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AN ANALYSIS OF THE INTRA-REGIONAL TRADE IN THE MIDDLE EAST AND NORTH AFRICA REGION

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ABSTRACT

This paper analyzes the intra-regional trade and investment flows in the Middle East and North Africa (MENA) region using an augmented gravity model applied to panel data. The study uses annual trade and investment data for the period 1980-2006. There is a growing awareness among countries in the MENA region regarding the importance of international trade and foreign direct investment for stimulating growth and integrating into the world economy. The research will attempt to achieve the following objectives: (a) analyze the intra-regional trade and investment flows in the MENA region; (b) identify the major determinants of trade and investment flows in the MENA region using an augmented gravity model applied to panel data; and (c) measure the effect of preferential trading arrangements in the region on members' trade and investment with other MENA countries.

JEL: F14, F21

INTRODUCTION

The Middle East and North Africa (MENA) region is an economically diverse region that includes countries with a common heritage, shared religion, culture, and language, at various stages of economic development, vastly different levels of per capita income, and with very different endowment of natural resources. As Bolle (2006) points out, the countries in the MENA region are divided into four subgroups based mostly on geographical place and production foundation specifically the Maghreb countries (Algeria, Libya, Mauritania, Morocco and Tunisia), the Gulf Cooperation Countries (GCC) (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates), the Mashreq countries (Egypt, Jordan, Lebanon, Syria and Sudan), and other countries (Djibouti, Somalia, and Yemen). Arab countries possess various connections comprising shared religion, culture and language. Conversely, they are distinct in terms of size, crude source endowments, and standard of living (Al-Atrash and Yousef, 2000). Several are mainly farming and rural countries (Mauritania and Sudan), others are chiefly energy creators (members of the Gulf Cooperation Council (GCC), and others hold a promising and rising industrial foundation (Egypt and Morocco).

Trade policy has frequently been mentioned as the major policy provoked barrier to intra- MENA trade. Even as several countries in the area, particularly the GCC countries, sustain a moderately open trade regimes, others have faced considerable impediments to trade. Still several countries utilize a range of procedures comprising of restraining licensing, embargos and sanctions, state trading/monopolies, restraining foreign exchange provision and multiple exchange rates, to depress imports (Al-Atrash and Yousef, 2000).

The degree of regional integration through trade in the Middle East and North Africa has been rising fast over the last twenty years. However, in 2006, inter-regional trade share in the Middle East and North Africa 12.9% was much lower than the European Union's share of 67.1% and of 55.2% for the North American Free Trade Agreement. In the same year, the intra-regional export share and import share was 10.7% and 15.9%, respectively (see Table 1 and Figure 1). Foreign direct investment flows in the MENA region have also remained relatively low, as Table 2 illustrates. Regardless of the low level of

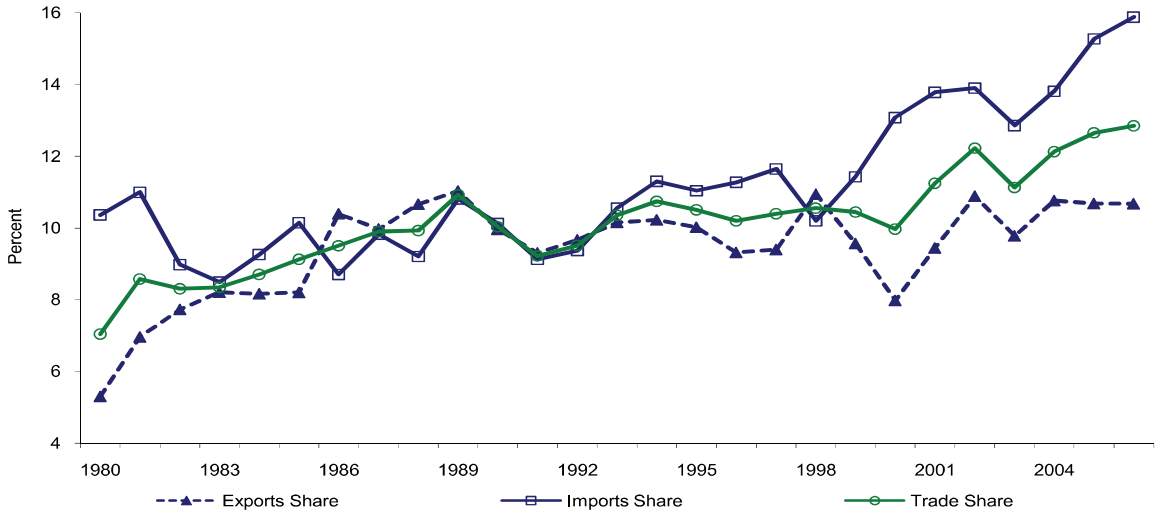
trade and investment flows in the region, it is interesting to find out reasons why they have remained at low levels.

Table 1: Direction of Trade of MENA Countries, 1980-2006

	Trade Share (%)				Export Share (%)				Import Share (%)			
Group	1980	1990	2000	2006	1980	1990	2000	2006	1980	1990	2000	2006
Industrial Countries	74.3	64.5	56.8	49.0	75.0	62.6	55.1	49.3	72.8	66.9	59.4	48.4
Developing Countries	24.2	30.9	39.1	46.7	23.5	32.2	39.2	43.9	25.5	29.3	38.9	50.6
Africa	1.3	2.1	2.9	2.9	1.4	2.3	3.4	3.6	1.2	1.8	2.0	1.8
Asia	10.6	12.0	22.2	26.1	11.7	13.4	25.8	28.1	8.4	10.3	16.6	23.2
Europe	2.9	5.7	3.5	4.8	1.8	5.5	2.3	2.5	5.1	6.1	5.4	7.9
Middle East	6.5	8.7	8.5	11.3	4.9	8.3	6.2	8.7	9.7	9.2	12.0	14.9
Western Hemisphere	2.9	2.3	2.0	1.7	3.8	2.7	1.4	1.0	1.2	1.9	2.9	2.7
European Union	42.6	38.8	31.5	27.0	39.8	34.1	26.5	22.3	47.8	44.6	39.2	33.6
Non-Oil Developing Countries	19.5	23.8	31.5	38.1	20.4	26.0	34.0	37.8	17.7	21.0	27.7	38.6
Oil Exporting Countries	4.7	7.1	7.6	8.6	3.1	6.1	5.2	6.2	7.7	8.2	11.3	12.0
Middle East and N. Africa	7.0	10.0	10.0	12.9	5.3	10.0	8.0	10.7	10.4	10.1	13.1	15.9
Total	100	100	100	100	100	100	100	100	100	100	100	100

This table shows the direction of trade of the MENA *region during the period 1980-2006. The region still trade mostly with industrial countries, although its trade share has dropped significantly between 1980 and 2006. The figures were taken from the IMF, Direction of Trade Statistics Database.*

Figure 1: Share of Intra-MENA Trade 1980-2006



This figure shows the trends in export share, import share and trade share of the MENA *region during the period 1980-2006. Import share remained consistently above the export and trade shares during this period.*

There is a growing awareness among countries in the MENA region regarding the importance of international trade and foreign direct investment for stimulating growth and integrating into the world economy. The research will attempt to achieve the following objectives: (a) analyze the intra-regional trade and investment flows in the MENA region; (b) identify the major determinants of trade and investment flows in the MENA region using an augmented gravity model applied to panel data; and (c) measure the effect of preferential trading arrangements in the region on members' trade and investment with other MENA countries. Although there are a few studies that analyze the intra-Arab trade, there are no studies to our knowledge that analyze both the trade and investment flows among MENA countries. This study, thus, will contribute the empirical literature on intra- MENA trade and investment.

Table 2: Stock of Intra-MENA Foreign Direct Investment, 1985-2006

Source Country	Host Country										
	Algeria	Bahrain	Egypt	Jordan	Kuwait	Lebanon	Saudi Arabia	Syria	Tunisia	UAE	Total
Algeria		20.1	337.1	160.6	26.3	11.2	42.5	30.4	33.1	28.3	751.2
Bahrain	36.0		126.1	4.4	180.8	51.8	1,459.0	0.1	17.6	59.9	1,826.5
Egypt	142.8	56.7		303.1	1,169.2	83.3	2,137.7	133.1	70.2	221.8	5,580.2
Jordan	34.7	16.5	75.6		13.5	153.7	3,011.1	70.4	1.0	11.8	3,956.5
Kuwait	315.5	232.4	242.4	147.2		2,241.8	63.5	482.9	170.1	428.0	4,028.5
Lebanon	4.5	21.5	272.5	6.8	683.6		1,621.6	204.5	0.7	804.4	3,986.0
Libya	19.1	-	22.7	-	-	1.8	64.1	-	19.0	98.7	334.9
Morocco	16.1	65.8	4.2	2.4	60.0	8.7	177.9	26.9	64.4	76.8	469.3
Oman	-	65.2	70.5	12.1	3.4	4.3	35.0	1.2	-	76.5	205.8
Qatar	14.6	2.8	10.8	8.7	107.7	556.3	65.9	2.3	-	78.7	1,044.4
Saudi Arabia	18.3	309.0	551.8	1,139.3	153.3	1,699.4		1,460.0	33.6	868.0	10,063.2
Sudan	2.8	-	69.7	182.1	88.4	65.3	1,586.0	180.2	0.6	209.3	2,564.9
Syria	4.7	21.7	28.9	18.1	338.3	346.1	1,187.5		5.7	375.4	3,154.3
Tunisia	17.5	2.8	5.0	136.0	359.1	8.3	425.3	4.0		144.2	1,599.8
UAE	9.7	50.9	2,963.3	82.7	362.1	1,585.5	35,457.5	640.1	2,328.8		43,575.8
Yemen	-	0.2	50.5	26.6	3.5	12.3	341.2	10.6	1.8	15.5	691.4
Total	637.2	865.6	4,866.7	2,552.3	3,549.4	6,829.9	47,939.3	3,281.5	2,750.3	3,573.2	84,756.5

This table shows the stock of intra-MENA investment flows during the period 1985-2006. There is no clear pattern of the investment flows. The figures were taken from the Inter-Arab Investment Guarantee Corporation, Investment Climate in Arab Countries 2006.

LITERATURE REVIEW

This section summarizes the previous studies that used gravity model to estimate the trade flows. For a more detailed literature review, the reader is directed to any of a number of surveys of various approaches, including Panagariya (1999, 2000), DeRosa (1998), Harrison, Rutherford and Tarr (2003), Robinson and Thierfelder (2002), Evenett and Keller (2002), Feenstra, Markusen, and Rose (2001), Scollay and Gilbert (2000), and Lloyd and MacLaren (2004).

The popularity of the gravity model is relatively recent. It was used during the 1960s and 1970s to estimate trade flows but was criticized because it lacks a strong theoretical foundation. Tinbergen (1962), Poyhonen (1963), and Linneman (1966) provided initial specifications and estimates of the determinants of trade flows. Anderson (1979) provided a rigorous economic justification, deriving a reduced-form gravity equation from a general equilibrium model incorporating the properties of expenditure systems. Bergstrand (1985) and Deardorff (1997) also provided partial theoretical foundations for the gravity equation, although none of the models generated exactly the same equation generally used in empirical work.

Due to a revival of interest among the economists about economics and geography, the gravity model has again become popular. A study by Egger (2008), using a partial equilibrium gravity model of bilateral trade, tests the role of distance on trade. He estimates a gravity equation from a large panel data-set of trade flows comprising all available bilateral export data from the United Nations' Comtrade database in the years 1980, 1990 and 2000. The analysis obtains three implications regarding the empirical specification of trade frictions in gravity models. The study concludes that distance became relatively more important in the two decades after 1980.

Instead of reviewing the recent studies that use the gravity model of trade, we summarize the findings of some recent studies on intra-Arab trade and investment.In a study by Bolbol and Fatheldin (2006) on intra-Arab investment flows, it was concluded that, although direct private flows increased, they were insufficient either to offset the fall in official flows or to boost intra-Arab trade. They highlight the importance of improving the Arab investment environment, particularly in those Arab countries having an investment or resource gap. They also point out that although most capital flows now originate from

private sources and are made up of direct investments, the Arab countries continue to be recipients of disproportionately small capital flows relative to their size in the world economy.

Söderling (2005) analyzes export performance in the Middle East and North Africa (MENA) using a gravity model applied to panel data to addresses two questions: (i) are there significant unexploited export markets for the MENA region?; and (ii) have integration efforts with the EU since the mid-1990s yielded positive results? The results of the study suggest that several MENA countries are substantially underexploiting the United States as an export market. Moreover, the impact of integration efforts with the European Union has been moderate overall but significant in individual cases.

Al-Atrash and Yousef (2000) analyze the intra-Arab trade flows using an international dataset on bilateral trade for 65 countries in the 1990s. They estimate a gravity model to address the question of whether intra-Arab trade is too little. Their results suggest that intra-Arab trade and, more broadly, Arab trade with the rest of the world are lower than what would be predicted by the gravity equation, suggesting greater scope for regional integration as well as multilateral integration especially with the European Union. The results also suggest that intra-GCC and intra-Maghreb trade are relatively low while the Mashreq countries exhibit higher level of intra-group trade.

METHODOLOGY AND DATA

Methodology

This study analyzes the trade and investment flows in MENA region. The analytical tool used for this purpose is the standard gravity model of bilateral merchandise trade that has been widely used as the 'workhorse' for empirical analysis of international trade flows. Gravity models were first introduced to economic theory in the 1960s. Linneman's (1966) seminal study applied a gravity model to analyze the factors that explain trade for a sample of 80 countries. The standard gravity model postulates that trade between two countries is a function of their economic size and of the geographic distance between them. Gravity models have been augmented with variables representing factors that could either facilitate of impede trade. We augment this basic structure by adding a number of explanatory variables drawn from the theory of international trade. Since the gravity models have been used extensively to analyze the trade flows, the authors do not plan to discuss the theoretical development of gravity models. An interested reader is directed to any of a number of previous studies that used gravity models, including Panagariya (1999, 2000), DeRosa (1998), Harrison, Rutherford and Tarr (2003), Robinson and Thierfelder (2002), Scollay and Gilbert (2000), and Lloyd and MacLaren (2004).

This paper follows numerous authors and specifies the following gravity equation which controls for the basic determinants of international trade and investment. We also replaced population variable by gross domestic product (GDP), since either one can be used to measure the size of the economy. Our specification of the gravity models are:

$$\ln(T_{ij}) = \beta_0 + \beta_1 \ln(PCGDP_i) + \beta_2 \ln(PCGDP_j) + \beta_3 \ln(GDP_i) + \beta_4 \ln(GDP_j) + \beta_5 \ln(Dist_{ij}) + \beta_6 \ln(RER_{ij}) + \beta_7 Border + \beta_8 Language + \beta_9 Maghreb + \beta_{10} GCC + \beta_{11} Mashreq + \beta_{12} PETRO + u_{ij} \quad (1)$$

$$\ln(FDI_{ij}) = \beta_0 + \beta_1 \ln(PCGDP_i) + \beta_2 \ln(PCGDP_j) + \beta_3 \ln(GDP_i) + \beta_4 \ln(GDP_j) + \beta_5 \ln(Dist_{ij}) + \beta_6 \ln(INF_j) + \beta_7 \ln(EXP_{ij}) + \beta_8 \ln(RER_{ij}) + \beta_9 Border + \beta_{10} Language + \beta_{11} Maghreb + \beta_{12} GCC + \beta_{13} Mashreq + u_{ij} \quad (2)$$

where T_{ij} represents the flow of trade from country i to country j; FDI_{ij} represents the flow of foreign direct investment from country i to country j; $PCGDP_i$ is the per capita gross domestic product of

country i, $PCGDP_j$ is the per capita gross domestic product of country j; GDP_i is the gross domestic product of country i; GDP_j is the gross domestic product of country j; $Dist_{ij}$ is the geographical or economic distance between the two countries; RER_{ij} is the real exchange rate between the two countries; INF_j is the inflation rate in country j; EXP_{ij} is the exports from country i to country j; *Border* is a dummy variable which takes the value 1 if the two countries share a contiguous border and zero otherwise; *Language* is a dummy variable which takes the value 1 if the two countries share a common language and zero otherwise; *Maghreb* is a dummy variable that equals 1 if the two countries are members of the Maghreb and zero otherwise; *GCC* is a dummy variable that equals 1 if the two countries are members of the Gulf Cooperation Council (GCC) and zero otherwise; *Mashreq* is a dummy variable that equals 1 if the two countries are members of the Mashreq and zero otherwise; *PETRO* is a dummy variables that equals 1 if country i is a petroleum exporting country; and u_{ij} is a normally distributed error term.

According to Frankel (1993), per capita GDP is included to capture the factors associated with the level of economic development. Other authors have also used per capita income to express the level of economic development (see, for example, Carrillo and Li (2002)). Per capita GDP also captures the productive capacity of the exporting country and the purchasing power of the importing country. The coefficients of the per capita GDP variables are expected to be positive.

Gross domestic product variables represent the size of the countries and are expected to have positive signs. According to Krugman (1980), the larger countries are better able to absorb imports than smaller countries and are better able to experience economies of scale and thus develop a comparative advantage in their export industries than are smaller countries. The size of GDP can also be treated as a proxy for market thickness (the economic depth of trading nations) which positively impacts on the location of outsourcing activity (Grossman and Helpman, 2005).

The coefficient of the distance variable ($Dist_{ij}$) is expected to be negative. This is a proxy for transportation costs and time, access to market information, access to markets, and other factors that make it difficult for nations to engage in trade.

Following Pozo (1992), the bilateral real exchange rate, RER, was constructed as,

$$RER_{ij} = \frac{ER_{ij} \times CPI^{j}}{CPI^{i}} \tag{3}$$

where RER_{ij} is the real exchange rate between country i to country j, ER_{ij} is the nominal exchange rate (the home currency price of a unit of foreign currency, for example, the number of Rials per US $), CPI^{i} is the consumer price index (2000=100) of origin country i and CPI^{j} is the consumer price index (2000=100) for a given foreign (destination) country j. The data on nominal exchange rates and CPI were taken from the International Monetary Fund, *International Financial Statistics database*. The coefficient of the RER_{ij} variable is expected to be positive.

The anticipated sign on all dummy variables is positive, reflecting the idea that proximity, common language, historical links, and regional trading agreements are trade creating networks. A common border dummy (*Border*) is included to account for possible additional advantages of proximity that are

not captured by the standard distance measure. Common language tends to facilitate trade by enhancing exporters' and importers' understanding of each others' cultures, commercial and legal systems, which have a great deal of influence on trade. Growing empirical literature finds that historical linkages are important determinants of international trade flows (see, for example, Frankel, Stein and Wei (1995), Frankel (1997), and Eichengreen and Inrwin (1998)).

Data Sources

We estimate the models with annual data for 20 MENA countries for the period 1980 to 2006. Algeria, the Kingdom of Bahrain, Djibouti, Egypt, the Islamic Republic of Iran, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Qatar, the Kingdom of Saudi Arabia, Somalia, Sudan, Syrian Arab Republic, Tunisia, the Kingdom of United Arab Emirates, and the Republic of Yemen. The dependent variables used in the analysis is exports from country i to country j and foreign direct investment from country i to country j. The data on exports and imports for the study period of 1980-2006 are from the International Monetary Fund, *Direction of Trade Statistics* database. Additional data on exports and imports are from the United Nation's *Commodity Trade Statistics* (Comtrade) database. Data on population are from International Monetary Fund, *International Financial Statistics Yearbook*. Information on per capita gross domestic product is from International Monetary Fund, *World Economic Outlook Database*, April 2008. The distance variable is obtained from the World Bank, *Trade, Production, and Protection* database. The data on foreign direct investment are from the Inter-Arab Investment Guarantee Corporation and from the UNCTAD's *World Investment Report 2007*.

EMPIRICAL RESULTS

Trade Flows

We estimated two sets of regression models to measure the fixed-effects and random-effects. The estimated results of the model analyzing intra-MENA trade flows are presented in the first three columns of Table 3. With twenty countries, where each of them has nineteen country-pairs, our sample has 380 observations per year and (380 observations x 27 years = 10,260) 10,260 observations for the full sample. The model specification test performed using the Hausman test rejected the random effects model specification. As a result, the results are discussed using the estimated results of the fixed-effects model, although the results of the random-effects models are also presented in Table 3. The conventional variables behave very much the same way as the model predicts, and the estimated coefficients are statistically significant. The adjusted R^2 value for the fixed-effects model is 0.515. This value is acceptable for a cross-sectional study and is comparable to those obtained in other studies employing the gravity model to examine intra-regional trade flows.

The coefficients of the GDP variables are positive and highly statistically significant, indicating that size of the economies play an important role in intra-MENA trade flows. However, the coefficient of the exporting country is relatively larger than that of the importing country. The coefficients of the per capita income variables are both negative, though they are expected to be positive. They are also statistically significant at the 1% level of significance. The distance variable also has the expected negative sign and is highly significant.

The real exchange rate variable has the expected positive sign and it is statistically significant at the 1 percent level of significance. This result is comparable to the findings of other studies on the impact of real exchange rate on exports. The Border dummy variable has the expected positive sign and is statistically significant. However, the border effect in the case of MENA trade flows is relatively low. Generally the border effect is estimated by the border dummy coefficient in a regression equation. Since

all variables in the model, except the dummy variables, are in logarithm, the border effect is calculated as the anti-log of the border dummy coefficient. In the estimated model, border dummy coefficient is 0.305 for the fixed-effects model. Therefore, the border effect is [exp(0.305) =] 1.36. This value indicates that countries sharing a common border in the MENA region, on average, tend to have 36% more trade compared with countries with no common borders. This result is similar to the finding of the study by Söderling (2005) on trade flows in MENA region. However, Helliwell (1996, 1998) and McCallum (1995) estimate the border effect to be around 20 in Canada-US trade, indicating that there will be 20 times more trade among states/provinces that share a common border.

The language dummy also has the expected positive sign. The common language variable has more effect on trade than the amount of trade when two countries share a common border. Two countries with a common language in MENA region tend to have 4.4 times more than two countries with different languages. Common language in the MENA region tends to facilitate trade by enhancing exporters' and importers' understanding of each others' cultures, commercial and legal systems. Similarly, colonial past also tends to have a positive and statistically significant effect on trade flows in MENA region. Two countries in the region with past common colony appear to have 3 times more trade than two countries with different colonial history.

The dummy variables for membership in a trade preference scheme give mixed results. Membership in GCC tends to have a positive effect on trade flows while memberships of *Maghreb* or *Mashreq* tend to have negative and significant effect on trade flows in the region. This finding is also consistent with the finding of the study by Al-Atrash and Yousef (2000) on intra-Arab trade.

Finally, the dummy variable representing whether or not the origin country is a petroleum exporting country also has a negative and statistically significant effect on intra-MENA trade flows. Petroleum exporting countries in the region tend to trade about 68% less with the countries in the region compared with non-petroleum exporting countries' trade with the countries in the region.

Investment Flows

The estimated results of the model analyzing intra-MENA investment flows are presented in the last two columns of Table 3. Unlike trade statistics, investment statistics are not available for the entire period under study. We were able to find investment data only for the period 1985-2006. Due to the limitation of data, we took the average level of foreign direct investment flows during this period. As a result, we only have 306 observations for the full sample. The model was estimated using the Ordinary Least Squares (OLS) estimation method. The adjusted R^2 value for the estimated model is 0.570, which is slightly higher than that of the trade model. The coefficients of the GDP variables are positive and highly statistically significant, indicating that size of the economies play an important role in intra-MENA investment flows. The coefficients of the per capita income variables are also both positive, though they were both negative in the trade model. However, only one of them is statistically significant at the 10% level of significance. The distance variable has the expected negative sign but it is significant only at the 10% level of significance.

The exports variable has the expected positive sign and it is statistically significant at the 1 percent level of significance. This result indicates that higher levels of exports tend to go with higher levels of foreign direct investment. The rate of inflation in the destination country has a positive sign and it is not statistically significant. The real exchange rate variable has the expected positive sign but it is statistically insignificant. The Border dummy variable also has the expected positive sign but it is statistically insignificant. The border effect in the case of MENA investment flows is relatively low. This value indicates that countries sharing a common border in the MENA region, on average, tend to have

17% more investment compared with countries with no common borders. The language dummy also has the expected positive sign though it is statistically insignificant. Finally, the dummy variables for membership in a preferential trade scheme give mixed and significant results. Membership in *Mashreq* tends to have a positive effect on investment flows while memberships of *Maghreb* or GCC tend to have negative and significant effect on investment flows in the region.

Table 3: Determinants of Trade and Investment Flows in Middle East and North Africa

	Intra-MENA Trade Flows		Intra-MENA Investment Flows	
Variable	**Fixed Effects**	**Random Effects**	**Variable**	**OLS Estimates**
Constant	16.948*	15.973*	*Constant*	-7.861
	(29.56)	(31.32)		(-1.48)
$\ln(GDP_i)$	1.479*	1.522*	$\ln(GDP_i)$	1.068*
	(44.15)	(52.23)		(4.34)
$\ln(GDP_j)$	1.151*	1.177*	$\ln(GDP_j)$	1.363*
	(49.21)	(58.74)		(7.10)
$\ln(PCGDP_i)$	-0.153*	-0.043	$\ln(PCGDP_i)$	0.116
	(-3.43)	(-1.26)		(0.30)
$\ln(PCGDP_j)$	-0.432*	-0.439*	$\ln(PCGDP_j)$	0.534**
	(-13.79)	(-12.07)		(2.26)
$\ln(Dist_{ij})$	-2.781*	-2.764*	$\ln(Dist_{ij})$	-0.861***
	(-44.07)	(-56.36)		(-1.87)
$\ln(RER_{ij})$	0.034*	0.041*	$\ln(Expo_{ij})$	0.355*
	(3.74)	(4.15)		(3.76)
Border	0.305*	0.240**	$\ln(INF_j)$	0.041
	(2.89)	(2.35)		(0.26)
Language	1.471*	1.439*	$\ln(RER_{ij})$	0.066
	(12.99)	(14.02)		(1.19)
Colony	1.080*	1.094*	*Border*	0.161
	(18.88)	(18.66)		(0.32)
Maghreb	-0.828*	-0.927*	*Language*	0.504
	(-6.15)	(-9.37)		(0.53)
GCC	0.110	0.308*	*Maghreb*	-1.307***
	(0.81)	(2.62)		(-1.73)
Mahreq	-0.803*	-0.747*	*GCC*	-1.776**
	(-4.82)	(-5.54)		(-2.19)
Petro	-0.961*	-1.210*	*Mahreq*	1.663***
	(-11.68)	(-18.46)		(1.73)
Adjusted R^2	0.515	0.386	*Adjusted* R^2	0.570
Observations	10,260	10,260	*Observations*	306
Hausman Test		196.74*		
Border effect	1.36	1.27	*Border effect*	1.17
language effect	4.35	4.22	*language effect*	1.66
Colony effect	2.95	2.99		

*This table shows the empirical results of the trade and investment models, as given in equations (1) and (2). The first three columns of the table show the empirical results of the trade model while the last two columns show the empirical results of the investment model. *, **, and *** indicate the significance at the 1%, 5%, and 10% level, respectively. Figures in parentheses are t values.*

SUMMARY AND CONCLUSIONS

This paper analyzes the intra-regional trade and investment flows in the Middle East and North Africa (MENA) region using an augmented gravity model applied to panel data. The study uses annual trade and investment data for the period 1980-2006. Employing the gravity model in the analysis of intra-regional trade and investment flows in MENA reveals some interesting observations concerning the Middle Eastern and North African trade and integration arrangements, such as the importance of language and culture as determinants of trade and investment. The findings of this study are, for the most part, are consistent with findings of previous studies on the Middle Eastern and North African trade and

investment flows. The coefficients of per capita GDP , population, and distance had expected signs and magnitudes in all models estimated. This confirms the results of other studies. The border effect is relatively smaller in the Middle Eastern and North African region, relative to the regions such as North America and Europe. For example, Helliwell (1996, 1998) and McCallum (1995) estimate the border effect to be around 20 in Canada-US trade, indicating that there will be 20 times more trade among states/provinces that share a common border while this study finds border effects to be only 1.4.

The flow of foreign direct investment to the MENA region continues to be very low, despite the more than two decades of fiscal reforms. The major policy implication of this paper is that MENA countries should be more open in order to attract foreign direct investment. The rapidly evolving economic and political climates in the region provide many opportunities for the investigation of the success of economic integration in the Middle East and North Africa.

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