ECONOMIC RESEARCH FORUM
منتدى البحوث الاقتصادية
2015

working paper series

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Working Paper No. 933

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August 2015

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First published in 2015 by
The Economic Research Forum (ERF)
21 Al-Sad Al-Aaly Street
Dokki, Giza
Egypt
www.erf.org.eg

Abstract

The paper investigates the effects of wars on trade in the Middle East and North Africa (MENA) region. As a region, MENA faces considerable risk of conflicts. Using an augmented gravity model, we introduce a war variable and distinguish between different types of conflicts. We run a battery of sensitivity analysis tests to control for the endogeneity problem that may arise in our estimation. The results show that, in general, wars have a significantly negative impact on exports, imports and trade. Civil conflicts hinder exports, imports and trade significantly. The disaggregated version of the gravity model shows that non-state conflicts have a detrimental effect on bilateral trade flows in manufacturing and that none of the conflicts do affect trade in services. Finally, the outcome of the gravity model for manufacturing sectors has been used to compute ad-valorem equivalents of wars at the country level. We found that, on average, a conflict is equivalent to a tariff of 5% of the value of trade. More heterogeneity is observed at the sectoral level (where AVEs range from 4% to 65%).

JEL Classification: F12, F14, F15, F51.

Keywords: Trade, Wars, Conflicts, MENA.

ملخص

تقوم هذه الورقة بالتحقيق فى آثار الحروب على التجارة في منطقة الشرق الأوسط وشمال أفريقيا (MENA). تواجه المنطقة خطر كبير من الصراعات. باستخدام نموذج الجاذبية، نقدم متغير الحرب والتمييز بين أنواع مختلفة من الصراعات. نقوم ايضا بتشغيل مجموعة من اختبارات تحليل الحساسية للسيطرة على مشكلة النمو الداخلي التي قد تنشأ في تقديرنا. أظهرت النتائج أنه في عام، الحروب كان لها تأثير سلبي كبير على الصادرات والواردات والتجارة. الصراعات الأهلية تعرقل الصادرات والواردات والتجارة بشكل كبير. الذسخة المصنفة حسب نموذج الجاذبية تظهر أن الصراعات غير الحكومية لها تأثير ضار على تدفقات التجارية الثنائية في التصنيع وأن أيا من الصراعات لا يؤثر على التجارة في الخدمات. وأخيرا، تم استخدام نتائج نموذج الجاذبية لقطاعات التصنيع لحساب معادلات قيمية من الحروب على المستوى القطري. وجدنا أنه، في المتوسط، هناك ما يعادل التعريفة من 5٪ من قيمة التجارة. لوحظ المزيد من التجانس على المستوى القطاعي (حيث تتراوح معادلات القيمة من 4٪ إلى 65٪).

1. Introduction

War kills, but the devastating effects of war are not restricted to those killed or wounded. The consequences of war extend far beyond battlefield casualties to include forced migration, the destruction of infrastructure, and the deterioration of institutional quality and economic growth. Last but not least, wars have a detrimental effect on international trade. Economic history shows that interstate conflicts are often accompanied by the imposition of partial or total trade embargoes on the exchange of goods or services. Furthermore, all types of armed conflicts (interstate and non-state conflicts) may reduce trade flows by raising the costs of engaging in international trade.

The paper explores the effects of war on trade in the Middle East and North African (MENA) region. Whether associated with decolonization and issues of statehood or related to the revolutionary wave of demonstrations and protests with the Arab Spring, interstate conflicts and civil war has ripped the region apart since 1945. However and surprisingly, MENA's share of trade in gross domestic product (GDP) compares favorably to the other regions. Data from the World Development Indicators, 2014, show that in 2012, the share of trade in MENA's gross domestic product (GDP) was higher than the other regions: developed ones like North America (33%) as well as developing ones like Sub-Saharan Africa (66%). We suspect that such bright figures mask a serious heterogeneity among countries and among sectors.

The relation between conflicts and international trade has been the focus of much more attention among political scientists than economists. On the one hand, empirical studies in political science tested reverse causation (i.e., the impact of bilateral trade on the frequency of war between country pairs). Many find a negative relationship (Polachek, 1980; Mansfield, 1995; Polachek, Robst and Chang, 1999; Oneal and Russet, 1999) and others find a positive relationship (Barbieri, 1996, 2002). On the other hand, Pollins (1989a and 1989b), Mansfield and Bronson (1997) and Kesht, Pollins and Reuveny (2004) focus on the effect of war on trade and show that conflicts dampen trade. In contrast, Morrow, Siverson, and Taberes (1998, 1999) and Mansfield and Pevehouse (2000) find that the effect of militarized interstate disputes on trade is not statistically significant. Barbieri and Levy (1999) find no evidence that war involving non-major power countries reduces bilateral trade over time, while Anderton and Carter (2001) find that wars involving major powers dampen trade both with other major powers as well as minor powers. In economics, Blomberg and Hess (2006) and Glick and Taylor (2008) use a gravity equation to investigate the effect of conflicts on trade, controlling for the standard determinants of trade in the literature. Blomberg and Hess (2006) calculate that, for a given country year, the presence of terrorism, as well as internal and external conflict is equivalent to as much as a 30 percent tariff on trade. Glick and Taylor (2008) estimatethe contemporaneous and lagged effects of wars on trade, controlling for the possible effects of reverse causality, and show that wars dampen trade. Martin et al. (2008) show the conventional wisdom that trade promotes peace is only partially true. When war can occur because of the presence of asymmetric information, the probability of escalation is lower for countries that trade more bilaterally because of the opportunity cost associated with the loss of trade gains. However, countries more open to global trade have a higher probability of war because multilateral trade openness decreases bilateral dependence to any given country and the cost of a bilateral conflict.

The MENA region has been widely neglected in the literature on conflicts and trade, although it has been ripped apart by different types of interstate and intrastate conflicts since 1945. According to Gates et al. (2010), there was a strong and fairly steady increase in the numberof conflicts in the MENA region from 1945 until the early 1990s, and then a strong decline for the next 10 years.

The level of conflict was fairly moderate until the late 1970s, associated with decolonization or with issues of statehood, in particular the Palestinian conflict. The increase in the 1970s and 1980s is probably a result of the Cold War era, during which the superpowers supported a broad range of wars and minor conflicts. During the 1980s and the 1990s, the incidence of conflict in the MENA region increased, with the Iran-Iraq war and the Algerian Civil War as the two most intense conflicts. While the second half of the 1990s has been more peaceful than the previous, the past decade has again witnessed more violence in the region. The story is not yet over, with the revolutionary wave of demonstrations, protests, and wars occurring in the Arab world since December 2010. With such a critical history of violence in MENA countries, one might be surprised to know that in 2012 the share of trade in MENA GDP (95%) was the highest among regions. The share of service trade is not as bright as the share of goods trade, accounting for only 15% of MENA GDP, but it is noteworthy that this percentage is higher than the other developed and developing regions. Although such radiant figures are dazzling, it is worth noting the existence of heterogeneity among countries and sectors, and that disaggregated data reveal a dimmer picture.

This paper investigates the effects of war on the trade performance of MENA countries. We adopt the definition of types of conflicts suggested by the Department of Peace and Conflict Research at Uppsala University: armed conflicts between two parties, of which at least one is the government of a state; non-state conflicts between two organized armed groups, neither of which is the government of a state; and one-sided violence where we distinguish between one-sided state violence, when the actor is the government of a state, and one-sided non-state violence in the opposite case. With this diversity of conflicts ripping apart the MENA region, one must be cautious in investigating their effects on MENA trade: while interstate conflicts are often accompanied by the imposition of trade embargoes on the exchange of goods or services and therefore affect trade between country pairs, the other types of conflicts do not necessarily involve country pairs. Therefore,we run two sets of regressions: macroeconomic regressions, where we investigate the impact of conflicts on the ability of countries to trade (do countries trade more or less, in general), and sectoral regressions, where we take into consideration the bilateral dimension of war and assess the effects of conflicts on bilateral trade. For the macroeconomic regressions, 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 and will be controlled for to assess the effect of different types of conflicts on the trade volume of MENA countries for the period 1960-2013. Since interstate conflicts affect trade between country pairs, we run sectoral regressions where we investigate the effect of conflicts on bilateral trade flows in 27 manufacturing sectors for the period 1980 - 2006. Taking into consideration that trade might have different impacts on manufacturing and service sectors, and since bilateral trade flows in services is not available at a disaggregated level, we use the unilateral variant of the gravity model for disaggregated trade in 12 service sectors for the period 2000 - 2013.

The results show that, in general, wars have a significantly negative impact on exports, imports and trade. Moreover, civil conflicts (non-state conflicts) do hinder exports, imports and trade significantly. The disaggregated version of the gravity model shows that non-state conflicts, unlike other types of conflicts, have a detrimental effect on bilateral trade flows in manufacturing, and that none of the conflicts do affect trade in services. Finally, the outcome of the gravity model for manufacturing sectors has been used to compute ad-valorem equivalents of wars at the country level. We found that, on average, a conflict is equivalent to a tariff of 5% of the value of trade. More heterogeneity is observed at the sectoral level (where AVEs range from 4% to 65%).

The paper is organized as follows: Section 2 describes some stylized facts of trade and war in the MENA region. Section 3 explains the econometric specifications and Section 4 is devoted to the discussion of the results. Section 5 concludes and presents some policy implications.

2. Wars and Conflicts in the MENA Region

Political conflicts occur in different areas of the world, but one of the most critical regions is MENA. Although the number of conflicts in the MENA region has fluctuated over the last decades, broadly inline with global trends (Gates et al., 2010), this number has been disproportionate to the region's population. The region accounts for only 5.5% of the world's population and yet experienced around 15% of conflicts in the world since 1945 and nearly one-third of all intra-state wars in the world in the late 1970s until the mid-1990s (World Bank, 2011).

Figure 1 shows a strong and reasonably steady increase in the number of conflicts in the MENA region since 1960. The level of conflict was fairly moderate until the late 1970s, with some of the conflicts related to decolonization, and others to issues of statehood, in particular the Palestinian conflict and the 1967 Arab-Israeli war. In addition to the persistence of the Palestinian conflict, the MENA region was inflicted by an increasing number of conflicts in the late 1970s and 1980s resulting from the Cold War era, during which the superpowers and their allies fought and supported a broad range of wars and minor conflicts. During the 1980s and well into the 1990s, the incidence of conflict in the MENA region increased, with the Iran-Iraq war and the Algerian Civil War as the two most intense conflicts (Gates et al., 2010). While the second half of the 1990s has been more peaceful than the previous, the past decade has again witnessed more violence in the region. Last but not least, MENA countries have been experiencing a revolutionary wave of protests, uprisings and demonstrations since December 2010, collectively referred to as "The Arab Spring".

It should also be noted that the distribution of conflicts between MENA countries is highly uneven: 60% of conflicts since 1960 occurred in Israel, Iran, and Iraq. Algeria, Egypt, Lebanon, Morocco, Syria and Yemen accounted for another 34% of conflicts. Most of the other countries did not experience a single conflict since 1960 (Figure 2).

It is worth mentioning that the nature of violence has changed over time. Figure 1 also shows that while armed conflicts[1] were dominant until the late 90s, the MENA region witnessed since then the appearance of other types of violence such as non-state armed conflicts, one-sided state violence and one-sided non-state violence. Apart from the Iraqi war and the persistent Palestinian conflict, much of such violence resulted from anti-government protests, riots, uprisings and civil wars associated with the "Arab Spring".

Figures 3a to 3d show that 61% of armed conflicts occurred in Israel, Iraq and Iran, 60% of one-sided state violence happened in Israel and Iraq, 83% of one-sided non state violence and 85% of non-state armed conflicts hit Israel, Iraq, Egypt and Algeria. The dominance of all types of conflicts in Israel and Iraq is explained by the long-lasting Palestinian conflict and the Iraqi war that started in 2003 and resulted in the end of Ba'athist Iraq and the establishment of a democratic

[1] Types of conflicts are based on the Uppsala Conflict Data Program (UCDP)'s definitions with some alteration for the sake of clarification. Armed conflicts are defined as "a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths." Non-state armed conflicts is defined as "the use of armed force between two organized armed groups, neither of which is the government of a state, which results in at least 25 battle-related deaths in a year." One-sided violence is the use of armed force by the government of a state (we call it one-sided state violence) or by a formally organized group (we call it one-sided non-state violence) against civilians which results in at least 25 deaths.

constitution. Then followed a long phase of fighting, in which an insurgency emerged opposing the occupying forces and the newly elected Federal government of Iraq. The United States completed its withdrawal of military personnel in December 2011. However, the insurgency is ongoing and continues to cause thousands of fatalities.

Violence that battered many of the other MENA countries is due to the Arab Spring that started in Tunisia on December 17, 2010, with the self-immolation of Tunisian Mohamed Bouazizi, who had been unable to find work and was selling fruit at a roadside stand, when a municipal inspector confiscated his wares. An hour later, Bouazizi doused himself with gasoline and set himself on fire. His death on January 2011 brought together many unemployed, political and human rights activists, labor unionists, students, professors, lawyers, and others, all dissatisfied with the existing system. With the success of the Tunisian Revolution that forced President Zine El Abidine Ben Ali to step down after 22 years in power, a wave of unrest motivated by social discontent and government corruption struck Algeria, Jordan, Egypt, and Yemen, and then spread to other countries. Until now, rulers had been forced from power in Tunisia, Egypt (twice), Libya, and Yemen. Civil uprisings erupted in Bahrain and Syria. Major protests broke out in Algeria, Iraq, Jordan, Kuwait, Morocco, and Israel, and minor protests occurred in Oman, Saudi Arabia and Djibouti. Many Arab Spring demonstrations have been met with violent attacks from authorities and counter-demonstrators. These attacks have been answered, in some cases, with violence from protestors themselves.

Conventional wisdom suggests that violence can be enormously disruptive of economic activity, and particularly international trade. Economic history shows that conflicts between countries are usually accompanied by the imposition of partial or total trade embargoes on the exchange of goods or services. Moreover, violence may reduce trade flows by raising the costs of engaging in international trade. Surprisingly, the picture looks brighter for the MENA region although it has been ripped apart by different types of conflicts for decades.

Figure 4 shows that in 2012, the share of trade in MENA GDP was higher than the other regions: developed ones like North America (33%) as well as developing ones like Sub-Saharan Africa (66%); but this is in large part due to petroleum exports. Notably, MENA trade, excluding oil, is at about the world average, but exports alone are below the world average. Behar and Freund (2011) show that, conditioning on GDP, distance and a number of other factors, a typical MENA country under-trades with other countries: exports to the outside world are at only a third of their potential. However, intra-MENA trade is conditionally higher than extra-MENA trade. These results hold for aggregate exports, non-natural exports and non-petroleum exports.

The share of service trade in MENA GDP is low, with nearly 15%, although this percentage is higher than the other developed and developing regions (Figure 4). The share of exports in GDP is much lower, around 6%, although higher than most of the other regions and the world average (Figure 5). Sectors like tourism, transportation, remittance, and to a lower extent financial, transportation and telecommunication services, are the driving forces behind this stylized fact.

Table 1 shows that almost all GCC countries, in addition to Djibouti, Israel, Jordan, Lebanon, Libya, Malta, Morocco and Tunisia exceed the region's average trade share in GDP, with the highest share in 2012 for Malta (202%). According to authors' calculations, Malta exhibits a comparative advantage[2] mainly in fish, crustaceans, tramway locomotives, machinery, nuclear

[2]The Revealed Comparative Advantage index is based on export data only. The results are available to the interested reader upon request.

reactors, pharmaceutical products, cereal, flour, milk preparations and products, clocks and watches, toys and games. Jordan has a revealed comparative advantage mostly in machinery, nuclear reactors, knitted or crocheted fabric, tramway locomotives, articles of apparel, paper and paperboard, beverages and vinegar, inorganic chemicals, tobacco and manufactured tobacco substitutes, salt, stone, and cement. GCC countries mainly have a revealed comparative advantage in mineral fuels and oils (Kuwait and Qatar); organic chemicals (Kuwait, Qatar and Saudi Arabia), milling products (Kuwait); dairy products, eggs, honey, edible animal products (Qatar and Saudi Arabia); essential oils, perfumes, cosmetics, furniture, lighting, miscellaneous articles of base metal, railway, tramway locomotives (Bahrain); stone, cement (Bahrain and United Arab Emirates); vehicles, live animals, tobacco and manufactured tobacco substitutes (Oman), ships and boats (Oman and Saudi Arabia); musical instruments (Qatar), plastics, soaps (Qatar, Saudi Arabia); paper (Saudi Arabia); manufactures of plaiting material, basketwork, leather, fish, crustaceans, mollusks (Yemen). The comparative advantage of Israel is in sectors like knitted or crocheted fabric, oil seed, oleagic fruits, grain, electrical and electronic equipment, pearls, miscellaneous chemical products, live trees and plants, stone, cement, and pharmaceutical products. Tunisia benefits from a comparative advantage in inorganic chemicals, precious metal compound, products of animal origins, miscellaneous articles of base metal, articles of apparel, articles of leather, musical instruments, electrical and electronic equipment.

Djibouti, Jordan, Bahrain, Lebanon and Malta exhibit higher shares for service trade in GDP than the region's average in 2012, mostly for Malta (93%), Lebanon (80%) and Jordan (33%). Authors' calculations for the Revealed Comparative Advantage index for services show that Malta exhibits high values of the index for personal, cultural and recreational services, financial services, royalties and license fees. Lebanon exhibits a comparative advantage in tourism, remittances, financial and construction services, Jordan in remittances and government services, and Bahrain in transportation and communications services.

Table 1 also shows that, for those countries that were the least affected by conflicts, the share of trade in GDP has been stable or has increased over the past decade. Conversely, countries like Bahrain, Egypt, Iraq,West Bank and Gaza, witnessed a decreasing share of trade in GDP. It is worth mentioning that this stylized fact concurs with the different types of conflicts that struck the above-mentioned countries in the context of the "Arab Spring", the aftermath of the Iraqi war and the Palestinian conflict.

3. Methodology and Data

3.1 Macro regressions

The methodology used in this article draws on the pioneering work of Tinbergen (1962) and Anderson (1979): the gravity model. Standing as an essential tool in the empirics of international trade to predict bilateral trade flows using multiple determinants of trade, the gravity model has undergone over years significant theoretical and empirical improvements (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 narrowing the gap between theoretical and empirical findings.

In order to assess the impact of war and different types of conflicts on trade in the MENA region, we adopt the definition conflicts suggested by the Department of Peace and Conflict Research at Uppsala University: armed conflicts between two parties, of which at least one is the government of a state; non-state conflictsbetween two organized armed groups, neither of which is the

government of a state; and one-sided violence where we distinguish between one-sided state violence, when the actor is the government of a state, and one-sided non-state violence in the opposite case. Since the different types of conflicts in the MENA region do not necessarily involve country pairs, we propose, like in van Lynden (2011), an adaptation of the gravity model, using unilateral variants of the variables that influence bilateral trade.

Our explanatory variables are the natural log of country *i*'s GDP and unilateral variants of the gravity-type variables: a dummy variable taking the value of 1 if twenty percent of the population speak Arabic and zero otherwise (*Arabic*), two dummy variables to determine whether a country has been colonized by France (*France*) or the United Kingdom (*UK*). We capture the effect of distance by taking the average distance between each country and its trade partners (*lnDist*). Finally, *war* is a dummy variable taking the value of 1 if the country has been affected by any type of conflicts and 0 otherwise. We capture the lagged effect of war on trade by introducing in the equation the lagged value of the dummy variable *war* that, at the same time, allows to control for any endogeneity problem that may arise between trade and war.

Our estimable macroeconomic equation is:

$$lnTrade_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_2 lnDist_i + \beta_3 Arabic_i + \beta_4 France_i + \beta_5 UK_i + \beta_5 war_{it-1} + f_t + \epsilon_{it} \quad (1)$$

with ϵ_{ijt} the discrepancy term and f_t year fixed effects.

We then distinguish between the effects of the different types of conflicts on trade, namely, armed conflicts, non-state armed conflicts, one-sided state violence and one-sided non-state violence. We define a dummy variable for each type of conflict, taking the value 1 if the related type of conflict occurred in country in a particular year and 0 otherwise. We introduce the lagged effect of those dummy variables and our estimable macroeconomic regression becomes:

$$lnTrade_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_2 lnDist_i + \beta_3 Arabic_i + \beta_4 France_i + \beta_5 UK_i + \beta_5 armedconflicts_{it-1} + \beta_6 nonstate_{it-1} + \beta_7 oneside_{it-1} + \beta_8 onesidens_{it-1} + f_t + \epsilon_{it} \quad (2)$$

To capture the long-lasting effect of war and conflicts on trade, we introduce some dynamic effects into the standard panel model, by including the lagged value of trade among the regressors. Theoretically, this can be done as follows:

$$y_{it}^* = \alpha_0 + \alpha_1 x_{it} + u_{it}$$
$$y_{it} - y_{it-1} = \lambda(y_{it}^* - y_{it-1}) \quad (3)$$

where y* is the desired level of y.

By substituting the expression for y* into the other equation we obtain the following estimating equation:

$$y_{it} = \alpha_0 \lambda + (1-\lambda) y_{it-1} + \lambda \alpha_1 x_{it} + \lambda u_{it} \quad (4)$$

Unfortunately there is a problem with the estimation of this type of model, as the lagged dependent variable will be correlated with the error term (in small samples). To overcome this, an instrumental variable technique can be used, such as Generalized Method of Moments (GMM), where the instruments can be lagged values of the variables in the original models. There are two

approaches to dynamic panel models; the most common is the Arellano-Bond dynamic panel, where individual or fixed effects are accounted for by differencing the data.

Macroeconomic regressions are estimated for a sample of 20 countries[3] from the MENA region for the period 1960-2013 using different econometric techniques namely panel estimations (both fixed effects *FE* and random effects *RE)* and dynamic panel (Arellano-Bond AB)[4]. Trade and GDP data are obtained from the World Development Indicators database at the World Bank and nominal values are deflated using the GDP deflator of 2005. Conflicts data come from the Uppsala Conflict Data Program (UCDP). Language, colony and latitude variables have been compiled from the CEPII dataset available on www.cepii.fr.

3.2 Sectoral regressions

Although conflicts occurring in the MENA region do not necessarily involve country pairs, we cannot deny that some types of conflicts have a bilateral dimension and might affect bilateral trade between the two partners involved in that conflict. Furthermore, we believe that the devastating effects of conflicts on trade will vary among countries, depending on their comparative advantage, as some sectors are more affected by war than others. Therefore, it will be quite interesting to run the regressions at a disaggregated sectoral level for both manufacturing and services.

For bilateral trade in manufacturing, we use the Trade and Production dataset with 27 sectors for the period 1980 – 2006. To deal with the zero trade issue, which might be due to the fact that war leads to discrete changes in trade, often drawing the level of trade down to zero, we opt for a Poisson Pseudo-Maximum Likelihood (PPML) regression (Santos Siliva and Tenreyro, 2006).The PPML estimator is a non-linear estimator used to deal with the zero trade observations and to provide unbiased and consistent estimates that are robust to the presence of heteroscedasticity. The PPML estimator offers several desirable properties for gravity models. First, it is consistent in the presence of fixed effects, which can be entered as dummy variables as in simple Ordinary Least Squares (OLS) regressions. This point is particularly important for gravity modeling because most theory-consistent models require the inclusion of fixed effects by exporter and by importer (this is why we include them in our specification). Second, the Poisson estimator naturally includes observations for which the observed trade value is zero. Such observations are dropped from the OLS model because the logarithm of zero is undefined. Moreover, those zero observations are relatively common in disaggregated trade matrices, since not all countries trade all products with all countries and since wars can result in the cessation of trade between partners. Third, the interpretation of the coefficients from the Poisson model is straightforward, and follows exactly the same pattern as OLS. Although the dependent variable for the Poisson regression is specified as exports in levels rather than in logarithms, the coefficients of any independent variable entered in logarithms can still be interpreted as simple elasticities. The coefficients of independent variables entered in levels are interpreted as semi-elasticities, like in OLS. Our estimable equation is:

$$X_{ijkt} = \beta_0 + \beta_1 lnDist_{ij} + \beta_2 Contig_{ij} + \beta_3 Com\,col_{ij} + \beta_4 Col_{ij} + \beta_5 RTA_{ij} + \beta_6 \ln(1 + tar_{ij}) + \beta_7 Lang_{ij} + \beta_8 armedconflicts_{ijt-1} + \beta_9 nonstate_{it-1} + \beta_{10} oneside_{it-1} + \beta_{11} onesidens_{it-1} + \Delta i + \mu j + \mathrm{q}k + \epsilon_{it} \quad (5)$$

[3]West Bank and Gaza are dropped from the sample as they don't show in any of the Uppsala conflict databases (conflicts affecting West Bank and Gaza are counted in Israel).

[4]See Appendix 1 for a list of the countries.

where X_{ijkt} is the bilateral trade flow between country *i* and country *j* in year *t* for sector *k*, $lnDist_{ij}$ is the bilateral distance between the two countries, $Contig_{ij}$, $Comcol_{ij}$,Col_{ij}, RTA_{ij} and $Lang_{ij}$ are dummy variables that take the value of 1 if the two countries share common borders, have been colonized by the same colonizer, had previous colonial links, are members of a regional trade agreement and share common languages. qk, μj and Δi are sector, importer and exporter fixed effects respectively.

We run regressions at the sector level to examine the different impact of conflicts on sectors.

For services, bilateral trade data is not available at a disaggregated level. Therefore, the dependent variable is total exports by country in 12 service sectors for the period 2000 – 2013. Disaggregated trade by services sectors come from "Trade Map," which is a web-based application with statistics, trends and indicators on global trade flows and developed by the International Trade Center (ITC, Geneva). The estimable equation[5] is as follows:

$$lnX_{itk} = \beta_0 + \beta_1 GDP_{it} + \beta_2 lnDist_i + \beta_3 Arabic_i + \beta_4 France_i + \beta_5 UK_i + \beta_5 armedconflicts_{it-1} + \beta_6 nonstate_{it-1} + \beta_7 oneside_{it-1} + \beta_8 onesidens_{it-1} + \Delta i + \mathrm{q}k + \epsilon_{it} \quad (6)$$

This equation is first run by pooling countries and sectors in the same regression, then it is run at the sectoral level (12 regressions).

4. Empirical Findings

4.1 Macro regressions

In order to assess the impact of war on trade, we run several regressions by flow (exports, imports and total trade) and by type of war (war in general, then by differentiating by types of conflicts: non-state conflicts, armed conflicts and one-sided state/non-state violence). We use several techniques for panel data, namely, both random and fixed effects and dynamic panel regressions.

Table 2 shows that that our unilateral version of the gravity model is doing well since GDP has the expected positive sign and is statistically significant. Moreover, distance has the expected negative impact on trade, exports and imports. Finally, sharing the same Arabic language is likely to boost trade. As per our variables of interest, it is worth mentioning that the lagged dummy of *war* is negative and significant for exports, imports and trade.

If we disentangle the effect of different conflicts on trade flows, we find that non-state conflicts have a detrimental effect on exports much more than other types of conflicts. This is in line with Martin et al. (2008) who point out that trade destruction due to civil wars (which are mainly non-state) is very large and persistent and increases with the severity of the conflict. In fact, civil wars are likely to destroy infrastructure, stop the production process and consequently affect production, labor demand, and thus exports. Furthermore, we find that imports are more likely to be affected by non-state, one-sided and one-sided non-state conflicts mainly because the purchasing power of the population is likely to decrease, leading to less demand and therefore lower imports. Consequently, total trade is chiefly affected by non-state and one-sided conflicts.

4.2 Manufacturing and services regression

Table 6 shows the impact of the different types of conflicts on bilateral trade between country pairs. Our gravity variables are doing well: distance and tariffs have a significant negative impact

[5] We use OLS techniques (instead of PPML) and introduce exporter and sector dummies since the share of zero flows is very small.

and common language a significant positive impact on bilateral trade flow. More importantly, non-state war is the only type of conflicts that hampers bilateral trade. Non-state conflicts reduce bilateral trade flows by 15.5%[6]. This finding is again justified by the fact that civil wars are likely to destroy infrastructure, stop the production process and consequently affect exports (Martin et al., 2008).The effect of non-state conflicts on bilateral trade is even harsher - they reduce trade by 22% - when we combine all the conflicts simultaneously in one specification. In fact, the conflict coefficient is greater than the tariff one, showing that civil conflict hinder trade more than classical tariffs for two reasons. First, conflicts hinder both exports and imports not imports only (which is the case of tariffs). Second, if tariffs can reduce trade flows for specific products and/or sectors, wars dampen trade regardless the type of the product since on the supply side, the whole production process is affected leading to less exports and on the demand side, the purchasing power of individuals is negatively impacted leading to less imports.

When we run the regressions by manufacturing sectors, we find that one-sided non-state violence hampers 44% of manufacturing sectors (wearing apparel, industrial chemicals, other chemicals, plastic products, other non-metallic mineral products, iron and steel, fabricated metal products, machinery except electrical, professional and scientific equipment). Sectors like tobacco and wood products are affected by non-state conflicts; furniture by non-state conflicts and one-sided state violence; and food products and beverages by armed conflicts. Trade in leather products is affected by one-sided non-state violence and by non-state conflicts. Trade in electric machinery is affected by one-sided non-state violence and by armed conflicts. Indeed, the effect of conflicts varies among manufacturing sectors according to the comparative advantage of the country that has been ripped apart by the(se) specific type(s) of conflict(s). Finally, it is noteworthy that we got very few counter-intuitive positive and significant coefficients of conflicts on bilateral trade of some sectors (Tables 7-9).

As bilateral trade data is not available for disaggregated service sectors, we use the unilateral variant of the gravity model specified in the previous section. Table 12 shows that the gravity variables have their expected signs. However, none of the conflicts' variables appear to have a significant effect on service export. Surprisingly, one-sided non-state conflicts have a significant positive effect on service exports when all conflicts variables are included in one specification.

When we run the regressions by sector, we find that one-sided state violence hampers travel services and other business services, and that non-state conflicts have a detrimental effect on financial services. The results also show that armed conflicts have a negative effect on communication, insurance and construction services as well as remittances. Counterintuitively, we find that one-sided non-state violence increase exports of travel, transportation, communication services, construction services and insurance services as well as government services.

In a nutshell, we can summarize our main findings in three main points. First, war has a robust and significantly negative impact on exports, imports and trade. Second, non-state conflicts are more likely to affect trade than the other specified types of war. Third, while bilateral manufacturing trade flows are affected by war in general, and by non-state conflicts in particular, none of the war variables appear to affect service exports.

[6] This elasticity has been calculated as follows $e^{\beta}-1$ where β is the "non-state" coefficient.

5. Calculating Ad-Valorem Equivalents for Conflicts

To assess more appropriately the impact of war on trade, we adopt the methodology of Kee et al. (2009) to estimate ad-valorem equivalents (AVEs) for conflicts based on the gravity model. To make conflicts comparable with AVEs, the quantity impact must be transformed into price equivalents. This yields the AVEs of a conflict $ave_j^{conflict}$ noted as $ave_j^{war} = dlog(p_j)$. Hence, the gravity equation is differentiated with respect toward $_j$:

$$\frac{d\ln(X)}{d(war)} = \frac{d\ln(X)}{d\ln(p\ )}.\frac{d\ln(p)}{d(war)} = \varepsilon_j.ave_j^{conflict} \qquad (7)$$

where ε is the import demand elasticity in country *j*and *p* the domestic price in country j.

Hence, solving (18) for $ave_j^{conflict}$:

$$ave_j^{conflict} = \frac{1}{\varepsilon}.\frac{d\ln(X)}{d(war)} \qquad (8)$$

In other terms, the AVEs can be computed by taking the ratio between the coefficient of the war(obtained from the gravity model) and the elasticity of demand (coming from Kee et al, 2008) as follows:

$$ave_j^{conflict} = \frac{\beta_6^{conflict}}{\varepsilon} \qquad (9)$$

This yields the ad-valorem equivalent of a conflict for the countries whose elasticity of demand is available. It is worthy to note that AVEs have been computed based on the output of the bilateral gravity model as it is the closest specification to Kee et al. (2009).

We find that, a conflict is equivalent to a tariff ranging from 4% to 65% of trade flows in manufacturing sectors. Most of the sectors that are highly affected by different conflicts are consumption goods such as food, beverages, wearing and apparels, leather and chemicals.

6. Conclusion and Policy Recommendations

The paper investigates the effects of wars on trade in the MENA region. As a region, MENA faces considerable risk of conflicts. Using an augmented gravity model, we introduce a war variable and distinguish between different types of conflicts. We run a battery of sensitivity analysis tests to control for the endogeneity problem that may arise in our estimation. The results show that, in general, wars have a significantly negative impact on exports, imports and trade. Moreover, civil conflicts (non-state conflicts) do hinder exports, imports and trade significantly. The disaggregated version of the gravity model shows that non-state conflicts, unlike other types of conflicts, have a detrimental effect on bilateral trade flows in manufacturing, and that none of the conflicts do affect trade in services. Finally, the outcome of the gravity model for manufacturing sectors has been used to compute ad-valorem equivalents of wars at the sector and country levels. We found that, on average, a conflict is equivalent to a tariff of 5% of the value of trade. More heterogeneity is observed at the sectoral level (where AVEs range from 4% to 65%).

“War is development in reverse” (Collier et al. 2003). Conflict in the MENA region has a significant detrimental effect on life expectancy, infant mortality rates, GDP per capita, access to water, trade and institutions.

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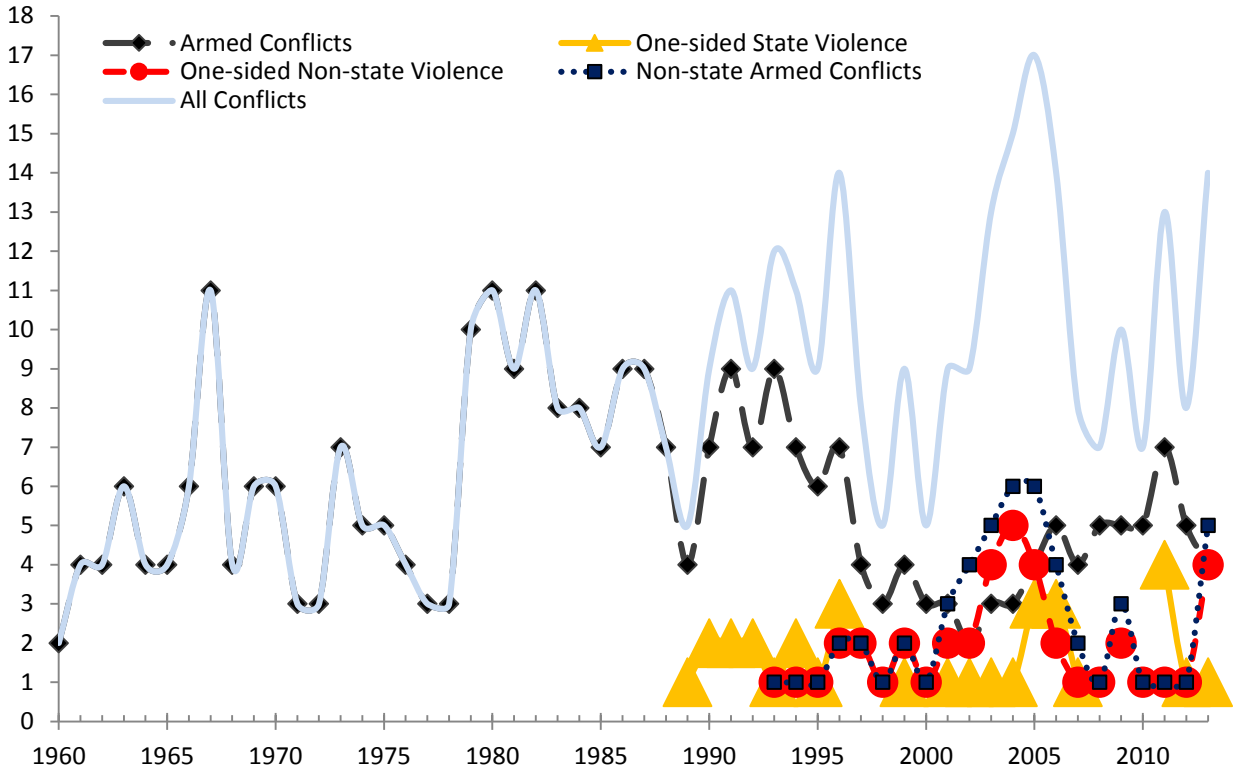
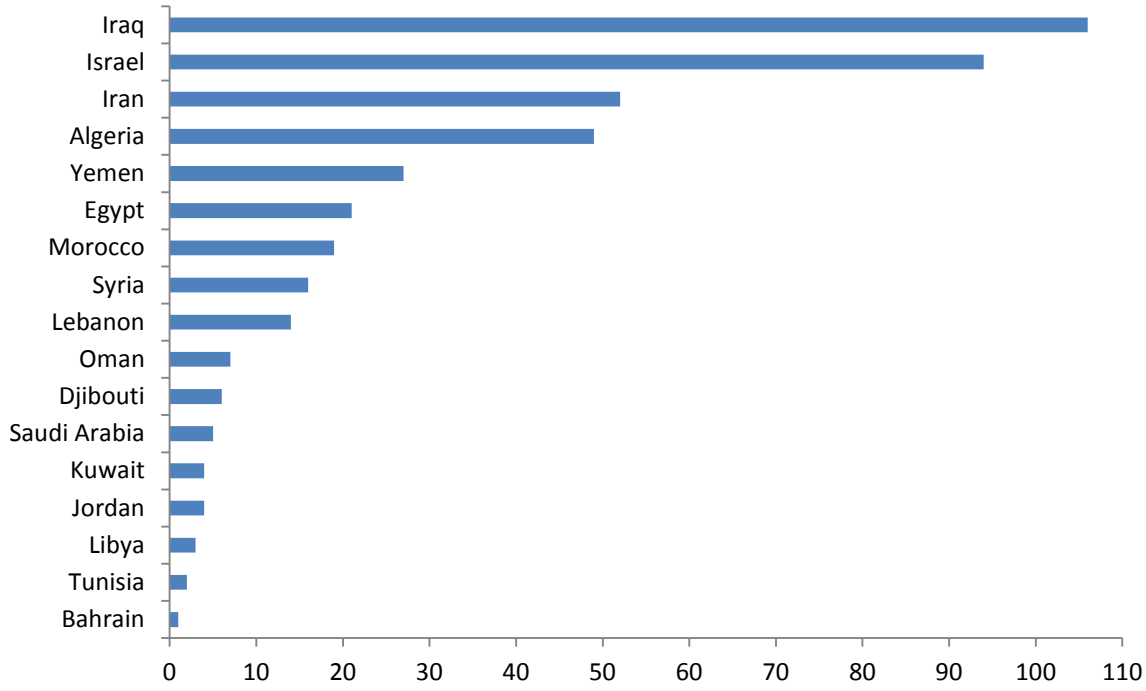
Figure 1: Conflicts in the MENA Region (1960 – 2013)



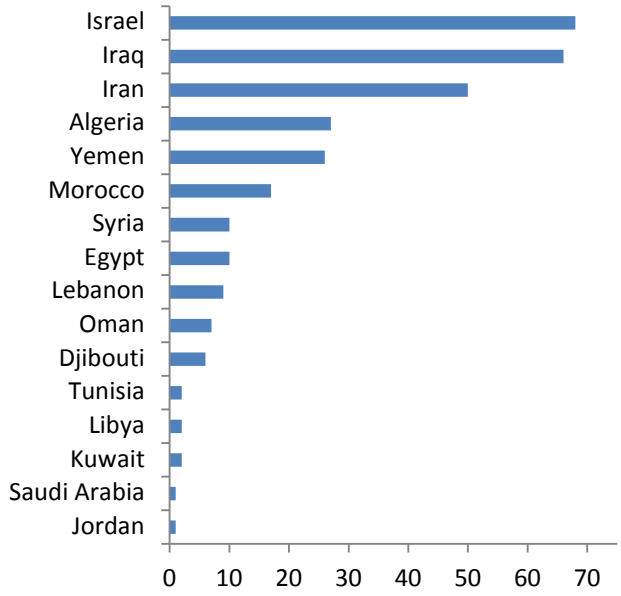
Source: Authors' calculations from the Uppsala Conflict Data Program, Department of Peace and Conflict Research, Uppsala Universitet.

Figure 2: Total Number of Conflicts by MENA Country (1960 – 2013)



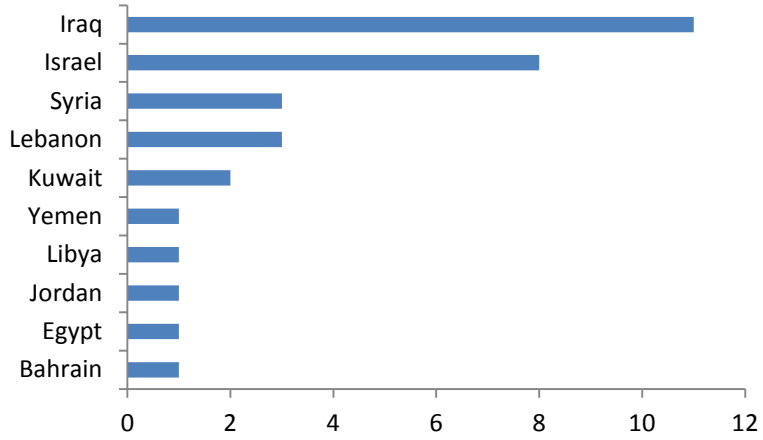
Source: Constructed by the authors using the Uppsala Conflict Data Program, Department of Peace and Conflict Research, Uppsala Universitet.

Figure 3a: Armed Conflicts by MENA Country (1960 – 2013)



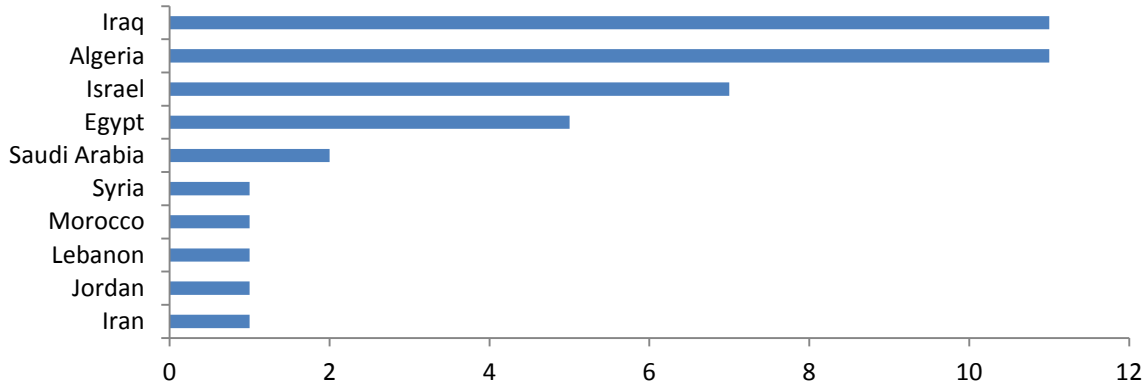
Source: Constructed by the authors using the Uppsala Conflict Data Program, Department of Peace and Conflict Research, Uppsala Universitet.

Figure 3b: One-Sided State Violence by MENA Country (1960 – 2013)



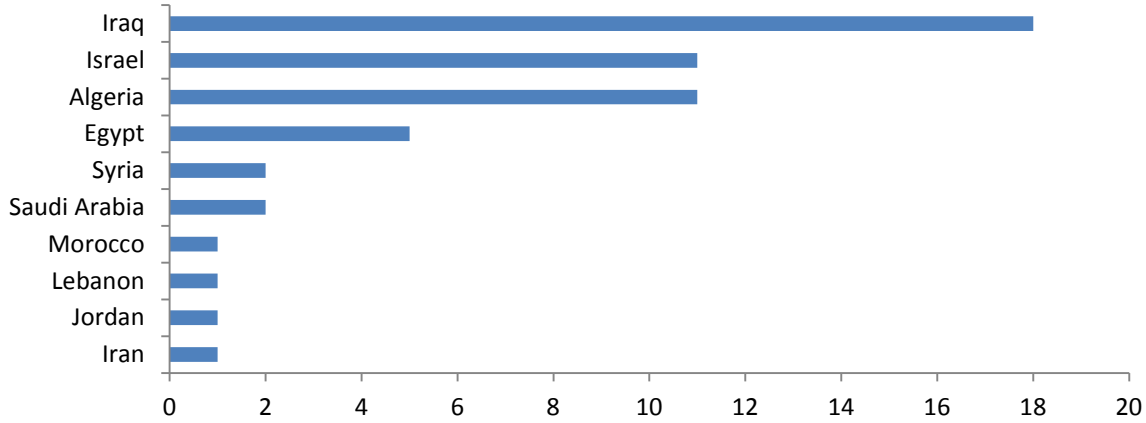
Source: Constructed by the authors using the Uppsala Conflict Data Program, Department of Peace and Conflict Research, Uppsala Universitet.

Figure 3c: One-Sided Non-State Violence by MENA Country (1960 – 2013)



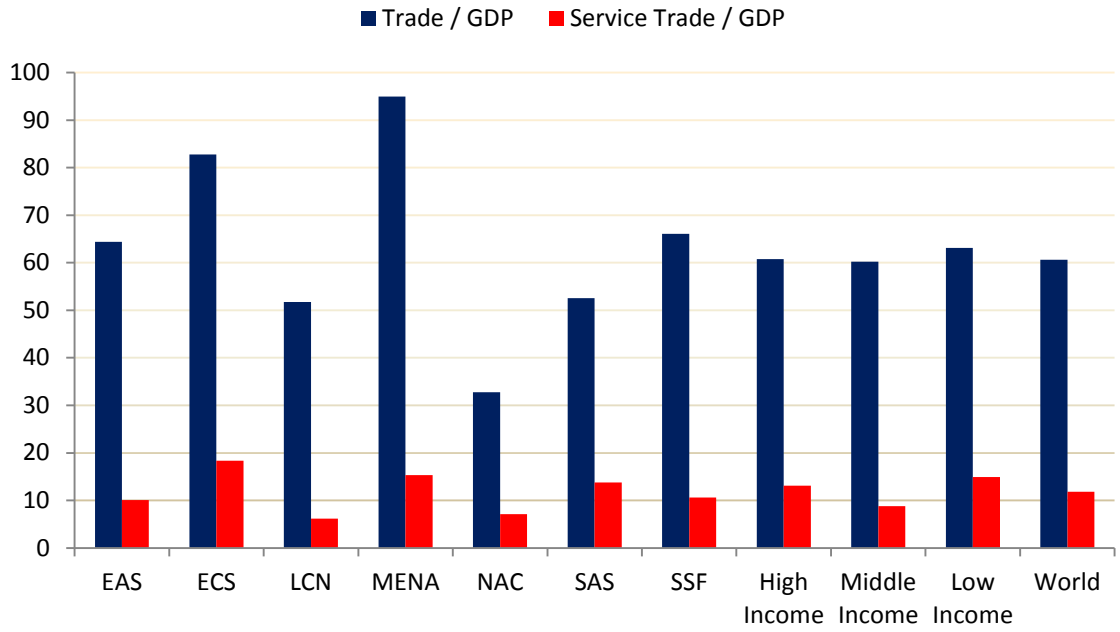
Source: Constructed by the authors using the Uppsala Conflict Data Program, Department of Peace and Conflict Research, Uppsala Universitet.

Figure 3d: Non-State Armed Conflicts by MENA Country (1960 – 2013)



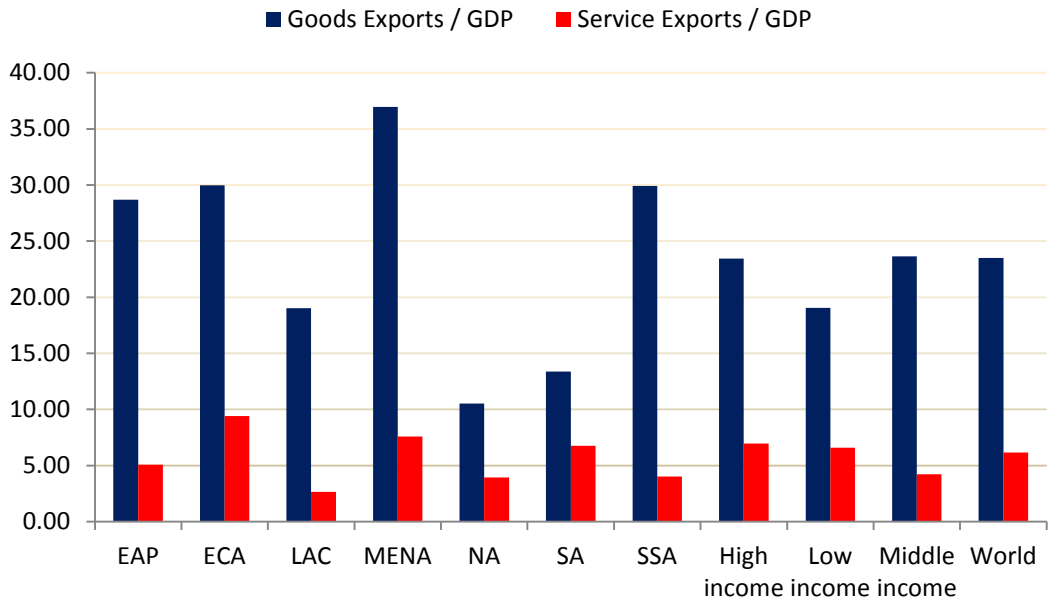
Source: Constructed by the authors using the Uppsala Conflict Data Program, Department of Peace and Conflict Research, Uppsala Universitet.

Figure 4: Trade as a Percentage of GDP, 2012



Note: (i) Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product. (ii) EAS: East Asia & Pacific; ECS: Europe & Central Asia; LCN: Latin America & Caribbean; MENA: Middle East & North Africa; NAC: North America;SAS: South Asia; SSF: Sub-Saharan Africa.
Source : World Bank, World Development Indicators database online, 2014.

Figure 5: Exports as a Percentage of GDP, 2012



Note: EAS: East Asia & Pacific; ECS: Europe & Central Asia; LCN: Latin America & Caribbean; MENA: Middle East & North Africa; NAC: North America;SAS: South Asia; SSF: Sub-Saharan Africa.
Source :Authors' Calculations from World Bank, World Development Indicators database online, 2014.

Table 1: Trade as a Percentage of GDP for Selected MENA Countries (2002 – 2012)

		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Algeria	Total				71.20	70.63	71.57	76.74	70.88	69.13	68.26	67.61
	Services				7.10	6.32	7.14	8.55	10.70	9.66	8.19	7.38
Bahrain	Total	148.00	146.24	168.25	148.31	147.10	137.78	145.88	117.96	120.46	126.81	123.75
	Services	23.69	22.34	35.67	28.62	27.38	24.77	23.13	24.29	23.87	17.47	15.04
Djibouti	Total	82.48	90.04	87.96	91.58	95.15	101.75	104.43	79.27	78.39	85.70	83.09
	Services	43.04	45.61	43.28	46.87	44.31	39.68	40.58	35.70	38.29	37.64	35.11
Egypt	Total	40.85	47.86	67.63	72.52	71.86	75.18	74.92	52.09	49.66	45.95	44.67
	Services	18.12	21.14	28.12	28.04	25.77	26.28	26.12	18.76	17.60	14.07	14.54
Iraq	Total				100.39	84.56	69.73	77.92	76.55	71.27	70.23	74.35
	Services				12.91	8.98	6.45	6.89	9.63	8.89	7.29	7.47
Israel	Total	74.67	73.34	80.57	85.82	82.78	83.37	78.41	64.61	68.34	71.54	72.16
	Services	20.46	20.25	21.78	22.92	22.62	22.36	20.97	19.47	18.79	18.57	20.15
Jordan	Total	113.83	117.97	139.66	146.98	141.75	145.99	144.02	114.99	116.82	119.44	117.84
	Services	38.09	36.38	38.35	38.75	39.04	41.29	39.16	35.15	37.91	33.34	32.98
Kuwait	Total	81.50	86.32	89.27	91.40	90.37	92.40	93.36	92.78	92.76	95.07	93.50
	Services	19.70	20.33	19.09	16.70	18.79	20.50	18.82	23.90	20.64	17.22	16.14
Lebanon	Total	81.31	124.75	134.11	141.28	147.92	153.72	177.17	143.81	134.05	143.03	139.99
	Services	40.97	79.75	81.52	88.10	93.61	92.53	107.85	88.08	76.49	81.43	79.94
Libya	Total	96.02	92.15	86.50	97.51	95.15	93.82	94.63	103.44	107.06	99.96	114.52
	Services	9.73	8.50	7.12	6.55	5.41	3.81	4.89	8.74	8.75	12.76	8.73
Malta	Total	164.34	160.20	161.50	158.92	188.12	189.15	189.83	169.08	190.84	195.37	201.63
	Services	47.52	46.01	48.94	54.56	68.17	74.21	82.97	80.72	87.89	91.23	92.53
Morocco	Total	63.78	60.46	64.02	62.39	65.92	73.54	83.12	64.82	70.56	78.37	82.67
	Services	16.93	16.68	17.83	22.02	24.15	25.90	24.73	23.90	24.36	24.67	24.47
Oman	Total	96.45	95.38	100.57	99.68	99.65	109.34	108.87	105.31	106.55	111.19	114.09
	Services	12.43	14.68	15.55	13.22	14.15	16.18	12.68	14.72	13.93	13.17	14.76
SA	Total	66.97	73.18	79.44	85.20	89.94	95.07	96.10	84.86	82.77	85.76	83.74
	Services	13.24	12.65	12.62	13.56	16.92	19.11	16.28	19.75	16.60	13.37	11.51
Syria	Total	66.22	60.59	76.10	78.36	75.14	76.49					
	Services	15.65	14.26	19.39	18.26	16.33	17.01					
Tunisia	Total	86.82	84.72	89.85	90.66	94.40	104.57	114.87	93.90	105.25	105.10	107.09
	Services	17.96	16.85	18.11	18.53	18.95	19.22	20.25	18.88	20.13	16.97	18.29
WBG	Total	107.07	107.10	110.53	93.50	97.67	104.49	94.50	93.42	83.53	85.26	88.27
	Services	31.08	26.85	23.38	17.48	17.77	21.45	21.37	22.51	23.71	20.61	20.85
Yemen	Total	69.58	73.44	71.17	76.04	82.00	66.83	71.93	61.40	63.98	69.95	
	Services	10.01	11.01	10.21	9.63	12.60	10.11	11.69	12.11	12.48	12.06	

Note: SA: Saudi Arabia; WBG: West Bank & Gaza.
Source :Authors' Calculations based on World Bank, World Development Indicators database online, 2014.

Table 2: The Effect of War on Exports, Imports and Total Trade at the Macro Level

	RE Ln(Exports)	FE Ln(Exports)	AB Ln(Exports)	RE Ln(Imports)	FE Ln(Imports)	AB Ln(Imports)	RE Ln(Trade)	FE Ln(Trade)	AB Ln(Trade)
Ln(GDP)	1.005***	1.097***	0.254***	0.909***	1.037***	0.260***	0.958***	1.063***	0.271***
	(0.0155)	(0.0691)	(0.0523)	(0.0130)	(0.0624)	(0.0521)	(0.0116)	(0.0545)	(0.0448)
Ln(Dist)	-0.261***		0.0278	-0.169***		0.313	-0.227***		0.223
	(0.0181)		(0.200)	(0.0151)		(0.207)	(0.0135)		(0.165)
Arabic	0.225***			0.0868**			0.197***		
	(0.0413)			(0.0345)			(0.0307)		
France	-0.516***			0.0216			-0.271***		
	(0.0428)			(0.0357)			(0.0318)		
UK	-0.364***			0.150***			-0.137***		
	(0.0450)			(0.0376)			(0.0335)		
War(-1)	-0.227***	-0.0957***	-0.0580***	-0.0166	-0.0553*	-0.0170	-0.0944***	-0.0560**	-0.0363***
	(0.0359)	(0.0313)	(0.0168)	(0.0300)	(0.0283)	(0.0173)	(0.0266)	(0.0247)	(0.0137)
Lag Dep. Var.			0.774***			0.722***			0.733***
			(0.0220)			(0.0241)			(0.0222)
Constant	5.083***	1.126		6.816***	2.550*		6.664***	2.649**	
	(0.381)	(1.555)		(0.319)	(1.406)		(0.283)	(1.228)	
Year dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	665	665	624	665	665	624	665	665	624
Number of code	20	20	20	20	20	20	20	20	20
R-squared		0.895			0.900			0.925	

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

Table 3: The Effect of Different Types of Wars on Exports at the Macro level

	RE					FE				
	Ln(Exports)	**Ln(Exports)**	**Ln(Exports)**	**Ln(Exports)**	**Ln(Exports)**	**Ln(Exports)**	**Ln(Exports)**	**Ln(Exports)**	**Ln(Exports)**	**Ln(Exports)**
Ln(GDP)	1.010***	0.990***	0.993***	0.984***	1.015***	1.140***	1.138***	1.108***	1.137***	1.115***
	(0.0155)	(0.0157)	(0.0159)	(0.0157)	(0.0156)	(0.0677)	(0.0682)	(0.0700)	(0.0685)	(0.0696)
Ln(Dist)	-0.290***	-0.275***	-0.263***	-0.271***	-0.290***					
	(0.0181)	(0.0186)	(0.0187)	(0.0187)	(0.0185)					
Arabic	0.294***	0.317***	0.270***	0.325***	0.259***					
	(0.0381)	(0.0392)	(0.0438)	(0.0395)	(0.0425)					
France	-0.515***	-0.565***	-0.547***	-0.569***	-0.505***					
	(0.0423)	(0.0431)	(0.0438)	(0.0434)	(0.0426)					
UK	-0.380***	-0.389***	-0.377***	-0.393***	-0.372***					
	(0.0445)	(0.0460)	(0.0464)	(0.0463)	(0.0446)					
Non-state(-1)	-0.445***				-0.421***	-0.173***				-0.163***
	(0.0629)				(0.0675)	(0.0530)				(0.0547)
One side(-1)		-0.272***			-0.143		-0.0791			-0.0426
		(0.0934)			(0.100)		(0.0691)			(0.0735)
Armed Conf (-1)			-0.110***		-0.0811*			-0.0650*		-0.0606*
			(0.0399)		(0.0420)			(0.0346)		(0.0353)
One side NS(-1)				0.0133	0.198***				-0.0121	0.0427
				(0.0692)	(0.0757)				(0.0579)	(0.0616)
Constant	5.083***	5.328***	5.247***	5.442***	4.964***	0.117	0.162	0.871	0.192	0.695
	(0.378)	(0.389)	(0.393)	(0.390)	(0.381)	(1.522)	(1.534)	(1.576)	(1.539)	(1.567)
Year dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	665	665	665	665	665	665	665	665	665	665
Number of code	20	20	20	20	20	20	20	20	20	20
R-squared						0.895	0.893	0.894	0.893	0.896

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

Table 4: The Effect of Different Types of Wars on Imports at the Macro level

	RE					FE				
	Ln(Imports)	**Ln(Imports)**	**Ln(Imports)**	**Ln(Imports)**	**Ln(Imports)**	**Ln(Imports)**	**Ln(Imports)**	**Ln(Imports)**	**Ln(Imports)**	**Ln(Imports)**
Ln(GDP)	0.904***	0.907***	0.909***	0.908***	0.906***	1.062***	1.061***	1.044***	1.048***	1.044***
	(0.0131)	(0.0128)	(0.0129)	(0.0127)	(0.0132)	(0.0612)	(0.0613)	(0.0631)	(0.0611)	(0.0626)
Ln(Dist)	-0.168***	-0.170***	-0.168***	-0.169***	-0.164***					
	(0.0153)	(0.0151)	(0.0153)	(0.0151)	(0.0156)					
Arabic	0.0975***	0.0939***	0.0801**	0.0931***	0.0815**					
	(0.0321)	(0.0320)	(0.0356)	(0.0319)	(0.0360)					
France	0.0118	0.0179	0.0232	0.0184	0.0163					
	(0.0356)	(0.0351)	(0.0356)	(0.0351)	(0.0361)					
UK	0.147***	0.148***	0.153***	0.149***	0.152***					
	(0.0375)	(0.0375)	(0.0377)	(0.0375)	(0.0378)					
Non-state(-1)	0.0505				0.0712	-0.104**				-0.0779
	(0.0529)				(0.0572)	(0.0479)				(0.0492)
One side(-1)		-0.00707			-0.0167		-0.112*			-0.0372
		(0.0761)			(0.0850)		(0.0621)			(0.0661)
Armed Conf (-1)			-0.0284		-0.0330			-0.0368		-0.0145
			(0.0325)		(0.0356)			(0.0312)		(0.0317)
One side NS(-1)				-0.0307	-0.0211				-0.168***	-0.142**
				(0.0560)	(0.0641)				(0.0517)	(0.0554)
Constant	6.882***	6.839***	6.792***	6.832***	6.828***	1.965	1.985	2.394*	2.284*	2.368*
	(0.318)	(0.317)	(0.320)	(0.316)	(0.322)	(1.376)	(1.378)	(1.420)	(1.372)	(1.410)
Year dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	665	665	665	665	665	665	665	665	665	665
Number of code	20	20	20	20	20	20	20	20	20	20
R-squared						0.901	0.900	0.900	0.902	0.902

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

Table 5: The Effect of Different Types of Wars on Trade at the Macro level

	RE					FE				
	Ln(Trade)	**Ln(Trade)**	**Ln(Trade)**	**Ln(Trade)**	**Ln(Trade)**	**Ln(Trade)**	**Ln(Trade)**	**Ln(Trade)**	**Ln(Trade)**	**Ln(Trade)**
Ln(GDP)	0.956***	0.951***	0.954***	0.949***	0.959***	1.088***	1.087***	1.069***	1.081***	1.071***
	(0.0117)	(0.0115)	(0.0116)	(0.0114)	(0.0118)	(0.0535)	(0.0536)	(0.0551)	(0.0537)	(0.0550)
Ln(Dist)	-0.236***	-0.233***	-0.227***	-0.230***	-0.234***					
	(0.0136)	(0.0136)	(0.0137)	(0.0136)	(0.0139)					
Arabic	0.230***	0.235***	0.209***	0.238***	0.205***					
	(0.0287)	(0.0286)	(0.0319)	(0.0287)	(0.0321)					
France	-0.279***	-0.291***	-0.282***	-0.293***	-0.272***					
	(0.0318)	(0.0314)	(0.0319)	(0.0315)	(0.0322)					
UK	-0.145***	-0.147***	-0.140***	-0.149***	-0.139***					
	(0.0335)	(0.0336)	(0.0338)	(0.0337)	(0.0337)					
Non-state(-1)	-0.122***				-0.0940*	-0.0960**				-0.0775*
	(0.0473)				(0.0510)	(0.0419)				(0.0432)
One side(-1)		-0.124*			-0.0934		-0.0946*			-0.0570
		(0.0682)			(0.0758)		(0.0543)			(0.0580)
Armed Conf (-1)			-0.0604**		-0.0550*			-0.0380		-0.0285
			(0.0291)		(0.0317)			(0.0273)		(0.0279)
One side NS(-1)				-0.0117	0.0697				-0.0717	-0.0366
				(0.0503)	(0.0571)				(0.0455)	(0.0486)
Constant	6.715***	6.762***	6.707***	6.808***	6.625***	2.060*	2.079*	2.499**	2.213*	2.428*
	(0.284)	(0.284)	(0.287)	(0.283)	(0.287)	(1.203)	(1.205)	(1.241)	(1.208)	(1.238)
Year dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	665	665	665	665	665	665	665	665	665	665
Number of code	20	20	20	20	20	20	20	20	20	20
R-squared						0.925	0.925	0.924	0.924	0.925

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

Table 6: The Effect of Different Types of Wars on Manufacturing (disaggregated data)

	PPML Flow	PPML Flow	PPML Flow	PPML Flow	PPML Flow
Ln(Dist.)	-1.584***	-1.584***	-1.585***	-1.584***	-1.586***
	(0.133)	(0.133)	(0.133)	(0.133)	(0.133)
Ln(1+Tar)	-0.144**	-0.144**	-0.144**	-0.144**	-0.144**
	(0.0701)	(0.0701)	(0.0701)	(0.0701)	(0.0701)
Contig.	-0.225	-0.227	-0.226	-0.224	-0.223
	(0.207)	(0.207)	(0.207)	(0.207)	(0.207)
Lang.	0.874***	0.873***	0.879***	0.875***	0.880***
	(0.177)	(0.178)	(0.179)	(0.178)	(0.181)
Com. Col.	-0.257	-0.260	-0.259	-0.257	-0.263
	(0.205)	(0.205)	(0.205)	(0.205)	(0.206)
Col 45	0.0812	0.0824	0.0782	0.0809	0.0756
	(0.278)	(0.277)	(0.278)	(0.278)	(0.279)
RTA	0.252	0.252	0.249	0.251	0.253
	(0.180)	(0.178)	(0.179)	(0.178)	(0.180)
One side NS	-0.0101				-0.153
	(0.0512)				(0.172)
Non-state		-0.169***			-0.248**
		(0.0635)			(0.110)
One side			0.0397		0.176
			(0.0849)		(0.219)
Armed				-0.0403	0.00880
				(0.0972)	(0.111)
Constant	2.832**	2.841**	2.837**	2.835**	2.848**
	(1.207)	(1.207)	(1.207)	(1.208)	(1.206)
Exporter fixed effect	YES	YES	YES	YES	YES
Importer fixed effect	YES	YES	YES	YES	YES
Sector fixed effect	YES	YES	YES	YES	YES
Observations	222256	222256	222256	222256	222256
R-squared	0.221	0.221	0.221	0.221	0.222

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

Table 7: The Effect of Different Types of Wars on Manufacturing Exports 1 (sectoral level)

	311 Flow	313 Flow	314 Flow	321 Flow	322 Flow	323 Flow	324 Flow	331 Flow	332 Flow
Ln(Dist.)	-1.020***	-3.307***	-3.484***	-1.627***	-3.130***	-0.525**	-2.640***	-1.960***	-1.455***
	(0.251)	(0.366)	(0.520)	(0.283)	(0.461)	(0.227)	(0.233)	(0.206)	(0.358)
Ln(1+Tar)	-0.135**	-0.0319	-0.293***	-0.162**	-0.252***	-0.0211	-0.526***	0.204***	-0.0143
	(0.0526)	(0.0735)	(0.0437)	(0.0755)	(0.0603)	(0.166)	(0.109)	(0.0709)	(0.207)
Contig.	0.933**	0.0774	-1.953*	0.0901	-1.686*	0.537	-1.270**	0.416	0.288
	(0.411)	(0.415)	(1.107)	(0.359)	(0.864)	(0.494)	(0.533)	(0.429)	(0.455)
Lang.	1.333***	1.002**	1.583***	1.112***	0.895***	1.260**	1.720***	2.114***	0.644*
	(0.225)	(0.398)	(0.494)	(0.271)	(0.334)	(0.511)	(0.346)	(0.280)	(0.370)
Com. Col.	-0.569*	1.749***	2.629***	0.431	-0.459	-0.526	-0.468	-1.517***	-1.087***
	(0.319)	(0.519)	(0.997)	(0.316)	(0.554)	(0.445)	(0.485)	(0.365)	(0.371)
Col 45	-0.449	1.401**	2.072**	0.706**	0.641*	1.031*	0.158	-0.166	1.007**
	(0.671)	(0.626)	(1.005)	(0.318)	(0.378)	(0.544)	(0.538)	(0.355)	(0.432)
RTA	0.146	0.0526	-0.532**	0.331***	0.119	0.0935	0.252**	0.152	0.606**
	(0.103)	(0.226)	(0.268)	(0.117)	(0.104)	(0.210)	(0.0985)	(0.175)	(0.269)
One side NS	-0.159	-0.106	-1.440	0.0896	-0.276***	-0.706***	-0.156	-0.149	-0.268
	(0.120)	(0.191)	(0.911)	(0.121)	(0.0806)	(0.218)	(0.194)	(0.267)	(0.368)
Non-state	0.158	0.0423	-2.338***	-0.0882	0.319	-0.962**	-0.502	-1.275***	-0.600*
	(0.230)	(0.175)	(0.853)	(0.276)	(0.310)	(0.429)	(0.662)	(0.287)	(0.315)
One side	0.0529	-0.0880	0.928	-0.0698	0.226***	0.346	-0.102	-0.251	-0.986**
	(0.133)	(0.158)	(0.970)	(0.128)	(0.0812)	(0.255)	(0.216)	(0.280)	(0.400)
Armed	-0.207***	-0.423**	0.688	-0.0269	-0.0257	-0.348	0.596**	0.443	1.435***
	(0.0781)	(0.194)	(1.291)	(0.109)	(0.180)	(0.295)	(0.250)	(0.460)	(0.305)
Constant	-3.887	14.06***	17.24***	3.356	13.47***	-11.10***	9.922***	1.096	-7.660**
	(2.570)	(3.113)	(4.392)	(2.607)	(4.133)	(2.300)	(2.402)	(2.131)	(3.230)
Exporter fixed effect	YES	YES	YES	YES	YES	YES	YES	YES	YES
Importer fixed effect	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	9015	7570	4648	8876	8252	7529	7391	6899	7202
R-squared	0.600	0.828	0.906	0.736	0.886	0.489	0.938	0.875	0.444

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

Table 8: The Effect of Different Types of Wars on Manufacturing Exports 2 (sectoral level)

	341 Flow	342 Flow	351 Flow	352 Flow	355 Flow	356 Flow	361 Flow	362 Flow
Ln(Dist.)	-1.314***	-0.966***	-0.781***	-0.994***	-1.638***	-1.294***	-2.277***	-1.340***
	(0.179)	(0.294)	(0.258)	(0.191)	(0.270)	(0.160)	(0.264)	(0.282)
Ln(1+Tar)	-0.163**	-0.254*	-0.365***	-0.210**	-0.0986	-0.422***	-0.0980	-0.270***
	(0.0747)	(0.151)	(0.0833)	(0.0856)	(0.123)	(0.0834)	(0.114)	(0.0851)
Contig.	0.583**	-0.534	-0.451	0.671**	0.232	0.133	0.308	0.172
	(0.270)	(0.454)	(0.385)	(0.308)	(0.516)	(0.299)	(0.607)	(0.386)
Lang.	1.245***	1.149***	-0.0402	1.455***	1.482***	2.066***	0.283	0.709**
	(0.261)	(0.309)	(0.197)	(0.282)	(0.283)	(0.262)	(0.305)	(0.315)
Com. Col.	-0.191	-0.212	-0.275	-0.950***	-1.367**	-1.251***	0.194	-0.0252
	(0.325)	(0.287)	(0.367)	(0.290)	(0.541)	(0.273)	(0.387)	(0.643)
Col 45	0.136	1.007**	0.505	0.0166	-1.265**	-0.699**	0.138	0.929***
	(0.502)	(0.511)	(0.325)	(0.541)	(0.492)	(0.309)	(0.358)	(0.361)
RTA	0.713***	0.426**	0.218	0.758***	0.0913	0.276***	0.247	0.439*
	(0.148)	(0.193)	(0.133)	(0.253)	(0.155)	(0.0726)	(0.190)	(0.260)
One side NS	-0.404	-0.304	-0.306**	-0.812**	0.0183	-1.024*	-0.265	-0.205
	(0.307)	(0.268)	(0.125)	(0.392)	(0.198)	(0.529)	(0.212)	(0.134)
Non-state	0.0907	-0.139	-0.255	0.693	0.00229	-0.310	0.385	-0.606
	(0.306)	(0.173)	(0.177)	(0.425)	(0.286)	(0.424)	(0.314)	(0.449)
One sided	0.328	0.331	0.207	1.002*	-0.176	1.130**	0.117	0.0452
	(0.309)	(0.355)	(0.130)	(0.550)	(0.198)	(0.576)	(0.287)	(0.185)
Armed	0.115	-0.0519	-0.0735	0.332**	-0.156	0.0774	-0.0700	0.0494
	(0.332)	(0.159)	(0.193)	(0.164)	(0.259)	(0.248)	(0.177)	(0.170)
Constant	-1.828	-6.251**	-2.816	-2.556	1.827	-0.509	5.178**	-1.308
	(1.701)	(2.558)	(2.365)	(1.714)	(2.644)	(1.415)	(2.437)	(2.625)
Exporter fixed effect	YES	YES	YES	YES	YES	YES	YES	YES
Importer fixed effect	YES	YES	YES	YES	YES	YES	YES	YES
Observations	8133	8354	8758	8623	8138	8534	7666	7852
R-squared	0.614	0.434	0.602	0.722	0.671	0.831	0.615	0.378

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

Table 9: The Effect of Different Types of Wars on Manufacturing Exports 3 (sectoral level)

	369 Flow	**371 Flow**	**372 Flow**	**381 Flow**	**382 Flow**	**383 Flow**	**384 Flow**	**385 Flow**
Ln(Dist.)	-1.595***	-1.607***	-1.998***	-1.408***	-1.344***	-1.416***	-1.739***	-0.681
	(0.136)	(0.178)	(0.199)	(0.154)	(0.350)	(0.294)	(0.296)	(0.499)
Ln(1+Tar)	-0.0649	-0.0155	-0.256***	-0.299***	-0.245***	-0.462***	-0.111	-0.253
	(0.0696)	(0.0996)	(0.0953)	(0.0679)	(0.0853)	(0.104)	(0.132)	(0.162)
Contig.	0.641***	0.733**	-0.327	-0.0823	0.0817	0.0251	-0.334	0.919
	(0.226)	(0.289)	(0.371)	(0.301)	(0.555)	(0.538)	(0.428)	(0.943)
Lang.	1.325***	1.909***	1.311***	1.148***	0.758**	1.088***	0.879**	0.576
	(0.232)	(0.262)	(0.345)	(0.222)	(0.357)	(0.278)	(0.411)	(0.578)
Com. Col.	-0.0821	0.334	-0.354	-0.803***	-0.310	0.361	0.269	0.418
	(0.241)	(0.363)	(0.260)	(0.254)	(0.281)	(0.554)	(0.405)	(0.444)
Col 45	-0.369	-0.367	0.222	-0.0850	-1.862**	-0.0544	-0.971	-2.446**
	(0.313)	(0.491)	(0.317)	(0.455)	(0.928)	(0.648)	(0.783)	(1.111)
RTA	0.368**	0.957***	0.249	0.335**	0.427***	0.547***	1.110***	0.587***
	(0.172)	(0.216)	(0.161)	(0.136)	(0.133)	(0.128)	(0.247)	(0.108)
One side NS	-0.701***	-0.419*	0.0690	-0.777**	-0.522**	-1.263***	-0.462	-1.539**
	(0.190)	(0.242)	(0.141)	(0.339)	(0.218)	(0.156)	(0.576)	(0.623)
Non-state	-0.315	-0.139	0.122	-0.0349	-0.00188	2.648***	0.856	1.241
	(0.308)	(0.259)	(0.194)	(0.292)	(0.469)	(0.789)	(0.760)	(1.204)
One side	0.382	0.307	-0.0657	0.762*	0.478*	1.262***	0.583	1.570**
	(0.333)	(0.272)	(0.161)	(0.408)	(0.278)	(0.181)	(0.670)	(0.630)
Armed	0.549***	0.183	0.00965	0.366*	-0.0698	-0.287*	0.654	0.0773
	(0.166)	(0.198)	(0.147)	(0.203)	(0.122)	(0.158)	(0.440)	(0.274)
Constant	0.800	-2.213	4.565**	0.829	1.511	1.990	4.466*	-8.529**
	(1.451)	(1.837)	(1.973)	(1.610)	(3.043)	(2.900)	(2.678)	(4.025)
Exporter fixed effect	YES	YES	YES	YES	YES	YES	YES	YES
Importer fixed effect	YES	YES	YES	YES	YES	YES	YES	YES
Observations	7910	8036	8009	8845	9073	8988	8776	8528
R-squared	0.693	0.497	0.703	0.788	0.780	0.716	0.560	0.718

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

Table 10: The Effect of Different Types Wars on Exports of Services

	Ln(Exp.)	Ln(Exp.)	Ln(Exp.)	Ln(Exp.)	Ln(Exp.)
Ln(GDP)	1.089***	1.158***	1.075***	1.110***	1.138***
	(0.203)	(0.202)	(0.205)	(0.202)	(0.205)
Ln(Dist)	-0.726*	-0.791*	-0.788***	-0.819***	-0.853***
	(0.421)	(0.418)	(0.217)	(0.215)	(0.217)
Arabic	-1.535***	-1.766***	-1.321*	-1.299*	-0.00245
	(0.206)	(0.243)	(0.686)	(0.694)	(0.363)
France	1.726***	1.970***	0.436	1.815***	2.033***
	(0.313)	(0.331)	(0.287)	(0.269)	(0.306)
UK	1.566**	1.703***	0.180	1.354***	1.568***
	(0.620)	(0.633)	(0.650)	(0.510)	(0.530)
One side(-1)	-0.0530				-0.0873
	(0.228)				(0.277)
One side NS(-1)		0.241			0.337*
		(0.162)			(0.178)
Non-state(-1)			-0.227		-0.272
			(0.306)		(0.343)
Armed Conf (-1)				-0.135	-0.115
				(0.219)	(0.220)
Constant	-10.30***	-11.69***	-8.464**	-10.42***	-12.51***
	(2.859)	(2.879)	(3.336)	(3.496)	(4.258)
Exp. Dummy	YES	YES	YES	YES	YES
Sector Dummy	YES	YES	YES	YES	YES
Observations	1631	1631	1631	1631	1631
R-squared	0.558	0.558	0.558	0.558	0.559

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

Table 11: The Effect of Different Types of Different Types of Wars on Exports of Services

	205 Ln(Exp.)	236 Ln(Exp.)	245 Ln(Exp.)	249 Ln(Exp.)	253 Ln(Exp.)	260 Ln(Exp.)	262 Ln(Exp.)	266 Ln(Exp.)	268 Ln(Exp.)	287 Ln(Exp.)	291 Ln(Exp.)	REM Ln(Exp.)
Ln(GDP)	1.088***	0.605***	1.569***	4.527***	1.871***	2.196***	6.261***	-0.319	-1.464**	3.643*	1.115**	0.616**
	(0.121)	(0.224)	(0.295)	(1.521)	(0.388)	(0.583)	(1.656)	(1.154)	(0.652)	(2.088)	(0.429)	(0.235)
Ln(Dist)	-0.679***	0.237	-1.108***	-1.796***	-1.497***	-1.406***	-4.202***	0.417	4.901***	-2.654	-2.337***	-0.0625
	(0.246)	(0.501)	(0.167)	(0.616)	(0.194)	(0.487)	(1.322)	(0.819)	(1.125)	(1.670)	(0.854)	(0.141)
Arabic	-2.049***	-1.360**	3.964***	0.0	0.950*	-0.864	0.0908	-0.722	1.301**	-2.041*	-1.016**	3.224***
	(0.129)	(0.652)	(0.914)	(0.0)	(0.496)	(0.561)	(0.886)	(2.093)	(0.651)	(1.129)	(0.471)	(0.746)
France	1.312***	-0.599	1.766***	-1.422	1.795**	3.574***	3.160***	-0.215	0.466	-0.425	1.441**	5.392***
	(0.175)	(0.631)	(0.458)	(1.290)	(0.822)	(0.462)	(0.650)	(1.651)	(0.813)	(3.029)	(0.707)	(1.467)
UK	0.714*	3.283***	3.242***	-6.350**	2.903***	3.094***	3.134***	2.482	15.78***	3.656***	-0.864	4.296***
	(0.381)	(1.169)	(0.860)	(2.744)	(0.429)	(0.473)	(0.619)	(2.319)	(2.907)	(0.673)	(1.271)	(1.372)
One side(-1)	0.0157	-0.700*	-0.169	-0.0763	-0.242	0.150	0.890	-0.407	-0.947***	1.516	-0.537	0.0782
	(0.105)	(0.393)	(0.139)	(0.425)	(0.271)	(0.490)	(1.185)	(1.187)	(0.338)	(1.204)	(0.476)	(0.127)
One side NS(-1)	0.185**	0.485*	0.263**	1.040***	0.386**	0.261	0.532	-0.123	0.546	0.225	0.511*	-0.133
	(0.0860)	(0.284)	(0.114)	(0.245)	(0.173)	(0.337)	(0.549)	(0.676)	(0.403)	(0.493)	(0.280)	(0.0985)
Armed Conf (-1)	0.192	0.679***	-0.260*	-0.733*	-0.397**	-0.0114	-0.264	0.161	-0.399	-0.105	-0.0500	-0.233*
	(0.191)	(0.220)	(0.135)	(0.433)	(0.195)	(0.0641)	(0.267)	(0.282)	(0.328)	(0.186)	(0.0947)	(0.138)
Non-state(-1)	0.143	-0.760	0.0404	-0.0449	0.0452	-0.960***	-0.888	2.069	0.0880	-2.693	0.426	0.0748
	(0.168)	(0.520)	(0.152)	(0.550)	(0.218)	(0.342)	(1.201)	(1.743)	(0.342)	(1.936)	(0.292)	(0.319)
Constant	-9.607***	-3.645	-26.74***	-89.94**	-31.74***	-38.13***	-126.2***	13.58	18.48*	-67.34	-2.964	-7.652
	(1.680)	(3.517)	(7.834)	(34.85)	(8.335)	(12.20)	(34.83)	(26.15)	(9.489)	(43.90)	(6.110)	(6.158)
Exp. Dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	213	211	166	71	150	103	87	78	164	79	186	123
R-squared	0.955	0.894	0.909	0.660	0.810	0.736	0.811	0.725	0.770	0.736	0.781	0.960

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

Table 12: Ad-Valorem Equivalents of Different Conflicts

	Uni-non state one side (%)	Non-state (%)	One sided (%)	Armed (%)
Algeria	0	-4	0	35
Egypt	5	0	0	-7
Israel	-31	1190	109	0
Lebanon	0	-8	-8	449
Morocco	0	0	0	-23
MENA	0	-6	0	0

Notes: A positive sign means that the conflict boosts trade and a negative sign means that it reduces trade
Source: Constructed by the authors.

Table 13: Ad-Valorem Equivalents of Different Conflicts (by sector)

		Uni-non state one side (%)	Non-state (%)	One sided (%)	Armed (%)
311	Food products	0	0	0	-4
313	Beverages	0	0	0	-8
314	Tobacco	0	-16	0	0
321	Textiles	0	0	0	0
322	Wearing apparel	-7	0	7	0
323	Leather products	-5	-6	0	0
324	Footwear	0	0	0	8
331	Wood products except furniture	0	-13	0	0
332	Furniture except metal	0	-26	-36	185
341	Paper and products	0	0	0	0
342	Printing and publishing	0	0	0	0
351	Industrial chemicals	-16	0	0	0
352	Other chemicals	-35	0	107	24
355	Rubber products	0	0	0	0
356	Plastic products	-45	0	146	0
361	Pottery china earthenware	0	0	0	0
362	Glass and products	0	0	0	0
369	Other non-metal min. prod.	-35	0	0	51
371	Iron and steel	-9	0	0	0
372	Non-ferrous metals	0	0	0	0
381	Fabricated metal products	-23	0	49	19
382	Machinery except electrical	-19	0	29	0
384	Transport equipment	0	0	0	0
385	Prof. and sci. equipment	-65	0	313	0

Notes: A positive sign means that the conflict boosts trade and a negative sign means that it reduces trade.
Source: Constructed by the authors.

Appendix 1

Table A1: List of Exporting MENA Countries

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

Table A2: List of Importing Countries Included in Trade and Production

Afghanistan	Costa Rica	India	Mongolia	Sao Tome and Principe
Angola	Czech Rep.	Ireland	Mozambique	Suriname
Albania	Germany	Iran	Mauritania	Slovakia
United Arab Emirates	Djibouti	Iraq	Mauritius	Slovenia
Argentina	Dominica	Iceland	Malawi	Sweden
Armenia	Denmark	Israel	Malaysia	Swaziland
Antigua and Barbuda	Dom. Rep.	Italy	Namibia	Seychelles
Australia	Algeria	Jamaica	Niger	Syria
Austria	Ecuador	Jordan	Nigeria	Chad
Azerbaijan	Egypt	Japan	Nicaragua	Togo
Burundi	Eritrea	Kazakstan	Netherlands	Thailand
Belgium and Lux.	Spain	Kenya	Norway	Tajikistan
Benin	Estonia	Kyrgyzstan	Nepal	East Timor
Burkina Faso	Ethiopia	Cambodia	New Zealand	Tonga
Bangladesh	Finland	Kiribati	Oman	Trinidad and Tobago
Bulgaria	Fiji	St Kitts Nevis	Pakistan	Tunisia
Bosn. andHerzeg.	France	Korea	Panama	Turkey
Belarus	Micronesia	Kuwait	Peru	Taiwan
Belize	Gabon	Lao Rep.	Philippines	Tanzania
Bolivia	United Kingdom	Lebanon	Palau	Uganda
Brazil	Georgia	Liberia	Papua New Guinea	Ukraine
Brunei Darussalam	Ghana	Saint Lucia	Poland	Uruguay
Bhutan	Guinea	Sri Lanka	Puerto Rico	United States of America
Botswana	Gambia	Lesotho	Portugal	Uzbekistan
Cen. Afr. Rep	Guinea-Bissau	Lithuania	Paraguay	St Vinc. and Grenad
Canada	Greece	Luxembourg	Romania	Venezuela
Switzerland	Grenada	Latvia	Russia	Viet Nam
Chile	Guatemala	Morocco	Rwanda	Vanuatu
China	Guyana	Moldova	Saudi Arabia	Samoa
Côte d'Ivoire	Hong Kong	Madagascar	Sudan	Yemen
Cameroon	Honduras	Maldives	Senegal	Serbia and Mont.
Congo	Croatia	Mexico	Singapore	South Africa
Colombia	Haiti	Marshall Isl.	Solomon Islands	Congo Demo. Rep.
Comoros	Hungary	Macedonia	Sierra Leone	Zambia
Cape Verde	Indonesia	Mali	El Salvador	Zimbabwe

Table A3: List of Manufacturing Sectors by Code

Code	Sector	Code	Sector
311	Food products	354	Misc. petrol./coal prod.
313	Beverages	355	Rubber products
314	Tobacco	356	Plastic products
321	Textiles	361	Pottery china earthenware
322	Wearing apparel	362	Glass and products
323	Leather products	369	Other non-metal min. prod.
324	Footwear	371	Iron and steel
331	Wood products except furniture	372	Non-ferrous metals
332	Furniture except metal	381	Fabricated metal products
341	Paper and products	382	Machinery except electrical
342	Printing and publishing	383	Machinery electric
351	Industrial chemicals	384	Transport equipment
352	Other chemicals	385	Prof. and sci. equipment
353	Petroleum refineries	390	Other manufactured products

Source: Constructed by the authors from Trade and Production database

Table A4: List of Service Sectors by Code

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

Source: Constructed by the authors from TradeMap

Appendix 2: The Dynamic Panel Results

Table A5: The Effect of Different Types of Wars on Exportsat the Macro Level

	Ln(Exports)	Ln(Exports)	Ln(Exports)	Ln(Exports)	Ln(Exports)
Ln(GDP)	0.284***	0.275***	0.251***	0.274***	0.265***
	(0.0521)	(0.0521)	(0.0526)	(0.0521)	(0.0531)
Ln(Dist)	-0.107	-0.102	0.0217	-0.0995	-0.00534
	(0.197)	(0.197)	(0.202)	(0.198)	(0.203)
Non-state(-1)	-0.0640**				-0.0599**
	(0.0287)				(0.0300)
One side(-1)		-0.0256			-0.0217
		(0.0377)			(0.0405)
Armed Conf (-1)			-0.0507***		-0.0530***
			(0.0184)		(0.0190)
One side NS(-1)				0.00657	0.0415
				(0.0315)	(0.0339)
Lag Ln(Exports)	0.773***	0.779***	0.778***	0.780***	0.771***
	(0.0221)	(0.0220)	(0.0219)	(0.0219)	(0.0222)
Year dummies	YES	YES	YES	YES	YES
Observations	624	624	624	624	624
Number of code	20	20	20	20	20

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

Table A6: The Effect of Different Types of Wars on Imports at the Macro Level

	Ln(Imports)	Ln(Imports)	Ln(Imports)	Ln(Imports)	Ln(Imports)
Ln(GDP)	0.271***	0.272***	0.267***	0.265***	0.277***
	(0.0518)	(0.0518)	(0.0522)	(0.0516)	(0.0524)
Ln(Dist)	0.273	0.259	0.263	0.290	0.241
	(0.203)	(0.203)	(0.209)	(0.203)	(0.209)
Non-state(-1)	-0.0673**				-0.0526*
	(0.0294)				(0.0306)
One side(-1)		-0.0968**			-0.0783*
		(0.0387)			(0.0416)
Armed Conf (-1)			0.00159		0.00413
			(0.0190)		(0.0195)
One side NS(-1)				-0.0298	-0.00333
				(0.0326)	(0.0350)
Lag Ln(Imports)	0.719***	0.721***	0.724***	0.721***	0.718***
	(0.0241)	(0.0240)	(0.0241)	(0.0242)	(0.0243)
Year dummies	YES	YES	YES	YES	YES
Observations	624	624	624	624	624
Number of code	20	20	20	20	20

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

Table A7: The Effect of Different Types of Wars on Trade at the Macro Level

	Ln(Trade)	Ln(Trade)	Ln(Trade)	Ln(Trade)	Ln(Trade)
Ln(GDP)	0.291***	0.289***	0.274***	0.284***	0.284***
	(0.0444)	(0.0444)	(0.0449)	(0.0443)	(0.0453)
Ln(Dist)	0.155	0.147	0.200	0.161	0.176
	(0.160)	(0.161)	(0.165)	(0.161)	(0.166)
Non-state(-1)	-0.0564**				-0.0454*
	(0.0232)				(0.0243)
One side(-1)		-0.0674**			-0.0626*
		(0.0306)			(0.0331)
Armed Conf (-1)			-0.0243		-0.0258*
			(0.0150)		(0.0155)
One side NS(-1)				-0.00391	0.0282
				(0.0256)	(0.0277)
Lag Ln(Trade)	0.731***	0.733***	0.734***	0.735***	0.730***
	(0.0221)	(0.0221)	(0.0221)	(0.0221)	(0.0224)
Year dummies	YES	YES	YES	YES	YES
Observations	624	624	624	624	624
Number of code	20	20	20	20	20

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