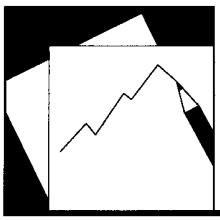
WP/10/31



IMF Working Paper

Constraints on Trade in the MENA Region

Rina Bhattacharya and Hirut Wolde

INTERNATIONAL MONETARY FUND

 WP/10/31

IMF Working Paper

Middle East and Central Asia Department

Constraints on Trade in the MENA Region

Prepared by Rina Bhattacharya and Hirut Wolde[1]

Authorized for distribution by Joël Toujas-Bernaté

February 2010

Abstract

In this paper we estimate gravity models to see whether trade volumes of countries in the MENA region are significantly lower than what would be expected given their economic, cultural and geographical characteristics. Our empirical results show that the variables used in standard gravity models cannot explain a significant part of MENA's trade performance, particularly on exports. We then go on to 'augment' the standard gravity model with relevant variables from the World Bank's Business Enterprise surveys. Our results further show that these variables, and in particular transport constraints and inefficiencies in customs clearance processes, are important in explaining the MENA region's underperformance in trade.

JEL Classification Numbers: C1, F1, O4

Keywords: Trade; Exports; Imports; Gravity Model; Transport; Customs Regulations

Author's E-Mail Address: rbhattacharya@imf.org; hwolde@imf.org

[1] The authors are with the Middle East and Central Asia Department of the IMF. They would like to thank Paul Cashin, Harald Finger, Oussama Kanaan, Sam Ouliaris, Jesmin Rahman, Ratna Sahay, Khaled Sakr, Abdelhak Senhadji, Natalia Tamirisa, Alun Thomas and Joël Toujas-Bernaté for useful comments and advice.

Contents Page

I. INTRODUCTION

1. Conventional wisdom has it that prevailing volumes of trade of countries in the Middle East and North Africa (MENA) region are much below their potential. This issue is important given the substantial academic literature, following from Sachs and Warner (1995), arguing that economies that are more open to trade enjoy higher long-term rates of economic growth. Iqbal and Nabli (2007) for example argue that even a casual observer of international development trends cannot fail to observe that the MENA region "lagged behind most other regions of the world in both development outcomes (such as growth and employment) and international integration (such as trade and foreign investment)" over the last two decades or so. They go on to argue that the region's weak development performance originates in part from its inability to integrate fully with the rest of the world in terms of exploiting opportunities for trade and for attracting foreign direct investment.

2. In this paper, we estimate gravity models separately for exports and imports to see whether trade volumes of countries in the MENA region are indeed significantly lower than what would be expected given their economic, cultural, and geographical characteristics. The empirical results presented in this paper show that this is indeed the case: the variables used in standard gravity models cannot explain a significant part of MENA's trade performance, particularly on exports. We go on to augment the standard gravity model with a number of relevant variables from the World Bank's Business Enterprise surveys. These surveys question business managers in over 100 countries on the main obstacles facing their enterprises. Our empirical results from the 'augmented' gravity model show that the survey variables are highly significant in explaining the MENA region's underperformance in trade.

3. To the best of our knowledge, the Business Enterprise survey dataset has not been used in any empirical analysis looking at the main constraints on trade in the MENA region. However, a couple of important caveats need to be borne in mind in exploiting this rich dataset. The first is common to all surveys, and is that it is difficult to judge how representative the survey results are of the population as a whole. Moreover, this survey dataset is about perceptions, and these may differ in important respects from reality in some cases. The second caveat has to do with the international dimension of the survey dataset: the openness of respondents to answering the questions may vary considerably from country to country. For example, apart from cultural differences, business managers in autocratic or closed regimes may be more reluctant to express openly their views compared with business managers operating in more democratic regimes. Nevertheless, it is still a useful exercise to exploit this database and examine the policy implications of the perceptions of local business managers on the key constraints affecting their business operations.

4. The rest of the paper is organized as follows. Section II reviews the empirical evidence and literature on trade in the MENA region. Section III discusses the key constraints on trade that have been put forward in the literature to explain why trade volumes in the MENA region are below their potential. Section IV presents the broad findings on the various constraints to international trade facing businesses highlighted by the Business Enterprise surveys. Section V explains the specification of the gravity model that is used to examine the trade performance of the MENA region. Section VI presents the empirical results, including estimates of the impact on trade volumes of the survey constraints. Section VII discusses the conclusions and policy implications of our results.

II. Does the MENA Region Trade Too Little?

5. Most of the empirical literature in the MENA region suggests that the region trades significantly less than would be expected on the basis of its economic, cultural, and geographical characteristics. Indeed, Figures 1-6 show that non-oil exports in particular are significantly lower as a share of GDP compared to all other non-advanced regions of the world. MENA imports are also lower as a share of GDP compared to the same regions, with the exception of sub-Saharan Africa.

6. Al-Atrash and Yousef (2000) estimate a gravity model to address the issue of the potential for significantly expanding intra-Arab trade. The results presented in their paper 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. More specifically, the GCC countries (Bahrain, Kuwait, Qatar, Oman, Saudi Arabia, and the United Arab Emirates) and Maghreb countries (Algeria, Libya, Mauritania, Morocco, and Tunisia) trade less with the outside world than what their estimated gravity models predict. However, Mashreq countries (Egypt, Jordan, Lebanon, Syria, and Sudan) trade considerably more with the outside world than predicted by their model. Their results also suggest that intra-GCC and intra-Maghreb trade are relatively low, while the Mashreq countries exhibit a higher level of intra-group trade. Overall their empirical estimates suggest that intra-Arab trade should be about 10-15 percent higher than what is observed.

7. Bannister and Erickson von Allmen (2001) also use a gravity model to examine the trade potential of the West Bank and Gaza. They conclude from their results that the Palestinian economy does not overtrade with Israel, but does significantly undertrade with the rest of the world. To put it somewhat differently, they find no significant evidence that trade between Israel and the West Bank and Gaza is higher than what might be expected given their proximity, GDP, population, and other relevant variables. On the other hand, Palestinian exports to the rest of the world are almost 80 percent below what would be expected from a country with the characteristics of the Palestinian economy. The policy implication of these results is that there is significant potential to increase Palestinian trade with the rest of the world without substantially reducing trade between Palestine and Israel.

8. These results are reinforced by the more recent empirical findings reported in Iqbal and Nabli (2007). They argue that the non-oil exports of MENA countries are, on average, one-third of the levels that would be expected on the basis of their per capita incomes, resource endowments, and population sizes. Only Jordan and Morocco have non-oil export levels close to what would be predicted and the world's three biggest underperformers in non-oil exports are MENA countries (Algeria, Iran, and Egypt). The authors also find that per capita manufacturing imports in the MENA region are about half of what would be predicted on the basis of their per capita incomes and population sizes. It is interesting to note that the conclusions of this study regarding Egypt contradict the findings of Al-Atrash and Yousef (2000) mentioned earlier—a reflection of differences in methodology and of the time period covered.

Figure 1. Exports of Goods and Services
(In Percent of GDP)

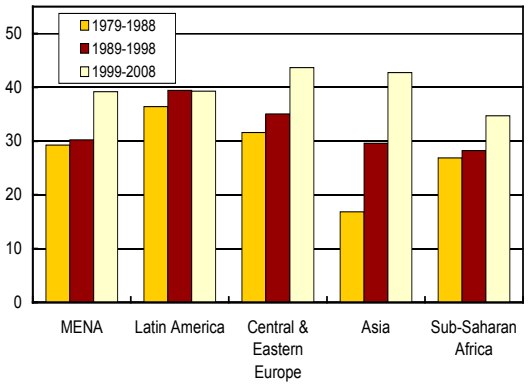


Figure 2. Exports of Goods and Services
(In Percent of GDP)

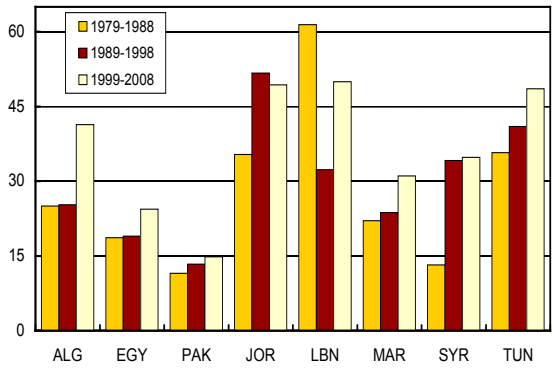


Figure 3. Non-oil Exports
(In Percent of GDP)

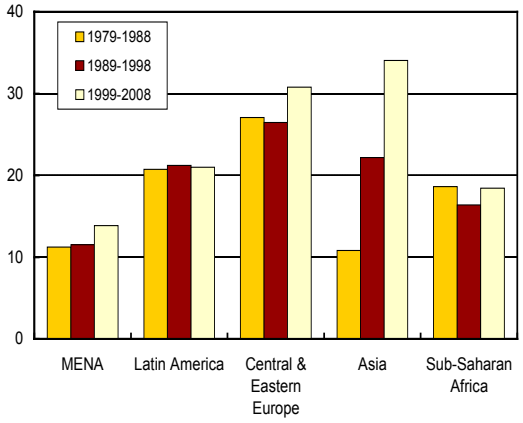


Figure 4. Non-oil Exports
(In Percent of GDP)

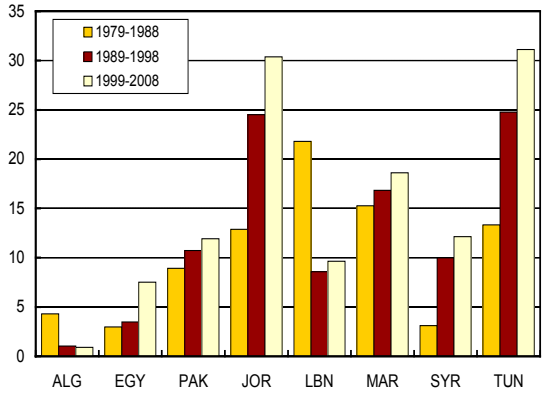


Figure 5. Imports
(In Percent of GDP)

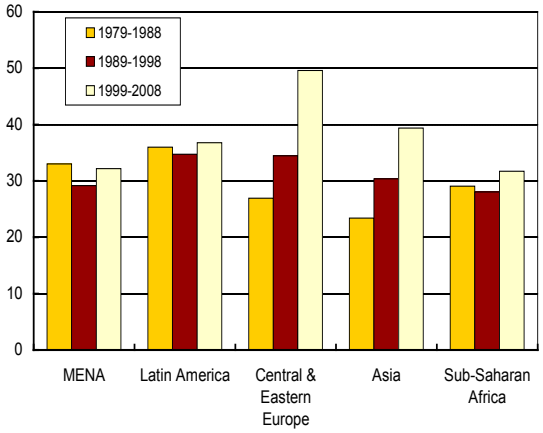
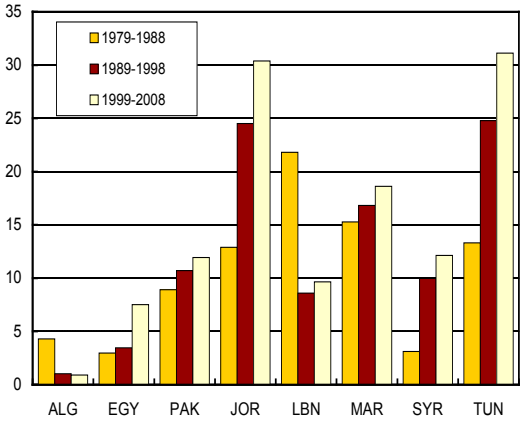


Figure 6. Imports
(In Percent of GDP)



ALG = Algeria; EGY= Egypt; PAK= Pakistan; JOR= Jordan; LBN= Lebanon; MAR= Morocco; SYR= Syria; TUN= Tunisia; WBG= West Bank and Gaza.

Source: World Economic Outlook.

III. KEY CONSTRAINTS ON TRADE IN THE MENA REGION

9. The above review of the literature strongly suggests that the Middle East and North Africa region has largely missed out on global trade integration, due in large part to the restrictiveness of their trade regimes. Indeed, trade policy has often been cited as the main policy-induced barrier to intra-Arab trade (El-Erian and Fischer (1996); Al-Atrash and Yousef (2000)). The trade regimes in the MENA region are among the most protective in the world, with tariff rates that are high and dispersed. Nontariff barriers, including lengthy processes to comply with customs and quality control standards, are still widespread. Nabli (2007) argues that the trade-impeding effect of these barriers has been compounded by often persistent overvaluation of exchange rates.

10. As Nugent and Pesaran (2007) point out, it is important to note that countries in the MENA region differ considerably in their degree of openness to trade. Algeria, Morocco, Pakistan, Jordan, and Tunisia all had tariff rates (unweighted) averaging over 10 percent in 2005/2006, with Tunisia's being almost 23 percent. Despite some recent attempts at trade liberalization, many of these countries still have highly restrictive trade regimes. By contrast, in several of the Gulf states tariff rates are very low and there are virtually no other barriers to trade (other than on goods from Israel).

11. High transport, logistics, and communications costs have also been highlighted as factors impeding trade in the MENA region. The lack of adequate infrastructure is among the two areas of investor concern that stand out in the MENA region with respect to institutional failure to provide crucial public goods and services, an important exception being the Gulf countries. Page and Van Gelder (2001) argue that the problem here is both with an institutional framework that does not align prices with costs, and with lack of an enabling environment, that would permit and entice private provision. Nabli (2007) further argues that the adverse impact on trade is usually compounded by an investment climate that discourages the start-up of small and medium firms, which is often critical to success in trading.

12. Another important area of investor concern in the MENA region is the lack of skilled workers at internationally competitive wages. While countries in both the Mashreq and Maghreb tout low cost labor as a selling point to potential investors, some businessmen find this low cost illusory since there is a shortage of workers with the appropriate skills. This feature of the MENA economies, which is reflected in relatively low human skill/natural resource ratios by international standards, has proved particularly inimical to export diversification at a time when new automated technologies demand high levels of general skills and education (Karshenas (2001)). Thus, a major obstacle to competitiveness in manufacturing and processing activities, which is general to all the countries in the MENA region, seems to be low levels of skill and human capital.

13. To conclude, in addition to the standard trade liberalization policies, it is also imperative for MENA countries to develop specific strategies to address the serious human skill gap in the region and to develop an adequate physical infrastructure in order to exploit their trade potential and integrate more fully in the global economy.

IV. The World Bank's Business Enterprise Surveys

14. The World Bank's Business Enterprise Surveys is a rich and comprehensive source of data covering 100,000 businesses in over 100 countries on the various constraints to business performance and growth.[2] The key obstacles to business performance and growth covered by the survey include labor skills and regulations, access to finance, infrastructure, tax rates and administration, business and customs regulations and licensing procedures, corruption and customs clearance. Four variables from these surveys are particularly relevant to trade performance: (i) the percentage of firms that trade that identify transportation as a major or severe constraint on the operation of their business; (ii) the percentage of firms that trade that identify customs and trade regulations as a major or severe constraint on the operation of their enterprise; (iii) the average time (days) it takes to clear exports through customs; and (iv) the average time (days) it takes to clear imports through customs. Figures 7 and 8 present the data from these surveys. These figures compare the MENA average with the averages for the world and for the OECD, and present the survey results for the three MENA countries reporting the highest and lowest constraints in the region.

15. On transport, the MENA average is not much higher than the world average. However, business managers in some countries in the MENA region report substantially greater difficulties with transportation, namely, West Bank and Gaza (WBG), Lebanon, and Algeria.

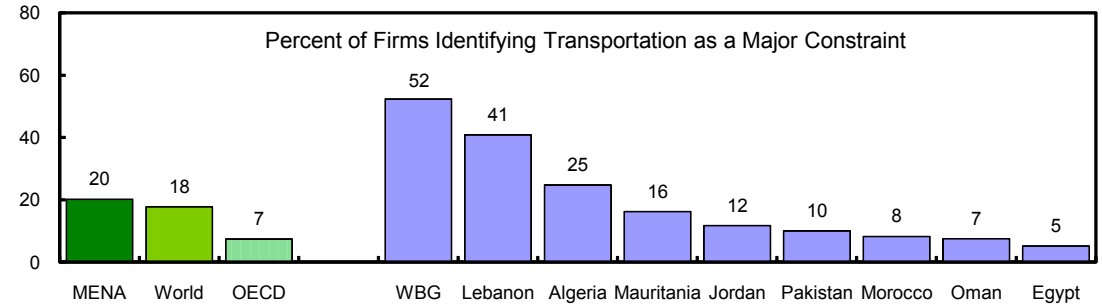
16. With regard to customs and trade regulations, the MENA average is noticeably higher than the world average. Here again, there are important differences across countries in the region, with a significantly higher percentage of business managers in Lebanon, Algeria, and the West Bank and Gaza identifying these regulations as particularly onerous to the operation of their businesses. In Morocco and Jordan by contrast, the percentage of business managers reporting customs and trade regulations as a major or severe constraint is significantly lower than the world or MENA averages.

17. Customs clearance procedures are also more time-consuming in the MENA region compared to other regions of the world. Clearing exports through customs takes an average of 6.3 days in the MENA region compared to the world average of 5.6 days. On imports, the average time for clearance through customs are 11.4 days in the MENA region compared to the world average of 9.0 days. Once again these averages conceal important differences across countries in the region. For example, the average number of days it takes to clear exports through customs is notably high in Algeria and Lebanon, while for imports, the time required is significantly above the world and MENA averages in the West Bank and Gaza and Algeria. Morocco and Jordan once again appear to have very efficient customs clearance procedures.

---

[2] These surveys are separate from the World Bank's 'Doing Business' Indicators, with a broader coverage of factors affecting businesses operating in the country covered by the survey, and can be accessed through the website https://www.enterprisesurveys.org.

Figure 7. Transport and Customs Clearance Constraints



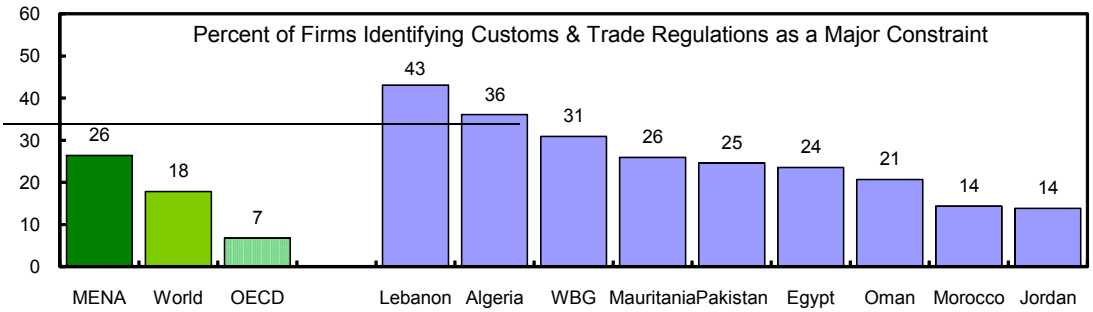
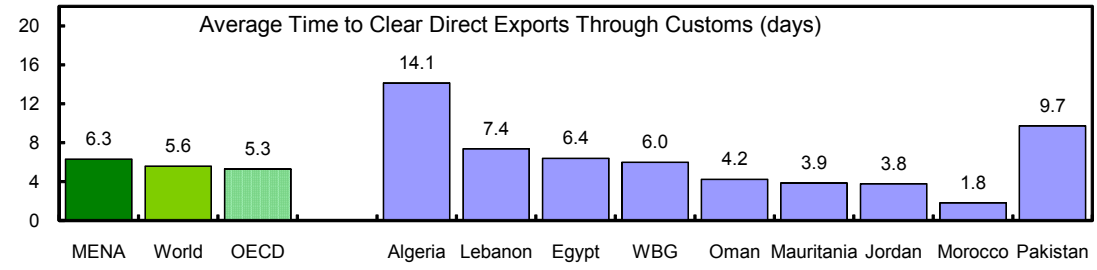


Figure 8. Customs Clearance



Source: World Bank Business Enterprise Survey Database.

V. SPECIFICATION OF THE GRAVITY MODEL

18. We start our empirical analysis by estimating standard gravity models to see whether the usual economic, cultural and geographical variables can adequately explain the MENA region's trade performance. This is used as a 'baseline' model to compare against an 'augmented' gravity model that includes the four variables from the World Bank's Business Enterprise surveys that were described in the previous section. The objective is to see if these survey variables, which to the best of our knowledge, have not been used in any empirical analysis of trade in the MENA region, can help to explain its relatively poor trade performance, particularly with regard to exports.

19. The gravity model has been found to be a particularly good predictor of trade flows. Moreover, despite criticism for its lack of theoretical foundations in its initial years of application, more recent work has shown that the gravity model is consistent with standard theoretical models that explain the pattern of trade based on factor proportions, patterns of demand, and product differentiation. Deardorff (1998) shows the consistency of the gravity model with the Hecksher-Ohlin theory of trade based on factor proportions, both with and without free trade. Helpman (1984, 1987), Bergstrand (1985), Helpman and Krugman (1987) and Feenstra, Markusen and Rose (2001) show that the model can also be derived from theories of trade based on differentiated products, imperfect markets and increasing returns, as well as models that explain trade based on differences in tastes and preferences of domestic consumers.

20. In its simplest form, the gravity model predicts bilateral trade flows on the basis of the sizes of the respective economies (the GDPs of the two countries) and the distance between them. Trade is assumed to depend positively on the sizes of the two economies and negatively on the distance. These variables are used in all standard gravity models.

21. In our models, we follow the recent literature by also including variables for the size of the populations, common language, trade restrictions, existence of a border between the trading partners, direct access to a seaport, and membership of regional trade arrangements. Population is included on the premise that poorer countries with low levels of GDP per capita tend to trade less than richer countries. Given that the model already controls for the level of GDP as a separate variable, population could be expected to be negatively related to trade flows (Bannister and Erickson von Allmen (2001)). On the other hand, it could be argued that, for a given GDP, a higher population would provide a larger base for import demand. A common language dummy variable is included as a proxy for cultural proximity, consistent with the empirical observation that countries that speak the same language trade more with each other than countries that do not. Similarly, the border dummy variable is intended to capture the fact that countries tend to trade more with their neighbors than with other countries. A dummy variable is also included to capture whether the country is landlocked, since direct access to a seaport tends to promote trade. An overall trade restrictiveness index is also included among the explanatory variables since trade restrictions lower trade volumes, all else being equal. Finally, dummy variables are included to capture the effect on bilateral trade from belonging to a regional trading arrangement.

22. More formally, the standard gravity model is given by

$$T_{ij} = \alpha_0 GDP_i^{\alpha 1} GDP_j^{\alpha 2} POP_i^{\alpha 3} POP_j^{\alpha 4} DISTANCE_{ij}^{\alpha 5} W_{ij}^{\alpha 6} e_{ij} \quad (1)$$

where T_{ij} is the flow of trade between countries *i* an *j*, GDP_i and $GDP_{j\ are}$ the GDP of countries *i* and *j*, POP_i and POP_j are the populations of countries *i* and *j*, $DISTANCE_{ij}$ is the linear distance between the capitals of the two countries *i* and *j*, W_{ij} includes other factors that influence bilateral trade, and e_{ij} is a log normally distributed error term.

23. Equation (1) is estimated by taking logs and expressing it in linear form:

$$\begin{aligned} Log(T_{ij}) = {} & \alpha_{0+} \alpha_1 Log_(GDP_i) + \alpha_2 Log(GDP_j) + \alpha_3 Log_(POP_i) + \alpha_4 Log(POP_j) + \\ & \alpha_5 Log(DISTANCE_{ij}) + \beta_1 LANG + \beta_2 BORDER + \beta_3 REPLL_i + \beta_4 TRI_i (\beta_4 TRI_j) + \\ & \beta_5 MENA + \sum_i^n \beta_i REGION_{ij} + e_{ij} \end{aligned} \quad (2)$$

where LANG is a dummy variable that takes the value of one if countries *i* and *j* share a common language (English, French, Arabic, Portuguese or Spanish) and zero otherwise; BORDER is a dummy variable that takes the value of one if countries *i* and *j* share a common border and zero otherwise; $REPLL_i$ is a dummy variable that takes the value of one if country *i* is landlocked and zero otherwise; TRI_i / TRI_j is the IMF's overall trade restrictiveness index for country *i* / country *j*; and $REGION_{ij}$ is a series of dummy variables that takes the value of one if countries *i* and *j* belong to a preferential trading arrangement (including ASEAN, COMESA, EU and MERCOSUR) and zero otherwise. Finally, a dummy variable MENA, that takes the value of one if country *i* is in the Middle East and North Africa region and zero otherwise, is included to examine the hypothesis that trade volumes in the MENA region are significantly lower than what would be expected given their economic, cultural and geographical characteristics.

24. Our dataset consists of 88 countries for which survey results are available, including 8 countries in the MENA region, supplemented with data for 5 other non-survey countries (France, Israel, Italy, the United Kingdom, and the United States). These countries represent around 66 percent of trade of the MENA countries in our sample, which include Algeria, Egypt, Jordan, Lebanon, Mauritania, Morocco, Turkey, and the West Bank and Gaza. The time period chosen for the variables in the standard gravity model is 2005–07: we calculate the average value of each variable over this period to smooth out any yearly anomalies. These data are supplemented in the 'augmented' gravity model with survey data covering the years 2005–07 (depending on year of availability).[3] Box 1 provides a summary explanation of the variables that were used to estimate the gravity models.

[3] The choice of MENA countries was based on availability of data. For example, Tunisia was not included among the list of MENA countries because no World Bank Business Enterprise Survey was carried out in Tunisia over the period 2005–07.

Box 1. Gravity Model: Explanation of Variables

LX*ij*	Log of exports, in current US dollars, from country *i* to country *j*
LM*ij*	Log of imports, in current US dollars, of country *i* from country *j*
LGDP*i*	Log of GDP, in current US dollars, of country *i*
LGDP*j*	Log of GDP, in current US dollars, of country *j*
LPOP*i*	Log of population of country *i*
LPOP*j*	Log of population of country *j*
LDISTANCE	Log of distance (km) between the capital cities of countries *i* and *j*
LANG	Dummy variable taking the value of one if countries *i* and *j* share a common language (English, French, Arabic, Portuguese or Spanish), zero otherwise
BORDER	Dummy variable taking the value of one if countries *i* and *j* share a common border, zero otherwise
REPLL*i*	Dummy variable that takes the value of one if country *i* is landlocked, zero otherwise
TRI*i*	IMF Trade Restrictiveness Index for Country *i*
TRI*j*	IMF Trade Restrictiveness Index for Country *j*
TRANS*i*	Percent of firms in Country *i* that trade that identifying transportation as a major constraint on the operation of their business
EXPCLR*i*	average time (days) to clear exports through customs in Country *i*
IMPCLR*i*	average time (days) to clear imports through customs in Country *i*
MENA	Dummy variable taking the value of one if country *i* is in the Middle East or North Africa, zero otherwise
ASEAN	Dummy variable that takes value of one if both countries *i* and *j* are members of ASEAN, zero otherwise
COMESA	Dummy variable that takes value of one if both countries *i* and *j* are members of the Common Market of Eastern and Southern Africa, zero otherwise
EU	Dummy variable that takes value of one if both countries *i* and *j* are members of the European Union, zero otherwise
MERCOSUR	Dummy variable that takes value of one if both countries *i* and *j* are members of MERCOSUR, zero otherwise

Sources: IMF *Direction of Trade Statistics*, IMF's database on trade policy restrictiveness, IMF *World Economic Outlook* database, Chemical Ecology (L. Eden, Texas A&M University), IMF staff estimates, and World Bank' s *Business Enterprise Survey* database.

25. Estimation of the above model is problematic due to the loss of data points when the data is transformed into logs for those pairs of countries where recorded trade is zero. Since the value of around 23 percent of the observations for bilateral trade in our data set is censored at the value of zero, estimation using Ordinary Least Squares (OLS) will result in biased estimates (Greene (1981)).[4] Accordingly, the gravity equations are estimated using a censored regression model (TOBIT). This requires adopting the assumption that the underlying value of the log of trade will be a large negative number when the observed value of bilateral trade is zero.

[4] Greene (1981) shows that when the value of the dependent variable is censored at zero, OLS produces inconsistent estimates, and the bias of the OLS estimates is linear in the proportion of observations not at zero.

VI. EMPIRICAL RESULTS

26. Table 1 presents the empirical results from estimating the gravity model formalized in equation (2) separately for exports and imports and shows that the standard variables cannot adequate explain the MENA region's trade performance. All of the coefficients have the 'right' sign and conform to what would be expected from economic theory. The coefficients on the logs of GDP of both trading partner countries are positive and significant, while the coefficients on the logs of population are negative but statistically significant only for the trading partner country in the case of imports. The distance variable is negative and significant, as expected, while the existence of a common language and border has positive impacts on trade volumes. The dummy variable for landlocked status of the reporting country is significant and negative for both dependent variables. Also as expected, the coefficients on the IMF's trade restrictiveness index are negative and significant both for exports and imports. Finally, the coefficient on the MENA dummy is negative and significant for exports, but not for imports, consistent with our hypothesis that countries in the MENA region are trading below their potential. More precisely, the coefficient estimates imply that MENA exports are more than 86 percent below what would be expected given the characteristics of their economies.[5]

27. Table 2 presents the empirical results from estimating the 'augmented' gravity model and show that the survey variables are significant in explaining the MENA region's relative underperformance in trade. However, inclusion of the variable on customs and trade regulations as an obstacle to the operation of the business led to results that were not robust, and in many cases the coefficient on this variable turned out to be statistically insignificant, and so this variable was dropped from the 'augmented' model. The results are broadly similar to those obtained from estimating the standard gravity model, with two exceptions. The coefficients on the population variable for the reporting country now turns out to be positive, and to be statistically significant in the case of imports.[6] More importantly, however, the MENA dummy loses its statistical significance at the 10 percent level in the export equation when the survey constraints are added to the model.

28. The coefficients on the transport constraint variable are negative and statistically significant for both dependent variables, and imply an elasticity of -0.67 for exports and of -0.90 for imports for countries that have positive bilateral trade. Applying these results suggest that reducing the transport constraint from the average for the MENA region to the world average could have a significant impact on trade volumes, raising exports by 9½ percent and imports by 11½ percent, ceteris paribus.

---

[5] The marginal effect of a dummy variable on the dependent variable in the gravity model equation can be calculated in percentage terms as 100*[exp(β) -1], where β is the coefficient on the dummy variable. See Coe and Hoffmaister (1998), footnote 9.

[6] Bannister and Erickson von Allmen (2001) report similar empirical findings.

Table 1. Results from Gravity Model Regressions Without Survey Constraints

	Dependent Variable					
	Exports			Imports		
Variable	Coefficient	Standard Errors	z-stat	Coefficient	Standard Errors	z-stat
Constant	9.041	2.530	3.574 **	8.056	2.568	3.137 **
$LGDP_i$	5.388	0.175	30.881 **	5.064	0.173	29.332 **
$LGDP_j$	4.839	0.149	32.512 **	4.945	0.146	33.978 **
$LPOP_i$	-0.395	0.227	-1.740	-0.125	0.243	-0.513
$LPOP_j$	-0.303	0.224	-1.352	-0.402	0.208	-1.930 *
LDISTANCE	-6.063	0.292	-20.764 **	-5.435	0.295	-18.440 **
LANG	2.958	0.734	4.030 **	3.407	0.725	4.699 **
BORDER	3.401	1.352	2.516 **	3.293	1.343	2.452 **
$REPLL_i$	-4.813	0.719	-6.692 **	-4.725	0.700	-6.754 **
TRI_i				-1.578	0.146	-10.820 **
TRI_j	-0.545	0.143	-3.813 **			
MENA	-1.984	0.751	-2.642 **	-0.135	0.738	-0.183
ASEAN	6.967	2.402	2.900 **	10.827	2.567	4.218 **
COMESA	0.621	2.389	0.260	0.087	2.399	0.036
EU	-7.664	0.845	-9.069 **	-6.605	0.839	-7.868 **
MERCOSUR	-1.482	3.239	-0.458	-0.184	3.069	-0.060
Total observations	7,832			7,820		
Uncensored observations	5,679			5,748		
S.E. of Regression	13.983			14.039		
Wald χ^2	4,065			3,914		
Prob > χ^2, p-value	0.000			0.000		

* Denotes significance at the 5 percent level.

** Denotes significance at the 1 percent level.

Table 2. Results from Gravity Model Regressions with Survey Constraints

	Dependent Variable					
	Exports			Imports		
Variable	Coefficient	Standard Errors	z-stat	Coefficient	Standard Errors	z-stat
Constant	11.012	2.525	4.360 **	9.828	2.581	3.808 **
$LGDP_i$	4.986	0.190	26.199 **	4.552	0.192	23.689 **
$LGDP_j$	4.806	0.149	32.277 **	4.896	0.147	33.399 **
$LPOP_i$	0.198	0.247	0.803	0.760	0.274	2.770 **
$LPOP_j$	-0.362	0.224	-1.616	-0.433	0.211	-2.055 *
LDISTANCE	-5.827	0.297	-19.648 **	-4.955	0.302	-16.419 **
LANG	3.801	0.765	4.967 **	4.503	0.778	5.789 **
BORDER	3.277	1.356	2.417 *	3.830	1.353	2.832 **
$REPLL_i$	-5.085	0.737	-6.901 **	-5.227	0.713	-7.334 **
TRI_i				-1.657	0.146	-11.361 **
TRI_j	-0.529	0.143	-3.711 **			
$LOG(TRANS_i)$	-0.918	0.254	-3.610 **	-1.222	0.267	-4.581 **
$LOG(EXPCLR_i)$	-1.208	0.449	-2.694 **			
$LOG(IMPCLR_i)$				-1.559	0.444	-3.506 **
MENA	-1.216	0.743	-1.635	1.107	0.739	1.497
ASEAN	6.697	2.455	2.729 **	11.010	2.956	3.725 **
COMESA	0.290	2.479	0.117	0.655	2.390	0.274
EU	-7.559	0.826	-9.154 **	-6.795	0.824	-8.244 **
MERCOSUR	-1.058	3.208	-0.330	0.276	3.200	0.086
Total observations	7,742			7,636		
Uncensored observations	5,649			5,629		
S.E. of regression	13.948			13.955		
Wald χ^2	3,919			3,860		
Prob > χ^2, p-value	0.000			0.000		

* Denotes significance at the 5 percent level.

** Denotes significance at the 1 percent level.

29. Our results suggest that enhancing the speed with which exports and imports are cleared through customs could also have a large impact on trade. More specifically, the estimated coefficients on the number of days it takes to clear exports/imports through customs are negative and statistically significant, indicating an elasticity of -0.88 for exports

and of -1.15 for imports for countries that have positive bilateral trade.[7] From this it can be calculated that reducing the number of days it takes to clear exports through customs from the average for the MENA region to the world average could raise exports by 11 percent, ceteris paribus. Similarly, reducing the number of days it takes to clear imports through customs from the average for the MENA region to the world average could raise imports by 30½ percent, ceteris paribus.

30. It is interesting to note that our results suggest that reducing the transport constraint, and increasing the efficiency of customs clearance procedures, will have a stronger impact on imports than on exports. Yet, our empirical results from the standard gravity model showed the MENA dummy to be statistically significant in the export equation but not in the import equation. One possible interpretation of these results is that relaxing the transport constraint and increasing the efficiency of customs clearance procedures would have particularly strong effects on exports of the MENA region relative to other regions of the world. However, the impact on MENA imports would not be quantitatively much different from the impact it would have in other regions of the world.

31. Our results are consistent with the findings of empirical studies covering other regions of the world. Njinkeu, Wilson and Fosso (2008) provide empirical evidence that port infrastructure quality and air transport infrastructure quality have positive impacts on African trade, while customs and regulatory environments are the main obstacles to intra-African trade. Dollar, Hallward-Driemeier, and Mengistae (2005), in their study of the garment industry in Bangladesh, China, India, and Pakistan, report results indicating that power shortages, and delays in clearing exports and imports through customs, are the most important bottlenecks for productivity, profitability and sales growth of exporting firms. In a broader study of Asia and Latin America Dollar, Hallward-Driemeier and Mengistae (2006) conclude that a sound investment climate—as reflected in low customs clearance times, reliable infrastructure and good financial services—makes it more likely that domestic firms will export, enabling the more productive firms to expand their scale and scope of operations. The same investment climate factors tend to attract foreign investment.

VII. Conclusions and Policy Implications

32. The empirical results presented in this paper support the widely held hypothesis that trade volumes in the MENA region are significantly lower than what would be expected given their economic, cultural, and geographical characteristics. More specifically, our results suggest that MENA exports are more than 86 percent below what would be expected given the characteristics of their economies. The standard gravity model variables, however, appear to adequately explain MENA import volumes. This raises the question of why export volumes of the MENA region are significantly below potential. Is it due to policy-induced impediments to trade, or to more fundamental structural reasons that are not easily reversed?

[7] Applying a similar approach and using cross-country data from the 2005 World Bank's Doing Business survey, Wilson (2007) reports an estimated elasticity of -0.63 for the average number of days needed for exports to cross the border.

33. Our empirical results from the 'augmented' gravity model show that the constraints highlighted in the Business Enterprise surveys help to explain the MENA region's underperformance in trade. Specifically, our estimates imply that reducing the transport constraint from the average of the MENA region to the world average could increase exports by approximately 10 percent, and imports by over 11 percent. Some countries in the MENA region could benefit even further. For example, transport constraints are particularly significant in Algeria, Lebanon, and the West Bank and Gaza. Here, it is relevant to note that, in the case of the West Bank and Gaza, transport constraints are likely to reflect not just inadequate physical transport infrastructure, but also the impact of Israeli restrictions on movement and access of both goods and people.

34. Efficiency of customs clearance processes also appears to have a significant impact on trade. Our results suggest that reducing the average number of days for clearing exports through customs to the world average could raise exports of the MENA region by around 11 percent, and reducing the average number of days for clearing imports through customs to the world average could raise imports by over 30 percent.

35. In terms of policy action, improving the efficiency of customs clearance procedures is something that national governments can probably tackle over the short- to medium-term, for example by streamlining the number of documents required for clearance of exports and imports through customs. Resolving the transport constraint is a more long-term problem and will probably require the active participation of the private sector, both in the financing and in the provision of transport services. In this context, governments could consider greater use of private-public partnerships in the financing and provision of transport services, particularly in countries facing fiscal pressures.

36. Given the considerable empirical evidence that greater openness to trade has a positive impact on economic growth, undertaking reforms to tackle key constraints on trade will also likely stimulate growth. In this context, Bhattacharya and Wolde (2009) look at the key constraints to growth in the MENA region, making use of the World Bank Business Enterprise Survey database, and find that openness is a significant factor in explaining cross-country differences in growth performance.

37. As mentioned in the introduction, our empirical results using the survey data should be interpreted with caution. Apart from the usual caveats with survey data, an additional complication in using cross-country survey data is that the openness of survey respondents may vary considerably from country to country, depending on culture and the nature of the political regime in which they operate. Nevertheless, our results strongly suggest that reducing transport constraints and improving the efficiency of customs clearance processes could significantly raise the volume of both exports and imports in the MENA region.

REFERENCES

Bhattacharya, Rina and Hirut Wolde, 2009, "Constraints on Growth in the MENA Region," forthcoming IMF Working Paper (Washington: International Monetary Fund)

Al-Atrash, Hassan, and Tarik Yousef, 2000, "Intra-Arab Trade: Is It Too Little?" IMF Working Paper 00/10 (Washington: International Monetary Fund).

Bannister, Geoffrey J. and Ulric Erickson von Allmen, 2001, "Palestinian Trade: Performance, Prospects, and Policy," in *West Bank and Gaza: Economic Performance, Prospects, and Policies: Achieving Prosperity and Confronting Demographic Challenges*, ed. by Rosa A. Valdivieso et al (Washington: International Monetary Fund).

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 T. and Alexander W. Hoffmaister, 1998, "North-South Trade: Is Africa Unusual?" IMF Working Paper 98/94 (Washington: International Monetary Fund).

Deardorff, Alan, 1998, "Determinants of Bilateral Trade: Does Gravity Work in a Neoclassical World?" in *The Regionalization of the World Economy,* ed. by J.A. Frankel (Chicago: University of Chicago Press), pp. 7-31.

Dollar, David, Mary Hallward-Driemeier and Taye Mengistae, 2005, "Investment Climate and Firm Performance in Developing Economies," Economic Development and Cultural Change, University of Chicago Press, Vol. 54(1), pp. 1-31, October.

_____, 2006, "Investment Climate and International Integration," *World Development*, Vol. 34(9), pp. 1498-1516.

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).

Feenstra, Robert C., James R. Markusen and Andrew K. Rose, 2001, "Using the Gravity Equation to Differentiate Among Alternative Theories of Trade," *Canadian Journal of Economics*, Vol. 34, No. 2 (May), pp. 430-47.

Greene, William H., 1981, "On the Asymptotic Bias of the OLS Estimator of the Tobit Model," *Econometrica*, Vol. 49, No. 2, pp. 505-73.

Helpman, Elhanan, 1984, "Increasing Returns, Imperfect Markets, and Trade Theory," in *Handbook of International Economics*, ed. by Ronald W. Jones and Peter B. Kenen Vol. 1 (Amsterdam: North-Holland; New York, N.Y., U.S.A).

Helpman, Elhanan, 1987, "Imperfect Competition and International Trade: Evidence from Fourteen Industrial Countries," *Journal of Japanese and International Economies*, Vol. 1 (March), pp. 62-81.

Helpman, Elhanan and Paul Krugman, 1985, "Market Structure and Foreign Trade: Increasing Returns, Imperfect Competition, and the International Economy," (Cambridge, Massachusetts: MIT Press).

Iqbal, Farrukh and Mustapha K. Nabli, 2007, "Trade, Foreign Direct Investment and Development in the Middle East and North Africa," Chapter 12 in *Breaking the Barriers to Higher Economic Growth: Better Governance and Deeper Reforms in the Middle East and North Africa*, ed. by Mustapha K. Nabli (Washington: The World Bank).

Karshenas, Massoud, 2001, "Structural Obstacles to Economic Adjustment in the MENA Region: The International Trade Aspects," in *The State and Global Change: The Political Economy of Transition in the Middle East and North Africa*, ed. by Hassan Hakimian and Ziba Moshaver (Richmond, Surrey, U.K.).

Nabli, Mustapha K., 2007, "Long-Term Economic Development Challenges and Prospects for the Arab Countries," in *Breaking the Barriers to Higher Economic Growth: Better Governance and Deeper Reforms in the Middle East and North Africa*, ed. by Mustapha K. Nabli (Washington: The World Bank).

Njinkeu, Dominique, John S. Wilson and Bruno P. Fosso, 2008, "Expanding Trade within Africa: The Impact of Trade Facilitation," World Bank Policy Research Working Paper No. 4790 (December) (Washington: The World Bank).

Nugent, Jeffrey B. and M. Hashem Pesaran, 2007, "Introduction: Explaining Growth in the Middle East," in *Explaining Growth in the Middle East*, ed. by Jeffrey B. Nugent and Hashem Pesaran (Amsterdam; Boston, Massachusetts: Elsevier).

Page, John and Linda Van Gelder, 2001, "Missing Links: Institutional Capability, Policy Reform and Growth in the Middle East and North Africa," in *The State and Global Change: The Political Economy of Transition in the Middle East and North Africa*, ed. by Hassan Hakimian and Ziba Moshaver (Richmond, Surrey, U.K.)

Sachs, Jeffrey and Andrew Warner, 2005, "Economic Reform and the Process of Global Integration," *Brookings Paper on Economic Activity,* No. 1, pp. 1-118.

Wilson, Norbert, 2007, "Examining the Trade Effect of Certain Customs and Administrative Procedures," OECD Trade Policy Working Papers No. 42 (Paris, France: Organization for Economic Cooperation and Development).