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## Intra-Arab Trade: Is It Too Little?

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**Intra-Arab Trade: Is It Too Little?**

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**Abstract**

This paper estimates a gravity model to address the issue of whether intra-Arab trade is too little. Although gravity models have been extensively used to measure bilateral trade among countries, they have—to the best of our knowledge—never been used to measure intra-Arab trade. Our results suggest that intra-Arab trade and Arab trade with the rest of the world are lower than what would be predicted by the gravity equation, suggesting considerable scope for regional—as well as multilateral—integration. The results also suggest that intra-GCC and intra-Maghreb trade are relatively low while the Mashreq countries exhibit a higher level of intragroup trade.

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## I. INTRODUCTION

Intra-Arab trade has been a relatively small portion of total Arab trade, both in absolute terms and relative to other regions. Various reasons have been offered to explain why intra-Arab trade is relatively small. Some of these are policy related and, in theory, could be overcome—such as the high level of tariffs (and other) trade impediments in some of the Arab countries as well as political disputes—while others are not easily reversible—such as the lack of product complementarity and the differences in per capita income—which may encourage greater trade with outside of the region.

However, in order to assess whether intra-Arab trade is indeed too little, one would need to make a judgement on the “normal” or “expected” level of trade in the absence of policy related barriers to trade. While most observers believe that intra-Arab trade is below what it could be, there is currently a gap in the empirical literature on estimating the potential for bilateral trade between Arab countries.

In this paper, we use a gravity model to measure the “expected” level of trade in the region. The question that we seek to answer is the following: compared with a sample of other countries, do Arab countries trade too little with each other? While gravity models have been extensively used to measure bilateral trade among countries, they have—to the best of our knowledge—never been used to measure intra-Arab trade. The reasons for this shortcoming in the empirical literature on intra-Arab trade probably have to do with the demanding data requirements for estimating a gravity model and the dominant role of oil in trade which could bias the relative importance of intra-Arab trade as well as Arab trade with the rest of the world.

The rest of the paper is organized as follows: Section 2 reviews the pattern of intra-Arab trade and how it compares to other regions; Section 3 summarizes the factors that have often been cited in the literature to explain the low level of trade within the region; Section 4 briefly reviews the arguments for and against greater regional integration; Section 5 discusses the specification of the model; Section 6 provides our results; and Section 7 discusses policy implications of our results.

## II. PATTERN OF INTRA-ARAB TRADE

The Arab countries have many similarities, including common religion, culture, and language.<sup>2</sup> However, they also have several differences. They are diverse in terms of size, natural resource endowments, and standard of living. Some are primarily agricultural countries (e.g., Mauritania and Sudan), others are primarily energy producers (e.g., members of the Gulf Cooperation Council (GCC)), and others have an emerging industrial base (e.g., Egypt and Morocco). Total exports by the Arab countries were about US\$130 billion in

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<sup>2</sup> Arab countries are defined based on membership in the Arab League.

1998. Over one-half of total exports were to industrial countries and another one-third were to Asia. Imports totaled US\$170 billion, of which about two-thirds were from industrial countries and another 15 percent from Asia. Thus, industrial countries and Asia make up about 80 percent of the region's total trade (Table 1).

Table 1. Direction of Arab Trade, 1998

(In billions of U.S. dollars)

	Exports		Imports	
	Value	Share	Value	Share
Industrial countries	72.3	54.0	113.8	67.5
Developing countries	61.5	46.0	54.9	32.5
Africa	4.0	3.0	2.8	1.7
Asia	39.0	29.1	26.4	15.7
Central and Eastern Europe	4.5	3.4	9.6	5.7
Arab countries	11.0	8.2	11.8	7.0
Western Hemisphere	1.7	1.3	3.3	2.0
Other	1.3	1.0	1.0	0.6
Total	133.8	100.0	168.7	100.0

Source: The IMF Direction of Trade Statistics, 1998 Yearbook.

Despite numerous attempts to promote regional integration, intra-Arab trade remains a small portion of total Arab trade.<sup>3</sup> Intraregional exports comprise some 8 percent of total exports in 1998 (Table 2). Moreover, the level of intra-Arab trade compares unfavorably with other regions. For example, intraregional trade as a share of total trade is nearly 50 percent higher in the Andean Pact countries than in the Arab countries, and 7 times higher in the countries belonging to the European Union (Table 3). Interestingly, intraregional trade in countries both with similar factor endowments—such as the EU—and with different factor endowment—such as NAFTA—is higher than trade among the Arab countries.

<sup>3</sup> See El-Imam (1990) for a discussion of the numerous attempts to promote greater economic integration in the region.

Table 2. Indicators of Intra-Arab Trade, 1998

	Exports by: 1/				
	Arab countries	Maghreb countries	GCC countries	Selected Mashreq countries	Other countries
(Intraregional exports, in billions of U.S. dollars)					
Exports to: 1/					
Arab countries, of which:	12.0	1.6	7.5	2.6	0.3
Maghreb	2.0	1.0	0.6	0.4	0.0
GCC	6.8	0.1	5.3	1.2	0.2
Selected Mashreq	2.6	0.5	1.2	1.0	0.0
Other	0.6	0.0	0.4	0.0	0.1
(Intraregional exports, as percent of exports to world)					
Arab countries, of which:	8.2	4.9	7.7	22.7	12.5
Maghreb	1.4	3.1	0.6	3.3	0.0
GCC	4.6	0.4	5.5	10.2	7.5
Selected Mashreq	1.8	1.4	1.2	8.6	0.1
Other	0.4	0.0	0.4	0.6	4.9
(Intraregional exports, as percent of exports to Arab countries)					
Arab countries, of which:	100.0	100.0	100.0	100.0	100.0
Maghreb	16.7	63.2	7.7	14.7	0.1
GCC	56.6	7.6	71.4	44.9	59.9
Selected Mashreq	21.8	29.1	15.6	37.7	0.8
Other	4.9	0.1	5.2	2.7	39.3

Source: The IMF Direction of Trade Statistics, 1998 Yearbook.

1/ Country groupings are:

*Maghreb*: Algeria, Libya, Mauritania, Morocco, Tunisia.

*GCC*: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates.

*Selected Mashreq countries*: Egypt, Jordan, Lebanon, Syria, Sudan.

*Other countries*: Djibouti, Somalia, Yemen.

Table 3. Trends in Intraregional Trade, 1970–98

(As a share of total exports in the region)

	1970	1975	1980	1985	1990	1995	1998
All Arab countries	5.2	4.9	4.5	7.8	9.4	6.7	8.2
Andean Pact countries 1/	1.7	3.6	3.5	3.1	4.0	11.3	11.4
Australia & New Zealand	6.1	6.1	6.4	7.0	7.6	9.9	8.6
Southern Core countries 2/	11.4	11.1	14.3	6.7	10.6	21.6	25.5
East Asian Economies 3/	19.2	21.3	22.4	20.7	20.7	26.4	22.2
NAFTA 4/	36.0	34.6	33.6	43.9	41.4	46.2	51.0
European Union	59.5	57.7	60.8	59.2	65.9	62.4	56.8

Sources: The IMF Direction of Statistics Yearbook, various editions; and Fund staff calculations.

1/ Colombia, Ecuador, Peru, and Venezuela.

2/ Argentina, Brazil, Chile, Paraguay, and Uruguay.

3/ China, Indonesia, Japan, Korea, Malaysia, the Philippines, and Thailand. Data exclude exports by Taiwan Province of China.

4/ Canada, Mexico, and United States.

The share of intra-Arab trade has remained relatively constant over time while such trade among other regional grouping has increased, in some cases significantly. For example, while intra-Arab trade as a share of total trade increased marginally—from 5 to 8 percent—between 1970 and 1998, trade among the Andean Pact countries increased from 2 percent of total trade to 11 percent, trade among the Southern Core countries increased from 11 percent of total trade to 25 percent, and trade among members of NAFTA increased from 36 percent of total trade to over 50 percent.

The Arab countries could be divided into four subgroups based largely on geographical location and production base, namely: 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) (see Allum (1998)). About 60 percent of intraregional exports—which totaled

US\$12 billion in 1998—was to the GCC countries with another 25 percent to the Mashreq countries.

Importantly, the proportion of trade within the four subgroups is significantly higher than overall intra-Arab trade: nearly two-thirds of the Maghreb countries exports to the Arab countries is with other Maghreb countries; three-fourths of GCC exports to the Arab countries is with other GCC countries; and one-third of the Mashreq's trade with the Arab countries is with other Mashreq countries. Thus, most of the intra-Arab trade is also within the subregions, possibly suggesting that trade impediments are lower within the subgroups than for the region as a whole and that there are differences in comparative advantage—even within the subgroups.

### III. CONSTRAINTS TO INTRA-ARAB TRADE

Various reasons have been offered as to why intra-Arab trade is relatively low. These fall broadly under two headings, namely policy-induced factors that have hindered trade and more fundamental structural differences that tend to encourage more intraregional rather than intraregional trade.

#### A. Policy Induced Barriers to Trade

Trade policy has often been cited as the main policy induced barrier to intra-Arab trade (see, for example, El-Erian and Fischer (1996), and El-Naggar (1992)). While some countries in the area, specifically the GCC countries, maintain a relatively open trade regime, others have imposed significant barriers to trade. The average tariff for the region as a whole is higher than that of any other region, except Africa.<sup>4</sup> Moreover, nontariff barriers are extensive in many countries in the region. Indeed, a classification scheme designed by the Fund to measure progress in trade liberalization in Fund supported programs places the Arab region as a whole as one of the most heavily “restricted” trading regions, notwithstanding the open trade regimes of the GCC countries.<sup>5</sup> While the methodology used by the Fund in assessing trade restrictiveness has its shortcomings, there is little doubt that tariff and nontariff barriers are extensive in some of the countries in the region. Many countries employ a variety of measures, including restrictive licensing, bans, state trading/monopolies, restrictive foreign exchange allocation, and multiple exchange rates, to discourage imports.

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<sup>4</sup> The average tariff for Arab countries is estimated at about 17 percent. This compares to an average tariff of 20 percent for African countries, of 13 percent for Western Hemisphere countries, of 12 percent for Asia Pacific, of 10 percent for the Baltic, Russia, and other countries of the former Soviet Union (BRO), and of 9 percent for Europe (excluding BRO).

<sup>5</sup> For an explanation of the methodology used to measure trade restrictiveness across countries, see *Trade Liberalization in IMF Supported Programs* (IMF), 1998, in particular, Appendix I pp. 32–37.



In order to assess the level of trade restrictiveness, we have computed the trade openness ratio (TOR) controlling for the effect of an economy's size and its level of development given the "stylized fact" that larger countries have lower TOR and more developed ones generally have a higher TOR.<sup>6</sup> The results are revealing (Box 1).

Box 1. Regression Results of Trade Openness Ratio 1/ 2/

Variable	Coefficient	Std. Error	T-Statistics	Prob.
C	-1.426448	0.463291	-3.078949	0.0025
GDP	-0.279838	0.027722	-10.09435	0.0000
GDPPC	0.719820	0.060773	11.84446	0.0000
R-squared	0.554583	Mean dependent variable		3.605558
Adjusted R-squared	0.547693	S.D. dependent variable		0.932905
S.E. of regression	0.627462	Akaike info criterion		-0.909510
Sum squared residual	50.39470	Schwartz criterion		-0.843666
Log likelihood	-123.3080	F-statistic		79.68551

1/ All variables were logged and adjusted for purchasing power parity.

2/ The number of observations was 131 (countries).

Trade Openness Ratios for Selected Group of Arab Countries

	TOR 1/	TOR 2/	Deviation of Residual in Percentage of STD
Egypt	13.86	56.14	-1.63
Jordan	36.40	125.56	-1.37
Lebanon	91.68	82.21	0.22
Morocco	21.52	62.38	-1.16
Sudan	3.61	32.03	-3.40
Syria	13.66	23.88	-2.55
Tunisia	33.99	92.29	-1.25
Yemen	17.41	45.08	-1.30

1/ Calculated using GDP based on purchasing power parity exchange rate.

2/ Not adjusted for PPP.

<sup>6</sup> Specifically, we have done a regression analysis for 131 countries with TOR (the ratio of exports and imports to GDP) as dependent variable, GDP, and GDP per capita in order to compare the openness of some Arab countries with other economies, normalizing for the size and level of development. All variables were adjusted for purchasing power parity.

They suggest that many countries in the region, including Egypt, Jordan, Morocco, Sudan, Syria, Tunisia, and Yemen, have economies that are relatively closed compared to countries with similar size and level of development (as proxied by per capita income). That is, the residuals are negative beyond one standard deviation. Indeed, some of these economies are among the most closed in the world. The broadly restrictive stance of the region reflects in part the legacy of inward-oriented policies pursued in the 1960s and 1970s, when many countries in the region adopted development strategies aimed at import substitution and self-sufficiency goals that usually involved the imposition of extensive barriers to trade.

Not unrelated, differences in overall economic strategy and policy have also been cited as reasons why intra-Arab trade is relatively small (Allum (1998)). In particular, while some countries in the region pursue market-oriented policies and have established a strong record of economic adjustment and reform (e.g., Jordan, Morocco, and Tunisia), other countries maintain a high degree of government involvement (e.g., Libya and Syria). These contrasting strategies tend to discourage intraregional trade.

Undoubtedly political factors, including economic sanctions, have also impacted bilateral trade in the region. For example, prior to the UN sanctions, Saudi Arabia's exports to Iraq exceeded US\$150 million (in 1989). Since then, exports have been negligible. Similarly, political differences between Algeria and Morocco reduced trade between the two neighbors from US\$140 million in 1992 to less than US\$100 million in 1995–96.

## **B. More Fundamental Barriers to Trade**

The lack of product complementarity has often been cited as an important factor hindering intra-Arab trade (see Fischer (1993)). The relative similarity of resource endowments among many countries in the region (e.g., oil, phosphates, and agricultural products) argues against intraregional trade since the region's comparative advantage is broadly in the same products. At the same time, the lack of a diversified export base—particularly in manufactures—limits the opportunities for trade based on product differentiation. Thus, intra-Arab trade does not fit well into either of the two main models of international trade: the Heckscher-Ohlin model, which predicts trade based on different factor endowments, and the intraindustry model, which predicts trade based on product differentiation.

However, as noted above, most intra-Arab trade is within subregions where, presumably, the lack of product complementarity is greatest. Nearly 75 percent of the GCC's trade in the Arab countries is with other GCC members. Similarly, 65 percent of the Maghreb's trade with Arab countries is with other Maghreb countries. Havrylyshyn (1997) calculates a "complementarity index" that shows that product complementarity in the region is broadly similar to that of other regional groupings (MERCOSUR and APEC), suggesting much greater scope for regional integration among the Arab countries.

High trade costs, including transport and communications, have also been cited as a factor constraining intra-Arab trade. The distance and difficult geographic terrain between some Arab countries make trade links difficult. The Maghreb countries, for example, are

geographically closer to Europe than to other Arab countries, making trade links easier with Europe.

Finally, differences in per capita income have also been cited as a factor constraining intra-Arab trade (Fischer (1993)). Richer countries prefer to import high quality goods, which are more likely to be produced by industrial nations. While per capita income (or the level of development) is not, *per se*, a barrier to trade—otherwise, trade between Mexico and the U.S. would be difficult to explain—the homogeneity of the export base among many Arab countries coupled with the disparity in income have generally been cited as an impediment to intraregional trade.

#### IV. ACHIEVING FULL POTENTIAL BY CLOSER REGIONAL INTEGRATION

Before analyzing whether intraregional and bilateral trade is below expected levels, it may be useful to ask whether too little trade among the countries in the area matters (that is, is it inefficient if actual trade is below expected trade). After all, trade theory generally advocates free trade in a multilateral context and not in a regional one.

Traditionally, economists have generally been suspicious of regional trading blocs on the grounds that they are inconsistent with a multilateral trade system given their discriminatory nature and potential inefficiency. The literature on regional trade arrangements initially focused on their trade creation and trade diversion effects (see Viner (1950) and Bhagwati (1993)). If trade creation outweighed trade diversion, it was said that the regional arrangement resulted in greater efficiency. It was believed that the more similar countries are—in terms of factor endowments and level of development—the more likely that the regional bloc would be welfare enhancing. Most of the empirical work in this area concluded that—with the exception of the European Community—trade diversion was dominant in most preferential agreements, particularly among developing countries.

More recently, there has been a renewed interest in regional trading arrangements. Two important factors have played a role in this. First, new efforts at regional integration have been initiated. The most prominent one is the creation of the North American Free Trade Agreement (NAFTA) between Canada, Mexico, and the United States, and the discussion of extending it southwards. Bhagwati (1993) has argued that the reorientation of the United States toward achieving free trade within blocs rather than in a multilateral context has been an important factor in the renewed interest in regional integration. The earlier creation of other regional blocs (i.e., ASEAN and MERCOSUR) have also contributed to this.

Moreover, recent analysis has suggested that the trade diversion effects of regional blocs may be less than previously believed. In this regard, the trading blocs of the 1950s and 1960s were initiated in the context of an overall strategy that relied on import substitution and, thus, were largely seen as a substitute for multilateral trade. The more recent trading blocs have been established by countries that are pursuing outward oriented policies, coming on the heels of major reform, and have largely been seen as complementing rather than

substituting for free trade in a multilateral framework. Moreover, intraindustry trade within the bloc is now believed to be greater, minimizing trade diversion.

Many analysts believe that greater integration among the Arab countries would bring important benefits as long as it is done in a way that is compatible with multilateral liberalization. These benefits include:

- *Greater efficiency.* Innovation in a Schumpeterian framework tends to be fostered by a large market size and economies of scale.
- *Higher levels of investment.* Integration promotes a deepening of capital markets and fosters foreign direct investment. A major weakness in the equity markets of several Middle Eastern economies stems from the supply side. One way to increase the supply of equity capital and deepen markets is to accelerate the pace of integrating national markets into a larger regional market.
- *Greater product variety* which would enhance intraindustry trade. It would also weaken monopoly power of local producers.

At the same time, however, the potential challenges facing the integration process should not be underestimated, particularly given the differences in economic strategies and the lack of product complementarity (see El-Erian and Fischer (1996) for a fuller exposition of the potential gains— and limits—of intraregional trade).

## V. SPECIFICATION OF THE GRAVITY MODEL

We employ a standard gravity model to examine our central hypothesis of whether intra-Arab trade is too small. The model has been widely used in the empirical literature to explain bilateral trade. For example, Havrylyshyn and Pritchett (1991) estimate a gravity model of bilateral trade for between Eastern and Western Europe; Coe and Hoffmaister (1998) look into the pattern of North-South trade, and whether Africa's bilateral trade with industrial countries is "unusual"; and Bayoumi and Eichengreen (1995) examine the effects on trading patterns of the EC and EFTA. However, its use in the literature on intra-Arab trade has largely been nonexistent.<sup>7</sup> To date, most authors have utilized crude statistical techniques in examining the intensity and bias of Arab trade flows.

While the model has done quite well in describing bilateral trade patterns, it has also been subject to criticism for its lack of theoretical foundation. However, as Helliwell (1998) observes, the model in recent years has undergone a transformation from being "a theoretical orphan" to a model that can be derived from standard trade theories. Deardorff (1995) shows the consistency of the gravity model with the Heckscher-Ohlin theory of trade (both with

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<sup>7</sup> We are familiar with only one such study, namely, that of Ekholm, Torstensson, and Torstensson (1995).

frictionless and impeded trade) and Helpman (1984) and Bergstrand (1985) derive the model from theories of trade based on differentiated products.

The model predicts that trade between two countries depends on their size, each country's population, and the distance between them. That is:

$$T_{ij} = \alpha_0 Y_i^{\alpha_1} Y_j^{\alpha_2} N_i^{\alpha_3} N_j^{\alpha_4} Dis_{ij}^{\alpha_5} \quad (1)$$

Where  $T_{ij}$  is the value of trade (exports, imports or both) between countries  $i$  and  $j$ ;  $Y_i$  and  $Y_j$  are the levels of GDP in countries  $i$  and  $j$ , respectively;  $N_i$  and  $N_j$  are each country's per capita GDP; and  $Dis_{ij}$  is the geographic distance between the two countries. We expect trade to be positively affected by economic size ( $\alpha_1, \alpha_2 \geq 0$ ) and negatively related to distance ( $\alpha_5 \leq 0$ ). The coefficients on per capita income ( $\alpha_3, \alpha_4$ ) could be positive or negative.<sup>8</sup> Taking logs and expressing the variables in lowercase letters, equation (1) becomes:

$$t_{ij} = \alpha_0 + \alpha_1 y_i + \alpha_2 y_j + \alpha_3 n_i + \alpha_4 n_j + \alpha_5 dis_{ij} \quad (2)$$

We augment the simple model with variables that capture the effect of trade policies, cultural factors, and regional trading arrangement. The empirical results presented below are based on the following specification which is similar to the one used by Foroutan and Pritchett (1993):

$$t_{ij} = \alpha_0 + \alpha_1 y_i + \alpha_2 y_j + \alpha_3 n_i + \alpha_4 n_j + \alpha_5 dis_{ij} + \sum_1^n \beta_i Region_{ij} + \sum_i^n \chi_i Language_{ij} + \delta_1 Border_{ij} + \delta_2 Open_i \quad (3)$$

Where:

- *Region* is an indicator of regional trade arrangements (ASEAN, EU, AMU, GCC);
- *Language* is a proxy for cultural similarity (English, French);
- *Border* is another indicator of geographical proximity and cultural similarity between a pair of countries; and
- *Open* is the indicator of trade restrictiveness discussed above that takes on the value 1 if the country is considered open (see the appendix for a full list of variables).

Our data set consists of 18 Arab countries and 43 other countries that represent over 90 percent of the exports and imports of the Arab world. The time period chosen is 1995–97

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<sup>8</sup> The impact of per capita income on trade is not straightforward. On the one hand, the Linder hypothesis says that intraindustry trade increases when countries have similar per capita income. On the other hand, the comparative advantage theory—which is premised on different factor endowments—predicts a decline in intraindustry trade when countries have similar income.

for which we calculate the average level for each variable. Distance is measured as the direct distance between two capitals.<sup>9</sup>

The model is estimated with the Arab countries in the sample. Following Foroutan and Pritchett (1993), we use dummy variables to statistically test our main hypothesis on intra-Arab trade. Subsequently, we use the model to test trade within the subregions. Thus, we introduce three dummy variables in equation (3):

Arab<sub>1</sub> = 1 if the reporting country is an Arab country;  
Arab<sub>2</sub> = 1 if the reporting country is an oil-exporting Arab country; and  
Arab<sub>3</sub> = 1 if the reporting and partner countries are in the Arab group.

The first variable captures any patterns that are applicable to the trade of Arab countries with the entire sample and the second captures patterns specific to the oil-exporting Arab countries—both variables measure the extent of trade integration between Arab countries and the rest of the world compared to the predictions of the gravity model. The third variable is the one most relevant to the question posed in this paper since it focuses on bilateral Arab trade and compares the observed pattern with what the gravity model suggests based on the whole sample. Thus, our model takes the following form:

$$t_{ij} = \alpha_0 + \alpha_1 y_i + \alpha_2 y_j + \alpha_3 n_i + \alpha_4 n_j + \alpha_5 dis_{ij} + \sum_1^n \beta_i Region_{ij} + \sum_i^n \chi_i Language_{ij} + \delta_1 Border_{ij} + \delta_2 Open_i + \sum_i^3 \phi_i Arab_{ij} \quad (4)$$

Two problems remain to be addressed; one data related and the other econometric. First, our data on bilateral trade includes trade in oil, and many of the Arab countries in our sample are oil-producing countries. Oil may bias the results both by exaggerating the level of the region's trade with the rest of the world and also by underestimating the potential for intra-Arab trade given the similar economic structure of the oil economies. Ideally, trade in oil should not be included or, at least, the results when oil data are included should be contrasted with those obtained when it is not.<sup>10</sup> However, due to data shortcomings and

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<sup>9</sup> We have not experimented with other measures of distance. The measure used would tend to exaggerate the distance between countries the larger their size as in the case of a number of Arab countries. We expect the use of the border variable to lessen the bias against large countries that is created by the distance variable.

<sup>10</sup> A priori, most trade theories do not distinguish between trade in raw materials and finished goods, supporting the case for including trade in oil. However, most oil sectors in oil-exporting countries, especially those in the Arab countries, represent enclave economies that do not capture the overall comparative advantage in these economies. On a more technical note, the reporting of trade in oil is often incomplete as it does not take into account re-exports or the final destination of crude that is sold in world markets.

inconsistencies, it was not possible to exclude the data of oil trade from all the countries in the sample. Accordingly, while the gravity model below is estimated using exports, imports, and total trade as the dependent variables, only the imports equation is likely to provide insight on intra-Arab trade given the bias resulting from oil exports.<sup>11</sup>

The econometric problem derives from the fact that since the value of the imports, exports, and trade is censored at zero, ordinary least squares (OLS) produces inconsistent estimates. With a few exceptions, the problem of zero observations has generally been ignored in the empirical literature. Since the value of almost 15 percent of the observations in our data set, including 20 percent in the sample of Arab countries, is at zero, the estimates produced by OLS would be biased towards zero by roughly 25 percent.<sup>12</sup> In fact, for our data set, the maximum likelihood (Tobit) estimates tended to be higher than those produced by OLS. As such, we shall report the estimates of the gravity coefficients generated by the Tobit procedure to correct for the censoring.

## VI. EMPIRICAL RESULTS

Table 4 presents the empirical results of estimating of equation (4) for imports, exports and total trade. The model's overall performance is quite good and compares favorably with other studies.<sup>13</sup> As expected, trade (as well as imports and exports separately) increases with both domestic and foreign GDP and with per capita income, and falls with distance; all variables are statistically significant at the 5 percent level.<sup>14</sup>

Moreover, countries with a common border tend to trade more with each other, consistent with the observation that intra-trade within the Arab subgroups is higher than overall intra-Arab trade. Cultural attributes, as proxied by language, yield mixed results: on the one hand, English-speaking countries tend to trade more with each other than would be expected; on the other hand, the results for French-speaking countries are not statistically significant, probably reflecting the composition of the sample used in the model. The ASEAN preference arrangement shows large positive effects but the results for the EU arrangement suggest that it decreased trade. We do not have a good explanation to the counter-intuitive results for the EU arrangement. Perhaps, the role of factor mobility or the

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<sup>11</sup> Kleiman (1992) also used imports as the dependent variable in his study of trade in the Middle East.

<sup>12</sup> This assumes, as has been shown by Greene (1981), that OLS bias is linear in the proportion of observations not at zero.

<sup>13</sup> See, for example, Foroutan and Pritchett (1992) and Frankel and Wei (1996).

<sup>14</sup> The main exception is GDP per capita of the trading partner in the export equation which gives insignificant results.

time period chosen (1995–97) impacts the results. The trade restrictiveness index exhibits the expected effect although its statistical significance varies across the three equations.

Table 4. Maximum Likelihood Estimates of the Gravity Model  
Using the Tobit Procedure  
(Arab countries as one group)

Dependent Variable	Imports		Exports		Trade	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
<b>Arab Dummy Variables</b>						
Arab1	0.35	1.41	-0.82	-3.17 ***	0.19	0.83
Arab2	-1.17	-5.62 ***	-1.12	-4.83 ***	-0.88	-4.62 ***
Arab3	-0.65	-2.34 ***	-0.26	-0.84	-0.42	-1.78 **
<b>Proximity</b>						
Distance	-1.01	-12.0 ***	-1.34	-13.9 ***	-1.01	-13.1 ***
Border	1.29	3.52 ***	0.611	2.5 ***	0.97	2.87 ***
<b>Reporter</b>						
GDP <sup>i</sup>	0.98	18.4 ***	1.08	20.14 ***	0.95	19.5 ***
GDPPC <sup>i</sup>	0.16	2.69 ***	0.32	5.12 ***	0.21	3.77 ***
<b>Partner</b>						
GDP <sup>j</sup>	1.25	25.4 ***	1.29	23.1 ***	1.14	25.3 ***
GDPPC <sup>j</sup>	0.16	3.27 ***	-0.02	-0.4	0.11	2.39 ***
<b>Preferential</b>						
ASEAN	1.56	1.94 **	2.02	2.16 ***	1.84	2.47 ***
EU	-0.83	-2.53 ***	-0.89	-2.4 ***	-0.61	-2.05 **
<b>Language</b>						
English	1.46	5.53 ***	1.63	5.43 ***	1.49	6.1 ***
French	0.42	0.88	0.34	0.63	0.24	0.54
<b>Openness</b>						
Reporting Country	0.24	1.53 *	...	...	0.28	1.91 **
Partner Country	...	...	-0.16	-0.96	-0.18	-1.37 *
Number of countries	61		61		61	
Uncensored observations	3718		3718		3718	
S.E.	2.53		2.53		2.53	
Log-likelihood	-2.35		-2.45		-2.29	
R <sup>2</sup>	61.4%		62.3%		62.7%	

Note: \*\*\*, \*\* and \* denote significance at the 5 percent, 10 percent, and 15 percent level, respectively.

With regards to Arab trade, the empirical estimates in Table 4 yield the following results when the entire group of Arab countries are considered:

- Arab exports to the rest of the world are lower than what is predicted by the gravity model.



- In the case of the oil-exporting Arab countries, their exports and imports are noticeably lower than what is predicted by the model.
- Intra-Arab trade is lower than what the model predicts based on both the imports and total trade equation.
- The GCC and AMU trading arrangements have not promoted greater integration among member countries: for each arrangement, members countries trade less amongst themselves than what the model predicts.

In all, these results suggest that considerable scope for trade exist both for Arab trade with the rest of the world and within the region itself. To the extent that regional trading arrangements promote trade between member countries, the existence of the GCC and AMU is justified by the low level of trade within each subgroup.

We pursued these findings on Arab trade patterns further by reestimating the model after disaggregating the Arab countries into three subgroups: GCC (Bahrain, Kuwait, Qatar, Oman, Saudi Arabia, and United Arab Emirates), Maghreb (Algeria, Libya, Mauritania, Morocco, and Tunisia), and Mashreq (Egypt, Jordan, Lebanon, Sudan and Syria). In doing so, we are in essence treating each subgroup as a separate region for which we examine the extent of trade integration.<sup>15</sup> The empirical results are summarized in Table 5. Again, the standard coefficients of the gravity model have the expected sign and are statistically significant. The empirical results support the following findings:

- With the exception of the Mashreq, other subgroups trade less with the outside world than what the model predicts. For the Mashreq, whether we use exports or imports, countries trade considerably more with the outside world; and
- With the exception of the Mashreq, other subgroups exhibit lower levels of intragroup trade; for the Mashreq, the opposite is true with member countries having more intragroup trade.

Thus, the empirical results based on a more disaggregated examination of the Arab countries would seem to suggest that the lower level of intra-Arab trade observed above is being driven by the GCC and Maghreb countries.<sup>16</sup> Notwithstanding the absence of a regional trading arrangement linking the group, the Mashreq countries appear to have achieved considerably higher levels of regional integration in addition to being more integrated with the global economy than the other two subgroups.<sup>17</sup>

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<sup>15</sup> Technically speaking, we replace the dummy variables for the entire group of Arab countries with ones for each subgroup and introduce intragroup dummy variables.

<sup>16</sup> Although not reported, the results for the Djibouti and Yemen when treated as a subgroup are similar to those for the GCC and AMU.

<sup>17</sup> Statistically, we are able to reject the hypothesis that the coefficients pertaining to the Mashreq countries are equal to those for the AMU and GCC countries. Thus, Mashreq trade  
(continued...)

Table 5. Maximum Likelihood Estimates of the Gravity Model  
Using the Tobit Procedure  
(Arab countries disaggregated into three groups)

	Imports		Exports		Trade	
	Coefficient statistic		Coefficient statistic		Coefficient statistic	
<b>Arab Dummy Variables 1/</b>						
AMU	-1.79	-4.66 ***	-1.6	-10.14 ***	-1.48	-4.39 ***
GCC	-0.84	-2.41 ***	-0.26	-0.66	-0.17	-1.55 *
Mash	0.79	2.04 **	1.1	2.83 ***	0.54	1.86 **
<b>Proximity</b>						
Distance	-1.18	-8.19 ***	-1.61	-10.13 ***	-1.14	-9.1 ***
Border	1.34	2.16 ***	0.51	1.98 **	0.97	2.87 ***
<b>Reporter</b>						
GDP <sup>i</sup>	1.12	14.33 ***	1.52	18.4 ***	1.57	17.86 ***
GDPPC <sup>i</sup>	0.129	1.23	0.31	2.78 ***	-0.05	-0.61 **
<b>Partner</b>						
GDP <sup>j</sup>	1.55	19.5 ***	1.57	17.86 ***	1.14	25.3 ***
GDPPC <sup>j</sup>	0.2	2.47 ***	-0.05	-0.61	0.11	2.39 ***
<b>Preferential</b>						
ASEAN	1.46	1.99 **	2.37	1.58 **	1.84	2.47 ***
EU	-1.34	-2.42 ***	-0.97	-1.61 **	-0.61	-2.05 **
GCC	-4.3	-3.5 ***	-0.25	-0.66	-0.57	-0.84
AMU	-0.27	-3.11 ***	-1.43	-3.62 ***	2.05	2.42 ***
Mash	1.63	2.34 ***				
<b>Language</b>						
English	1.76	3.91 ***	2.43	4.98 ***	1.49	6.1 ***
French	0.76	1.64 *	0.54	1.12	0.24	0.54
<b>Openness</b>						
Reporting Country	0.03	0.12	...	...	-0.04	-0.02
Partner Country	...	...	-0.33	-1.24 *	-0.39	-1.8 **
Number of countries	61		61		61	
Uncensored observations	3718		3718		3718	
S.E.	4.2		4.6		3.79	
Log-likelihood	-2.86		-2.9		-2.7	
R <sup>2</sup>	63.8%		64.1%		65.1%	

Note: \*\*\*, \*\* and \* denote significance at the 5 percent, 10 percent, and 15 percent level, respectively.

1/ The regressions presented in this table do not impose any common dummy variables on the Arab countries as a whole.

with the rest of the world and within the Mashreq group appears to exhibit a different pattern from that of the rest of the Arab world.

## VII. CONCLUDING THOUGHTS AND POLICY IMPLICATIONS

The analysis presented in this paper supports the hypothesis that intra-Arab imports are too low. It also suggests that the Arab countries as a whole trade less with the outside world than what would be expected. In quantitative terms, the model suggests that overall intra-Arab trade should be about 10–15 percent higher than what is observed.<sup>18</sup> This raises a question as to why intra-Arab trade is too small and why the Arab world is less integrated with the global economy—is it due to policy induced impediments to trade or to more fundamental structural reasons that are not easily reversed? We have not examined in any detail the relative importance of these explanations. In particular, while our model includes a dummy variable that measures trade restrictiveness (and that is statistically significant), the variable is not region-specific—it does not tell us whether the trade impediments faced by Arab countries in their dealings with other Arab countries are greater than those faced with the rest of the world. This is an area that is ripe for future research.

Nevertheless, our results strengthen the case for further trade liberalization in the Arab world, possibly in the context of greater regional integration. Greater regional integration, in a way that is compatible with multilateral liberalization, could contribute to growth not only by increasing trade and allowing regional producers to benefit from economies of scale, but also by encouraging foreign direct investment and the deepening of capital markets. In this regard, the recent initiatives in regional integration are to be welcomed: in 1998, 14 Arab countries established the Pan-Arab Free Trade Agreement (PAFTA) under which tariffs will be reduced for participating members by 10 percent annually (establishing free trade from 2007).<sup>19</sup> However, our results also suggest that considerable room exists for the growth of Arab trade with the rest of the world. As such, the recently launched cooperation initiatives in the Southern Mediterranean basin have the potential of achieving greater trade integration between the Arab countries and Europe.

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<sup>18</sup> Based on the estimated equation for the level of trade in Table 5.

<sup>19</sup> Moreover, various bilateral free trade agreements have recently been concluded among countries in the region.

## REFERENCES

- Allum, Peter, 1998, "Inter-Arab Trade: Constraints and Prospects" Paper for the Sectoral Meeting on Trade and Development between the League of Arab States and the United Nations (Cairo, June 8–11, 1998).
- Balassa, Bela, and Luc Bauwens, 1988, *Changing Trade Patterns in Manufactured Goods: An Econometric Investigation*: Amsterdam: Elsevier Publishers.
- Baghwati, Jagdish, 1993, "Regionalism and Multilateralism: An Overview," in *New Dimensions in Regional Integration*, edited by Jaime de Melo and Arvind Panagariya (Cambridge: Cambridge University Press).
- Bayoumi, Tamim, and Barry Eichengreen, 1995, "Is Regionalism Simply a Diversion? Evidence from the Evolution of the EC and EFATA," CEPR Discussion Paper No. 1294 (London: Centre for Economic Policy Research).
- Bergstrand, Jeffrey, 1985, "The Gravity Equation in International Trade: Some Microeconomic Foundations and Empirical Evidence", *Review of Economics and Statistics*, vol 67 (August), pp. 474–81.
- Coe, David and Alexander Hoffmaister, 1998, "North-South Trade: Is Africa Unusual?" IMF Working Paper 98/94 (Washington: International Monetary Fund), forthcoming in *Journal of African Economies*.
- Deardorff, Alan, 1995, "Determinants of Bilateral Trade: Does Gravity Work in a Neoclassical World?" NBER Working Paper No. 5377 (Cambridge, Massachusetts: National Bureau of Economic Research).
- El-Erian, Mohamed, and Stanley Fischer, 1996, "Is MENA a Region? The Scope for Regional Integration," IMF Working Paper 96/30 (Washington: International Monetary Fund).
- El-Imam, M., 1990, "Arab Economic Integration Between Two Decades," *Al Mustaqbal Al Arabi*, No. 138 (August).
- El-Naggar, Said (ed.), 1992, *Foreign and Intratrade Policies of the Arab Countries* (Washington: International Monetary Fund).
- Fischer, Stanley, 1993, "Prospects for Regional Integration in the Middle East," in *New Dimensions in Regional Integration*, edited by Jaime de Melo and Arvind Panagariya (Cambridge: Cambridge University Press).
- Foroutan, Faezeh, and Lant Pritchett, 1993, "Intra-Sub-Saharan African Trade: Is it too Little?", *Journal of African Economies*, vol. 2 (May) pp. 74–105.

- Greene, W., 1981, "On the Asymptotic Bias of OLS Estimator of the Tobit Model", *Econometrica*, Vol. 49, No. 2, pp. 505–73.
- Havrylyshyn, Oleh and Lant Pritchett, 1991, "European Trade Patterns After the Transition," Washington: World Bank Working Papers on Trade Policy, WPS 748.
- Havrylyshyn, Oleh, 1997, "A Global Integration Strategy for the Mediterranean Countries" (Washington: International Monetary Fund).
- Havrylyshyn, Oleh, and Hassan Al-Atrash, 1998, "Opening Up and Geographic Diversification of Trade in Transition Economies," IMF Working Paper 98/22 (Washington: International Monetary Fund).
- Havrylyshyn, Oleh and Lant Pritchett, 1991, "European Trade Patterns After the Transition," Washington: World Bank Working Papers on Trade Policy, WPS 748.
- Helliwell, John, 1998, *How Much Do National Borders Matter?* (Washington: Brookings Institute).
- Helpman, Elhanan, 1984, "Increasing Returns, Imperfect Markets, and Trade Theory," in *Handbook of International Economics*, vol. 1, ed. By Ronald Jones and Peter Kenen (Amsterdam: North-Holland).
- Kleinman, Ephraim, 1992, "Geography, Culture and Religion, and the Middle East Trade Patterns, the Hebrew University of Jerusalem, Working Paper No. 262.
- Pritchett, Lant, 1991, "Measuring Outward Orientation: Can it be Done?" World Bank Pre-Working Paper, WPS 566.
- Sharer, Robert and IMF Staff, 1998, *Trade Liberalization in Fund Supported Programs*, World Economic and Financial Surveys (Washington: International Monetary Fund).
- Viner, Jacob, 1950, *The Customs Union Issue* (New York: Carnegie Endowment for International Peace).