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**ON THE DETERMINANTS OF TRADE IN SERVICES:  
EVIDENCE FROM THE MENA REGION**

**Fida Karam and Chahir Zaki**

**Working Paper No. 692**

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## Abstract

This paper examines the determinants of aggregate flows of service trade in MENA countries using an adapted version of the gravity model and a panel dataset covering the 2000-2009 period for 21 countries and 10 sectors. A new determinant of trade performance is introduced: the number of commitments undertaken by sector in the WTO as well as the availability of those commitments by mode. The results show that being a WTO member boosts trade in services. In addition, the number of commitments and binding these commitments increase exports, imports and trade in services. This positive and significant effect remains robust even after controlling for several econometric issues, namely the selection bias related to the WTO membership and the endogeneity of commitments.

**JEL Classification:** F10, F12.

**Keywords:** Trade in Services, WTO Commitments, Gravity models, MENA region

## ملخص

تبحث هذه الورقة محددات التدفقات الإجمالية لتجارة الخدمات في بلدان المنطقة باستخدام نسخة معدلة من نموذج الجاذبية ومجموعة بيانات تتبعية تغطي الفترة 2009-2000 عن 21 بلدا و 10 قطاعات. يتم إضافة محدد جديد من الأداء التجاري: وهو عدد الالتزامات التي تعهد بها القطاع في منظمة التجارة العالمية، فضلا عن توافر تلك الالتزامات من قبل وسيط. فقد بينت النتائج أن كون البلد عضوا لمنظمة التجارة العالمية يعزز هذا من قطاع التجارة في الخدمات. وبالإضافة إلى ذلك، فإن عددا من الالتزامات وربط هذه الالتزامات يزيد من الصادرات والواردات والتجارة في الخدمات. لهذا تأثير إيجابي وكبير ولا يزال قويا حتى بعد ضبط عدة قضايا في الاقتصاد القياسي وهي انحياز الاختيار المتعلق بعضوية منظمة التجارة العالمية وتأثير الجوانب الداخلية من الالتزامات.

## 1. Introduction

Trade in services is receiving increasing interest in the trade literature and in the negotiations under the GATS due to the importance of services in the global economy. Services currently account for approximately two thirds of world GDP and over half of total employment in industrialized countries (WTO 2010). Given these figures, one may be surprised to see that the share of services in total trade falls behind, reaching 21%<sup>1</sup> of global trade flows in 2009 (WTO 2010). If trade in services is underestimated due to the intangible nature of services and the interdependence of services and foreign direct investment flows that makes the measurement of services trade difficult, this low figure is also due to the important restrictions on trade in services.

In 2010, the major exporters of commercial services were the European Union, the United States, Japan, China and India, which together represented around two-thirds of world exports (WTO 2011). The share of developing countries remained low, although the performance of some countries was significantly improved in many directions. For instance, in some Middle East and North Africa (MENA) countries, trade in services, rather than trade in goods, appears as the core of their development strategies. Countries of the Gulf Cooperation Council (GCC), have heavily invested in services to reduce their dependence on oil and further diversify their economy and exports. The Emirate of Dubai promoted tourism, which now contributes more than oil to the Emirate's GDP, as well as exports in information and communication technology, and media. Non-GCC countries are also performing well. For example, Morocco is becoming an important off-shoring center for high-tech enterprises. Besides, the service sector has been an important source of value added growth and job creation in MENA countries during the latter half of the 2000s, irrespective of whether the country was an oil exporter or importer (World Bank 2011). Nonetheless, MENA's share in world service trade was only 4.8% in 2010 [author's calculations from WTO (2011)]. Moreover, service trade only represented 19% of the region's GDP in 2009 although service value added accounted for more than 40% of GDP (author's calculations from the World Development Indicators, 2011). These outcomes reveal serious competitiveness issues and raise the question of whether they are the consequence of the limited commitments for service liberalization.

This paper investigates the determinants of service trade in MENA countries. This region has been widely neglected in the literature on service trade. Since we are interested in each country's trade performance in services instead of bilateral service trade flows, we use an adapted version of the gravity model, taking into account unilateral variants of those variables that have been found to influence bilateral trade. We also introduce a new determinant of trade performance: the number of commitments<sup>2</sup> undertaken by sector in the WTO as well as the availability of those commitments by mode.

The gravity model has been widely applied in international trade studies to investigate the determinants of bilateral trade flows. Its popularity is due to the simplicity of the concept<sup>3</sup>, the extent to which it fits the data and the ease of the econometric estimation<sup>4</sup> of the model. Over the years, the gravity model has undergone significant theoretical and empirical

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<sup>1</sup> This is 2 percentage points up from the previous year, as the decline in global trade in services was considerably less pronounced than that of goods. The share of services in total trade was for a long time lower than 20% before 2009 (WTO 2010).

<sup>2</sup> "A specific commitment in a services schedule is an undertaking to provide market access and national treatment for the service activity in question on the terms and conditions specified in the schedule. When making a commitment a government therefore binds the specified level of market access and national treatment and undertakes not to impose any new measures that would restrict entry into the market or the operation of the service." (WTO website [http://www.wto.org/english/tratop\\_e/serv\\_e/guide1\\_e.htm](http://www.wto.org/english/tratop_e/serv_e/guide1_e.htm))

<sup>3</sup> The concept of the gravity model is based on Newton's Law of Universal Gravitation. Originally applied to international trade by Tinbergen (1962), the gravity model predicts bilateral trade flows between any two countries as a function of their size and the distance between them.

<sup>4</sup> Traditionally the gravity model has been estimated using Ordinary Least Squares (OLS). Nowadays, it is increasingly the case that more sophisticated estimation techniques are employed (Anderson and van Wincoop 2003; Feenstra, 2002; Santos Silva and Tenreiro 2006).

improvements since the pioneering work of Tinbergen (1962) and Anderson (1979) (Mac Callum 1995; Feenstra et al. 2001; Feenstra 2002; Anderson and van Wincoop 2003; Evenett and Keller 2002; Santos Silva and Tenreyro 2006). Those improvements have enforced its theoretical base, narrowing the gap between theoretical and empirical findings. For instance, the model specification has been augmented through the addition of other variables that are thought to affect trade flows such as dummy variables for a common language, common borders or historical relationships between countries as well as membership of trade agreements or common currency areas.

Although most attention is being given to the determinants of bilateral trade flows, it is not that important, from a policy perspective, with whom you trade, as how much you trade. This is a little researched question in international economics that was raised by van Lynden (2011). The author examined the determinants of aggregate trade flows in goods and services using an adapted version of the gravity model and showed that constant factors such as culture and geography have a large effect on a country's total trade.

This paper looks at the trade performance in services of MENA countries. More specifically, we ask the following question: why do MENA countries trade as much or as little in services as they do. Since we are interested in those countries' trade performance in services, it makes little sense to look at the determinants of bilateral trade in services. That is why we propose, like in van Lynden (2011), an adaptation of the gravity model, using unilateral variants of the variables that influence bilateral trade. These unilateral variants will be country-specific, instead of country-pair-specific to assess the determinants of trade in services in MENA countries. Since eight out of twenty one MENA countries are not members of the WTO, we first assess the impact of WTO membership on service flows disaggregated by sector. We then investigate the impact of the number of commitments undertaken by sector on service flows for WTO members only. However, this regression may suffer from a selection bias given the fact that WTO commitments are observed for WTO members only. To control for this problem, we run a Heckman two-stage selection model. First, we examine the determinants of being a WTO member using a host of institutional variables. Then, we determine the impact of the number of commitments by sector as well as the availability of those commitments by mode on trade in services. Finally, we notice an endogeneity problem arising from the fact that countries may have commitments in those sectors where they trade well. To fix it, we instrument WTO commitments with institutional variables, given that countries with better institutions are more likely to have commitments in services at the WTO.

This paper is organized as follows. Section 2 presents some stylized facts on service trade in the MENA region. Section 3 describes the methodology adopted. Section 4 is dedicated to data analysis. Section 5 exhibits the econometric results and section 6 concludes.

## **2. Stylized Facts**

The service sector currently represents 42.39% of total GDP in the MENA region (table 1) lagging behind all the other regions, the developed ones like North America (77.35%) and Europe (73.55%) as well as the developing ones like Sub-Saharan Africa (57.2%). While the share of service value added in GDP tends to rise significantly with the countries' level of income, standing at 73.43% on average in high income countries, against 55.3% and 49.91% respectively in middle and low income countries, the picture looks different when MENA countries are analyzed individually. In most countries, the production of services is a core economic activity although significant differences exist between different income groups as well as within the same group. For instance, in some high-income economies like Kuwait, Oman, Saudi Arabia and United Arab Emirates, services represent around 40% of GDP while in Malta, another high-income country, they account for 65.19% of GDP, which is above the

share of both industry and agriculture. Also, in some lower and upper middle income countries like Djibouti, Lebanon and Jordan, the share of the service sector in GDP is around 70% while in others like Iraq and Libya, it barely reaches 20%. Besides, it is worth noting that, with some exceptions, the general trend is an increase in the share of services in GDP between 2000 and 2009. The biggest increase was of 18 percentage points, in Malta, due to the surge of financial services and tourism, followed by an increase of 8 percentage points in Lebanon and Syria. Growth was concentrated in tourism, construction and telecommunication services in Syria and Lebanon. To these are added the banking sector as well as retail and wholesale trade in Lebanon.

The current importance of services as reflected by their contribution to GDP is also mirrored in employment statistics. Table 2 shows that the service sector attracts at least half of total employment in MENA countries. The figure is bigger in high-income countries like Israel, Kuwait, Malta, Saudi Arabia, Oman and the United Arab Emirates, above 70% of total employment, although the contribution of services to GDP is only around 40%. Interestingly, the share of services in total employment in Morocco is cut by half between 2000 and 2009, although the share of services in GDP remained almost constant across years. The decomposition of employment in the service sector into public and private employment indicates that the government service sector is indeed a large employer in many MENA countries. It accounts for at least half of the employment in the service sectors in Jordan, Saudi Arabia, Israel, Algeria, Syria and Egypt, and is much larger than the corresponding share in some fast growing, resource-rich, middle income countries such as Brazil, Malaysia, and Indonesia. The government service sector's share is relatively small in the United Arab Emirates, Qatar, Iran and Morocco (World Bank 2011).

Given these figures, one may be surprised to see that trade in services as a percentage of GDP lags behind, representing only 19.4% of total GDP in the MENA region (Figure 1). However and surprisingly, this figure is the highest among regions and in comparison with the averages for low, middle and high income countries. Such a high share of trade in services in GDP is mainly due to countries like Lebanon and Malta whose figures are respectively 88.59% and 81.37%. Figure 1 also shows that significant differences exist between countries within the same income group. For instance, high income countries other than Malta have a share of service trade in GDP only about 20-25%. For low and middle income countries other than Lebanon, Djibouti and Jordan, trade in services barely reaches 15% (Libya, Algeria, Iraq, Yemen and Syria).

Moreover, when we observe the share of services in total trade, the picture does not look brighter (Figure 2). Service trade only accounts for 25.71% of global trade flows in the MENA region in 2009, despite a positive change of 3 percentage points since 2000 (authors' calculations from World Development Indicators database online, 2011). At the country level, only Djibouti, Lebanon and Malta display a high percentage of service trade (above 45%).

Once trade is disaggregated into exports and imports, we can notice that the share of services in total exports and total imports is still low, respectively 19.96% and 32.02% (figure 3). At the country level, the picture is different. Lebanon, Malta and Djibouti exhibit high shares of services in total exports (above 60%), and much lower shares of services in total imports. By contrast, service exports in Libya, Iraq, Saudi Arabia and Oman represent a small percentage of total exports (below 10%) while service imports account for a much bigger share of total imports.

Despite the low share of service trade in total trade, it is worth mentioning that exports and imports of services both increased in the MENA region since 2000, reaching a peak in 2008, and declined thereafter. However, this growth has not kept pace with the growth of world

exports and imports of services, reflecting losses in market shares of MENA countries (figure 4). This observation points to a loss of competitiveness of MENA exporters in key services activities. The sharp drop of service trade in 2009 is due to the global economic crisis that sparked a 12.2% contraction in the volume of global trade, the largest decline since World War II. Figure 4 also shows that the MENA region is a net importer of services.

However, this is not the case of all MENA countries. Table 3 shows that Bahrain, Djibouti, Egypt, Israel, Jordan, Lebanon, Malta, Morocco, Syria and Tunisia are all net exporters of services. In 2009, Egypt was the biggest net exporter of services followed by Morocco, Tunisia, Jordan and Lebanon. With some exceptions, the trade surplus of net exporters increased between 2000 and 2009. By contrast, the trade deficit of net importers has exacerbated over years.

At the sectoral level, the MENA region had a revealed comparative advantage in mainly all sectors in 2008 except travel, computer and information services, and other business services, when the measure is calculated based on export data (table 4). However, the revealed comparative advantage measure based on net exports is only greater than one for sectors like travel, financial services, royalties and license fees as well as other business services. This measure is also negative for sectors like insurance services, computer and information services, and personal, cultural and recreational services as well as for remittances. For insurance services and computer and information services, the negative figure is mainly due to Israel. For personal, cultural and recreational services, the negative figure is mainly due to Malta.

In general, trade in services is hampered by barriers to commercial establishment such as foreign ownership caps and joint venture obligations, restrictions on types of commercial presence and number/type of services that can be provided, discriminatory registration requirements and licensing procedures, nationality and residency requirements, economic needs tests and discriminatory treatment advantaging domestic companies over the foreign ones. The economy-wide costs of these barriers can be significant. For instance, empirical evidence shows that the cost and quality of services inputs such as telecommunication, distribution, and financial intermediation are key determinants of the competitiveness of firms.

Where matters concern MENA countries in particular, poor and high-costs of infrastructure services such as transport and telecommunications, storage and distribution reduce the competitiveness of MENA firms. Public monopolies in ports and port services, combined with poor infrastructure for loading and storing goods, results in high costs for traders. Monopoly shipping and domestic policies favoring national carriers result in low quality, low frequency, and high-cost services. Policies restricting trade in land transport services impose high costs on intra-MENA trade. Examples include denial of visas for professional drivers of certain nationalities, arbitrary changes in documentary requirements, surcharges and discriminatory taxes, and prohibitions on obtaining cargo in the country of destination to take back to the country of origin.

The persistence of barriers to service trade in the region can also be illustrated by examining the state of WTO commitments. Table 5 presents the number of commitments by sector and by country in the MENA region. Two remarkable facts can be viewed: on the one hand, some countries such as Bahrain, Djibouti, Tunisia and Malta, do not have commitments for many sectors. On the other hand, some countries like Jordan, Egypt, Oman, Morocco and Kuwait have committed their trade in services for several sectors at the WTO. For this reason, our goal is to assess the impact of these commitments on these countries' trade in services.



### 3. Methodology

The methodology used in this paper draws on the pioneering work of Tinbergen (1962) and Anderson (1979): the gravity model, which became nowadays an essential tool in the empirics of international trade to assess the determinants of trade in goods and services. The gravity model has undergone significant theoretical and empirical improvements over the years (Mac Callum 1995; Feenstra et al. 2001; Feenstra 2002; Anderson and van Wincoop 2003; Evenett and Keller 2002; Santos Silva and Tenreyro 2006), enforcing its theoretical base and thus narrowing the gap between theoretical and empirical findings. The application of the gravity model is not only restricted to trade in goods. Recently, a new (although limited) literature arises on the application of the gravity model to services trade (Francois 2001 and Francois et al. 2003; Park 2002; Grunfeld and Moxnes 2003; Kimura and Lee 2006; Walsh 2006; van Lynden 2011).

In this paper, we investigate the impact of WTO commitments on trade in services. This is why we propose an adaptation of the gravity model, using unilateral variants of those variables that have been found to influence bilateral trade (van Lynden, 2011). These unilateral variants will be country-specific, instead of country-pair-specific to assess the determinants of trade in services in MENA countries.

Since eight countries out of twenty one are not members of the WTO, we first have to assess the impact of WTO membership on service flows. Our dependant variable is the value of service trade of country  $i$  in sector  $j$  at year  $t$  ( $X_{ijt}$ ). Our explanatory variables are GDP and GDP of the rest of the world being the partner of the home country. Furthermore, we use unilateral variants of the gravity-type variables. For instance, we include a dummy variable taking the value of 1 if 20 percent of the population speak English and zero otherwise (*English20*). We also include three dummy variables to determine whether a country has been colonized by France (*Fr. Col*), the United Kingdom (*Eng. Col*) or Spain (*Spn. Col*). Since most of our countries are located in the Arab region, two dummy variables are introduced to assess the impact of some preferential trade agreements within the region: the *GAFTA* and the *Agadir* agreements. The rationale behind this is to examine whether these agreements promote trade in services. We capture the effect of distance by the variable latitude (*Lat.*). With the majority of rich countries being in temperate zones, the major markets are concentrated away from the equator. The closer a country is to the equator, the less it will trade, *ceteris paribus*. Finally, *WTO* is a dummy variable taking the value of 1 if the country is a WTO member and 0 otherwise. Therefore our estimable equation is:

$$X_{ijt} = \beta_0 + \beta_1 GDP_{it} + \beta_2 GDP_{ROW,t} + \beta_3 English20 + \beta_4 Fr. Col + \beta_5 Eng. Col + \beta_6 Spn. Col + \beta_7 Lat. + \beta_8 GAFTA + \beta_9 Agadir + \beta_{10} WTO + \epsilon_{ijt} \quad (1)$$

where  $\epsilon_{ijt}$  is the discrepancy term.

We can assess the impact of WTO commitments for WTO members only, this is why we run (1) for them. However, this regression may suffer from a selection bias given the fact that the WTO commitments are observed for WTO members only. Since selection bias can be thought of as a form of omitted variable bias (Heckman 1979), we run a Heckman selection model to control for this problem. We adopt a two-stage analysis to tackle such an issue. In our first step, we examine the determinants of being a WTO member using a host of institutional variables and in the second step we determine the impact of WTO commitments on trade in services. The rationale behind using institutional variables as determinants of WTO accession arises from the real fact that, during the negotiation process, the newly acceded members undertake a number of engagements to redesign their domestic economic structure and legal framework. Indeed, according to Basu et al. (2009), acceding countries

have to deliver tangible results about changes in trade laws and regulations, not only by providing improved market access in goods and services, but also by making their trade regimes more transparent for business communities. In other words, the development of trade-related institutions such as the laws and regulatory frameworks that govern trade are crucial in terms of ensuring trade liberalization and guaranteeing benefits from the multilateral trading system.

Finally, it is quite clear that WTO commitments may suffer from an endogeneity problem since countries may have commitments in those sectors where they trade well. To control for the endogeneity of the WTO commitments, we instrument them using institutional variables, since countries having better institutions are more likely to have commitments in services at the WTO.

All these econometric issues allow us to properly assess the impact of the WTO commitments on trade in services in the MENA region.

#### **4. Data**

We focus on the MENA region given the importance of services for these countries and their low level of commitments at the WTO. Our dataset covers 21 MENA countries (13 WTO members and 8 non-members), over 10 years (from 2000 to 2009) and 10 service sectors<sup>5</sup>.

We compile our dataset from different sources. First, for the WTO commitments, we use the WTO dataset for commitments in trade in services (available on WTO website ([http://www.wto.org/english/tratop\\_e/serv\\_e/guide1\\_e.htm](http://www.wto.org/english/tratop_e/serv_e/guide1_e.htm)) that provides an exhaustive overview of the commitments by country, by sector and by mode of supply: mode 1 (cross-border supply); mode 2 (consumption abroad); mode 3 (foreign commercial presence); and mode 4 (movement of natural persons). Furthermore, we use the number of commitments by country and by sector that is provided by the WTO as well. Such commitments are all retrieved from the services' schedule for each WTO member.

Our gravity-type variables come from different sources. Trade data come from "Trade Map" (2011) which is a web-based application with statistics, trends and indicators on global trade flows and developed by the International Trade Center (ITC, Geneva). This dataset includes yearly figures between 2000 and 2009 and reports the values of exports and imports in US dollars. In addition to these two variables, we have constructed a variable called trade which is the sum of exports and imports of the corresponding sector. The Gross Domestic Product (GDP) for each country and the GDP of the rest of the world come from the World Development Indicators database online (2011) that provides GDP in constant 2000 USD<sup>6</sup>. The GDP of the rest of the world has been constructed by summing up all GDP values for one year and then subtracting the home country's GDP.

Furthermore, we have constructed unilateral variants of the gravity-type variables. First, language, colony and latitude variables have been compiled from the CEPII dataset (2011) available on [www.cepii.fr](http://www.cepii.fr). Second, we have constructed dummy variables related to preferential trade agreements (Agadir and GAFTA) and to the fact of being a member of the WTO using the respective official websites of these agreements/organizations.

The instruments that have been used to control for endogeneity come mainly from the Doing Business dataset (2011) that includes a host of institutional variables. The variables we took into account are time to trade, paying taxes (defined as total tax rate percentage of profit), procedures of enforcing contract and the cost of registering property (% of property value).

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<sup>5</sup> See Appendix 1 and 2.

<sup>6</sup> Dollar figures for GDP are converted from domestic currencies using 2000 official exchange rates.

## 5. Results

In order to determine the impact of WTO commitments on trade in services, we will proceed in three steps. First, since some of our countries are not WTO members, we determine the impact of being a member of the WTO on trade in services. Second, we assess the impact of WTO commitments on trade in services. Third, we deal with some econometric issues related to the WTO commitments especially the endogeneity of these commitments and the selection bias that may affect our results.

First, it is worth mentioning that our gravity model is doing well since both GDP and GDP of the rest of the world have the expected positive sign and are statistically significant. Yet, in our sample, the other variables do not affect trade in services: neither the language variable (20% of the population speaking English) which is positive but insignificant, nor latitude. Although bilateral distance is typically expected to have a negative impact on trade in goods, it is not clear from the existing literature that this is necessarily the case for services. Service products do not have to be physically transported from location to location. Some kinds of services require movement of physical persons, but others may be communicated electronically. Consequently, the importance of distance in services trade may be insignificant, as it is the case in this paper.

As per our variables of interest, table 6 presents the panel results of being a WTO member. It is quite clear that the effect of WTO membership is statistically significant at the 1% level. The effect is positive on exports, imports and total trade. This shows to what extent service liberalization within the WTO framework promotes trade in services by creating a credible and reliable system of international trade rules, by stimulating economic activity through guaranteed policy bindings and by promoting trade through progressive liberalization. Interestingly, GAFTA and Agadir agreements seem to be ineffective in promoting trade in services. However, this result should be expected given that neither agreement has extended coverage to include free trade in services. Therefore, in order to deepen integration among Arab countries, these agreements should focus more on increasing commercial services.

Moving to the direct impact of WTO commitments on trade in services, Table 7 shows that the number of commitments has a positive statistically significant impact on exports, imports and trade in services meaning that the higher the number of commitments, the higher the level of trade in services. Yet, as it was mentioned before, the impact of WTO commitments can be examined for WTO members only; this is why we run the regression taking into account the potential selection bias affecting our results. As table 8 shows, using a two-step Heckman technique, we find that institutional variables such as the time to trade, to register property and to enforce contracts have a highly significant impact on the probability of being a WTO member. In the second step, and even after controlling for the selection bias, we find that the number of WTO commitments still have a positive and significant impact on trade in services. The rationale behind is as follows: the more the country has commitments, the more it imposes a bound on any protectionist measure aiming at reducing trade in services. This is why the more a country binds its commitments, the less likely it imposes any measure aiming at protecting its market or discriminating between WTO members.

Table 9 presents the panel results and takes the endogeneity problem into account. First, even when we consider the panel dimension of our dataset, the number of commitments is still positive and statistically significant pointing out the contribution of commitments to the increase of trade in services. However, these commitments may suffer from an endogeneity problem since a country may not have a commitment in a sector where it does not trade. Therefore, we instrument our potentially endogenous variable, namely the number of commitments, and find that its impact on exports, imports and trade remains positive and statistically significant.

Finally, in order to have a detailed analysis by mode, we run the regression by taking into account the impact of commitments by mode on trade in services (Tables 10 and 11). The “commitments by mode” variables measure whether the commitments are bound or not. Therefore, we find, after instrumenting these modes by the same institutional variables that have been used in instrumenting the number of commitments, that the four modes do have a positive and significant impact on service trade. Again, the commitments are virtually guaranteed conditions for foreign exporters and importers of services as well as investors to do business and to ensure that the partner country will not impose any unexpected restriction on international trade.

To sum up, it is quite clear that being a WTO member boosts trade in services. In addition, the number of commitments and binding these commitments increases exports, imports and trade in services. This positive and significant effect remains robust even after controlling for several econometric issues, namely the selection bias related to the WTO membership and the endogeneity of these commitments.

## **6. Concluding Remarks and Policy Implications**

This paper investigates the determinants of aggregate flows of service trade in MENA countries. More specifically, we ask the following question: why do MENA countries trade as much or as little in services as they do. Since we are interested in each country’s trade performance in services instead of bilateral service trade flows, we use an adapted version of the gravity model, taking into account unilateral variants of those variables that have been found to influence bilateral trade. We also introduce a new determinant of trade performance: the number of commitments undertaken by sector in the WTO as well as the availability of those commitments by mode.

Since eight out of twenty one MENA countries are not members of the WTO, we first assess the impact of WTO membership on service flows disaggregated by sector. We then investigate the impact of the number of commitments undertaken by sector on service flows for WTO members only. We control for the possible selection bias coming from the fact that WTO commitments are only observed for WTO members by running a Heckman two-stage selection model. First, we examine the determinants of being a WTO member using a host of institutional variables. Then, we determine the impact of the number of commitments by sector as well as the availability of those commitments by mode on trade in services. Finally, we notice an endogeneity problem arising from the fact that countries may have commitments in those sectors where they trade well. To fix it, we instrument WTO commitments with institutional variables, given that countries with better institutions are more likely to have commitments in services at the WTO.

The results show that being a WTO member boosts trade in services. In addition, the number of commitments and binding these commitments increase exports, imports and trade in services. This positive and significant effect remains robust even after controlling for several econometric issues, namely the selection bias related to the WTO membership and the endogeneity of commitments.

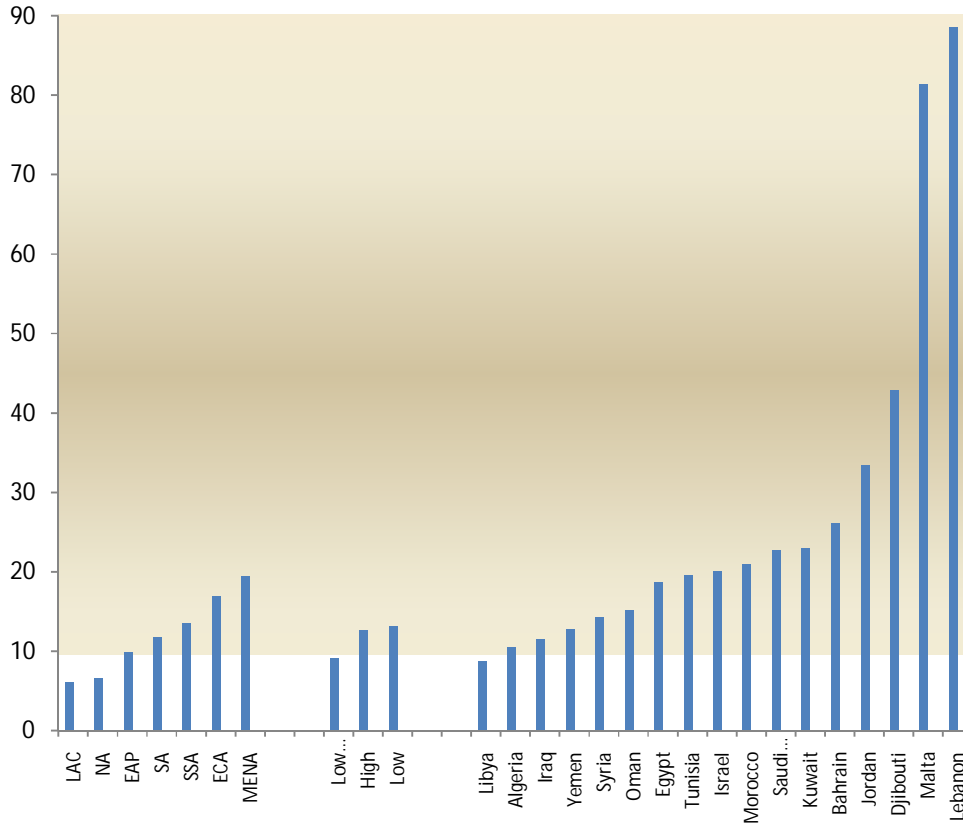
This paper may be interesting from a policy perspective, in the context of the Euro-Mediterranean and other WTO negotiations on service liberalization in the MENA region. Policymakers are in need of studies that show the importance of liberalizing service trade in MENA countries to be aware of the gains and pursue the negotiations. Indeed, governments in all levels of development today recognize the vital role of an efficient and vibrant service industry in enhancing economic and social development, and trade (including investment) policy plays an important role in helping countries harness the economic benefits emanating from service integration.

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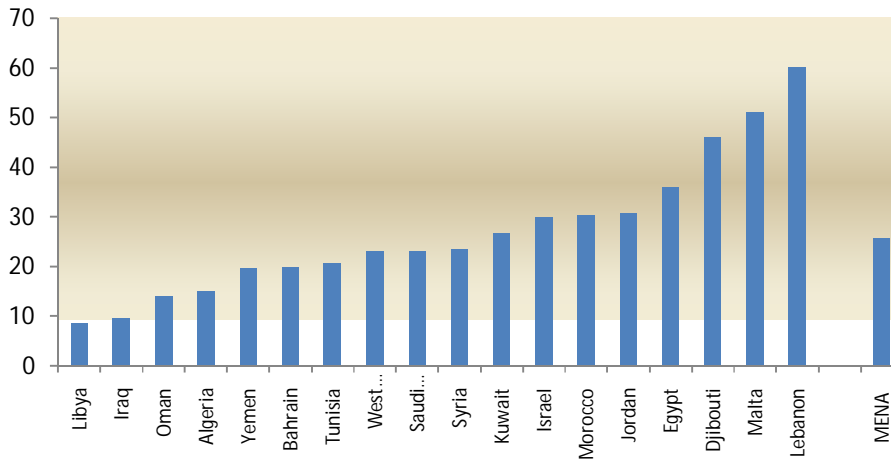
**Figure 1: Trade in Services as a Percentage of GDP, 2009**



Note: (i) Trade in services is the sum of service exports and imports divided by the value of GDP, all in current U.S. dollars. (ii) LAC: Latin America & Caribbean; NA: North America; EAP: East Asia & Pacific; SA: South Asia; SSA: Sub-Saharan Africa; ECA: Europe & Central Asia; MENA: Middle East & North Africa.

Source: World Bank, World Development Indicators database online, 2011.

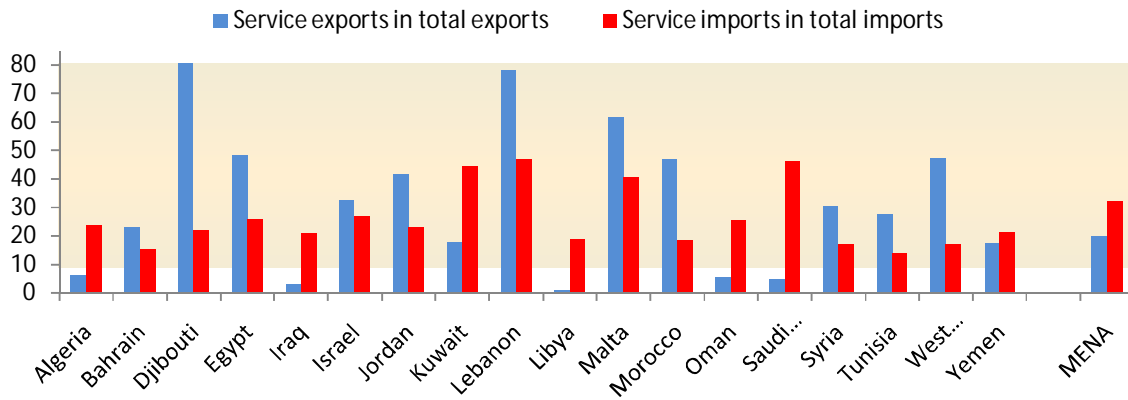
**Figure 2: Trade in Services as a Percentage of Total Trade, 2009**



Note: Trade values are in current U.S. dollars.

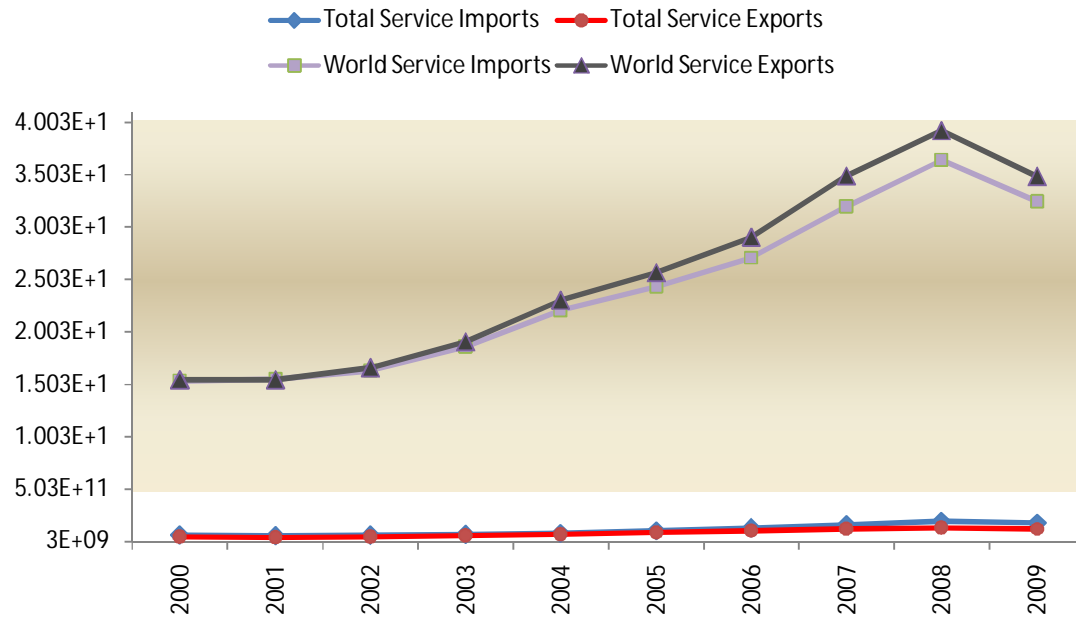
Source: World Bank, World Development Indicators database online, 2011.

**Figure 3: Service Exports/Imports as a Percentage of Total Exports/Imports, 2009**



Note: Trade values are in current U.S. dollars.  
 Source: World Bank, World Development Indicators database online, 2011.

**Figure 4: Exports and Imports of Services in the MENA region, 2000-2009**



Note: Trade values are in current U.S. dollars.  
 Source: Authors' calculations from the World Development Indicators database online, 2011 and from Trade Map, International Trade Center, 2011.



**Table 1: Share of Services in GDP (percentage)**

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
East Asia & Pacific	61.03	62.37	62.91	62.96	62.71	62.90	63.23	63.73	64.73	-
Europe & Central Asia	68.62	69.30	70.17	70.80	70.72	70.95	70.81	70.82	71.32	73.55
Latin America & Caribbean	64.62	65.31	63.65	60.90	59.55	60.21	61.05	61.77	61.50	63.34
Middle East & North Africa	42.87	45.04	44.39	43.29	44.11	42.12	41.46	41.48	-	42.39
North America	74.67	75.84	76.53	76.56	75.97	75.95	76.08	76.97	77.35	-
South Asia	50.34	51.32	52.47	52.69	52.73	52.80	52.84	52.72	53.90	54.98
Sub-Saharan Africa	54.29	54.15	50.59	51.39	51.92	51.71	52.08	52.75	55.50	57.20
High income	70.49	71.53	72.25	72.49	72.23	72.33	72.40	72.74	73.43	-
Low & middle income	52.85	53.91	53.39	52.44	52.02	52.26	52.51	53.15	53.51	55.30
Low income	45.24	45.38	46.36	46.72	46.72	47.46	47.53	48.90	49.56	49.91
<b>Selected MENA countries</b>										
Algeria	32.51	36.14	36.91	34.69	33.46	30.47	29.71	30.69	30.96	33.73
Djibouti	81.10	80.81	80.43	80.23	79.76	79.86	80.11	79.26	-	-
Egypt	50.13	50.11	49.15	48.41	48.35	49.21	47.50	49.59	49.25	49.00
Iran	49.53	51.78	46.58	47.08	46.04	45.10	45.99	45.31	-	-
Iraq	10.26	13.30	17.64	21.28	-	-	-	-	-	-
Jordan	72.11	71.97	70.36	70.12	68.59	68.05	69.44	66.96	64.78	65.46
Kuwait	40.48	45.52	50.34	48.53	-	-	-	-	-	-
Lebanon	70.13	70.03	70.83	71.46	72.05	72.72	72.91	71.01	72.14	78.18
Libya	-	-	28.72	20.55	28.41	22.19	19.50	21.50	19.94	-
Malta	46.76	53.93	53.23	53.18	57.03	57.92	59.08	59.37	60.18	65.19
Morocco	55.95	55.88	56.13	54.78	55.16	57.10	55.96	58.95	55.04	55.09
Oman	40.80	43.68	44.44	44.11	43.03	-	-	-	-	-
Saudi Arabia	41.15	43.57	43.42	41.11	38.32	33.53	32.43	31.60	27.48	46.45
Syria	38.31	39.73	40.99	40.78	43.50	44.97	49.48	46.93	45.00	45.27
Tunisia	59.07	59.61	60.16	59.66	59.09	59.92	60.06	60.69	58.08	62.26
United Arab Emirates	40.83	44.14	46.78	45.36	43.34	40.42	39.11	37.60	-	-
Yemen	43.19	46.86	48.80	45.36	-	-	-	-	-	-

Note: Services correspond to the International Standard Industrial Classification (ISIC) divisions 50-99 and they include value added in wholesale and retail trade (including hotels and restaurants), transport, and government, financial, professional, and personal services such as education, health care, and real estate services. Also included are imputed bank service charges, import duties, and any statistical discrepancies noted by national compilers as well as discrepancies arising from rescaling.

Source: World Bank, World Development Indicators database online, 2011.

**Table 2: Share of Services in Total Employment (percentage)**

Selected MENA countries	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Algeria	-	54.5	-	54.8	53	-	-	-	-	-
Bahrain	-	67.8	-	-	-	-	-	-	-	-
Egypt	49.1	50.2	51.9	50.4	48.2	47.5	46.6	46	45.3	-
Iran	-	-	-	-	-	44.8	45.1	45.1	46.5	-
Iraq	-	-	-	-	65.1	-	52.5	59.7	58.2	-
Israel	73	73.9	74.6	75.1	75	75.6	75.8	75.6	75.7	77
Jordan	72.8	73.8	74.3	74.5	-	-	-	-	-	77.4
Kuwait	-	-	-	81.7	-	76	-	-	-	-
Malta	65.1	66.6	65.8	67.5	68	67.7	69.3	71.6	72	72.9
Morocco	62.8	63.8	35.5	35.9	34.7	35	36.3	36.7	37.2	-
Oman	82.1	-	-	-	-	-	-	-	-	-
Qatar	-	58.8	-	-	56	-	55.2	45.5	-	-
Saudi Arabia	73.9	72.7	74.2	-	-	-	75.7	75.4	77.2	-
Syria	40.9	43.1	41	47.3	-	-	-	51.8	-	-
United Arab Emirates	58.6	-	-	-	-	54.4	-	-	71	-
West Bank and Gaza	51.5	58.9	60	57.4	58.1	58	59	59.5	59.9	-

Note: Services correspond to divisions 6-9 (ISIC revision 2) or tabulation categories G-P (ISIC revision 3) and include wholesale and retail trade and restaurants and hotels; transport, storage, and communications; financing, insurance, real estate, and business services; and community, social, and personal services.

Source: World Bank, World Development Indicators database online, 2011.

**Table 3: Net Exports of Services, 2000-2009**

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
<b>Net exporters</b>										
Bahrain	-8.7E+05	-1.1E+06	-7.0E+05	-7.0E+05	4.0E+05	4.0E+05	2.0E+05	3.0E+05	-	5.0E+05
Djibouti	1.0E+05	1.3E+05	1.4E+05	1.7E+05	1.6E+05	1.9E+05	1.9E+05	1.6E+05	1.9E+05	2.2E+05
Egypt	5.4E+06	5.0E+06	5.3E+06	7.5E+06	8.9E+06	9.0E+06	9.0E+06	1.4E+07	1.6E+07	1.5E+07
Israel	-	-2.0E+06	-2.0E+06	-	1.0E+06	1.0E+06	2.0E+06	1.0E+06	1.0E+06	2.0E+06
Jordan	1.5E+06	1.6E+06	1.7E+06	1.9E+06	1.9E+06	2.0E+06	2.5E+06	2.9E+06	3.6E+06	3.8E+06
Lebanon	-	-	1.0E+06	3.0E+06	2.0E+06	4.0E+06	5.0E+06	6.0E+06	9.0E+06	3.0E+06
Malta	4.0E+04	3.5E+05	4.1E+05	5.3E+05	6.0E+05	8.0E+05	1.0E+06	1.2E+06	1.4E+06	1.3E+06
Morocco	3.3E+06	5.2E+06	4.8E+06	6.2E+06	7.5E+06	9.1E+06	1.0E+07	1.4E+07	1.3E+07	6.2E+06
Syria	2.0E+05	3.0E+05	-2.0E+05	4.0E+05	1.2E+06	1.3E+06	9.0E+05	1.6E+06	8.0E+05	-
Tunisia	2.2E+06	3.5E+06	3.3E+06	3.4E+06	4.0E+06	4.4E+06	4.6E+06	5.1E+06	5.9E+06	6.1E+06
<b>Net importers</b>										
Algeria	-	-	-	-	-	-2.1E+06	-2.0E+06	-3.9E+06	-7.4E+06	-8.9E+06
Iran	-3.5E+06	-3.9E+06	-4.4E+06	-5.7E+06	-5.6E+06	-6.0E+06	-6.4E+06	-8.1E+06	-1.0E+07	-8.1E+06
Iraq	1.4E+05	1.7E+05	-	-	-	-5.1E+06	-5.6E+06	-4.0E+06	-6.0E+06	-
Kuwait	-4.8E+06	-5.4E+06	-6.1E+06	-5.6E+06	-6.1E+06	-6.2E+06	-5.5E+06	-9.0E+06	-1.0E+07	-3.0E+06
Libya	-1.2E+06	-1.5E+06	-1.9E+06	-1.9E+06	-2.5E+06	-2.7E+06	-3.0E+06	-3.4E+06	-5.1E+06	-
Oman	-2.8E+06	-2.8E+06	-2.9E+06	-3.6E+06	-4.2E+06	-4.5E+06	-5.4E+06	-6.9E+06	-9.0E+06	-
Qatar	-2.7E+05	-5.9E+04	-1.9E+05	8.5E+04	4.0E+05	-1.5E+06	-1.5E+06	-3.2E+06	-2.1E+06	-
Saudi Arabia	-3.5E+07	-2.9E+07	-3.1E+07	-3.0E+07	-3.4E+07	-3.6E+07	-5.2E+07	-6.3E+07	-8.8E+07	-6.3E+07
UAE	-5.7E+06	-6.1E+06	-2.7E+06	-2.9E+06	-3.4E+06	-4.4E+06	-6.1E+06	-8.0E+06	-2.9E+07	-
West Bank	-7.5E+07	-4.9E+08	-4.8E+08	-3.1E+08	-3.6E+08	-2.2E+08	-3.0E+08	-3.7E+08	-3.4E+08	-2.8E+08
Yemen	6.5E+05	5.9E+05	5.0E+05	7.3E+05	6.0E+05	4.0E+05	-1.0E+05	-2.0E+05	-4.0E+05	-

Note: Trade values are in current U.S. dollars.

Source: Authors' calculations from Trade Map, International Trade Center, 2011 and the World Development Indicators database online, 2011.

**Table 4: Revealed Comparative Advantage Index for MENA countries, 2008**

Sector	Algeria	Bahrain	Djibouti	Egypt	Iran	Iraq	Israel	Jordan	Kuwait	Lebanon	Libya
205	<b>1.30</b> 0.60	<b>1.00</b> 0.20	<b>1.60</b> 0.10	<b>1.20</b> 0.10	<b>2.40</b> 0.10	<b>0.90</b> 1.30	<b>1.10</b> -3.10	<b>0.50</b> -0.80	<b>1.70</b> 0.10	<b>0.10</b> -0.30	<b>2.80</b> 0.60
236	<b>0.30</b> 0.60	<b>1.00</b> 0.60	<b>0.10</b> 0.60	<b>1.00</b> 15.20	<b>0.70</b> 17.10	<b>0.00</b> 4.00	<b>0.60</b> 27.00	<b>1.10</b> 15.80	<b>0.10</b> 22.00	<b>0.80</b> 11.30	<b>1.10</b> 7.20
245	<b>0.70</b> 0.10	<b>3.00</b> .	<b>0.30</b> .	<b>0.80</b> -0.90	<b>0.20</b> -0.50	<b>0.10</b> -0.10	<b>0.20</b> 0.90	.	<b>9.10</b> 10.30	<b>0.20</b> -0.10	<b>0.90</b> -0.10
249	<b>4.00</b> 4.30	.	.	<b>1.80</b> 0.80	<b>8.70</b> 2.10	.	<b>0.70</b> -2.10	.	.	.	.
253	<b>3.30</b> 0.10	<b>20.70</b> .	.	<b>0.50</b> -1.60	<b>0.30</b> 0.00	<b>0.10</b> 4.30	<b>0.10</b> -8.20	.	<b>0.50</b> 0.20	<b>0.90</b> 0.00	<b>1.90</b> 0.90
260	<b>4.80</b> 0.80	.	.	<b>0.90</b> 1.00	<b>0.80</b> 1.80	<b>0.20</b> 8.20	.	.	<b>0.60</b> -0.40	<b>0.50</b> 0.80	.
262	<b>0.30</b> -0.60	.	.	<b>0.40</b> -0.60	<b>0.50</b> -1.80	<b>0.10</b> -0.40	<b>6.40</b> -131.7	.	.	.	.
266	<b>0.10</b> -0.40	.	.	.	<b>0.10</b> -6.50	<b>48.80</b> 60.30	<b>3.00</b> 75.30	.	.	.	.
268	<b>2.50</b> 5.10	<b>0.30</b> -0.50	<b>0.20</b> -0.50	<b>0.30</b> -1.10	<b>0.20</b> 1.00	<b>0.00</b> 0.10	<b>2.50</b> 65.10	<b>0.50</b> 1.10	.	<b>2.70</b> 6.90	.
287	<b>0.30</b> -0.80	.	.	<b>0.40</b> 0.10	<b>2.10</b> -6.60	<b>0.30</b> -1.50	<b>0.50</b> 55.10	.	.	.	.
291	<b>0.70</b> 0.30	.	<b>19.00</b> 3.20	<b>0.30</b> -0.30	<b>0.70</b> 0.20	<b>4.60</b> 0.10	<b>0.00</b> -1.00	<b>0.60</b> -0.10	<b>3.80</b> 0.70	<b>0.00</b> 0.00	.
REM	<b>0.20</b> -0.10	.	<b>0.50</b> 1.20	<b>1.50</b> 4.90	.	<b>0.20</b> -0.10	<b>0.10</b> -28.50	<b>2.70</b> 8.50	.	<b>1.60</b> 3.30	.
Total	<b>1.54</b> 0.83	<b>5.20</b> .	<b>3.62</b> 0.94	<b>0.83</b> 1.60	<b>1.52</b> 0.63	<b>5.03</b> 6.93	<b>1.38</b> 4.44	<b>1.08</b> 4.90	<b>2.63</b> 5.48	<b>0.85</b> 2.74	<b>1.68</b> 2.15

Sector	Malta	Morocco	Oman	Palestine	Qatar	Saudi	Syria	Tunisia	UAE	Yemen	Total
205	<b>0.70</b> 0.30	<b>0.60</b> 0.00	<b>1.10</b> 0.50	<b>0.20</b> 0.30	<b>2.90</b> 1.40	<b>1.20</b> 0.30	<b>0.20</b> -4.50	<b>1.20</b> 0.00	<b>1.00</b> 1.80	<b>0.10</b> 5.90	<b>1.13</b> 0.24
236	<b>0.80</b> 11.10	<b>1.10</b> 13.80	<b>1.20</b> 0.20	<b>1.60</b> 23.40	<b>0.10</b> 19.40	<b>1.90</b> 3.10	<b>2.40</b> 86.30	<b>1.20</b> 15.40	<b>2.40</b> 6.00	<b>0.60</b> -18.20	<b>0.96</b> 14.07
245	<b>0.30</b> -0.20	<b>0.50</b> -0.70	<b>0.80</b> 0.10	<b>0.90</b> -0.90	<b>0.30</b> -1.80	<b>0.40</b> -0.20	<b>0.60</b> -2.00	<b>0.40</b> -0.50	.	<b>0.80</b> 3.60	<b>1.08</b> 0.41
249	.	<b>0.10</b> 0.10	.	<b>2.30</b> -0.80	.	.	.	<b>1.80</b> -0.10	.	.	<b>2.77</b> 0.61
253	<b>0.90</b> -1.00	<b>0.50</b> 0.00	<b>0.70</b> 0.90	<b>0.00</b> 0.50	<b>1.80</b> 1.50	<b>1.30</b> 0.30	<b>1.00</b> -3.50	<b>0.50</b> -0.60	.	.	<b>2.06</b> -0.39
260	<b>7.00</b> -5.70	<b>0.20</b> 0.10	.	.	.	<b>5.40</b> 1.00	<b>3.00</b> 2.00	<b>1.40</b> 2.70	.	.	<b>2.25</b> 1.12
262	<b>0.80</b> 1.70	<b>0.40</b> -0.60	.	<b>0.10</b> -0.20	.	.	<b>0.50</b> 3.80	<b>0.30</b> -0.20	.	.	<b>0.98</b> -13.06
266	<b>3.40</b> -35.00	<b>0.00</b> 0.50	.	.	.	.	.	<b>0.30</b> -1.40	.	<b>0.30</b> -5.20	<b>7.00</b> 10.95
268	<b>1.60</b> 0.90	<b>0.60</b> 0.60	<b>1.90</b> 3.10	<b>0.90</b> -0.30	.	<b>0.00</b> 1.90	<b>0.10</b> 0.50	<b>0.30</b> 2.00	.	<b>0.00</b> 14.90	<b>0.86</b> 6.33
287	<b>32.50</b> -189.10	<b>0.80</b> -1.80	.	<b>0.40</b> -71.60	.	.	<b>1.60</b> -9.20	<b>0.10</b> 0.40	.	.	<b>3.90</b> -22.50
291	<b>0.30</b> 0.00	<b>1.10</b> -0.20	.	<b>6.80</b> -0.40	<b>12.10</b> -1.80	<b>0.90</b> 1.20	<b>2.50</b> 1.00	<b>0.90</b> 0.00	.	<b>2.70</b> -0.90	<b>3.35</b> 0.12
REM	<b>0.10</b> 0.00	<b>2.00</b> 4.80	<b>0.10</b> 5.30	.	.	<b>0.10</b> 2.30	.	<b>1.20</b> 3.10	.	<b>3.90</b> -24.50	<b>1.09</b> -1.52
Total	<b>4.40</b> -19.73	<b>0.66</b> 1.38	<b>0.97</b> 1.68	<b>1.47</b> -5.56	<b>3.44</b> 3.74	<b>1.40</b> 1.24	<b>1.32</b> 8.27	<b>0.80</b> 1.73	<b>1.70</b> 3.90	<b>1.20</b> -3.49	<b>1.95</b> 0.72

Notes: (i) For each sector, figures in **bold** (the upper row for each sector) provide the measure of Revealed Comparative Advantage based on export data only and the normal ones (the lower row for each sector) provide the same measure based on net exports. (ii) 205 = Transportation; 236 = Travel; 245 = Communication Services; 249 = Construction Services; 253 = Insurance Services; 260 = Financial Services; 262 = Computer and Information Services; 266 = Royalties and License Fees; 268 = Other Business Services; 287 = Personal, Cultural and Recreational Services; 291 = Government Services; REM = Personal Remittances.

Source: Authors' calculations from Trade Map, International Trade Center, 2011.

**Table 5: Number of Commitments by Country and by Sector**

	262	268	245	249	253	260	291	236	287	205
Bahrain					1	1				
Djibouti		1	3					1	1	
Egypt			1	3	1	2		4		1
Israel	1	2	4		1	1		3		
Jordan	1	5	3	5	1	1	8	2	4	7
Kuwait	1	3		4		1	3	3	2	3
Malta					1	1		2		1
Morocco	1	2	1	5	1	1		4		2
Oman	1	3	3	5	1	1	5	2		7
Qatar	1	3	1	4		2		1		0
Saudi Arabia	1	4	5	5		2	7	3	2	8
Tunisia			1		1	1		2		
UAE	1	3	1	5		1		2		

Source: WTO dataset for commitments in trade in services available on WTO website

[http://www.wto.org/english/tratop\\_e/serv\\_e/guide1\\_e.htm](http://www.wto.org/english/tratop_e/serv_e/guide1_e.htm)

**Table 6: Results: The Impact of WTO Membership**

	Ln(Trade)	Ln(Exports)	Ln(Imports)
Ln(GDP)	0.552*** (0.108)	0.622*** (0.132)	0.623*** (0.111)
Ln(GDP RoW)	3.550*** (0.241)	3.458*** (0.333)	3.813*** (0.259)
English 20%	0.204 (0.509)	0.331 (0.584)	-0.0410 (0.505)
GAFTA	0.249 (0.374)	-0.0321 (0.426)	0.0219 (0.370)
Agadir	-0.439 (0.533)	-0.0880 (0.611)	-0.537 (0.520)
Latitude	-0.0267 (0.0299)	-0.0318 (0.0339)	-0.00866 (0.0283)
France col.	-0.740 (0.456)	0.684 (0.527)	-1.236*** (0.443)
UK col.	-0.380 (0.471)	0.719 (0.543)	-0.648 (0.456)
Spain col.	-0.427 (0.905)	-0.487 (1.050)	0.0231 (0.920)
WTO	1.198*** (0.415)	1.469*** (0.483)	1.352*** (0.404)
Constant	-111.0*** (6.151)	-111.9*** (8.976)	-122.0*** (6.763)
Observations	1345	1382	1525
Number of groups	180	184	199

Notes: Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Estimation has been done using random effects

**Table 7: Results: The Impact of WTO Commitments, OLS Regressions**

	<b>Ln(Trade)</b>	<b>Ln(Exports)</b>	<b>Ln(Imports)</b>
Ln(GDP)	0.459*** (0.0602)	0.299*** (0.0669)	0.463*** (0.0586)
Ln(GDP RoW)	2.412*** (0.676)	3.141*** (0.746)	2.303*** (0.669)
English 20%	-0.386* (0.209)	-0.716*** (0.229)	-0.902*** (0.203)
GAFTA	0.617*** (0.177)	0.613*** (0.192)	0.380** (0.176)
Agadir	-0.714*** (0.253)	-0.221 (0.277)	-0.157 (0.237)
Latitude	0.00111 (0.0111)	0.0286** (0.0120)	0.0154 (0.0110)
France col.	-0.420 (0.462)	-0.209 (0.510)	-1.233*** (0.403)
UK col.	0.297 (0.326)	0.743** (0.366)	0.0289 (0.274)
Spain col.	-1.122*** (0.363)	-1.466*** (0.411)	-0.706** (0.322)
Commitment	0.268*** (0.0331)	0.209*** (0.0369)	0.262*** (0.0312)
Constant	-73.54*** (21.05)	-94.48*** (23.22)	-71.02*** (20.78)
Observations	709	738	758
R-squared	0.402	0.280	0.468

Notes: Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 8: Results: The Impact of WTO Commitments, Heckman Two-Steps Regressions**

	Ln(Trade)	Selection WTO	Ln(Exports)	Selection WTO	Ln(Imports)	Selection WTO
Ln(GDP)	0.464*** (0.0608)		0.289*** (0.0677)		0.469*** (0.0598)	
Ln(GDP RoW)	2.270*** (0.766)		3.462*** (0.841)		2.130*** (0.757)	
English 20%	-0.374* (0.209)		-0.746*** (0.230)		-0.888*** (0.204)	
GAFTA	0.611*** (0.176)		0.626*** (0.192)		0.373** (0.175)	
Agadir	-0.665** (0.282)		-0.336 (0.310)		-0.0989 (0.265)	
Latitude	0.000181 (0.0112)		0.0308** (0.0122)		0.0145 (0.0111)	
France col.	-0.446 (0.463)		-0.148 (0.512)		-1.244*** (0.401)	
UK col.	0.247 (0.349)		0.863** (0.393)		-0.0197 (0.291)	
Spain col.	-1.165*** (0.378)		-1.364*** (0.427)		-0.744** (0.330)	
Commitment	0.265*** (0.0336)		0.216*** (0.0374)		0.259*** (0.0318)	
Time to trade		-0.228*** (0.0149)		-0.231*** (0.0149)		-0.247*** (0.0172)
Register prop.		-0.0496*** (0.0136)		-0.0470*** (0.0133)		-0.0660*** (0.0136)
Paying taxes		-0.0335*** (0.00394)		-0.0342*** (0.00393)		-0.0443*** (0.00442)
Enforcing contracts		-0.152*** (0.0149)		-0.154*** (0.0149)		-0.135*** (0.0141)
Lambda		-0.0886 (0.231)		0.209 (0.260)		-0.110 (0.231)
Constant	-69.15*** (23.81)	14.77*** (0.972)	-104.5*** (26.17)	14.99*** (0.969)	-65.68*** (23.46)	15.30*** (1.001)
Observations	1549	1549	1578	1578	1598	1598

Notes: Standard errors in parentheses. \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

**Table 9: Results: The Impact of WTO Commitments, Controlling for Endogeneity**

	Panel dimension			Panel dimension with Instruments		
	Ln(Trade)	Ln(Exports)	Ln(Imports)	Ln(Trade)	Ln(Exports)	Ln(Imports)
Ln(GDP)	0.575*** (0.140)	0.443*** (0.160)	0.463*** (0.145)	0.614*** (0.146)	0.483*** (0.168)	0.463*** (0.146)
Ln(GDP RoW)	3.089*** (0.305)	3.476*** (0.357)	3.598*** (0.327)	3.027*** (0.315)	3.412*** (0.371)	3.598*** (0.329)
English 20%	-0.0219 (0.531)	-0.197 (0.582)	-0.708 (0.535)	-0.131 (0.557)	-0.514 (0.629)	-0.878 (0.554)
GAFTA	0.370 (0.484)	0.473 (0.529)	0.137 (0.487)	0.460 (0.507)	0.587 (0.563)	0.128 (0.489)
Agadir	-0.798 (0.674)	-0.502 (0.729)	0.0312 (0.652)	-1.584** (0.804)	-1.448* (0.852)	-0.303 (0.709)
Latitude	-0.0123 (0.0333)	0.0168 (0.0358)	0.00630 (0.0329)	-0.00284 (0.0351)	0.0408 (0.0391)	0.0110 (0.0332)
France col.	-0.130 (1.078)	0.416 (1.178)	-1.801* (1.049)	2.126 (1.584)	3.269** (1.653)	-0.539 (1.470)
UK col.	0.386 (0.751)	0.935 (0.838)	-0.388 (0.743)	2.129* (1.171)	3.304*** (1.271)	0.688 (1.149)
Spain col.	-0.605 (0.887)	-0.904 (1.000)	-0.713 (0.896)	-0.0358 (0.967)	-0.128 (1.099)	-0.380 (0.939)
Commitment	0.247*** (0.0909)	0.182* (0.100)	0.225** (0.0920)	0.737*** (0.264)	0.864*** (0.284)	0.536** (0.269)
Constant	-97.25*** (7.415)	-108.4*** (8.836)	-110.9*** (8.158)	-98.72*** (7.624)	-111.0*** (9.191)	-112.3*** (8.300)
Observations	709	738	758	709	738	758
Nbr. of groups	87	89	91	87	89	91

Notes: Standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1; Estimation has been done using random effects

**Table 10: Results: The Impact of WTO Commitments by Mode, Controlling for Endogeneity**

	Ln(Trade)	Ln(Exports)	Ln(Imports)	Ln(Trade)	Ln(Exports)	Ln(Imports)
Ln(GDP)	0.714*** (0.172)	0.493** (0.195)	0.613*** (0.164)	0.424* (0.227)	0.167 (0.250)	0.389** (0.181)
Ln(GDP RoW)	2.876*** (0.341)	3.357*** (0.406)	3.246*** (0.338)	3.341*** (0.443)	3.870*** (0.522)	3.607*** (0.368)
English 20%	0.675 (0.709)	0.313 (0.743)	-0.0531 (0.645)	-0.219 (0.916)	-0.538 (0.922)	-0.706 (0.647)
GAFTA	0.512 (0.589)	0.630 (0.615)	0.416 (0.545)	0.323 (0.838)	0.504 (0.826)	0.307 (0.593)
Agadir	-1.935* (1.010)	-1.321 (1.029)	-1.291 (0.911)	-2.975 (1.931)	-2.553 (1.674)	-1.455 (1.310)
Latitude	-0.0567 (0.0404)	-0.0282 (0.0418)	-0.0312 (0.0386)	-0.00387 (0.0554)	0.0198 (0.0538)	0.00657 (0.0396)
France col.	-0.0207 (1.312)	0.700 (1.393)	-1.141 (1.314)	-2.832 (1.793)	-2.054 (1.797)	-3.663*** (1.326)
UK col.	0.449 (0.893)	1.344 (0.949)	0.262 (0.972)	-0.825 (1.172)	0.158 (1.189)	-1.287 (0.840)
Spain col.	0.429 (1.121)	-0.129 (1.202)	0.709 (1.193)	-1.050 (1.478)	-1.562 (1.511)	-1.016 (1.088)
M1 bound	7.273*** (2.437)	6.245*** (2.400)	5.731** (2.506)			
M2 bound				22.92* (12.59)	22.91** (10.19)	12.65 (9.185)
Constant	-93.04*** (7.709)	-105.3*** (9.595)	-103.3*** (7.850)	-100.2*** (10.01)	-113.1*** (12.44)	-108.2*** (8.618)
Observations	837	866	911	837	866	911
Nbr of groups	101	103	107	101	103	107

Notes: Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 11: Results: The Impact of WTO Commitments by Mode, Controlling for Endogeneity**

	Ln(Trade)	Ln(Exports)	Ln(Imports)	Ln(Trade)	Ln(Exports)	Ln(Imports)
Ln(GDP)	0.877*** (0.228)	0.631** (0.246)	0.818*** (0.232)	-0.0917 (0.353)	-0.638 (0.409)	0.120 (0.321)
Ln(GDP RoW)	2.612*** (0.432)	3.139*** (0.478)	2.927*** (0.431)	4.180*** (0.603)	5.178*** (0.712)	4.046*** (0.553)
English 20%	1.845* (1.078)	1.028 (1.007)	1.231 (1.120)	-1.503 (0.916)	-2.473** (1.054)	-1.493* (0.873)
GAFTA	-3.072** (1.496)	-1.861 (1.321)	-1.628 (1.134)	1.051 (0.658)	1.405** (0.712)	0.715 (0.586)
Agadir	3.517** (1.670)	2.945* (1.565)	1.671 (1.138)	0.121 (0.753)	0.832 (0.883)	0.148 (0.677)
Latitude	-0.405** (0.157)	-0.251* (0.130)	-0.260* (0.134)	-0.153* (0.0795)	-0.182** (0.0832)	-0.0741 (0.0685)
France col.	1.149 (1.740)	1.153 (1.633)	0.147 (1.872)	-1.340 (1.135)	-0.717 (1.309)	-2.730*** (1.015)
UK col.	-1.089 (0.931)	0.0756 (0.945)	-1.027 (0.823)	1.222 (1.246)	2.789** (1.286)	-0.101 (1.081)
Spain col.	-0.0427 (1.200)	-0.488 (1.241)	0.0457 (1.146)	-2.340* (1.239)	-3.541** (1.444)	-1.692 (1.151)
M3 bound	10.25** (4.023)	7.934** (3.809)	7.016** (3.472)			
M4 bound				6.317* (3.341)	8.671*** (3.342)	3.401 (2.723)
Constant	-84.96*** (9.927)	-100.3*** (10.90)	-95.93*** (9.516)	-116.3*** (12.23)	-137.5*** (14.59)	-116.7*** (11.23)
Observations	837	866	911	837	866	911
Nbr. of groups	101	103	107	101	103	107

Notes: Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



## Appendix

### Appendix 1: List of sectors

Code	Sector
236	Travel
205	Transportation
245	Communications services
249	Construction services
253	Insurance services
260	Financial services
262	Computer and information services
266	Royalties and license fees
268	Other business services
287	Personal, cultural and recreational services
291	Government services, n.i.e.
REM	Personal remittances

### Appendix 2: List of MENA countries

WTO members	Non-WTO members
Bahrain	Algeria
Djibouti	Iran
Egypt	Iraq
Israel	Lebanon
Jordan	Libya
Kuwait	Palestine
Malta	Syria
Morocco	Yemen
Oman	
Qatar	
Saudi Arabia	
Tunisia	
UAE	