*International Research Journal of Social Sciences*_____ ISSN 2319–3565
Vol. **4(5),** 19-22, May **(2015)** *Int. Res. J. Social Sci.*

Determinants *of Bilateral* Trade Flows in *Arab Maghreb Union (AMU)*

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Available online at: www.isca.in
Received 11th February 2015, revised 12th March 2015, accepted 11th April 2015

Abstract

The study aims to measure the most important determinants of trade flows among Arab Maghreb Union (AMU) group members from 1995to2011 through Gravity Model. The empirical findings show that there exist a positive impact of gross domestic production (GDP) and a negative effect of geographical distance on trade flows, that the exchange rate and tariff rates have no significant effect on export flows. In the contrast, these countries have not yet achieved their aim and should set up efforts by the policy makers to promote intra- trade among Arab Maghreb Union.

Keywords: Arab Maghreb Union, Intra-trade, Gravity Model.

Introduction

Lots of countries get higher benefits from international trade when those countries exchange goods and services without restrictions where it costs comparatively less to produce them. Comparative advantage of David Ricardo[1] is the most fundamental theory Traditional of Trade. In addition, New classical school[2,3] sees that labor is not the only factor used in the production, but added a capital element to explain proportional cost of goods. In a related new theory, Krugman (1980)[4] presents a more theoretical analysis of trading patterns focusing that his idea has been arrived as a successful trade blocs for the last half of the 20th century (such as the North American Free Trade Agreement NAFTA, the European Union, Southern Common Market or Mercosur, Greater Arab Free Trade Area, Gulf Cooperation Council, The Association of Southeast Asian Nations) Table-1.

Table-1
UMA imports flow for 1997-2012(Millions of dollars)

	1997	2005	2010	2012
UMA*	1018	1877	3600	5594
	3.16%	3.04%	3.05%	3.94%
UE**	1374805	2524149	3069709	3370967
	63.63%	61.21%	58.51%	58.12%
MERCOSUR**	24282	27572	57274	69227
	%20. 64	20.56%	19%	18%
ALENA****	481856	782100	888103	1065988
	40%	34.47%	33.38%	33.60%
GCC*****	7567	16620	31919	44697
	9%	9%	8.73%	9.11%
ASEN******	72436	154331	236396	291055
	19%	25.60%	24.80%	23.80%

Table-2
UMA exports flow for 1997-2012(Millions of dollars)

	1997	2005	2010	2012
UMA*	1001	1258	3739	5729,
	2.73%	2.23%	2.36%	3.34%
UE**	1472137	2725712	3330777	3630191
	65.88%	67.62%	64.80%	62.77%
MERCOSUR**	24316	34879	56996	67342
	%22. 63	13.63%	16.16%	15%
ALENA****	494638	951021	955314	1150305
	49%	52%	48%	48.54%
GCC*****	8391	19437	34292	45981
	6.40%	5%	5.32%	4.72%
ASEN******	85081	191092	263226	324587
	24%	25.72%	25.48%	25.86%
World	5566591	10442960	15221944	18271666
	100%	100%	100%	100%

Source: CNUCED, *Arab Maghreb Union, the European Union**, ***common market in Latin America, *****North American Free Trade Agreement, ***** *Gulf* Corporation council, ******Association of Southeast Asian Nations.

The Arab Maghreb Union is one of these old trade agreements launched in 17/02/1989 to enhance an economic and political unity among Arab countries of the Maghreb in North Africa namely Algeria, Libya, Mauritania, Morocco and Tunisia but has since n failed *to boost* the growth of potential and bilateral trade flows, Table 3

The goal of this study is to evaluate the intra regional trade in the Arab Maghreb Union using a Gravity Model upon annually data for the period (1995 – 2011).

Table-1
***Economic Structures*in UMA**

Sectors	Countries	1999	2003	2007
	Algeria	53,32	53	52,01
	Libya	55,35	46,56	46,71
GDP industriel	Morocco	29,65	28	27.78
(%)	Tunisia	32.8	32.08	29.55
	Mauritania	30	27.41	39.44
	Algeria	37,65	37	38,16
	Libya	36,86	46	46,85
GDP Services	Morocco	55,12	50	54
(%)	Tunisia	52,17	55	58
	Mauritania	39,17	50	41
	Algeria	9,03	10	9,84
	Libya	7,80	7	6,44
GDP Agriculture	Morocco	15,23	19	18,23
(%)	Tunisia	15,04	13	12,18
	Mauritania	30,81	23	20
	Algeria	48.46	68	135.84
	Libya	30.48	24	71.8
GDP	Morocco	39.7	50	75.22
	Tunisia	23	27.45	39
	Mauritania	1.4	1,56	3,35

The rest of the paper is organized as follows. In section two, we present the Research Methodology, followed by the results and discussions in Section Three, and finally, section Four presents the main conclusion.

Hypothesis: First hypothesis: The GDP coefficient indicates a positive effect on trade flows among Arab Maghreb Union (AMU) group members in the period of 1995-2011.

Second hypothesis stating a positive correlation between the Geographical distance and trade in Arab Maghreb Union area.
Third hypothesis: tariff rates coefficient indicates a significant impact on trading potentials in Arab Maghreb Union.
Four hypothesis: exchange rate is the main determinant of *Determinants* of Bilateral *Trade Flows in* Arab Maghreb Union

Research Methodology

Theories of the of Gravity equation Origins: the origin of Gravity models to analyze international trade date back to Izard (1954)[5], Tinbergen (1962)[6] and Pöyhönen (1963)[7]. The mathematical representation of Gravity equation can be run as:
$F_{ij}=G\ (M_iM_j)/D_{ij}$

Where: ij : Exports and imports flow. G : Constant, $MiMj$: Economic sizes in countries $iandj$, Dij: Distance between two countries.

Literature Review: Walid Abdmoulah (2011)[8] examined the main determinants of trade flows in Arab regional trade agreements (GAFTA, UMA, GCC, AGADIR) in the period between (1997- 2008) through gravity model. His results indicate that there are positive impact of gross domestic production (GDP) and negative effect of geographical distance on exports flows in *Twenty-seven* Arab countries , while , GCC,UMA and AGADIR suggested disappoint trade gains results. Yaghoob J et al (2011)[9] concluded that Gross Domestic Product (GDP), exchange rate, population of exporter country, border and distance are most positive determinants on exports flows in D 8 countries the Organization of Islamic Countries (OIC) via the Gravity Model during the 1995-2007 periods. Bahmani .O, et al (2010)[10] pointed out in their study the effect of currency fluctuations on bilateral trade flows for 62 Canadian export industries to Mexico and 45 import industries from Mexico. Rina B and Hirut W (2010)[11] detected that the trade volumes of countries in the MENA region are significantly lower than what would be expected giving their economic, cultural and geographical characteristics from 1994 to 2009. On the contrary, transport constraints and inefficiencies in customs clearance processes are important in explaining the MENA region's underperformance in trade.See Rajabzadeh, A and Panahzadeh A (2013)[12]. Melitz (2008)[13] indicated that the common spoken language and Higher *education* play a big important role in explaining bilateral trade in gravity models of 112 countries along period from during 1970 to 2007. In East Asia, Lee and Shin (2006)[14] suggested that regional trade agreements (RTA) are likely to create more trade among members without diverting trade from non-members during (1948-1999), when the same time Philipini, Molini (2003)[15] found the size economy and the increase in the number of individuals in a population are the main factors significant to boost trade flows In East Asia. .Pass and Tafenau (2005)[16]

confirmed whether the gravity equation based on the new trade theory in the (EU-25) is explained by size, level of economic development of trading partners and distance for the years 1993 to 2002. Inmaculada M and Felicitas N (2003)[17] analyzed Mercosur-European Union trade using Gravity model. The authors found that variables namely, infrastructure, income differences and exchange rates are important determinants of bilateral trade flows.

Individual Characteristics: Adding to basic function of Gravity Model, the specification of our model used in this paper is:

$\ln Exp_{ijt} = a_0 + a_1 \ln GDP_{it} + a_2 \ln GDP_{jt} + a_3 \ln Ex_{it} + a_3 \ln Dis_{ijt} + a4 \text{ In } TRI\varepsilon_t$

Where:

In: Natural logarithm. Exp_{ijt}: exports between countries *i* and *j* at time *t*. GBP economic size by GDP. EX: Exchange rate of exporter. DIS: distance between *i* and *j*. TRI: trade tariff restrictiveness index of importer. a_0, a_1, a_2, a_3, a_4 are parameter estimates. ε_t = Random error

Results and discussion

In table 4, econometric diagnostic tests present the absence of serial correlation, while Durbin Watson seems to be good with high R^2 more than 70 percent. It is clear to show the change in the GDP of the exporting countries by 1% leads to an increase trade flows by 0.61%, while a change in GDP importer countries shows a negative sign which implies that there is a decrease in the flow of intra regional trade by 0.14% (Bahmani - Oskooee and All (1991)[18].

The main explanations can be report in these results of this contradictory situation between GDP and trade is because it constitutes the dominant structural trade at a similar product. An interesting thing to note the rising an inferior good demand among UMA countries.

In addition, the magnitude contribution of intra-trade among Maghreb Union (AMU ranges negatively from 0.06 percent of geographical distance. Contrarily, the exchange rate and tariff rates have no significant effect on export flows in this region, but both empirical evidence and theory suggest that this assumption is wrong.

In contrast, the underperformance of trade tariff restrictiveness index (TRI) and exchange rate of each single member play a crucial role to underdevelop intra-trade and conversely help explain how this lower intra-trade level leads to dismantle trade barriers with the Euro-Mediterranean Agreement and establishing an Association without mentioning that union is the largest trading partner about ½ of the UMA imports.

Table-4
Regression Results for theGravityModel

prob	Z statistic	Coefficient	Variables
0.1008	17.9	29.5	c
0.0191*	2.357	0.612	$\ln GDP_{it}$
0.0466*	-2.431	-0.145	$\ln GDP_{jt}$
0.3148	-1.008	-0.1	$\ln EX_{it}$
0.0000*	-7.737	-0.062	$\ln Dis_{ijt}$
0.4614	-0.734	-1.558	$\ln TRI_{jt}$
R^2= 70, DW= 1.66, F-statistic* =170.37			

*Significantat the5% level

Conclusion

The aim of this paper was to assess the main determinants of Arab Maghreb Union (AMU) trade flows using gravity model since 1995.

Our results indicated that GDP of the exporting countries have a positive influence elasticity on exports flows about 0,14percent, geographical distance has negative whereas could be impact by 0,06 percent. Moreover, main findings show that exchange rate and tariff rates have no significant impact on export flows between UMA countries.

These results explained by competitive trade structure between Arab Maghreb Union and by the discouraging cooperative effort between policy makers for promoting the performance of intra-trade flows, closer economic cooperation and the endeavor to provide a uniform bloc for all neighboring.

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