

TRADE FACILITATION AND INTRA-ARAB TRADE (1996-2002): AN EMPIRICAL ASSESSMENT

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I. INTRODUCTION

Through a gradual phase-out of tariffs on trade in goods that started in 1998, the creation of the Greater Arab Free Trade Area (GAFTA) became the stepping stone of the recent revival of Arab efforts towards establishing a regional bloc.¹ The establishment of an Arab bloc reflected a double need: fostering intra-Arab trade and increasing the integration of the Arab world into the world economy, notably after the creation of the World Trade Organization.² In 2005, free trade between GAFTA members was to a large extent complete. As such, GAFTA constitutes a pioneering success in trade liberalization efforts in the Arab countries. In fact, since the beginning of the 1950s until GAFTA, the Arab countries had not succeeded in liberalizing their trade in a regional framework. With this elimination of tariffs, non-tariff barriers continue to stand as the main obstacles hampering intra-Arab trade. Such obstacles can severely reduce the pro-competitive effects induced by the elimination of tariffs. In fact, intra-Arab trade suffers from a panoply of non-tariff obstacles: technical, quantitative as well as administrative barriers; para-tariffs³ and the lack of appropriate transportation and communication

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¹ By that time, fourteen Arab countries were members of GAFTA: Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia and the United Arab Emirates (UAE).

² As stated in the preamble of the Arab Economic and Social Council's Decision 1317, which gave birth to the GAFTA.

³ Fees and surcharges imposed on imports, thus discriminating between national and foreign products.

infrastructures. In this paper, we focus on what is known in the literature as “trade facilitation” and its impact on intra-Arab trade; we assess the impact of some trade facilitation components, namely administrative barriers, transportation and communication infrastructures on the (1996–2002) intra-regional trade.⁴ Recently, many authors have highlighted the importance of enhancing trade facilitation in Arab countries. Zarrouk (2004) stressed the necessity of streamlining cumbersome administrative procedures and speeding up slow customs services. The ESCWA⁵ evaluated the increase of trade that would be induced by the enhancement of ports and customs efficiency in three Arab countries.⁶ Dennis (2006), using a general equilibrium model, quantified the impact of improving some trade facilitation elements on the welfare of Arab economies. One of the limits of a general equilibrium modeling technique is that it does not allow “visualization” of the elements of trade facilitation, thus limiting the accuracy of the resulting recommendations in terms of specific reforms to be adopted by the countries of interest.

Following Mann, Otsuki and Wilson (2003),⁷ we used a gravity model to quantify the impact of trade facilitation on intra-Arab trade. This approach has two main advantages: (i) it allows ranking each of the Arab countries in terms of the components of trade facilitation, thus identifying weaknesses and strengths regarding trade facilitation and (ii) based on different simulated scenarios, it computes the increase in intra-regional trade generated by a global improvement in all of the elements of trade facilitation. It allows us to identify both national and regional trade facilitation priorities that would increase intra-Arab trade. Moreover, strategies aimed at enhancing trade facilitation in the Arab world would not only affect intra-regional trade, but also accelerate the

⁴ Although the final year covered by our regression analysis is 2002, the paper’s descriptive figures pertaining to trade facilitation components in the Arab world go beyond that year.

⁵ Economic and Social Commission for Western Asia, ESCWA (2003a).

⁶ Jordan, Lebanon and Syria.

⁷ They used a gravity model assessing trade facilitation impact on Asia-Pacific region trade.

integration of the Arab region into the world economy. To our knowledge this is the first investigation of this type for the Arab world, using a newly-applied methodology and tackling an important issue at the forefront of regional and international trade topics.

The paper is structured as follows: Section 2 reviews the features of some trade facilitation components in Arab countries; it highlights the main loopholes in the institutional environment regulating economic activity in the Arab world and also sheds some light on the poor endowment of Arab countries in terms of transportation and communication infrastructures. Sections 3 and 4 assess the impact of the abovementioned factors on intra-Arab trade. Section 3 presents the model and the results; it shows that trade facilitation has a significant impact on trade relations between Arab countries. Section 4 evaluates the increase in intra-regional trade that would be induced by a general improvement of the trade facilitation components in the relevant countries; it also identifies national and regional priorities in terms of trade facilitation. Section 5 concludes and makes some recommendations based on the results.

II. INSTITUTIONAL, TRANSPORT AND COMMUNICATION INFRASTRUCTURES IN THE ARAB WORLD: FACTS AND FIGURES

In February 1997, the Arab Economic and Social Council (AESC) gave birth to the GAFTA.⁸ The liberalization of intra-Arab trade⁹ was scheduled to take place over a period of ten years, starting in 1998, mainly through a gradual phasing out of tariffs. In addition, GAFTA's executive program called for the elimination of non-tariff barriers. A special committee was formed in order to track all forms of non-tariff barriers in member countries, the objective being to eliminate those by the end of the transition period. In 2002, the AESC accelerated tariff

⁸ Through the Decision 1317.

⁹ Although GAFTA's executive program calls for comprehensive trade liberalization, it allowed member states to differ in the liberalization of certain industrial and agricultural products.

reductions and the full trade liberalization among GAFTA members was completed by January 2005.¹⁰ By that time, seventeen Arab states were GAFTA members.¹¹ However, a glimpse of intra-Arab exports reveals the low level of integration between Arab states. As shown in Figure 1, intra-Arab exports represented on average merely 6.5 percent of total Arab exports between 1992 and 2004. This ratio is strikingly low when compared to other blocs such as MERCOSUR, where intramember exports were equal to 21 percent of MERCOSUR's total exports in 2000, and 13 percent in 2004. It should be noted that the picture is less gloomy when oil exports are excluded — since oil accounts for the greatest share of many Arab countries' exports¹² and since it is largely exported to non-Arab countries, oil tends to bias the real magnitude of intra-Arab trade. Figure 1 shows that after excluding oil from Arab exports, the ratio of intra-Arab exports to total exports averaged around 23 percent between 1992 and 2004.

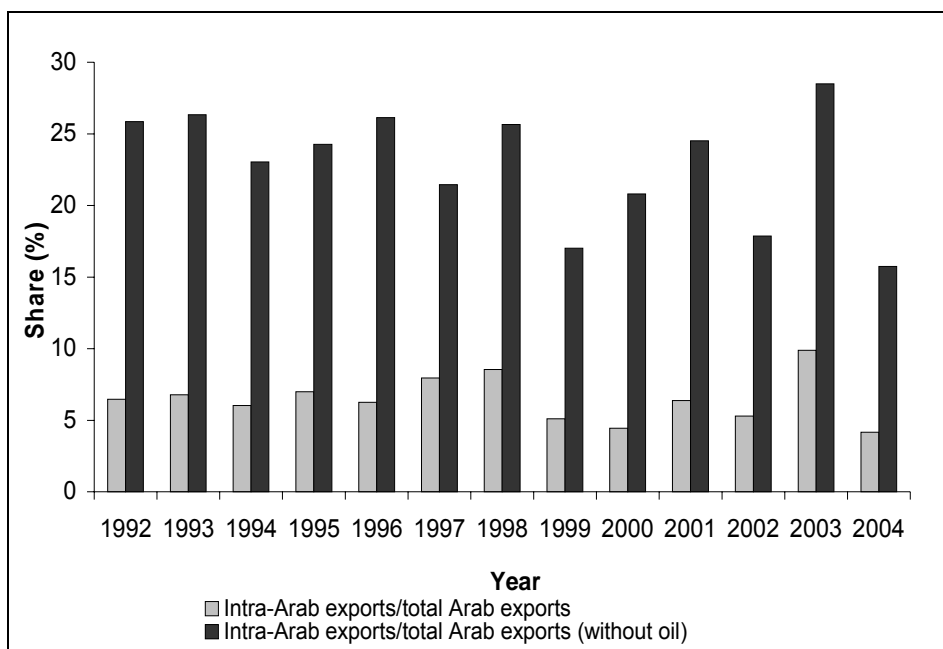
Despite the elimination of tariffs between GAFTA members, intra-Arab trade is still hampered by a number of non-tariff obstacles that are preventing it from reaching its full potential and are also limiting the beneficial effects of trade liberalization. More precisely, two factors stand as significant obstacles facing the expansion of intra-GAFTA trade: cumbersome bureaucratic and institutional frameworks, as well as high transportation and communication costs, in part due to weak infrastructures.

¹⁰ Through Decision 1431.

¹¹ Bahrain, Egypt, Gaza Strip and West Bank, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, the UAE and Yemen. Among the League of Arab States members, only Algeria, Comoros, Djibouti, Mauritania and Somalia were not GAFTA members by the end of 2005 (Arab Monetary Fund, 2006).

¹² For instance, in 2004, oil and gas accounted for nearly 97 percent of Algerian exports, 74 percent of Bahraini exports, 82 percent of Omani exports, 86 percent of Qatari exports, 88 percent of Saudi Arabian exports, 67 percent of Syrian exports and 92 percent of Yemeni exports.

Figure 1. Share of intra-Arab exports in total Arab exports, 1992–2004



Source: Author's calculations based on the Comtrade database.

Note: We subtracted Product Category 3 (mineral fuels and lubricants) — according to the United Nations' Standard International Trade Classification (SITC, Rev.1) — from both total and regional exports when computing the share of intra-Arab exports in total Arab exports without oil.

Cumbersome bureaucratic and institutional frameworks

Anecdotal evidence shows that in many Arab countries, bureaucratic hurdles and institutional loopholes significantly increase transaction costs. For example, in Egypt and Jordan, procedures relating to investment remain complex, thus giving officials significant leeway in interpreting investment codes (Page, 2003). On another note, Yousef (2005) outlines the complexity and slowness of judicial procedures in many Arab countries. One critical aspect affecting many countries in the region is corruption — a survey made in 2000 across firms operating in eight countries revealed that corruption was one of the main obstacles facing intra-regional trade and capital mobility (Zarrouk, 2003). Indeed,

Al Khouri (2000) shows that corruption is a structural feature of the administrative environment, widespread in many Arab countries. For instance, in Lebanon the interaction between “grand” and “petty” corruption in customs is such that it consolidates illegal practices, thus rendering reforms harder to achieve. Such bureaucratic burdens impose high entry costs to newly-established firms, particularly small and medium enterprises. The “Ease of Doing Business” database reveals that the MENA¹³ region is the second most costly region in the world in terms of establishing a business.¹⁴ In particular, such burdens impede commercial transactions, as shown in the following table; the MENA region is the one where completion of commercial transactions requires the highest number of documents and the longest time.

Table 1. Required documents and time, as well as costs associated with commercial transactions^a, 2008

Region	Required documents for exporting	Required time for exporting (days)	Costs of exporting (US dollars /container)	Required documents for importing	Required time for importing (days)	Costs of importing (US dollars /container)
East Asia and Pacific	6.9	24.5	885.3	7.5	25.8	1014.5
Latin America and Caribbean	7	22.2	1107.5	7.6	25.8	1228.4
MENA	7.1	24.8	992.2	8	28.7	1128.9
OECD	4.5	9.8	905	5	10.4	986.1

Source: the “Ease of Doing Business” database, <http://www.doingbusiness.org>.

Note: (a) these are costs associated with maritime transport.

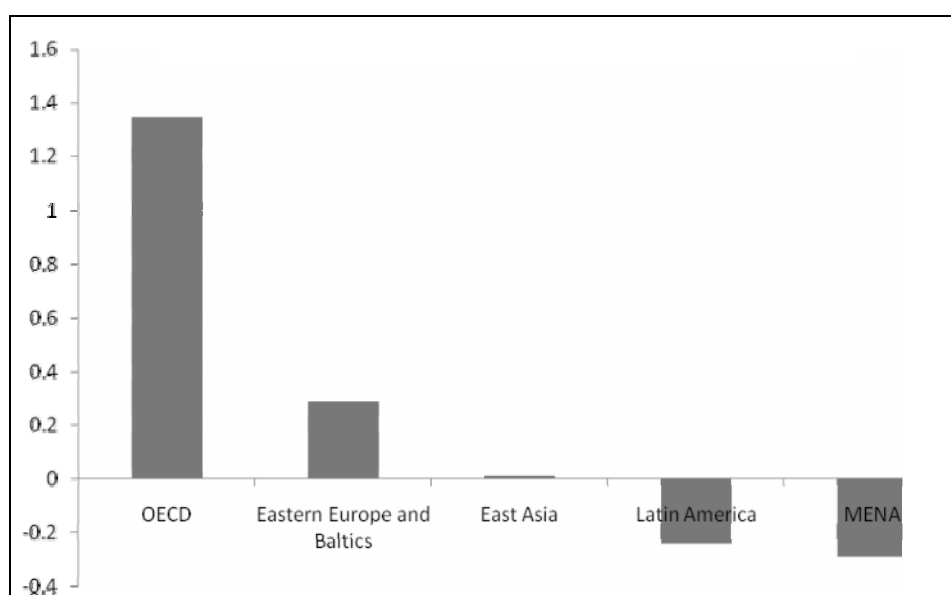
(b) MENA region includes: Algeria, Bahrain, Egypt, Gaza Strip and West Bank, Iran, Iraq, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, the UAE and Yemen.

¹³ Middle East and North Africa.

¹⁴ Sub-Saharan Africa is the most costly region, the “Ease of Doing Business” database is available at <http://www.doingbusiness.org>.

In general, these features reflect the poor governance that characterize the Arab countries. Indeed, it is the quality of governance that, at least in part, influences the policies set that, in turn, affect the institutional climate, making it more or less business friendly. In fact, as shown in Figure 2, the World Bank shows a “governance gap” associated with MENA countries (World Bank, 2003). It is important to note that this gap reflects both a poor quality of public administration and a lack of public accountability.¹⁵

Figure 2. “Good governance”, MENA countries and other regions, 2006



Source: Author’s calculations, based on the World Bank’s “good governance” indicators available at <http://info.worldbank.org>.

Note: MENA region includes: Algeria, Bahrain, Egypt, Iran, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, the UAE and Yemen. The higher the index, the better the quality of governance quality.

¹⁵ The World Bank defines two notions inherent to good governance: “inclusiveness” and “accountability”. Inclusiveness refers to fair and free participation of citizens in political decisions. Accountability refers to the fact that public authorities are responsible before the citizens. The more these two notions are respected, the better the country in question is ranked in terms of “good governance”.

In sum, slow and complex administrative procedures, as well as widespread corruption related to bad governance conditions, impose high transactional costs on the private sector. Such costs are detrimental to intra-Arab trade and to the integration of the Arab world into the world economy.

Weak transport and communication infrastructures

a. Transport infrastructure

When it comes to trade costs in the region, studies highlight high transport and communication costs, partly due to weak infrastructures (AMF, 2004 and ESCWA, 2003^a). Concerning transportation infrastructure, the data from the “world development indicators”¹⁶ shows that only 56 percent of total road networks in Arab countries were paved in 1999. The same year, it was 90 percent for the OECD¹⁷ countries. More important, some countries had less than 13 percent of their road networks paved: Djibouti, Mauritania, Somalia and Yemen. More recent data pertaining to the efficiency of transportation infrastructure shows significant differences between Arab countries.

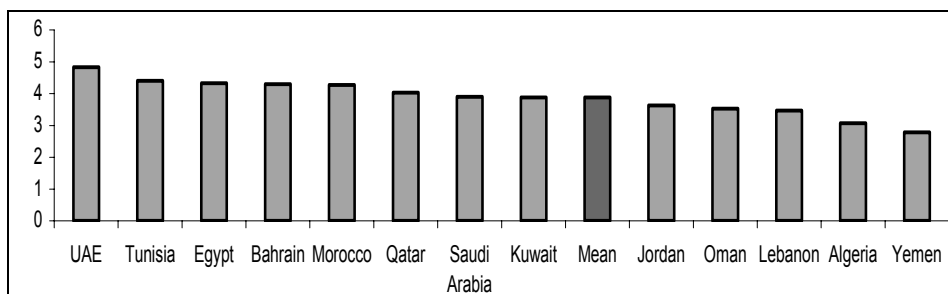
At a high level, Egypt and the Maghreb countries are better equipped in terms of railroad infrastructures, while the Gulf countries have better ports and airport infrastructures.¹⁸ The underlying reason behind the Gulf countries’ well equipped ports and airports is their will to become the regional economic and commercial hub linking the Arab world with the rest of the world. Perhaps the best example is Dubai’s Jebel Ali port, which is one of the biggest ports in the world (WTO, 2006). Notwithstanding the Gulf countries, many Arab countries lack good seaports infrastructures as defined by best practices.

¹⁶ WDI CD–Rom, 2005.

¹⁷ Organization for Economic Co-operation and Development.

¹⁸ The Arab world competitiveness report (2003 and 2005).

Figure 3. Transport infrastructure efficiency, 2004



Source: Author's calculations, based on "The Arab world competitiveness report" (2003 and 2005).

Note: The data pertains to a survey conducted in 2004, with the exception of Kuwait where it took place in 2002.

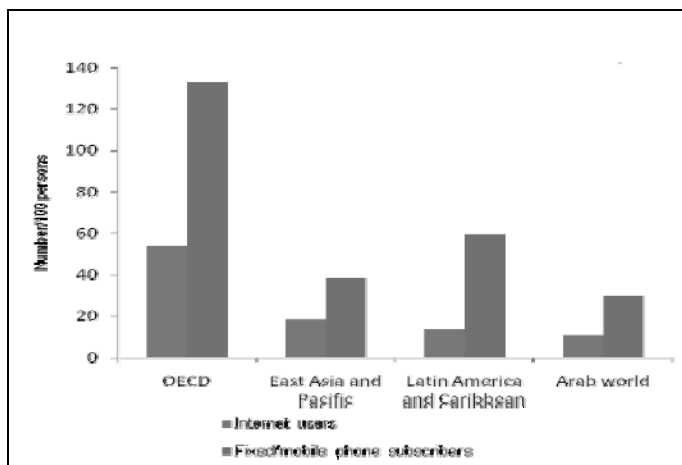
The index is the simple average of three sub-indices reflecting ports, airports and railroad efficiencies.

b. Communication infrastructure

The knowledge economy depends on the amount and the quality of available information in the society. Thus, the so-called "information society" is based on information and communication technologies (ICT). If developed, such technologies would help the Arab countries to intensify their trade relations with one another and with the rest of the world. However, the Arab world is poorly endowed with ICT when compared to other regions; as shown in Figure 4, there were only 11 Internet users per 100 persons in the Arab world in 2004, while this ratio was 18.5 in East Asia and 54 in the OECD countries. In 2005, there were on average 8 computers per 100 persons in the Arab world. The same ratio was equal to 10 in Brazil and almost eight times higher in Singapore¹⁹.

¹⁹ World Economic Forum, available at <http://www.weforum.org>.

Figure 4. Internet users, fixed and mobile phone subscribers, Arab world and other regions, 2004



Source: Author's calculations, based on the World Bank, the world development indicators, available at <http://ddp-ext.worldbank.org>.

Note: The Arab world includes: Algeria, Bahrain, Egypt, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, the UAE and Yemen.

One of the reasons explaining the reduced Internet use in the Arab countries is the relatively high cost to access the World Wide Web there — in 2001, the average monthly cost was around 35 US dollars, compared to 23 US dollars in the OECD countries and only 14 US dollars in East Asia (AHDR, 2003). The poor state of telephone networks is another factor behind the weak Internet use in the region: as shown in Figure 4, in 2004 the average ratio of telephone lines per 100 persons was around 30 in the Arab world, while in Latin America it was double that.

In conclusion, while intra-Arab trade has been, to a large extent, tariff-free since the beginning of 2005, the full potential of trade relations between Arab countries cannot be reached if the factors outlined above are not solved. On one hand, there is a necessity to streamline the administrative procedures pertaining to economic and commercial transactions. This calls for better governance in the Arab world,

especially for a higher quality of public administration. By stressing the need for better quality of public administration, we do not underestimate the likely positive outcome of a better public accountability. In fact, enhanced accountability would foster private sector participation in the determination of public policies which could accelerate the reforms needed. However, given the political constraints inherent in a broader political liberalization and the direct impact of improved public services on transactions, we focus on the latter aspect of better governance and its impact on intra-Arab trade. On the other hand, reforms should be directed towards lowering trade costs. In this respect, priority should be given to the transportation and communication sectors by ameliorating infrastructures and enhancing competition. Overall, such reforms should target these trade facilitation factors. Indeed, in its broadest meaning, the concept of trade facilitation embodies efficient administrative services,²⁰ a transparent judicial system, as well as developed transportation and communication infrastructures. In what follows, we estimate the impact of certain components of trade facilitation on intra-Arab trade.

III. TRADE FACILITATION AND INTRA-ARAB TRADE: THE MODEL

Based on a minimal and commonly used simplification of the theoretical model developed by Anderson and Van Wincoop (2003), we used a gravity model to assess the impact of the components of trade facilitation on intra-Arab trade, introducing three variables. One variable reflects ports infrastructure in each of the Arab countries in the sample: highly-equipped ports are more likely to increase trade. In fact, several studies highlighted the importance of ports infrastructure in trade relations. Kyvik and Piermartini (2004) found that efficient ports were the single most important factor affecting bilateral trade relations. Clark, Dollar and Micco (2004) signaled that inefficient ports increase maritime transport costs, thereby hampering bilateral trade. The second variable

²⁰ Notably customs.

highlights communication infrastructure, namely the Internet, in the countries of interest. In his 1996 paper, Rauch put forward a sequential research process between sellers and buyers that characterizes commercial transactions in differentiated products. Such a process, however, is costly and negatively affects exchange possibilities. Using a gravity model in which they included communication costs, Fink, Mattoo and Neagu (2002) found that high communication costs significantly hinder bilateral trade. In fact, the availability and the cost of information about potential buyers and sellers are important components of transaction costs: greater use of the Internet would reduce these costs and thus foster commercial transactions. Freund and Weinhold (2000) developed an analytical framework showing that the Internet can aggregate both demands and supplies of certain goods, consequently facilitating bilateral trade. The third variable mirrors the quality of the institutional framework in the Arab countries. Transparent and impartial judicial systems, as well as efficient and simple administrative procedures, are all factors reducing transactional costs. In this respect, Anderson and Marcouiller (2000) found that traded goods' prices are positively related to risks inherent in commercial transactions. Such risks are significantly reduced in the presence of an efficient judicial system and transparent public policies. Consequently, these factors tend to reduce the price of traded goods, thereby enhancing trade opportunities. The importance of an impartial judicial system in fostering bilateral trade was also shown by Berkowitz, Moenius and Pistor (2005). Besides trade facilitation, we introduced to the model a number of variables affecting the cost of commercial transactions between Arab countries, thereby taking into account sub-regional trade agreements, such as the Arab Maghreb Union (AMU)²¹ and the Gulf Cooperation Council (GCC).²² Also, we introduce a variable reflecting the reduction of tariffs between GAFTA members. Furthermore, we introduced two variables controlling geographical and cultural proximity between the countries of interest:

²¹ Signed in 1981 between Algeria, Mauritania, Morocco and Tunisia.

²² Signed in 1989 between Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the UAE.

the fact that the latter share common borders and have had the same colonizer after World War II.

The estimated equation is:²³

$$\ln\left(\frac{M_{ij}}{y_i y_j}\right)_t = k + \beta_1 \ln(D_{ij}) + \beta_2 \ln(Ports_i \times Ports_j)_t + \beta_3 \ln(Internet_i \times Internet_j)_t + \beta_4 \ln(Institutions_i \times Institutions_j)_t + \beta_5 AMU_{ij} + \beta_6 GCC_{ij} + \beta_7 GAFTA_{ijt} + \beta_8 CB_{ij} + \beta_9 CC_{ij} + \alpha_{im} + \alpha_{ix} + \alpha_{jm} + T + \varepsilon_{ijt} \quad (1)$$

With:²⁴

The subscripts *i*, *j*, *t*, represent respectively country *i*, *j* and time;

M_{ij} being manufactured goods²⁵ imported by country *i* from country *j*;

y_i and *y_j* being Gross Domestic Product (GDP) of country *i* and *j*, respectively;

D_{ij} being the distance between the capitals of countries *i* and *j*;

Ports_i and *Ports_j* being the technical capacities of ports of country *i* and *j*, respectively;²⁶

Internet_i and *Internet_j* being Internet usage in country *i* and *j*, respectively;

Institutions_i and *Institutions_j* being the institutional efficiency in country *i* and *j*,

respectively.²⁷

²³ For details on the theoretical specification of the gravity model, see Anderson and Van Wincoop (2003). For details on trade costs, see Anderson and Van Wincoop (2004).

²⁴ For technical details, see appendix: data description.

²⁵ Our definition of manufactured goods includes product categories numbered 5, 6, 7 and 8 of the United Nations' Standard International Trade Classification, SITC–Rev.1. These categories accounted for almost 53 percent of intra-Arab trade in 2002. We have excluded mineral fuels and lubricants as well as agricultural products.

²⁶ For each country, it is measured by the square of the number of ports having lifts with leverage capacity of over 50 tons, normalized by the product of the surface and the population.

²⁷ For each country, it is the simple average of three “good governance” sub-indices. Before we computed the averages, we transformed the raw data. For details, see appendix, data description.

In order not to be captured by country-specific effects, we introduced trade facilitation variables using multiplication across importer and exporter countries. Although this is a rare specification, some authors have already used this system with the variables defined as follows:²⁸

AMU_{ij} being a dummy variable taking the value of 1 when both countries are AMU members, and 0 otherwise;

GCC_{ij} being a dummy variable taking the value of 1 when both countries are GCC members, and 0 otherwise;

$GAFTA_{ij}$ being a dummy variable taking the value of 1 when both countries are GAFTA members, and 0 otherwise;²⁹

CB_{ij} being a dummy variable taking the value of 1 when countries i and j share a common border, and 0 otherwise:

CC_{ij} being a dummy variable taking the value of 1 when countries i and j have had a common colonizer after 1945, and 0 otherwise;

α_i and α_j being specific effects reflecting time-invariant characteristics of country i and j , respectively:³⁰.

T being time-fixed effects that control for a number of time-variant factors affecting all the countries of interest:³¹ and

ε_{ijt} being the error term.

²⁸ Testing the impact of Internet diffusion on international trade, Freund and Weinhold (2000) introduced the product of the "cybermasses" of countries i and j .

²⁹ Although the GAFTA entered into force only in 2005, we included it in the model since it reflects mutual tariffs reductions between GAFTA members during the period of interest. Since the sample countries' membership in GAFTA evolved throughout the years, we let the GAFTA dummy variable change over time.

³⁰ For instance, such effects reflect the fact that a given country is an island, or landlocked ;we make a distinction between import specific effects (α_{im} and α_{jm}) when a given country is importing, and export specific effects (α_{ix} and α_{jx}) when a given country is exporting.

³¹ For instance, such effects reflect the world growth, or shocks simultaneously affecting the Arab economies and their trade.

Our methodology presents the advantage of “visualizing” the components of trade facilitation by country. Thus, it allows us to rank the eighteen Arab countries in terms of each of the three components of trade facilitation.³² The following table synthesizes the descriptive statistics concerning these components:

Table 2: Trade facilitation indices, descriptive statistics, 2002

Index	Mean	Standard deviation	Minimal value ^a	Maximal value ^a
Technical capacity of ports	1	3.92	0.00002 (Sudan)	16.72 (Bahrain)
Internet use	1	1.19	0.04 (Sudan)	4.63 (UAE)
Institutional environment quality	1	0.46	0.32(Sudan)	1.79 (UAE)

Source: Author’s calculations.

Note: (a) reported values correspond to countries between parentheses. For each component of trade facilitation, we normalized the eighteen Arab countries’ indices, so that the mean of the new series of indices is equal to 1.

The table shows that the most significant difference between Arab countries in the components of trade facilitation is that pertaining to ports infrastructures. It is followed by the Internet use and institutional efficiency, respectively. Later, we will use the trade facilitation indices for simulation purposes. We estimate equation (1) using the panel estimation data for the years 1996, 1998, 2000 and 2002. The regression results are displayed in Table 3: the first column reports the results for equation (1) — model 1. It shows that almost all variables have the expected sign: the two variables without the expected sign — GCC and CB — are insignificant.

³² The sample includes: Algeria, Bahrain, Comoros, Egypt, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, the UAE and Yemen. With the exception of Algeria, Comoros and Mauritania all the countries either were, or became, GAFTA members during the period of interest.

Table 3: Regression results

Right hand variables	Left hand variable: $\ln(M_{ij}/y_{ij})$	
	Estimated coefficients of Model 1	Estimated coefficients of Model 2
$\ln(D_{ij})$	-1.2**** (0.26)	-1.14**** (0.19)
$\ln(Ports_i * Ports_j)$	0.09 (0.06)	0.12*** (0.06)
$\ln(Internet_i * Internet_j)$	0.19**** (0.54)	0.12**** (0.04)
$\ln(Institutions_i * Institutions_j)$	0.3 (0.32)	0.46* (0.3)
AMU	1.32*** (0.68)	0.96* (0.62)
GCC	-0.2 (0.73)	
GAFTA	0.3 (0.3)	
Common border	-0.62 (0.71)	
Common colonizer	0.63* (0.4)	0.59** (0.36)
Constant	-23.2**** (2)	-23.7**** (1.47)
Number of observations	452	452
R ²	0.51	0.49
Adjusted R ²	0.5	0.48
Prob. F statistic	0.0	0.0

Note: We estimated the model using generalized least squares taking into account panel effects, autocorrelation and heteroskedasticity of the error term.

Numbers between parentheses are standard errors of the estimated coefficients.

Asterisks correspond to the significance levels of the estimated coefficients: (****), (***), (**) and (*) correspond to coefficients significant at 1 percent, 5 percent, 10 percent and 12 percent, respectively.

Country-specific effects, as well as time-fixed effects are not reported in the table.

Distance significantly affects intra-Arab trade;³³ all other things being equal, a 1 percent increase in distance reduces intra-Arab imports by 1.2 percent. Regarding trade facilitation, the Internet is the only component that is significant; a 1 percent increase in the use of the Internet implies a growth of intra-regional trade by 0.19 percent, all other things being equal.

Concerning trade agreements, surprisingly, the AMU stands as the only agreement that significantly affects intra-Arab trade; all things being equal, being a member of the AMU increases trade by a factor of almost 4.³⁴ One explanation could be that the AMU variable controls mostly for the fact that AMU members are located in northeast Africa, somewhat isolated from the rest of the Arab world, rather than the AMU agreement *per se*.³⁵ As a matter of fact, geopolitical tensions between Maghreb countries have eroded the AMU trade liberalization efforts. Finally, having the same colonizer in the post-1945 period affects intraregional trade rather significantly;³⁶ all things being equal, having shared the same colonizer nearly doubles³⁷ trade. The regression was rerun after eliminating the insignificant non-trade facilitation variables and the results are reported in the second column — Model 2. As in Model 1, distance, AMU and CC are significant and have the expected signs. Pertaining to the variables of interest — trade facilitation — they all have the expected signs. The regression shows that, all other things being equal, a one percentage point enhancement of the technical capacities of ports increases intra-regional trade by 0.12 percent. Furthermore, a 1 percent increase in Internet use boosts intra-Arab trade by 0.12 percent,

³³ More accurately, it is bilateral imports (of country *i* from country *j*) normalized by the product of the countries' GDP. For clarity, each time we use "intra-Arab trade", "intra-regional trade", "intra-Arab imports" and "intra-regional imports", we mean intra-Arab imports normalized by the product of GDPs.

³⁴ $e^{1.32} \approx 4$.

³⁵ In their model, Bolbol and Fatheldin (2005) estimated the impact of three sub-regions on intra-Arab trade — they found that the Maghreb sub-region positively and significantly affects trade relations. Such result corroborates our interpretation of the AMU variable.

³⁶ The estimated coefficient of the CC variable is significant at 12 percent.

³⁷ $e^{0.63} \approx 2$.

all other things being equal. The estimated coefficient of the institutional quality³⁸ shows that a 1 percent improvement in the latter increases intra-Arab trade by 0.46 percent, all other things being equal.

In the final analysis, the regression shows that the trade facilitation components significantly affect intra-Arab trade. Thus, the implementation of appropriate measures in order to enhance trade facilitation capacities in the Arab countries would positively affect intra-Arab trade. Moreover, such measures would also increase trade relations between the Arab world and the rest of the world. One of the advantages of our methodology is that it enabled us to conduct simulations to illustrate the increase of intra-Arab trade induced by improvement scenarios pertaining to each of the trade facilitation components in the Arab countries. We discuss the results of such simulations after briefly pointing out the limits of our model.

The main difficulty when modeling the impact of trade facilitation on intra-Arab trade is the scarcity of data, specifically data pertaining to trade facilitation. For instance, since an important part of intra-regional trade is done by land, it would have been interesting to use indices assessing the impact of road networks as well as railroads on trade between Arab countries. However, limited data pertaining to road and railroad infrastructures prevented us from doing that. Another example of how the limited data affected our choice of variables concerns the quality of the institutional environment. Amongst the six sub-indices of the “good governance” index developed by the World Bank, we chose three sub-indices that, *a priori*, affect economic and commercial transactions the most.³⁹ However, such choice remains arbitrary. If we had more precise data pertaining to, for example, customs service, we could have evaluated its impact on intra-Arab trade. Moreover, if we had more detailed data, we could have complemented our ports infrastructure analysis by using another variable to capture ports

³⁸ Significant at 12 percent.

³⁹ These are regulatory quality, rule of law and control of corruption.

efficiency more accurately. Recently, new databases were set up to cover such “direct” measures of trade facilitation;⁴⁰ however, these databases cover a much smaller set of Arab countries and years than the sample we used. Thus, we preferred using “indirect” measures of trade facilitation covering a large sample of Arab countries for the relevant time period, rather than recent “direct” measures that cover a much smaller set of countries and years. Related to the first difficulty mentioned is the lack of observations in the database used to estimate the model. While we should have had no less than 1224 observations,⁴¹ we ended up with only 452 observations due to missing data. The reduced number of observations significantly affects our results — it reduces the significance of the estimated coefficients and leads to biased values. A third limit to our model is the restrictive assumption of strict exogeneity of the regressors⁴². A final limit to our model is the eventual high correlation between the components of trade facilitation.⁴³ Indeed, these components often reflect the development level of the countries they correspond to and are generally highly correlated. More precisely, we found that the Internet component is rather highly correlated with both the institutional quality (65 percent) and ports infrastructure (67 percent) components. To tackle any eventual multicollinearity, we reran the model using the principal components analysis. The results, unreported in this paper, showed that the component reflecting the trade facilitation elements are significant and positively affect intra-Arab trade.⁴⁴ After discussing the limits of our model, we now turn to the simulations.

⁴⁰ For example, the ease of doing business database, or country competitiveness reports.

⁴¹ The product of the number of countries (18), the number of country-pairs (17) and the number of observation years (4).

⁴² A related problematic issue is the plausible double causality relationship between trade and ports infrastructure. However, the causality assumed in the model allows us to proceed to the policy simulation analysis. The regression results could be interpreted as statistical correlation.

⁴³ See Appendix, Table 1.

⁴⁴ All other things being equal, a 1 percent improvement of ports infrastructure, institutional environment and Internet use increases intra-Arab trade by 0.51 percent.

IV. TRADE FACILITATION AND INTRA-ARAB TRADE: SIMULATIONS

Our objective was to evaluate intra-Arab trade that would be generated from an improvement of the trade facilitation components, the base year being 2002. For each trade facilitation component, we measured the effect of bringing the below-median Arab countries to the regional median value. Our approach can be justified by the following factors: first, giving our limited financial and technical resources, it would be appropriate to focus on countries that are way behind the regional norm. Second, for many countries that have indices inferior to the corresponding median indices, intra-regional trade represents a significant share either of their total trade, or their GDP.⁴⁵ Finally, simulations based on median rather than on mean values eliminate biases induced by eventually excessive values of some countries' trade facilitation indices. For instance, this is the case for the Bahraini ports infrastructure index, which is extremely higher than the corresponding indices of the other countries in the sample. We ran three separate simulations corresponding to each of the three trade facilitation elements. For each trade facilitation component we did the following:

- First, we computed the median value of the eighteen indices corresponding to the eighteen Arab countries of the sample.
- Second, we identified the countries with an index below the median value.
- For those countries, we computed their regional imports induced by the improvement of their trade facilitation index value, using (i) the gap between their index value and the median value, and (ii) the elasticity of intra-regional imports relatively to the trade facilitation component.

⁴⁵ For example, this is the case of Lebanon and Yemen, where trade with Arab partners accounted respectively for 16.6 percent and 16.2 percent of their total trade in 2002. Besides, regional trade represented respectively nearly 7 percent and 11.4 percent of Lebanese and Yemenite GDP in 2002.

The table below summarizes simulations findings and illustrates the total of intra-regional imports induced by the improvement of all of the trade facilitation components.

Table 4. Intra-regional imports induced by a general improvement of all trade facilitation components

(in US dollars)

Trade facilitation components	Intra-Arab imports induced by each trade facilitation component	Share of each trade facilitation component in intra-Arab imports, in percent
Ports	14 683 784 200	82.1
Internet	1 709 881 378	9.6
Institutions	1 481 574 489	8.3
Total	17 875 240 066	

Source: Author's calculations.

Four conclusions can be drawn from the table: first, the total of intra-Arab imports due to the improvement of the trade facilitation components is around 18 billion US dollars; this is more than double the value of intra-Arab imports in 2002.⁴⁶ Second, improving ports infrastructure has the biggest impact on intra-regional trade growth. This stems from the significant increase in the regional imports of Saudi Arabia, Sudan and Yemen, induced by the improvement of their ports infrastructures.⁴⁷ Third, almost 10 percent of intraregional imports are due to greater use of the Internet. In this case, a major part of trade stems from the increased imports of Algeria, Sudan, Syria and Yemen. Finally, the improvement of the institutional environment accounts for around 8 percent of total intra-Arab trade. In this respect, the countries that record the most significant expansion of their regional imports are Algeria, Libya, Sudan and Yemen. Before presenting reform-strategies in terms of trade facilitation, it is important to mention that caution is

⁴⁶ In manufactured goods.

⁴⁷ See Appendix, Tables 2, 3 and 4.

needed when dealing with the simulations results, for two main reasons. First, our results depend on the regression which is limited by the factors mentioned earlier. Second, simulations findings are relative to the base year 2002. However, since that year, several Arab countries have embraced economic and policy reforms, thus enhancing many elements of trade facilitation. These considerations highlight the illustrative aspect of our simulations.

Table 5. Trade facilitation priorities in each country having at least one trade facilitation component below regional standards

Country	Components of trade facilitation
Algeria	Ports (60.6 percent), Institutions (27.2 percent), Internet (18 percent)
Comoros	Internet (102.1 percent), Institutions (47.7 percent)
Egypt	Ports (167.5 percent), Institutions (8.1 percent), Internet (5 percent)
Lebanon	Institutions (13.2 percent)
Libya	Institutions (83.6 percent), Internet (9.3 percent)
Mauritania	Internet (117.6 percent), Ports (55.8 percent), Institutions (0.02 percent)
Morocco	Internet (8.3 percent), Ports (0.9 percent)
Saudi Arabia	Ports (104 percent)
Sudan	Ports (1983.2 percent), Internet (172.4 percent), Institutions (114.1 percent)
Syria	Institutions (21.6 percent), Internet (10.5 percent), Ports (7.1 percent)
Yemen	Ports (227 percent), Internet (82 percent), Institutions (43.9 percent)

Source: Author's calculations.

Note: numbers between parentheses correspond to percent expansion of regional imports (relatively to the base year, 2002) of each of the countries, associated with improvements in the corresponding component of trade facilitation.

In what follows, and with the objective of increasing intra-Arab trade, we use the simulations results in order to define national and regional priorities in terms of trade facilitation. The following table illustrates, for each country having at least one of its trade facilitation indices below the corresponding median value, the percent growth of its regional imports induced by the improvement of the corresponding trade facilitation index.⁴⁸ For each country, the components of trade facilitation are ranked in terms of the resulting growth of imports. For example, in the case of Algeria, it is the improvement of its ports infrastructure that should result in the most significant increase of its imports from Arab partners (around 61 percent, relative to 2002).

In terms of national priorities, the following table shows that there are five countries for which upgrading ports infrastructures stands out as a priority in order to increase their trade with their Arab partners: Algeria, Egypt, Saudi Arabia, Sudan and Yemen. In fact, for those countries, improving ports infrastructure would maximize the expansion of their regional imports. Improving the institutional environment should be the priority for three countries: Lebanon, Libya and Syria. It is this measure that would stimulate the most significant expansion of their regional imports; relative to the base year, this expansion is 13 percent in the case of Lebanon, 84 percent for Libya and 22 percent for Syria. Finally, implementing measures aimed at increasing the use of the Internet would be the most effective means to increase regional imports for Comoros, Mauritania and Morocco. Considering the rather limited financial and technical capacities in these countries,⁴⁹ the previous table allows us to generate national priority plans of action targeting the component of trade facilitation affecting that country's regional imports most significantly.

⁴⁸ Relative to the base year 2002.

⁴⁹ With the exception of Lebanon, Libya and Saudi Arabia, average per capita GDP in these countries was only about 889 US dollars in 2002. In the same year, GDP per capita in Comoros, Mauritania, Sudan and Yemen, was around 394 US dollars, 357 US dollars, 470 US dollars and 434 US dollars, respectively.

Simulations can be used to define regional priorities, the objective being, as before, to increase intra-Arab trade. To do this, we identify, for the improvements made to each of the trade facilitation elements, the four countries for which an increase in their regional imports would be the most significant for all countries. The following table illustrates what the regional priorities should be:

Table 6: Countries that account for most of the new intra-regional imports induced by a general improvement in the Components of trade facilitation

Country	Ports	Internet	Institutions
Share of the 4 countries that account for most of the new intra-regional imports induced by a general improvement of all trade facilitation components^a	Sudan (59.4 percent)	Sudan (30.8 percent)	Sudan (25.6 percent)
	Saudi Arabia (16.4 percent)	Yemen (26.6 percent)	Yemen (22.2 percent)
	Yemen (12 percent)	Syria (9.7 percent)	Libya (15.2 percent)
	Egypt (5 percent)	Algeria (8.9 percent)	Syria (11.3 percent)
Ranking of the 4 countries between the 18 countries of the sample, in terms of each of the trade facilitation components^b	Sudan (16)	Sudan (18)	Sudan (18)
	Saudi Arabia (13)	Yemen (15)	Yemen (15)
	Yemen (15)	Syria (13)	Libya (17)
	Egypt (14)	Algeria (14)	Syria (13)

Source: Author's calculations.

Note: (a) numbers between parentheses correspond, for each country, to its share in total intra-regional imports induced by an improvement of the corresponding trade facilitation component.

(b) the ranking pertaining to ports infrastructure is among sixteen countries: we excluded Bahrain due to its very high index and Comoros is not included in the series due to a lack of data.

Pertaining to ports infrastructure, the table reads: 59.4 percent of total new intra-regional imports, induced by an improvement of ports infrastructures, stems from the increased Sudanese imports, 16.4

percent from the Saudi imports, 12 percent from the Yemenite imports and 5 percent from the Egyptian imports. The second row shows, for each of the trade facilitation components, the ranking of the four countries relatively to the eighteen countries of the sample. For example, with regards to ports infrastructure, Sudan is in 16th position, Saudi Arabia in 13th position, Yemen and Egypt occupy, respectively, the 15th and 14th positions. With an objective of boosting intra-GAFTA trade, the previous table allows, for each element of trade facilitation, to channalize regional efforts towards the countries for which the expansion of their regional imports, induced by the improvement of the corresponding trade facilitation element, is the most significant among all other countries. In terms of upgrading ports infrastructure, regional funds should be directed primarily towards Sudan, Saudi Arabia, Yemen and Egypt. Regarding investments in ICT,⁵⁰ regional efforts should focus principally on Sudan, Yemen, Syria and Algeria. As for the enhancement of the institutional environment, regional endeavors should be guided towards Sudan, Yemen, Libya and Syria. Such efforts would greatly benefit from Arab common funds, notably the Arab Fund for Economic and Social Development.⁵¹ They could also benefit from the League of Arab States' specialized agencies, particularly those pertaining to transportation and communication. The importance of the distinction made between national and regional priorities is worth mentioning. For instance, as far as Algeria is concerned, its own priorities are the enhancement of its ports infrastructure and institutional environment. However, regional efforts towards Algeria should be directed to upgrade its Internet services. Thus, distinguishing between national and regional priorities would avoid the duplication of efforts aimed at expanding intra-GAFTA trade and allow complementarities between national and regional endeavors.

⁵⁰ The countries in which the Internet use is below regional standards also suffer from weak telephone networks. Thus, investments should also be aimed, among other things, at upgrading telephone networks.

⁵¹ This fund, created in 1968, mainly finances common projects.

V. CONCLUSIONS

In this paper, we highlighted several deficiencies characterizing many Arab countries in terms of some of the elements of trade facilitation: the quality of the institutional framework, as well as the quality of transportation and communication services. With the complete elimination of tariffs among GAFTA members, such deficiencies are frustrating pro-competitive effects that should be generated by the trade liberalization scheme.

As shown in the model and the simulations, trade facilitation significantly affects intra-Arab trade. Therefore, efforts aimed at enhancing trade facilitation are necessary to increase regional integration. Such efforts will also accelerate the integration of the Arab region into the world economy, thus lessening any eventual welfare-reducing effects induced by GAFTA.⁵² Our methodology allows identification of the needs of each country in terms of trade facilitation. It can therefore help direct the efforts towards well-targeted improvements in trade facilitation. The methodology also permits us to distinguish between national and regional priorities in terms of trade facilitation, thus allowing for complementarities in national and regional efforts. These efforts should be guided towards reducing transactional costs of trade through the enhancement of transportation and communication services and the streamlining of public administration services. Pertaining to the first components, Arab countries suffering from poor transportation and communication infrastructures should upgrade them, notably by mobilizing private investment funds. Others should eliminate monopoly powers, mainly by liberalizing some key services and adopting competition laws. Concerning the quality of public administration services, efforts should target a more transparent and efficient institutional environment. This can be achieved by adopting best practices to streamline administrative procedures and the computerization of some strategic services, most notably customs. The

⁵² Mainly caused by “trade diversion”.

dissemination of online administrative services is a valuable option. The GAFTA's institutional structure can also contribute to such efforts — GAFTA should reinvigorate its committee responsible for the elimination of non-tariff barriers in member countries. Furthermore, GAFTA's executive body would greatly benefit from embedding a partnership with the Arab private sector. Such a partnership could be particularly fruitful if done with the newly-established “Arab Business Council”, which attempts to identify ways to intensify intra-Arab trade, as well as the integration of Arab economies into the world economy. Overall, such measures⁵³ would positively affect intra-Arab trade and speed up the integration of the region with the rest of the world. Given that several Arab countries have adopted measures aiming at enhancing trade facilitation since the beginning of the new millennium, the latter should be positively affecting intra-regional trade.

To be complete, the analysis should be broadened to take into consideration the costs⁵⁴ and the benefits⁵⁵ of the recommended measures. However, this lies beyond the scope of this paper, and could be a subject for further research. Keeping in mind the limits of our methodology, this study is a first step to identify the needs of Arab countries in terms of trade facilitation, as well as the measures that should be taken to enhance trade facilitation and regional integration in the Arab world.

⁵³ If coupled with broader investment-friendly measures.

⁵⁴ Mainly in terms of investments needed to enhance and maintain technical capacities of ports, telephone networks and Internet connections. The costs also include the funding necessary to increase the efficiency of the institutional structure.

⁵⁵ Mainly in terms of trade and employment.

APPENDIX. Data description

Variable: bilateral imports of manufactured goods (M_{ij})

Description: imports of country i from country j , in US dollars (C.I.F terms, using the SITC Rev.1, at the 1-digit level).

Source: Comtrade database, available at <http://comtrade.un.org>

Note: in some cases, “mirror” data was used (i.e. X_{ji})

Variable: Gross Domestic Product (y_i, y_j)

Description: GDP in current US dollars.

Source: International Monetary Fund, World Economic Outlook database, available at <http://www.imf.org>

Variable: distance (D_{ij})

Description: great circle distance between capital cities.

Source: <http://www.wcrl.ars.usda.gov/cec/java/capitals>.

Variable: technical capacities of ports ($Ports_i, Ports_j$)

Description: for each country, it is the square of the number of “big” ports normalized by the product of the population and the surface:

$$Ports_i = \left(\frac{P_i^2}{Population_i \times Superficie_i} \right)$$

we define “big” ports as ports which have lifts with leverage capacity of 50 tons and above.

Source: the number of ports was obtained from Portualia S.A. world port database, available at <http://www.portualia.com>, population and surface figures were obtained from the World Development Indicators 2005 (CD) and from country data profile available at <http://www.worldbank.org>.

Variable: Internet usage ($Internet_i, Internet_j$)

Description: Internet users per 100 inhabitants.

Source: International Telecommunication Union, “Arab States telecommunication indicators, 1992–2001”, available at <http://www.itu.int>, and the world development indicators data query, available at <http://devdata.worldbank.org/> data-query.

Variable: institutional efficiency ($Institutions_i, Institutions_j$)

Description: first, we transformed each of the 3 series of “Good governance” indices: “Regulatory quality index”, “Rule of law index”, and “Control of corruption index”, through the following formula:

$$\text{Transformed index} = \left(\frac{\text{Initial index} - \text{Minimal index}}{\text{Maximal index} - \text{Minimal index}} \right)$$

With (for each series of indices): *initial value*, the initial index value of the country of interest as obtained from the World Bank database; *minimal value*, the minimal index value among the 18 Arab countries and *maximal value*, the maximal index value among the 18 Arab countries. Second, for each country, we computed the simple average of the 3 new indices obtained, when at least 2 of these indices exist per country.

Source: “Governance matters III: Governance indicators for 1996–2002”, World Bank Policy Research Working Paper, 2003.

Variable: (AMU_{ij})

Description: a dummy variable taking the value of 1 when both countries are AMU members, and 0 otherwise. Throughout the years of interest, the AMU member countries did not change.

Source: <http://www.maghrebarabe.org>

Variable: (GCC_{ij})

Description: a dummy variable taking the value of 1 when both countries are GCC members, and 0 otherwise. Throughout the years of interest, the GCC member countries did not change.

Source: http://www.gcc-sg.org/index_e.html

Variable: ($GAFTA_{ij}$)

Description: a dummy variable taking the value of 1 when both countries are GAFTA members, and 0 otherwise. Since the sample countries’ membership in GAFTA evolved throughout the years, we let the GAFTA dummy variable change in time.

Source: United Nations’ Economic and Social Commission for Western Asia, “Annual review of developments in globalization and regional integration in the countries of the ESCWA region” (2002, 2003, 2005).

Variable: common border (CB_{ij})

Description: a dummy variable taking the value of 1 when countries i and j share a common border, and 0 otherwise.

Source: Central Intelligence Unit, "Fact book", available at <http://www.odci.gov>

Variable: common colonizer (CC_{ij})

Description: a dummy variable taking the value of 1 when countries i and j have had a common colonizer after 1945, and 0 otherwise.

Source: Centre d'Etudes Prospectives et d'Informations Internationales (CEPII), available at <http://www.cepii.fr>.

CORRELATION COEFFICIENTS OF TRADE FACILITATION COMPONENTS

Table A1. Pair-wise correlation coefficients of trade facilitation variables

Variable	$\ln(\text{Institutions}_i^* \text{Institutions}_i)$	$\ln(\text{Ports}_i^* \text{Ports}_i)$	$\ln(\text{Internet}_i^* \text{Internet}_i)$
$\ln(\text{Institutions}_i^* \text{Institutions}_i)$	1	0.52	0.65
$\ln(\text{Ports}_i^* \text{Ports}_i)$	0.52	1	0.67
$\ln(\text{Internet}_i^* \text{Internet}_i)$	0.65	0.67	1

INTRA-ARAB IMPORTS INDUCED BY IMPROVEMENTS OF EACH OF THE TRADE FACILITATION COMPONENTS

Table A2. Intra-regional imports induced by an improvement of technical capacities of ports in countries that have an index below the median value

(in US dollars)

Countries with a port index below the median value	Intra-regional imports (2002)	Intra-regional imports induced by an improvement of technical capacities of ports	Increase of imports
Morocco	280 713 355	283 204 083	2 490 728
Syria	417 162 879	446 951 636	29 788 757
Mauritania	23 914 971	37 253 669	13 338 698
Algeria	359 079 371	576 795 230	217 715 859
Saudi Arabia	1 521 100 959	3 103 659 107	1 582 558 148
Egypt	353 226 349	944 840 161	591 613 812
Yemen	695 686 856	2 275 152 422	1 579 465 566
Sudan	537 855 026	11 204 667 657	10 666 812 631

Source: Author's calculation.

Note: The countries are listed in decreasing order relatively to their indices.

For each country, we computed its regional imports induced by the improvement of its ports infrastructures using (i) the gap between its port index and the median value, and (ii) the elasticity of intra-regional imports relatively to ports efficiency.

Table A3. Intra-regional imports induced by an increase use of the Internet in countries that have an index below the median value

(in US dollars)

Countries with an Internet index below the median value	Intra-regional imports (2002)	Intra-regional imports induced by an increased use of the Internet	Increase of imports
Egypt	353 226 349	370 887 666	17 661 317
Morocco	280 713 355	304 050 626	23 337 271
Libya	372 648 209	407 329 335	34 681 126
Syria	417 162 879	460 994 359	43 831 480
Algeria	359 079 371	423 579 003	64 499 632
Yemen	695 686 856	1 266 150 078	570 463 222
Comoros	109 416	221 176	111 760
Mauritania	23 914 971	52 031 220	28 116 249
Sudan	537 855 026	1 465 034 344	927 179 318

Source: Author's calculation.

Note: The countries are listed in decreasing order relatively to their indices.

For each country, we computed its regional imports induced by the more widespread use of Internet using (i) the gap between its Internet index and the median value, and (ii) the elasticity of intra-regional imports relatively to Internet use.

Table A4: Intra-regional imports induced by an improvement of institutional efficiency in countries that have an index below the median value

(in US dollars)

Countries with institutional index below the median value	Intra-regional imports (2002)	Intra-regional imports induced by an improvement of the institutional efficiency	Increase of imports
Mauritania	23 914 971	23 921 079	6108
Egypt	353 226 349	381 865 617	28 639 268
Lebanon	257 977 029	292 071 757	34 094 728
Syria	417 162 879	507 414 630	90 251 751
Algeria	359 079 371	456 747 544	97 668 173
Yemen	695 686 856	1 001 256 910	305 570 054
Comoros	109 416	161 605	52 189
Libya	372 648 209	684 191 622	311 543 413
Sudan	537 855 026	1 151 603 827	613 748 801

Source: Author's calculation.

Note: The countries are listed in decreasing order relatively to their indices.

For each country, we computed its regional imports induced by the improvement of its institutional efficiency using (i) the gap between its institutional index and the median value, and (ii) the elasticity of intra-regional imports relatively to institutions efficiency.

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