Terrorism and Arms Trade

Brock Blomberg   Oana Tocoian

Claremont McKenna College   *Claremont McKenna College*

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[*]Address correspondence to Brock Blomberg, Department of Economics, Claremont McKenna College, Claremont, CA 91711.

E-mail: bblomberg@mckenna.edu, tel: (909) 607-2654, fax: (909) 621-8249.

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Abstract

We conduct a battery of tests using a series of models to study the demand for arms. We show that conflict is an important determinant in the demand for Arms particularly in the Arms imports. We find that external war is the strongest determinant of arms imports, however terrorism rivals internal conflict in predicting higher imports. We investigate this finding by analyzing the extent to which regions or non-linearities are driving the results. We find some evidence that high conflict regions such as the Middle East and North Africa, as well as parts of East and South Asia are hotspots for this activity. Terrorism also has a sizeable impact on arms exports, suggesting that countries respond to terrorist threats by projecting power abroad, perhaps strengthening strategic ties or forging new alliances.

1 Introduction

The year 2013 has produced a significant change in the political landscape for the international transfers of conventional arms. In April 2013, the members of the United Nations General Assembly voted 154 to 3 to approve an Arms Trade Treaty for the first time in its history.[1] This has followed two decades of organizing following lobbying by humanitarian groups after the 1991 Persian Gulf war. Noreover, this agreement took seven years to bring to the floor of the General Assembly.

As Secretary of State John Kerry stated, "It will help reduce the risk that international transfers of conventional arms will be used to carry out the worlds worst crimes, including terrorism, genocide, crimes against humanity and war crimes" Implicit in this agreement and Sen. Kerry's statement is the notion that arms demand is driven by conflict – particularly terrorism and civil war. Given the historic step by the United Nations, it would seem important to examine the extent to which arms trade is determined by conflict. More to the point, it would also be useful to explore the extent to which different forms of conflict drive arms trade. In other words, if we take the Secretary of State's comment literally, is the demand for arms more likely for terrorism, genocide or war? The purpose of this paper is to conduct such an exercise.

The literature on conflict, economics and trade is vast. Conflicts can affect economic conditions and limit growth through a variety of channels - by destroying capital, diverting resources to the armed forces, or increasing the cost of conducting business. Abadie and Gardeazabal (2008) show that even terrorism, which has a small direct impact, can significantly reduce growth by encouraging investment capital to flee to other countries. Blomberg et al. (2004) find a significant negative effect of all types of conflict, although the cost of terrorism is far below that of armed conflict.

With respect to international trade, Blomberg and Hess (2006) find that the negative impact of different forms of conflict is comparable in magnitude or even exceeds the effect of typically examined barriers to trade, such as tariffs, geographic or linguistic separation. The "tax" imposed by external wars is the greatest, followed by internal conflicts, and then terrorism. Glick and Taylor (2010) also examine how trade is affected by conflicts, but they limit their focus to large external wars.

International transfers of weapons are a component of trade that can be expected to be particularly responsive to conflict, although the normative implications of the effects are not as straightforward. Strong imports of passenger cars signal consumer confidence and smoothly operating international trade channels. Strong imports of armored vehicles, on the other hand, may be a sign of growth-destroying resource re-

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[1]http://www.nytimes.com/2013/04/03/world/arms-trade-treaty-approved-at-un.html?ref=opinion.

allocation. In this regard, our paper falls within a larger literature that examines the political economy of terrorism - see for instance Sandler and Enders (2004), Enders and Sandler (2006),Blomberg and Engel (2012), Blomberg et al. (2011),Blomberg et al. (2009) and conflict in general - see Garfinkel and Skaperdas (2007) and bilateral aid see Younas (2008) .

At the intersection of political science and economics, there has been growing interest in the relationship between international trade and external and internal war. Starting with Polachek (1980), then Barbieri (1996), Oneal et al. (1996), Polachek et al. (1999), Martin et al. (2008b) and others, researchers have explored - with mixed results - the liberal theory that interdependence through trade will lead to peace by increasing the opportunity cost of conflict. Martin et al. (2008a) show that even (mild) civil wars can be facilitated by trade openness, since relationships with foreign agents can act as substitutes to intra-country trade.

We measure the opposite direction of causality, and for the trade in a particular commodity: how is the international trade in weapons impacted by terrorism and other forms of conflict? Our analysis serves several purposes: first, we seek to better understand the determinants of the global arms trade. Second, we want to compare the relative impact of different types of conflict on state actions and political realignments. Finally, by looking across the four decades from 1968 to 2008, we test whether arms trade has become a less important strategic tool, as signaled by some of the political science literature.

2   Data sources

We use data on three types of conflict: first, information on terrorist incidents is drawn from an update through 2008 of the ITERATE dataset (see Mickolus et al., 2007). The ITERATE data set attempts to standardize and quantify characteristics, and activities of transnational terrorist groups.A n international terrorist event is defined as

> the use, or threat of use, of anxiety-inducing, extra-normal violence for political purposes by any individual or group, whether acting for or in opposition to established governmental authority, when such action is intended to influence the attitudes and behavior of a target group wider than the immediate victims and when, through the nationality or foreign ties of its perpetrators, its location, the nature of its institutional or human victims, or the mechanics of its resolution, its ramifications transcend national boundaries (Mickolus et al., 2007, p.2).

Following Blomberg et al. (2004), we define a dummy variable T that takes value 1 if a terrorist incident was recorded for the country in that year.

The Internal war data, obtained from Gurr et al. (2003), provides data that originates from four broader categories. The measure is similar to what has been employed in Blomberg and Hess (2004). It is a dummy variable that takes into account conflict between the government and national ethnic, religious, or other communal minorities seeking changes in their status, genocides, and revolutions. In order to be considered a war, more than 1000 individuals had to be mobilized and 100 fatalities must have occurred. This measure does not include nonviolent transitions.

The third type of conflict we consider is external war (W), which is the initiation or escalation of a foreign policy crisis that results in violence. A foreign policy crisis is defined by Brecher et al. (1988) as:

> a specific act, event or situational change which leads decision-makers to perceive a threat to basic values, time pressure for response and heightened probability of involvement in military hostilities.A trigger may be initiated by: an adversary state; a non-state actor; or a group of states (military alliance). It may be an environmental change; or it may be internally generated (p.3).

A foreign policy crisis with an intensity of a specified magnitude is called a conflict. This particular definition comes from the International Crisis Behavior (ICB) project undertaken by Brecher et al. (1988) which includes the initiation or escalation of a conflict that warrants the highest level of severity.

From the World Bank's World Development Indicators database we obtained data on international transfers of major conventional weapons - this dataset is organized by the Stockholm International Peace Research Institute (SIPRI)'s Arms Transfers Program. Categories included are aircraft, armored vehicles, artillery, radar systems and other sensors, missiles, and ships designed for military use as well as some major components such as turrets for armored vehicles and engines. Other categories, like small arms and light weapons, as well as ammunition, are excluded from this dataset.

The SIPRI arms transfer data cover the supply of weapons through sales, aid, gifts, manufacturing licenses, and even loans and leases that are at least 3 months long. This means that the total *transferred* according to the SIPRI definition exceeds the value of weapons that is *sold* in the conventional sense of the word, and that physically crosses borders.

Military expenditure as a share of gross domestic product was also obtained from SIPRI, via the World Bank's WDI dataset. Data on GDP, population counts, and country area were obtained from an update of

Summers and Heston (1991) (the Penn World Table). Because of conflict data limitations, our regression sample is an unbalanced panel that spans the time period from 1970 to 2008 and includes 127 countries, for a total of 4,464 observations.

One issue that comes up when discussing the trade in arms is whether countries are truthful in their reporting of arms sales or purchases. For example, the Small Arms Survey has been publishing an annual Transparency Barometer since 2003, in recognition of the fact that countries don't always provide complete reports on their exports of small arms and light weapons. In addition, one worries whether reporting problems are aggravated during times of conflict.

To get around this problem, we rely on an independent data source. Stockholm International Peace Research Institute (SIPRI)'s Arms Transfers Program collects international trade data on major conventional weapons - including aircraft, armored vehicles, artillery, radar systems and other sensors, missiles, and ships designed for military use. It does *not* cover most small arms and light weapons [2] or ammunition - arguably the types of weapons that are most easily smuggled by private entities or mis-reported by the state.

3 Empirical regularities

In this section, we provide some preliminary analysis of the data. We parse the data by country, region, income, governance and time to explore possible relationships between arms trade. We find that over time as countries have become richer, more economically integrated and freer, the demand for arms trade has fallen. So, while the international trade in arms is a recurring topic of political concern. However, it has not increased in real terms since 1980, whereas trade in other commodities has more than tripled over the 3 decades from 1980 to 2010.

We also find that there are important regional considerations associated with arms trade. The trade in weapons is highly concentrated on the exporter side, although it is becoming less so over time. The top 3 exporters made up 85% of the market in 1970, but only 73% in 2010. By far the largest exporter is the United States, followed by Russia, France, and the United Kingdom. On the importer side, the market is less severely concentrated (the top 3 importers make up around 30%, and the top 10 make up around 60% of the market). The top recipients of major conventional weapons are mainly countries in the Middle East and South and East Asia: India, Iraq, Japan, Iran, Egypt, Saudi Arabia, Turkey, South Korea, Syria, Israel, China. (Western industrialized countries are heavier importers of small arms and ammunition, not captured

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[2]except portable guided missiles such as man-portable air defence systems (MANPADS) and guided anti-tank missiles.

in this data).

Finally, we find that countries that are more susceptible to conflict are also those countries that demand more arms. This is the most pronounced in the Middle East and North Africa. Of all the regions in the sample, this region has experienced the least amount of economic growth since 1970. It has however experienced among the highest rates of terrorism , internal conflict and war. Because of these factors, the share of imports devoted to arms in this region is three times the average share for a given country year.

Table 1 shows summary statistics by region, time period, income level, regime type, and whether the country is an oil producer. Variables shown are income, growth, arms exports, arms imports, share of years with terrorism, internal war, external war. These statistics show this is a distinct regional impact. We confirm that Middle East and North Africa, South Asia and East Asia are the biggest importers and are also have the high conflict levels especially in terrorism and internal war. North America has low imports, but very high exports. Latin America and Western Europe have low levels of trade in weapons, despite high levels of terrorism, but perhaps due to the low incidence of external war. There has been a falloff in arms imports after the cold war and a similar fall off in conflict. Poorer countries import more arms, though the relationship of income with exports is nonlinear. Interestingly, there are no systematic differences between democratic and non-democratic countries. Finally, oil producing countries import arms at higher rates, export arms at lower rates, and have double the likelihood of being involved in an external war.

The table also shows the trend towards higher peace, prosperity and lower arms trade more recently. The difference during the 2000s is the starkest. While economic growth has increased from 0.5 to 3.0 over the 1990s, the rate of Terrorism has fallen in half, and the rate of external war has fallen 5 fold. During the same period in question, arms imports have been cut in half.

Tables 2 to 5 in the Appendix provide country averages for income, growth, arms exports, arms imports, percentage of years with terrorism, internal war , external war. As you can see those countries with higher arms imports also have higher conflict. The big importers (Egypt, Ethiopia, India, Pakistan, Syria) all have above average conflict in one or all three areas. Interestingly, terrorism is the only form of conflict that is higher in each case. Arms exports are more complicated as obviously, the numbers are smaller (since USA/Russia are the world exporters) but there does appear to be a relationship as both are impacted by conflict.

4 Empirical approach

Our baseline specification regresses total arms imports (and exports) on indicators of terrorism, internal and external war, as well as region fixed effects and controls for income, openness to trade, population density, political regime, and military expenditure.

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\begin{aligned}
ARMS_{Iit} = {} & \beta_0 + \beta_1 T_{i,t-1} + \beta_2 I_{i,t-1} + \beta_3 W_{i,t-1} + \beta_4 Y_{i,t-1} \\
& + \beta_5 OPEN_{i,t-1} + \beta_6 Area/Pop_{i,t} + \beta_7 DEM_{i,t} + \beta_8 MILRANK_{i,t} \qquad (1) \\
& + \beta_9 LOWINC_i + \beta_{10} HIGHINC_i + \beta_{11-17} REGION_{1-7}
\end{aligned}
$$

$$
\begin{aligned}
ARMS_{Eit} = {} & \beta_0 + \beta_1 T_{i,t-1} + \beta_2 I_{i,t-1} + \beta_3 W_{i,t-1} + \beta_4 Y_{i,t-1} \\
& + \beta_5 OPEN_{i,t-1} + \beta_6 Area/Pop_{i,t} + \beta_7 DEM_{i,t} + \beta_8 MILRANK_{i,t} \qquad (2) \\
& + \beta_9 LOWINC_i + \beta_{10} HIGHINC_i + \beta_{11-17} REGION_{1-7}
\end{aligned}
$$

where $ARMS_E = \frac{\text{Arms Exports}_{i,t}}{\text{Exports}_{i,t}}$, $ARMS_I = \frac{\text{Arms Imports}_{i,t}}{\text{Imports}_{i,t}}$, OPEN is trade openness (exports + imports / GDP), AREA is normalized by the population, DEM is a dummy variable for democracies as defined by POLITY IV, LOWINC and HIGHINC are dummy varibles for income level, REGION are dummy variables for region, MILRANK is a ranking of countries by military expenditure, Y is the log of income per capita, T is a dummy variable for a terrorist attack, I is a dummy variable for an internal conflict and W is a dummy variable for an external war.. We estimate equations 1 and 1 by OLS, Poisson, negative binomial, fixed effects, and quantile regressions. We also test the introduction of 2nd lags, but find that they add little explanatory power.

5 Results

In this section, we provide tables of results on the demand for arms imports and exports. We begin with a battery of tests over a variety of specifications, then we concentrate on these results in particular regions and times. We find that terrorism is a robust determinant for arms demand and possibly supply. We also

find that external war is a much larger contributer to the demand for arms versus other forms of conflict. Interestingly, internal conflict does not appear to be as strong a contributer from a statisical standpoint. The impact on demand appears to be on the lower side of the demand function for terrorism and on the higher end of the demand function for internal and external war.

Table 6 shows a series of regressions explaining the demand for arms imports as a function of lagged conflict (T,I,W), log income, lagged trade openness (exp+imp/GDP), physical country size normalized by the population, governance (democracy indicator), military spending rank (MILRANK)[3] and regional dummy variables.

Column 1 provides an OLS estimate with clustered standard errors. Columns 2 and 3 show results from a Poisson and a negative binominal specification, respectively. Column 4 includes second lags to test for delayed effects, column 5 has country fixed effects, column 6 has country and time fixed effects, column 7 is quantile regression at median, column 8 is at 75th percentile, column 9 is at 90th percentile and column 10 is at the 95th percentile.

Column 1 shows that poorer countries demand more arms as do those with larger militaries and as do those in the middle east. One can also see that terrorism and internal war account for a similar magnitude in the demand function, however only terrorism is statistically significant. Not surprisingly, external war has the largest impact on the demand for arms. Column one shows that countries experiencing a terrorist attack in a given year should expect a rise in the demand for arms by 1 percentage point of total imports whereas a country experiencing a war should expect a rise in demand for arms by 6-7 percent.

Column 2 and 3 present results from other models to examine other distributions to control for zeros in the arms imports. In both cases, the results are similar to that in the OLS case except that internal conflict is statisically significant in the neagive binomial case. Column 4 includes lags to see if there is a temporal issue here and the results are practically identical when including lags rather than contemporaneous measures. Columns 5 and 6 include country and country+time fixed effects to see if the results remain robust. In this case, the impact for internal conflict becomes statistically significant. The final four columns consider whether which portion of the demand function is being driven by conflict. As one would expect, the magnitudes rise when examining the higher demand arms countries. Still, terrorism remains stable across the entire distribution until you examine the biggest 90 percent importers. In this case, it appears external and internal conflict are the largest drivers of demand for arms.

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[3]MILRANK takes value 1 if the country is in the 5th percentile of military spending as a share of GDP, 2 for 25th percentile, 3 for 50th, 4 for 75th, and 5 for 95th percentile.

We repeat the same analysis for exports. Table 7 presents results from panel regressions of countries' exports of arms as a share of total exports. Many of the results are similar however the magnitude of the coefficients are quite different. Column 1 again shows that poorer countries, with larger militaries are more apt to export arms, and the magnitude for high conflict external wars versus terrorism. However, the results for external war are statistically insignificant. This is likely due to the concentration of countries that do the majority of arms exporting.

Columns 2 through 4 present results with various specifications with similar results to column 1. Columns 5-6 include country and then country and time fixed effects and the results change a bit. In column 6, it appears that the magnitude due to terrorism is roughly half of what it was in column 1 whereas the magnitude for war is roughly the same. This may suggest that the impact of terrorism on arms exports is more fragile when including other controls. This did not appear to be the case when considering arms imports. This can be seen more readily when considering the other portions on the distribution of arms exports. It appears that terrorism's is likely driven by a few countries at certain parts of the arms exporting distribution (likely the United States and Russia) whereas the impact on external war increases monitonically across the distribution.

Next, we run OLS regressions for each region separately, as well as for high and lower income countries, and during and after the Cold War. All regressions include country and year fixed effects. Results are reported in table 8, and show that the pattern dependence between arms imports and conflict is often region-specific. For example, higher a incidence of terrorist attacks predicts higher arms imports in most regions (some not significant), but not in Europe and Central Asia. Column 9 shows that this somewhat counterintuitive result is due to high income countries - perhaps because these countries are likely to fight terrorist organizations outside their own borders. High income countries also appear to reduce arms imports following internal turmoil; this may hint at fundamental differences in the types of civil war rich vs poor countries experience. Internal conflicts along political and ideological lines are perhaps less one-sided than ethnic-based conflicts, and so there is less room for armed suppression. Finally, the effect of external wars on arms imports is quite large, led primarily by MENA countries, followed by Eurasia and Sub-Saharan Africa. It is worth noting that the extent to which arms procurement responds to conflict has gone down across the board after the end of the Cold War.

Table 9 mirrors the specifications from table 8, this time for arms exports. Results are uniformly less pronounced than for imports, but once again we find external wars to be most influential. Also as before,

there are region and time-specific differences. During the Cold War, arms exports did not respond to terrorism - perhaps because terrorist activities were more likely to have local targets. Post Cold War, attacks often cross national borders or target foreign citizens, just as they are increasingly motivated by ideology, rather than practical goals like obtaining political concessions.

6   Conclusion

We test whether involvement in different types of conflicts can predict the intensity of a country's international trade in arms. We find that both imports and exports respond most strongly to external wars, which was expected given the much higher typical scale. However, the impact of terrorism is stronger than that of internal war for arms imports and arms exports. This suggests an important way in which terrorism may affect state actions by forcing it to project power abroad.

This is obviously a first step in understanding the role of conflict in determining arms trade. We believe that there are other channels to possibly pursue to include more rigorous tests of joint causality and examining field experiments to see the extent to which policy is effective in regulating the industry. As the latest step by the UN should provide some leverage in this area, we would think this would be a productive area of research to consider in the near future.

Tables and Appendix

Table 1: Summary statistics

REGION/CATEGORY	GDP/N	GROWTH	ARMS_E	ARMS_I	T	I	W	NOBS
EAP	10013	3.18	0.24	3.64	0.34	0.26	0.06	38.73
ECA	8423	1.82	0.57	1.66	0.29	0.10	0.05	27.86
LAC	5848	1.37	0.02	1.62	0.53	0.06	0.00	38.94
MENA	24076	0.03	0.44	7.80	0.59	0.19	0.11	37.80
NA	29320	1.65	1.90	0.26	0.72	0.00	0.14	39.00
SA	1670	1.25	0.03	4.47	0.56	0.52	0.04	39.00
SSA	2119	0.23	0.03	2.15	0.21	0.19	0.01	39.92
WE	22862	2.45	0.45	0.42	0.59	0.03	0.04	42.08
1970s	5714	1.33	0.32	5.08	0.40	0.16	0.07	39.50
1980s	7335	0.16	0.28	3.89	0.52	0.18	0.02	39.27
1990s	8477	0.50	0.21	1.51	0.42	0.19	0.05	36.45
2000s	11041	3.07	0.21	0.74	0.22	0.11	0.01	36.48
HI INC, OECD	24243	2.33	0.52	0.73	0.60	0.02	0.06	39.00
HI INC, non-OECD	46814	0.85	0.38	2.41	0.36	0.10	0.05	36.89
UPPER-MID INC	10565	1.92	0.09	2.54	0.44	0.13	0.02	37.31
LOWER-MID INC	4717	1.55	0.34	3.25	0.41	0.17	0.05	38.28
LOW INC	1565	0.39	0.13	3.25	0.27	0.24	0.03	37.46
NONDEM	9691	1.21	0.26	2.85	0.39	0.15	0.04	38.13
DEM	9303	1.43	0.21	2.30	0.37	0.21	0.03	36.79
NONOIL	8530	1.54	0.27	2.50	0.39	0.16	0.04	37.89
OIL	20681	-1.62	0.03	5.10	0.40	0.20	0.08	37.55
Total	9611	1.26	0.25	2.73	0.39	0.16	0.04	37.86

Notes: GDP/N is real GDP per capita, GROWTH is percent income growth, ARMS_E is exports of arms as a percentage of all exports. ARMS_I is imports of arms as a percentage of all imports. T, I, and W are 0/1 indicators for terrorist attacks, internal war, and external war respectively. Region indicators are, in order: East Asia and Pacific, Central/Eastern Europe and Central Asia, Latin America, Middle East and North Africa, North America, South Asia, Sub-Saharan Africa, and Western Europe. See tables 2 to 5 in the Appendix for summary statistics by country.

Table 2: Summary statistics by country, part 1

COUNTRY	GDP/N	GROWTH	ARMS_E	ARMS_I	T	I	W	NOBS
Albania	4373.55	1.62	0.00	0.12	0.18	0.03	0.00	38
Angola	3232.04	-0.92	0.02	13.55	0.59	0.72	0.05	38
Argentina	6293.96	3.46	0.02	3.48	0.69	0.13	0.08	39
Armenia	3598.15	2.10	0.00	6.18	0.05	0.11	0.21	18
Australia	26094.77	1.50	0.13	1.27	0.56	0.00	0.15	39
Austria	22590.25	2.60	0.13	0.23	0.69	0.00	0.00	39
Azerbaijan	4893.47	-2.11	0.00	1.20	0.26	0.37	0.21	18
Bangladesh	1199.64	0.28	0.00	1.98	0.31	0.49	0.08	39
Belarus	8724.64	0.90	1.51	0.16	0.00	0.11	0.00	18
Belgium	22215.66	1.94	0.03	0.33	0.72	0.00	0.05	39
Benin	1274.35	0.21	0.00	0.32	0.00	0.03	0.00	39
Bolivia	2474.68	0.60	0.00	1.47	0.54	0.00	0.00	39
Bosnia and Herz	4078.50	10.14	0.03	0.55	0.53	0.21	0.21	18
Botswana	5260.61	7.07	0.00	0.57	0.15	0.00	0.00	39
Brazil	5872.45	2.92	0.25	1.10	0.54	0.00	0.00	39
Bulgaria	6882.34	3.70	0.37	3.14	0.10	0.00	0.00	38
Burkina Faso	682.86	1.31	0.00	0.67	0.05	0.03	0.00	39
Burundi	540.31	0.56	0.00	0.48	0.28	0.56	0.00	39
Cambodia	955.52	1.23	0.01	11.91	0.44	0.15	0.26	38
Canada	27234.66	1.41	0.15	0.37	0.54	0.00	0.08	39
CAR	756.02	-1.40	0.00	0.57	0.08	0.13	0.00	39
Chad	1070.48	0.47	0.42	2.77	0.18	0.64	0.10	39
Chile	7669.92	1.93	0.02	2.72	0.59	0.10	0.00	39
China	2579.31	5.32	3.18	0.45	0.26	0.44	0.10	39
Colombia	6208.38	1.45	0.00	1.60	0.87	0.00	0.00	39
Comoros	1331.21	-1.21	0.00	0.35	0.00	0.10	0.00	39
Congo, Rep.	3396.80	-2.39	0.00	1.70	0.23	0.03	0.00	39
Costa Rica	7009.81	1.12	0.00	0.03	0.54	0.00	0.00	39
Cote d'Ivoire	1863.61	-1.03	0.00	0.31	0.21	0.18	0.00	39
Cyprus	13520.63	3.86	0.09	1.16	0.59	0.03	0.05	39

Table 3: Summary statistics by country, part 2

COUNTRY	GDP/N	GROWTH	ARMS_E	ARMS_I	T	I	W	NOBS
Djibouti	3101.36	-2.63	0.00	1.13	0.15	0.10	0.00	38
Dominican Republ	4653.42	3.00	0.00	0.16	0.21	0.00	0.00	39
Ecuador	4430.97	1.55	0.00	3.72	0.51	0.08	0.00	39
Egypt, Arab Rep.	2510.40	3.94	0.53	18.26	0.79	0.00	0.18	39
Equatorial Guinea	4340.77	6.77	0.00	1.18	0.05	0.26	0.00	39
Estonia	11779.88	2.31	0.02	0.22	0.05	0.00	0.00	18
Ethiopia	590.41	0.46	0.56	19.33	0.64	0.62	0.13	39
Fiji	4372.67	0.41	0.00	0.13	0.05	0.05	0.00	39
Finland	21844.68	2.54	0.11	0.83	0.00	0.00	0.00	39
France	22204.53	2.02	1.51	0.08	0.95	0.00	0.13	39
Gabon	13297.72	-1.41	0.00	1.58	0.08	0.00	0.00	39
Gambia, The	1186.86	0.51	0.00	0.30	0.00	0.03	0.00	39
Georgia	3978.06	-2.40	4.30	2.31	0.53	0.16	0.00	18
Ghana	1588.66	-0.03	0.01	0.54	0.10	0.05	0.00	39
Greece	15337.52	2.91	0.05	4.60	0.85	0.00	0.10	39
Guatemala	3355.43	0.94	0.00	0.46	0.69	0.51	0.00	39
Guinea	1650.07	-1.63	0.00	1.37	0.05	0.00	0.00	39
Guinea-Bissau	785.22	0.89	0.00	5.78	0.00	0.08	0.00	39
Honduras	2515.66	0.71	0.00	1.07	0.49	0.00	0.00	39
Hungary	10522.27	2.98	0.04	1.41	0.10	0.00	0.00	38
India	1506.76	2.37	0.04	10.11	0.92	0.72	0.03	39
Indonesia	2566.74	2.53	0.02	1.18	0.38	0.74	0.00	39
Iran, Islamic Rep	7079.56	-0.27	0.10	7.43	0.77	0.38	0.26	39
Iraq	4373.28	-0.00	0.04	12.52	0.77	0.79	0.36	38
Ireland	20447.30	4.22	0.01	0.07	0.62	0.00	0.00	39
Israel	18924.90	1.72	1.99	6.37	0.95	0.56	0.15	39
Italy	20794.01	3.10	0.51	0.45	0.85	0.00	0.05	39
Jamaica	4572.06	-0.69	0.00	0.11	0.18	0.00	0.00	39
Japan	21922.87	3.86	0.01	0.69	0.56	0.00	0.00	39
Jordan	3352.96	0.96	2.47	7.99	0.79	0.00	0.15	39
Kazakhstan	7927.90	-0.50	0.27	0.81	0.00	0.00	0.00	18
Kenya	1508.38	-0.31	0.02	1.31	0.33	0.08	0.00	39
Korea, Rep.	11598.10	6.93	0.16	1.97	0.36	0.03	0.10	39
Kuwait	103062	-6.22	0.03	3.68	0.56	0.00	0.05	38
Kyrgyz Republic	3116.41	-4.83	2.03	0.15	0.21	0.00	0.00	18

Table 4: Summary statistics by country, part 3

COUNTRY	GDP/N	GROWTH	ARMS_E	ARMS_I	T	I	W	NOBS
Lao PDR	1264.29	3.06	0.00	22.58	0.21	0.26	0.00	38
Latvia	10238.23	0.92	0.05	0.25	0.16	0.00	0.00	18
Lebanon	5527.77	1.40	0.12	0.53	0.90	0.44	0.00	38
Lesotho	1035.91	1.50	0.00	0.20	0.10	0.08	0.00	39
Liberia	695.37	-2.72	0.00	0.20	0.18	0.18	0.00	39
Lithuania	10807.76	0.47	0.00	0.15	0.05	0.00	0.00	18
Luxembourg	34497.45	2.37	0.00	0.00	0.13	0.00	0.00	39
Macao	19449.32	5.86	0.00	0.45	0.00	0.00	0.00	38
Macedonia, FYR	5670.76	2.79	0.00	1.93	0.16	0.05	0.00	18
Malawi	746.50	0.24	0.01	0.47	0.03	0.00	0.00	39
Malaysia	7493.40	2.51	0.00	8.87	0.41	1.00	0.00	39
Maldives	4967.10	4.85	1.74	0.04	0.03	0.03	0.00	38
Mali	667.22	1.57	0.00	1.73	0.03	0.15	0.00	39
Mexico	9821.87	1.31	0.00	0.34	0.67	0.00	0.00	39
Mongolia	1925.40	4.08	0.00	1.52	0.00	0.00	0.00	38
Morocco	2952.08	1.36	0.00	2.73	0.44	0.38	0.05	39
Mozambique	421.75	1.28	0.01	3.83	0.44	0.00	0.00	39
Namibia	3965.39	-0.08	0.00	0.28	0.10	0.00	0.00	39
Nepal	959.18	1.00	0.00	0.56	0.18	0.03	0.00	39
New Zealand	19070.76	1.22	0.03	0.63	0.10	0.00	0.05	39
Niger	728.09	-1.86	0.00	0.69	0.05	0.03	0.05	39
Nigeria	1733.07	-1.48	0.00	0.99	0.31	0.13	0.00	39
Norway	37209.27	1.30	0.18	0.86	0.31	0.00	0.00	39
Oman	16975.29	-0.64	0.01	6.75	0.00	0.00	0.03	38
Pakistan	1897.56	1.47	0.12	8.32	0.92	0.69	0.10	39
Panama	6694.91	2.90	0.01	0.29	0.62	0.00	0.00	39
Peru	4094.74	1.94	0.04	8.00	0.72	0.03	0.00	39
Philippines	2963.90	1.32	0.00	0.63	0.87	1.00	0.10	39
Poland	8426.89	3.12	0.87	3.07	0.26	0.00	0.00	38

Table 5: Summary statistics by country, part 4

COUNTRY	GDP/N	GROWTH	ARMS_E	ARMS_I	T	I	W	NOBS
Qatar	1.2e+05	-4.16	0.11	3.27	0.08	0.00	0.03	38
Russian Fed	11825.07	-0.88	3.36	0.00	0.95	0.68	0.11	18
Rwanda	972.15	0.44	0.00	1.04	0.08	0.26	0.00	39
Saudi Arabia	35165.62	-4.07	0.00	4.14	0.56	0.00	0.08	38
Senegal	1564.83	-0.20	0.01	0.51	0.10	0.21	0.05	39
Sierra Leone	1090.47	-0.59	0.00	2.31	0.21	0.18	0.05	39
Singapore	23328.84	3.69	0.06	0.65	0.21	0.00	0.00	39
Slovak Republic	13133.33	1.42	0.00	0.08	0.00	0.00	0.00	18
Slovenia	18365.07	1.17	0.42	0.29	0.00	0.14	0.10	19
South Africa	6152.35	0.54	0.12	0.95	0.49	0.26	0.00	39
Spain	16656.03	2.99	0.39	1.21	0.90	0.00	0.08	39
Sri Lanka	2787.45	1.16	0.01	1.37	0.49	0.67	0.00	39
Sudan	1296.48	1.60	0.03	5.48	0.69	0.74	0.00	38
Suriname	5285.14	0.32	0.00	0.31	0.13	0.08	0.00	38
Swaziland	3270.43	2.57	0.26	0.20	0.31	0.03	0.00	76
Switzerland	30635.15	1.73	0.57	0.42	0.67	0.00	0.00	39
Syrian Arab Rep	2442.10	-0.24	0.48	28.47	0.54	0.05	0.21	39
Tajikistan	2316.74	-3.75	0.00	0.37	0.47	0.00	0.05	18
Tanzania	1016.86	-0.20	0.00	1.97	0.15	0.00	0.05	39
Thailand	4610.79	4.22	0.00	1.71	0.67	0.18	0.10	39
Tunisia	4997.68	2.84	0.00	1.11	0.38	0.00	0.00	39
Turkey	8673.67	2.26	0.04	6.73	0.97	0.62	0.15	39
Turkmenistan	7014.38	-0.74	0.00	0.10	0.00	0.00	0.00	18
Uganda	791.08	0.46	0.00	2.38	0.54	0.92	0.05	39
United Kingdom	21979.96	2.00	1.42	0.24	0.95	0.31	0.13	39
United States	31407.10	1.89	3.65	0.14	0.90	0.00	0.21	39
Uruguay	8179.23	1.05	0.00	1.11	0.31	0.08	0.00	39
Uzbekistan	3771.18	0.93	0.76	0.04	0.05	0.00	0.05	18
Venezuela	10298.85	-1.28	0.00	1.52	0.77	0.00	0.00	39
Yemen, Rep.	1251.24	6.70	0.00	4.25	0.81	0.00	0.00	20
Zambia	1484.93	-1.46	0.00	1.66	0.36	0.10	0.00	39
Zimbabwe	3312.81	1.52	0.01	1.20	0.41	0.18	0.00	39
Total	9611.35	1.26	0.25	2.73	0.39	0.16	0.04	37.86

Table 6: Panel regressions of arms imports

	1	2	3	4	5	6	7	8	9	10
	OLS	POISSON	NEG BIN	LAGS	FE	TFE	Q=.5	Q=.75	Q=.90	Q=.95
T_{it-1}	1.367***	0.580***	0.548***	1.199**	1.122***	0.777*	0.197***	0.377*	0.807	-0.057
	[0.440]	[0.148]	[0.097]	[0.499]	[0.422]	[0.432]	[0.068]	[0.218]	[0.678]	[1.623]
I_{it-1}	1.506	0.372	0.601***	0.874	1.694***	1.982***	0.107	1.173***	4.566***	9.108***
	[1.357]	[0.282]	[0.221]	[0.800]	[0.605]	[0.603]	[0.087]	[0.280]	[0.870]	[2.082]
W_{it-1}	6.688**	0.865***	0.793***	5.485**	5.636***	5.989***	1.601***	4.602***	11.336***	16.800***
	[3.146]	[0.313]	[0.220]	[2.388]	[0.869]	[0.889]	[0.156]	[0.500]	[1.552]	[3.716]
T_{it-2}				0.322						
				[0.637]						
I_{it-2}				0.623						
				[0.848]						
W_{it-2}				2.138						
				[1.751]						
Y_{it-1}	-0.919	-0.270*	-0.178	-0.923	0.226	1.161**	0.117**	0.229	-0.052	-0.958
	[0.575]	[0.163]	[0.141]	[0.597]	[0.471]	[0.485]	[0.050]	[0.159]	[0.494]	[1.182]
$OPEN_{it-1}$	-0.574	-0.152**	-0.193*	-0.582	-1.060***	-0.458	-0.042	-0.281**	-0.299	-0.385
	[0.351]	[0.066]	[0.114]	[0.382]	[0.277]	[0.301]	[0.036]	[0.116]	[0.360]	[0.861]
Area/Pop	3.207	0.842	0.859	2.751	17.122***	-0.796	-0.542	-1.427	-1.673	-0.672
	[4.019]	[1.422]	[1.651]	[3.826]	[5.775]	[6.151]	[0.363]	[1.167]	[3.625]	[8.677]
DEM	0.197	0.039	0.084	0.186	0.8	0.51	0.055	0.234	0.242	-0.196
	[0.502]	[0.244]	[0.185]	[0.518]	[0.815]	[0.876]	[0.079]	[0.254]	[0.790]	[1.892]
MILRANK	0.463***	0.277***	0.247***	0.455***			0.036*	0.210***	0.504**	0.976**
	[0.154]	[0.065]	[0.066]	[0.154]			[0.021]	[0.067]	[0.207]	[0.495]
EAP	1.493	0.568	0.303	1.462			0.134	-0.228	-0.343	1.33
	[1.282]	[0.368]	[0.315]	[1.288]			[0.120]	[0.384]	[1.194]	[2.858]
LAC	0.133	0.205	0.262	0.114			0.07	-0.193	-0.213	-0.655
	[0.660]	[0.385]	[0.368]	[0.652]			[0.116]	[0.372]	[1.155]	[2.765]
MENA	4.689***	1.057***	1.199***	4.469***			1.746***	4.980***	7.786***	14.098***
	[1.689]	[0.312]	[0.291]	[1.655]			[0.126]	[0.404]	[1.255]	[3.004]
NA	-0.894	-1.667**	-1.654**	-1.106			-0.377	-1.388*	-1.489	-0.816
	[1.406]	[0.753]	[0.751]	[1.490]			[0.256]	[0.822]	[2.554]	[6.114]
SA	-0.587	0.034	-0.156	-0.63			1.475***	2.332***	1.694	-2.135
	[1.762]	[0.390]	[0.373]	[1.772]			[0.179]	[0.574]	[1.783]	[4.267]
SSA	-1.31	-0.285	-0.244	-1.258			0.084	-0.245	-0.923	-2.347
	[1.287]	[0.432]	[0.323]	[1.332]			[0.128]	[0.411]	[1.277]	[3.057]
WE	0.854	-0.511	-0.56	0.801			-0.081	-0.25	-0.432	1.439
	[0.941]	[0.467]	[0.400]	[0.976]			[0.153]	[0.492]	[1.529]	[3.660]
LOW INC	0.785	0.37	0.417	0.763			0.069	0.326	0.863	1.608
	[1.131]	[0.323]	[0.298]	[1.111]			[0.110]	[0.352]	[1.094]	[2.618]
HI INC	-0.218	-0.096	0.022	-0.218			-0.125	-0.392	0.179	-0.528
	[1.057]	[0.445]	[0.335]	[1.127]			[0.136]	[0.438]	[1.362]	[3.260]
Obs	4464	4464	4464	4428	4464	4464	4464	4464	4464	4464
R sq	0.07			0.07	0.02	0.05				

Notes: Dependent variable is 100 * arms imports/ total imports. See table 1 for a description of the control variables. Excluded categories are non-democratic states, the region of Central/Eastern Europe and Central Asia, and middle income countries. Significance indicated is at 10%(*), 5%(**), and 1%(***).

Table 7: Panel regressions of arms exports

	1	2	3	4	5	6	7	8	9	10
	OLS	POISSON	NEG BIN	LAGS	FE	TFE	Q=.5	Q=.75	Q=.90	Q=.95
T_{it-1}	0.164*	0.536*	0.489**	0.135*	0.100**	0.091*	0	0	0.145*	0.24
	[0.096]	[0.323]	[0.250]	[0.074]	[0.050]	[0.052]	[0.003]	[0.010]	[0.074]	[0.197]
I_{it-1}	0	0.125	0.193	0.019	-0.01	0.021	0	0	0.026	0.445*
	[0.119]	[0.316]	[0.264]	[0.102]	[0.072]	[0.072]	[0.004]	[0.012]	[0.095]	[0.252]
W_{it-1}	0.484	0.491	0.916**	0.406	0.465***	0.486***	0	0.007	0.800***	2.800***
	[0.310]	[0.320]	[0.434]	[0.325]	[0.103]	[0.107]	[0.008]	[0.022]	[0.170]	[0.450]
T_{it-2}				0.065						
				[0.066]						
I_{it-2}				-0.043						
				[0.078]						
W_{it-2}				0.129						
				[0.198]						
Y_{it-1}	-0.101*	-0.578***	-0.577***	-0.093	-0.196***	-0.143**	0	0	0	-0.003
	[0.058]	[0.206]	[0.207]	[0.059]	[0.056]	[0.058]	[0.003]	[0.007]	[0.054]	[0.143]
$OPEN_{it-1}$	-0.076	-0.142	-0.310*	-0.083	0	0.01	0	0	0	-0.021
	[0.050]	[0.094]	[0.177]	[0.052]	[0.033]	[0.036]	[0.002]	[0.005]	[0.039]	[0.104]
Area/Pop	-0.048	-19.482	-21.941**	-0.017	0.372	-0.435	0	0	0	-0.049
	[0.198]	[23.866]	[11.060]	[0.193]	[0.687]	[0.737]	[0.019]	[0.052]	[0.396]	[1.052]
DEM	0.025	0.292	0.263	0.026	0.094	0.031	0	0	0	-0.005
	[0.089]	[0.389]	[0.323]	[0.089]	[0.097]	[0.105]	[0.004]	[0.011]	[0.086]	[0.229]
MILRANK	0.062**	0.456*	0.296*	0.061**			0	0	0	0.008
	[0.029]	[0.250]	[0.164]	[0.029]			[0.001]	[0.003]	[0.023]	[0.060]
EAP	-0.381	-1.004	-1.556**	-0.391			0	-0.036**	-0.928***	-2.018***
	[0.272]	[0.736]	[0.644]	[0.277]			[0.006]	[0.017]	[0.131]	[0.346]
LAC	-0.555**	-2.968***	-3.142***	-0.579**			0	-0.036**	-0.985***	-2.282***
	[0.235]	[0.898]	[0.831]	[0.248]			[0.006]	[0.016]	[0.126]	[0.335]
MENA	-0.27	-0.841	-0.761	-0.289			0	-0.034*	-0.046	-0.834**
	[0.298]	[0.612]	[0.616]	[0.306]			[0.006]	[0.018]	[0.137]	[0.364]
NA	1.209	1.340**	0.768	1.173			0.756***	3.143***	4.081***	3.223***
	[1.125]	[0.586]	[0.777]	[1.116]			[0.013]	[0.036]	[0.279]	[0.741]
SA	-0.751***	-3.893***	-4.114***	-0.772***			0	-0.036	-0.985***	-2.313***
	[0.240]	[0.762]	[0.751]	[0.249]			[0.009]	[0.025]	[0.195]	[0.517]
SSA	-0.600**	-3.262***	-3.474***	-0.607**			0	-0.036**	-0.985***	-2.288***
	[0.232]	[0.765]	[0.745]	[0.237]			[0.007]	[0.018]	[0.140]	[0.371]
WE	-0.001	0.77	0.407	-0.024			0.155***	0.459***	-0.128	-0.651
	[0.285]	[0.717]	[0.743]	[0.294]			[0.008]	[0.022]	[0.167]	[0.444]
LOW INC	-0.072	-0.212	-0.305	-0.06			0	0	0	-0.013
	[0.154]	[0.564]	[0.605]	[0.153]			[0.006]	[0.016]	[0.120]	[0.317]
HI INC	0.065	0.208	0.411	0.051			0	0.065***	0.21	-0.076
	[0.211]	[0.618]	[0.648]	[0.215]			[0.007]	[0.019]	[0.149]	[0.395]
Obs	4464	4464	4464	4428	4464	4464	4464	4464	4464	4464
R sq	0.07			0.07	0.01	0.02				

Notes: Dependent variable is 100 * arms exports/ total exports. See table 1 for a description of the control variables. Excluded categories are non-democratic states, the region of Central/Eastern Europe and Central Asia, and middle income countries. Significance indicated is at 10%(*), 5%(**), and 1%(***).

Table 8: Fixed effects panel regressions of arms imports by region and income level

	1	2	3	4	5	6	7	8	9	10	11	12
	ALL	EAP	ECA	MENA	SA	WE	NA	SSA	HIGHIN	LOWIN	COLDWAR	POST
T_{it-1}	0.752*	4.656*	-0.008	1.311	1.410*	-0.05	0.098	0.518	-0.417**	2.221**	1.334	-0.137
	[0.431]	[2.546]	[0.530]	[1.669]	[0.807]	[0.075]	[0.082]	[0.547]	[0.197]	[1.033]	[0.877]	[0.163]
I_{it-1}	1.970***	8.185**	-1.689**	-0.074	0.051	-0.158		3.598***	-3.359***	3.734***	1.53	-0.079
	[0.603]	[3.917]	[0.782]	[2.277]	[0.820]	[0.168]		[0.640]	[0.432]	[1.154]	[1.275]	[0.259]
W_{it-1}	6.036***	-1.774	3.915***	13.062***	3.1	-0.176	0.078	4.309***	1.144***	2.505	6.404***	1.930***
	[0.887]	[5.022]	[0.921]	[2.473]	[1.965]	[0.149]	[0.162]	[1.651]	[0.333]	[2.279]	[1.696]	[0.354]
Y_{it-1}	1.103**	-0.892	0.106	-0.495	-9.725***	-0.641***	0.066	0.489	-0.636***	-2.279*	0.664	-0.27
	[0.482]	[4.648]	[0.717]	[1.402]	[2.643]	[0.170]	[1.226]	[0.562]	[0.213]	[1.311]	[1.215]	[0.253]
OPEN$_{it-1}$	-0.46	-2.503*	0.095	-1.865	0.909	-0.623***	0.073	0.820*	-0.236	-0.586	-0.05	0.15
	[0.299]	[1.414]	[0.230]	[1.405]	[1.198]	[0.106]	[0.655]	[0.437]	[0.357]	[0.628]	[0.842]	[0.123]
DEM	0.509	1.819	1.137	-5.031	0.709	-0.054		0.576	0.256	0.575	0.232	0.568**
	[0.869]	[5.092]	[0.721]	[7.863]	[1.563]	[0.157]		[1.218]	[0.346]	[2.417]	[2.866]	[0.275]
Obs	4468	570	611	513	190	456	76	1406	893	1629	2181	2287
R sq	0.05	0.08	0.13	0.28	0.42	0.25	0.67	0.09	0.17	0.07	0.02	0.04

Notes: Dependent variable is 100 * arms imports/ total imports. See table 1 for a description of the sub-samples. All regressions include country and year fixed effects. Significance indicated is at 10%(*), 5%(**), and 1%(***).

Table 9: Fixed effects panel regressions of arms exports by region and income level

	1	2	3	4	5	6	7	8	9	10	11	12
	ALL	EAP	ECA	MENA	SA	WE	NA	SSA	HIGHIN	LOWIN	COLDWAR	POST
T_{it-1}	0.093*	-0.212**	0.897***	0.404*	0.019	-0.096	-0.398	-0.026	-0.095	-0.063	0.021	0.173**
	[0.052]	[0.101]	[0.335]	[0.238]	[0.031]	[0.066]	[0.247]	[0.044]	[0.062]	[0.069]	[0.070]	[0.077]
I_{it-1}	0.021	-0.015	-0.028	-0.144	-0.066**	0.759***		0.096*	0.016	0.036	0.014	-0.019
	[0.072]	[0.156]	[0.494]	[0.325]	[0.032]	[0.148]		[0.052]	[0.137]	[0.077]	[0.101]	[0.122]
W_{it-1}	0.486***	0.671***	-0.132	0.521	-0.038	-0.282**	-1.081**	0.633***	0.072	0.764***	0.813***	0.007
	[0.106]	[0.200]	[0.582]	[0.353]	[0.077]	[0.131]	[0.486]	[0.134]	[0.105]	[0.152]	[0.135]	[0.166]
Y_{it-1}	-0.143**	-0.785***	0.104	-0.338*	0.192*	0.272*	-16.392***	0.022	0.082	-0.341***	-0.047	-0.262**
	[0.058]	[0.185]	[0.453]	[0.200]	[0.103]	[0.150]	[3.679]	[0.046]	[0.067]	[0.087]	[0.096]	[0.119]
OPEN$_{it-1}$	0.008	-0.109*	0.107	-0.196	-0.014	-0.219**	-13.245***	-0.008	-0.682***	-0.056	-0.171**	0.129**
	[0.036]	[0.056]	[0.145]	[0.200]	[0.047]	[0.094]	[1.965]	[0.035]	[0.113]	[0.042]	[0.067]	[0.058]
DEM	0.039	0.236	-0.029	0.526	-0.007	-0.06		0.005	-0.001	-0.111	0.05	-0.035
	[0.104]	[0.203]	[0.456]	[1.121]	[0.061]	[0.138]		[0.099]	[0.109]	[0.161]	[0.228]	[0.129]
Obs	4468	570	611	513	190	456	76	1406	893	1629	2181	2287
R sq	0.02	0.14	0.07	0.1	0.22	0.35	0.94	0.07	0.18	0.06	0.04	0.02

Notes: Dependent variable is 100 * arms exports/ total exports. See table 1 for a description of the sub-samples. All regressions include country and year fixed effects. Significance indicated is at 10%(*), 5%(**), and 1%(***).

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