} \quad (4)$$

Empirical results

Gravity Model Estimation

Table 2: Panel Gravity Model - estimates

Variables	Bahrain	KSA	Kuwait	Oman	Qatar	UAE
C	-17.135***	-43.835***	-10.497**	-14.626***	-37.912***	-17.109***
GDPpc_i	-3.605***	1.437***	-0.422**	-0.369*	0.915***	0.632**
GDPpc_j	1.368***	0.108	1.531***	-0.206	0.316*	-0.132
POP_i	2.244***	0.863***	-0.209	2.090***	1.606***	1.389***
POP_j	0.800***	0.906***	0.762***	0.827***	1.513***	0.963***
DIST_{ij}	0.502***	0.779*	-0.679***	-2.476***	-1.977***	-2.468***
BORDER_{ij}	1.859***	1.719***	-0.706**	0.927***	-2.750***	-0.350
CUAGCC	0.161	0.652***	1.162***	0.742***	0.363*	0.284**

***, **, * denote significance at the 1%, 5% and 10% level respectively. All variables are log-transformed except the binary variables BORDER, CUAGCC.

Empirical results

Gravity Model Estimation: case of Bahrain

- The coefficient of GDP per capita is negative for Bahrain and positive for the GCC trading partners, indicating that trade increases with the level of GDP per capita of GCC trading partners and decrease with that of Bahrain. In fact, during the periode 1980-2022 the share of imports in trade of bahrain with other GCC countries was in average 63 which mean that the increase of Bahrain's GDP per capita will have an positive absorption effect.
- On another side, due to the economies scale effect on GCC exporter countries to Bahrain (especially for KSA), the exports are expected to increase after a positive shock on their GDP per capita (positive sign of the coefficient β_2 of partners).

Table 2.1: Panel Gravity Model- Bahrain

Variables	Estimated Coefficients
C	-17.135***
GDPpc _i	-3.605***
GDPpc _j	1.368***
POP _i	2.244***
POP _j	0.800***
DIST _{ij}	0.502***
BORDER _{ij}	1.859***
CUAGCC	0.161

***, **, * denotes significance at the 1%, 5% and 10% level respectively. All variables are log-transformed except the binary variables BORDER, CUAGCC.

Empirical results

Gravity Model Estimation: case of Bahrain

- **The coefficients of population** of both Bahrain and GCC trading partners are significant and positive, indicating that the market size affects positively the bilateral trade between Bahrain and GCC trading partners. Note that if population in Bahrain increases by 1%, the bilateral trade value will step up by roughly 2.4%.
- **The coefficient of distance** between Bahrain and its GCC trading partners is low and positive (not negative as expected). In fact, Bahrain's imports from the GCC trading partners are mostly from the KSA (90% in average between 1980 and 2022) and exports to GCC are mostly intended to KSA and UAE (78% in same period).

Empirical results

Gravity Model Estimation: case of Bahrain

- The **Border coefficient** is positive and is the highest among GCC countries, indicating that the only land border between Bahrain and KSA is of great importance for Bahrain's trade with KSA and GCC globally. The Bahrain-KSA land border contribute by six time more to Bahrain's trade with KSA than other GCC countries, as the level predicted by the gravity model ($\exp(1.859)=6$).
- The **coefficient of the GCC Customs Union Agreement (GCC-CUA)** period (2002-2022) is 0.161, indicating that the bilateral trade between Bahrain and other GCC trade partners increased by 17.5% = $(\exp(0.161)-1)*100$ since the GCC-CUA.

Empirical results

Gravity Model Estimation: case of Saudi Arabia

- The bilateral trade of the KSA, biggest economy in GCC area, is mostly exports (68% in average of total trade between 1980 and 2022) especially to Bahrain and UAE (receiving two had about 81% of KSA exports to GCC).
- According to Table 2.2, [the coefficient of GDP per capita](#) is positive for both KSA and its trading partners, indicating that trade increases with the level of GDP per capita of KSA and that of GCC trading partners.
- [The coefficient of GDP per capita of GCC economic partners](#) is non significant indicating that KSA-GCC trade increases less proportionally with the GDP of GCC trading partners and more than proportionally with that of KSA.

Table 2.2: Panel Gravity Model- **KSA**

Variables	Estimated Coefficients
C	-43.835***
GDP _{pc_i}	1.437***
GDP _{pc_j}	0.108
POP _i	0.863***
POP _j	0.906***
DIST _{ij}	0.779*
BORDER _{ij}	1.719***
CUAGCC	0.652***

***, **, * denotes significance at the 1%, 5% and 10% level respectively. All variables are log-transformed except the binary variables BORDER, CUAGCC.

Empirical results

Gravity Model Estimation: case of Saudi Arabia

- **The coefficient of KSA's population** is positive and significant for both KSA and its trading partners, indicating that the labor force size in KSA and the market size of the trading partners impact positively its bilateral trade with other GCC countries. In point of fact, large and wealthy countries tend to trade more with each other. Thus, population's growth leads to reinforce the local production and demand for goods, which naturally increase exports as well as imports.
- **The coefficient of distance** between KSA and its GCC trading partners is positive. In fact, the statute of major GCC trade partner of KSA has gradually shifted from Bahrain in 1980 (69.5% of KSA trade with GCC) to the UAE in 2022 (52.6% of KSA trade with GCC). This reorientation of KSA's bilateral trade towards the UAE market can be motivated by the latter's ability to absorb larger KSA's growing exports and the gradually development of road infrastructure and land crossings between KSA and UAE.

Empirical results

Gravity Model Estimation: case of Saudi Arabia

- **The Border coefficient** between KSA and its GCC trading partners is positive (the second highest coefficient among GCC countries), indicating that trade of KSA with other GCC countries is positively related to the existence of land borders with them. We note that KSA is the only country that has land borders with all other GCC countries which allows it to take full advantage of this strategic position. The KSA's land borders (GCC countries) contribute at about six time more to KSA's trade with other GCC countries, as the level predicted by the gravity model ($\exp(1.719) \simeq 6$).
- **The coefficient of the GCC Customs Union Agreement (GCC-CUA)** period (2002-2022) is positive and third largest among GCC countries after Kuwait and Oman, indicating that the GCC-CUA has made significant change in trade between KSA and its GGC trading partners. The introduction of GCC-CUA in 2002 contributed to increase the bilateral trade between KSA and other GCC countries by 92% $\simeq (\exp(0.652)-1)*100$.

Empirical results

Gravity Model Estimation: case of Kuwait

- The coefficient of GDP per capita is negative for Kuwait and positive for the its trading partners, indicating that trade increases with the level of GDP per capita of GCC trading partners and decrease with that of Kuwait. In fact, the bilateral trade of Kuwait with GCC countries is mostly imports (69% in average between 1980 and 2022) especially from KSA and UAE (respectively 53 percent and 28 percent of GCC exports to Kuwait in average on 1980-2022).
- On the other side, the positive sign of β_2 explain the effect of economic scale of trading partners on their exports/imports to/from Kuwait. This finding is somewhat similar to the case of Bahrain.

Table 2.3: Panel Gravity Model- Kuwait

Variables	Estimated Coefficients
C	-10.497**
GDPp _i	-0.422**
GDPp _j	1.531***
POP _i	-0.209
POP _j	0.762***
DIST _{ij}	-0.679***
BORDER _{ij}	-0.706**
CUAGCC	1.162***

***, **, * denotes significance at the 1%, 5% and 10% level respectively. All variables are log-transformed except the binary variables BORDER, CUAGCC.

Empirical results

Gravity Model Estimation: case of Kuwait

- The coefficient of the population of Kuwait's trading partners is positive and significant, indicating that their trade with Kuwait (mainly exports) is positively impacted by the increase of their population (labor force).
- The coefficient of the population of Kuwait is negative (non significant), indicating that the population growth in Kuwait impacts negatively the Kuwait's trade with other GCC countries. In fact, by enhancing the productivity, the labor force growth which explain mainly population growth in Kuwait must negatively impact its imports from other GCC countries (74% of trade between 2000 and 2022).
- The coefficient of distance between Kuwait and its GCC trading partners is negative, indicating that the Kuwait's trade decline proportionally as the distance with GCC trading partner increase. In fact, distance is a proxy for transportation costs which mean that the greater the distance, the higher the transportation costs.

Empirical results

Gravity Model Estimation: case of Kuwait

- The **Border coefficient** between Kuwait and its GCC trading partners is negative ($\beta_6 = -0.706$), indicating that the trade between Kuwait and KSA do not take advantage of the shared land border ($\exp(-0.706)=0.49$).
- The **coefficient of the GCC Customs Union Agreement (GCC-CUA)** period (2002-2022) is the largest among GCC countries, indicating that the GCC-CUA has made significant change in trade between Kuwait and its GGC trading partners. Therefore, the establishment of GCC-CUA in 2002 contributed to increase the bilateral trade between Kuwait and other GCC countries by around 220%

Empirical results

Gravity Model Estimation: case of Oman

- Oman's trade balance with other GCC countries has maintained a slight equilibrium between 1991 and 2014 (imports represent 52% of all trade) before deteriorating between 2015 and 2022 caused by the fall of exports (imports represent 61% of all trade).
- The coefficient of GDP per capita is negative for Oman indicating that trade decrease with the level of GDP per capita of Oman. In fact, a negative sign of the coefficient β_1 mean that the increase of Oman's GDP per capita have an positive absorption effect.
- The same parameter β_2 is not significant for trading partners of Oman, indicating that the Oman's imports and exports together seem not to be impacted by the economies scale effect in other GCC countries.

Table 2.4: Panel Gravity Model- **Oman**

Variables	Estimated Coefficients
C	-14.626***
GDP _{pc_i}	-0.369*
GDP _{pc_j}	-0.206
POP _i	2.090***
POP _j	0.827***
DIST _{ij}	-2.476***
BORDER _{ij}	0.927***
CUAGCC	0.742***

***, **, * denotes significance at the 1%, 5% and 10% level respectively. All variables are log-transformed except the binary variables BORDER, CUAGCC.

Empirical results

Gravity Model Estimation: case of Oman

- The coefficient of Oman's population is positive β_3 , indicating that the labor force and market sizes in Oman impact positively its exports and imports respectively to/from other GCC countries. The same coefficient (β_4) is positive for its GCC trading partners, indicating that the market size in GCC trading partners of Oman impacts positively the Oman's exports especially to UAE and KSA (88% of Oman's exports in average between 2003 and 2022).
- The coefficient of distance between Oman and its GCC trading partners is negative and is the largest among GCC countries, indicating that the Oman's trade decline proportionally as the distance with GCC trading partner increase.

Empirical results

Gravity Model Estimation: case of Oman

- **The Border coefficient** between Oman and its GCC trading partners is positive, indicating that the two Oman's land borders with UAE and KSA contribute significantly to the trade between Oman and other GCC countries. According the results of Table 2, the land borders of Oman contribute by around 2.5 time more to Oman's trade with KSA and UAE, as the level predicted by the gravity model ($\exp(0.927)=2.5$).
- **The coefficient of the GCC Customs Union Agreement (GCC-CUA)** period (2002-2019) is the second largest among GCC countries, indicating that the GCC-CUA has made significant change in trade between Oman and its GGC trading partners. Therefore, The establishment of GCC-CUA in 2002 contributed to increase the bilateral trade between Oman and other GCC countries by 110% $\simeq (\exp(0.742)-1)*100$.

Empirical results

Gravity Model Estimation: case of Qatar

- The coefficient of GDP per capita (β_1) is positive for Qatar, indicating that trade increases with the level of GDP per capita of Qatar. This shows that the increase of Qatar's GDP per capita had an economies scale effect on Qatar exports to GCC and an absorption effect on Qatar imports.
- The same coefficient (β_2) of GCC partners of Qatar is positive, indicating that the Qatar's exports together seem to be impacted by the economies scale effect in other GCC countries. We note that the country succeeded in rebalancing its trade balance by going from a trade deficit as imports representing 61 percent of its total trade between 1980 and 2009 to a trade surplus between 2010 and 2022.

Table 2.5: Panel Gravity Model- Qatar

Variables	Estimated Coefficients
C	-37.912***
GDPpc _i	0.915***
GDPpc _j	0.316*
POP _i	1.606***
POP _j	1.513***
DIST _{ij}	-1.977***
BORDER _{ij}	-2.750***
CUAGCC	0.363*

***, **, * denotes significance at the 1%, 5% and 10% level respectively. All variables are log-transformed except the binary variables BORDER_{ij}, CUAGCC.

Empirical results

Gravity Model Estimation: case of Qatar

- The coefficient of Qatar's population is positive β_3 , indicating that the labor force and market sizes in Qatar impact positively its exports and imports respectively to/from other GCC countries. The same coefficient β_4 is positive for its GCC trading partners, indicating that the market size in GCC trading partners of Qatar impacts positively the Qatar's exports especially to UAE and KSA (53% and 25% respectively of Qatar's total exports to GCC in average between 1980 and 2022).
- The coefficient of distance between Qatar and its GCC trading partners is negative, indicating that the trade decline proportionally as the distance with GCC trading partner increase (transportation costs).

Empirical results

Gravity Model Estimation: case of Qatar

- **The Border coefficient** between Qatar and its GCC trading partners is negative ($\beta_6 = -2.75$), indicating that historically (1980-2022) the trade between Qatar and KSA did not take advantage of the shared land border ($\exp(-2.75)=0.06$).
- **The coefficient of the GCC Customs Union Agreement (GCC-CUA)** period (2002-2022) is positive but marginally significant, indicating that the GCC-CUA has increased the Qatar's trade with its GGC trading partners. Therefore, the establishment of GCC-CUA in 2002 contributed to increase the bilateral trade between Qatar and the other GCC countries by about 44% $\simeq (\exp(0.363)-1)*100$.

Empirical results

Gravity Model Estimation: case of Unites Arab Emirates

- The coefficient of GDP per capita (β_1) is positive for UAE, indicating that the UAE's trade with other GCC countries increases with the level of GDP per capita of UAE. In fact, the country succeeded in shifting its trade with GCC by going from a deficit to a surplus (the exports share in UAE's total trade with GCC countries hiked from 28.9 percent in average between 1980 and 1990 to 57.7 percent between 1991 and 2022). This shows that the increase of UAE's GDP per capita had an important economies scale effect on UAE exports to GCC and an absorption effect on UAE's imports.

As we found elsewhere for the case of Oman and Qatar, the same coefficient (β_2) of GCC partners of UAE is not significant, indicating that the UAE's imports and exports together seem not to be impacted by the economies scale effect in other GCC countries.

Table 2.6: Panel Gravity Model- UAE

Variables	Estimated Coefficients
C	-17.109***
GDPpc _i	0.632**
GDPpc _j	-0.132
POP _i	1.389***
POP _j	0.963***
DIST _{ij}	-2.468***
BORDER _{ij}	-0.350
CUAGCC	0.284**

***, **, * denotes significance at the 1%, 5% and 10% level respectively. All variables are log-transformed except the binary variables BORDER_{ij}, CUAGCC.

Empirical results

Gravity Model Estimation: case of Unites Arab Emirates

- The coefficient of UAE's population is positive β_3 , indicating that the increase of labor force and market size in UAE has a positive impact on trade with the other GCC countries. The same coefficient β_4 is positive for its GCC trading partners, indicating that the increase of market size in GCC trading partners impacts positively the UAE's exports.
- The coefficient of distance between UAE and its GCC trading partners is negative and is the second largest among GCC countries after Oman, indicating that the UAE's trade declines proportionally as the distance with GCC trading partner increase.

Empirical results

Gravity Model Estimation: case of Unites Arab Emirates

- **The Border coefficient** between UAE and its GCC trading partners is not significant, indicating that historically the existing land borders between UAE and KSA-Oman does not had a significant impact on the harmonious balanced share of UAE's exports to the other GCC countries namely Oman (44.1%), KSA (30.0%), Qatar (10.2%), Kuwait (10.8%) and Bahrain (4.9%).
- **The coefficient of the GCC Customs Union Agreement (GCC-CUA)** period (2002-2022) is positive, indicating that the GCC-CUA had a positive impact on the trade between UAE and its GGC trading partners. Therefore, the establishment of GCC-CUA in 2002 contributed to increase the bilateral trade between KSA and other GCC countries by 33%
$$=(\exp(0.284)-1)*100.$$

Empirical results

Gravity Model Estimation: Summary results

Table 3: Summary results of the estimated Trade Gravity Models for GCC countries (1980-2022)

GCC Country	Economic Activity (GDP per capita)		Market Size (population)		Distance Between the Country and its Partners	Land Border	GCC Customs Union Agreement (2002)
	Country	GCC Partners	Country	GCC Partners			
Bahrain (Net importer) 	(-) imports from GCC partners	(+) exports	(+) trade	(+) trade	(+) trade (concentrated with KSA and UAE)	(+) trade (highest impact among GCC)	(+) trade (low impact) 17%
Kuwait (Net importer) 	(-) imports from GCC partners	(+) exports	impact not significant	(+) trade	(-) trade	(-) trade (low impact)	(+) trade 220%
Oman (Net importer) 	(-) imports from GCC partners	impact not significant	(+) trade	(+) trade	(-) trade	(+) trade	(+) trade 110%
Qatar (Net exporter) 	(+) imports from GCC partners	(+) exports	(+) trade	(+) trade	(-) trade	(-) trade (very low impact)	(+) trade 44%
Saudi Arabia (N.E) 	(+) imports from GCC partners	impact not significant	(+) trade	(+) trade	(+) trade (gradual reorientation towards the United Arab Emirates as new major partner instead of Bahrain)	(+) trade (second highest impact among GCC)	(+) trade 92%
United Arab Emirates (N.E) 	(+) imports from GCC partners	impact not significant	(+) trade	(+) trade	(-) trade	not significant (harmonious distribution of UAE exports)	(+) trade 33%

Discussion

- **Bahrain** can still further develop its trade with other GCC countries notably Kuwait, Qatar and Oman.
- **KSA** can further develop its trade with other GCC countries by developing its logistical connections with GCC's neighboring countries. KSA's central geographic position may allow it to play an important spillover role in the process of deepening intra-GCC trade. Thereby, the road upgrading project linking KSA and Oman as well as the railway project linking the GCC countries should give a big boost to the trade of the KSA with the rest of the GCC economic space.
- **Kuwait** can further benefit from its land border connection with KSA and benefits of the customs agreement with GCC countries to export more to these countries with a view to reducing its trade deficit with them.

Discussion

- **Oman** is one of the best GCC countries having succeeded in diversifying and balancing their exchanges with other GCC members during the period 1980-2022 by taking maximum advantage of the GCC-CUA and its position of strategic neighbor with KSA and UAE.
- **Qatar** can further benefit from its land border connection with KSA and benefits of the customs agreement with GCC countries to export/import more to/from these countries.
- **UAE** benefits from its land border connection with KSA and Oman and the customs agreement with GCC countries to export/import harmoniously with all other GCC countries.

Conclusion

- This study examines the extent to which the GCC Customs Union Agreement (GCC-CUA, 2002) had a differentiate impacts on bilateral trade among GCC countries.
- Using panel unit root tests, we find clear long-run relationship between Trade, GDP per capita, population size and the geographical distances between the economic centres among all GCC countries.
- A gravity trade model was estimated based on pooled time series-cross-sectional data of bilateral trade for each GCC country with other five member countries of (GCC) Customs Union.
- Our finding results show that the effect of economic activity growth (GDP per capita) and population size on GCC-bilateral trade depends on the span of the trade balance deficit/excess in each country.

Conclusion

- Our findings suggest, thus, that the distance between GCC countries impacts negatively their bilateral trade (transportation costs) except for Bahrain and KSA.
- The existence of land borders impacts positively trade of Bahrain, Oman, KSA, and negatively Qatar and Kuwait. According to our descriptive investigation, the GCC-Bilateral trade of UAE is well distributed and seems to be not strongly linked to the existing land borders with KSA and Oman.
- **The impact of GCC Customs Union of 2002 was positive on all GCC countries.** However, it was
 - **Higher** for: Kuwait (+220%), Oman (+110%) and KSA (+92%)
 - **Moderate** for: Qatar (+64%), UAE (+33%), and Bahrain (17%)