French arms exports and intrastate conflicts:

An empirical investigation

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Abstract

The aim of this article is to evaluate whether French Major Conventional Weapons (MCW) exports impact conflict intensity of recipient countries. Recent increase in French arms exports seems to contradict the French political discourse on the promotion of regional stability. We run Zero Inflated Probit Models in order to analyze the role of arms trade on the intensity of civil conflicts in 161 countries from 1992 to 2014, using SIPRI and UCDP/PRIO data. Our results suggest that French MCW exports do not increase the conflict intensity during this period. These findings are robust to changes in the empirical framework. We provide lines of explanations of such results: the choice of recipient countries and the nature of MCW exported.

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Key words: Major Conventional Weapons, Trade, Intrastate conflict, France, Zero Inflated Ordered Probit models.

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1 Introduction

According to data published by SIPRI (*Stockholm International Peace Research Institute*), recent trends in arms exports show a sharp increase in many countries, especially in Asia and Middle-East whereas European countries flow is decreasing since the beginning of the economic crisis. Arms exports are concentrated: 90% of exports are initiated by 10 countries (mostly the US, Russia, France, United Kingdom, Germany and China). Arms imports are more diffuse and depend on international tensions, diplomatic relationships and economic conditions. The article focuses on one of the main arms supplier: France. French case is interesting because it appears as puzzling. On the one hand, in its official discourse, French authorities promote arms control (the main guideline is prohibition), notably to ensure regional security and promote human rights. On the other hand, between 1992 and 2014 the growth change French arms exports reach 42% (compared to 17% worldwide). The aim of our article is to investigate the link between French arms exports and intrastate conflict[1] intensity in the recipient countries during the post-Cold War area. The choice of the period is motivated by the shift in the nature of intrastate conflicts after 1991. As explained by Kalyvas and Balcells (2010), the end of the Cold War implies a transformation of intrastate conflicts. During the Cold War, they were considered as "proxy war" between the two superpowers. After the collapse of the USSR, the spread of conflicts increases partly due to the emergence of new contested states, the proliferation of weapon and the withdrawal of support from a superpower.

In this article, we only consider Major Conventional Weapons (MCW) exports due to several reasons. First, the evaluation of the Small Arms and Light Weapons (SALW) market is subject to major issues given the influence of illicit trade. Among others, the main difficulties are second-hand data and lack of comparability (in both individual and temporal dimensions) leading to case studies with little replicability[2]. Moreover the exclusion of SALW of the sample does not imply flaws in our sample. Indeed, according to the Small Arms Survey[3], France does not appear as a major exporter of small arms.[4] As a result, in the following, we investigate the role MCW exports on the stability of recipient countries, measured in terms of intrastate conflict intensity. In particular, we focus on the impact of the share of French MCW exports in the total MCW exports. It should be noticed that we are interested in intrastate conflict, as a result we exclude all

[1] According to the Uppsala Conflict Data Program (UCDP), an intrastate conflict is a conflict between a government and a non-governmental party, with no interference from other countries.

[2] Some papers deal with the detection of illegal traffic (see DellaVigna and Ferrara (2010) or McDougal et al. (2015)) but quantifying its extent appears too difficult to be implemented. The SIPRI database only covers legal trade based on deliveries. In the case of France, these deliveries are well documented because of control in arms exports and several public reports

[3] See `http://www.smallarmssurvey.org/weapons-and-markets/transfers/exporters.html`

[4] This market follows an upward trend since 2001 and is dominated by Austria, Belgium, Brazil, Germany, Italy, Russia, South Korea, Switzerland and the USA. Moreover, the assault rifle of French armies (FAMAS) has to be replaced but French firms are no longer able to produce such an equipment so that a contract with a German company (Hecker and Koch) has been officially notified by the French procurement agency.

interstate conflicts which only represents 5.2% of total conflict around the world over the period 1992-2014 according to UCDP/PRIO data. Lastly, to the best of our knowledge, the SIPRI database is the most appropriate one for our study because it covers a large time span and allows accurate international comparisons. Unfortunately, SALW are not provided in the SIPRI database.

As rightly pointed by Bagozzi et al. (2015), panel studies dealing with conflicts face a statistic problem with regard to the excess number of zero (*i.e.* the absence of conflict) in data. However, a zero is not a homogeneous measurement in the sense that it can be either due to a complete peace (never involved in a conflict) or an incomplete one (peaceful period between two conflict periods). Results obtained by traditional methods may suffer from measurement bias. Following pioneering work of Harris and Zhao (2007), a Zero Inflated Ordered Probit Model (ZiOP) can be used to circumvent this difficulty. (Bagozzi et al., 2015, p. 4) show that "ZiOP model allows researchers to statistically account for observable and latent factors that influence the probability of the two types of zero observations in zero-inflated ordinal dependent variables." Our main results are that total MCW exports tend to increase the instability of the recipient country, whereas the share of French MCW exports is negatively related with the intensity of conflict. In other words, French arms exports not seem to have a destabilizing effect. Multiple robustness checks corroborate these results. The article also explores two channels by which can explain such a result: France choices regarding the identity of the buyer and the type of MCW sold. Our results show that France is less prone to sell arms to countries violating human rights. We also find that France exports significantly less aircraft and armored vehicles and significantly more air system defenses and sensors than the rest of the world. These two explanations support our main findings.

The paper proceeds as follows. In the second section, we provide a literature review discussing the originality of our approach. The third section provides information relative to the French legal background regarding arms export. The fourth section presents the econometric model, data and econometric method used for our application. The main results and robustness checks are discussed in the fifth section. The sixth section explores two lines of explanations of our results. The last section concludes the paper.

2 Literature review

Arms and conflicts are strongly related and the nature of their links have been discussed for decades[5]. From a theoretical perspective there are two opposite views labeled by Anderton (1995) respectively "the destabilizing school" and "the stabilizing school". According to the destabilizing school, arms trade may have an exacerbating effect on the conflict for at least two reasons[6]. First, by influencing the balance of power in favor of the government, arms trade can enhance its military capacities in such a way that a decisive victory against its opponents is made possible. In this case, arms trade is associated with an increase of the battle-related deaths. In the same vein, detaining new arms may also lead to the outbreak of the conflict: either the government would be more prone to engage itself in a civil conflict (Blanton, 1999a), or rebels would see in this arming process an danger that requires preventive political violence. On the other hand, the stabilizing school pretends that arms trade may have a deterrence effect on conflicts.[7] Game-theoretic approaches provide salient explanations for this channel (Schelling, 1960). Recently De Luca and Sekeris (2013) show that a deterrence effect may be at work if the destruction associated with the conflict is high. The idea is that destructive weapons raise the costs of the rebellion and thus contribute to deter it. In that sense, exporting arms to a government may discourage a violent opposition and reduce the intensity of the civil conflict. Determining which effect dominates the other is a complex issue. Kemp (1970, p. 70) concludes that "arms trade [...] is neither 'good' nor 'bad', that certain types of transfer can both serve and harm the interests of suppliers and recipients and, more particularly, that there is no *a priori* truth that predetermines the arms transfers inevitably contribute to the outbreak of a conflict". That is why empirical investigations are particularly needed.

Early empirical studies on the link between arms trade and conflicts mostly deal with interstate ones (e.g. Schrodt (1983), Sherwin (1983), Pearson et al. (1989), Brzoska and Pearson (1994), Kinsella (1994), Craft (1999) or Kinsella (2002)). The end of the Cold War has seen an major modification in the conflicts trend: civil conflicts became the most prominent type of conflict (Correlate of War). As a matter of fact, empirical studies also shifted from interstate to intrastate studies. However, still few of them address the question of the linkage between arms trade and the intensity of civil conflicts. To the best of our knowledge, the first

[5] As noted by Anderton (1995, p. 547), in the early 1970's the SIPRI stated that "perhaps the most important question about arms supplies [is]... what effect they have on the development of wars – on the likelihood of wars breaking out, on the course of wars and on their general severity" (SIPRI, 1971, p. 73).

[6] The interested reader would find more details about theoretical channels in Baugh and Squires (1983) They propose five "models" linking up arms trade and conflict.

[7] It should be noted that the view the stabilizing school presented in this paper is slightly different from the one analyzed by Anderton (1995). Indeed, his analyze based on the restoring of the balance of power seems more accurate for the case of international or regional conflicts (e.g. Intriligator and Brito (1984)). By focusing on infra-national level, we almost systematically observe unbalanced situation in the sense that the conflict opposes an organized State and rebel groups that do not detain equivalent military capacities.

paper embracing this topic is Maniruzzaman (1992). He shows that arms trade facilitates occurrence of coups, promotes political instability and intensifies civil conflicts. Blanton (1999b) finds that arms acquisitions by developing countries contribute to repression "by making violent political acts more feasible" (ibid., p. 241). The same kind of results appear in Sislin and Pearson (2001) who study 133 ethnic conflicts occurring during the 1991-1998's period. They show that high access to arms leads to greater probability of ethnic wars and contributes to their further escalation. Craft and Smaldone (2002) focus on political violence in Sub-Saharan Africa between 1967 and 1997. They find a positive but weak relation between state's arms acquisition and the level of political violence.

Our paper is more closely related to Suzuki (2007) and Moore (2012), both on the method and on the choice of measurement of traded weapons. In the first one, Suzuki (2007) use a dataset covering the case of 100 sovereign States from 1956 to 1998. He investigates the impact of conventional arms imports on the onset of civil war and ethnic war – measured a dichotomous variable. Contrary to generally accepted ideas, results of his probit regressions suggest that major arms imports have no significant effect both on civil and ethnic war's cases. Moore (2012)'s work partly corroborates this result. By using UCDP/PRIO data on number of deaths related to 114 civil wars on the period 1946-2002, he finds no effect of major conventional imports to governments on the intensity of civil wars.[8]

To summarize, the literature dealing with the link between arms trade and civil conflict is mixed. Most studies quoted above insist on the importance of considering particularities on arms trade. Our paper may be seen as a continuation of that concern. We address more particularly on the impact of one specific country: France. Our paper supports the idea that "trade in arms is not just business but also a policy issue"(Comola, 2012, p. 151). Consequently, the identity of the supplier of arms is likely to play a role. France is an interesting case because it shows its willingness of not destabilizing the internal situation of the recipient country. Since the 1972 French White Paper, French officials declare that "Arms export control is intended to reconcile political and economic objectives of our arms sales with the duty to maintain, enhance or restore peace" (p. 132). In order to confront the discourse with facts, we propose an empirical investigation on the influence of French arms exports on intensity of civil conflicts.

[8]One originality of Moore (2012) comes from the fact that he both takes into account the government and the rebel organization. In particular, he finds "strong evidence [...] that the provision of major conventional weapons to revels increases the severity of civil wars" (ibid., p. 339).

3 French arm exports : legal background

Since the beginning of the Fifth Republic, French defense policy is called "grandeur policy" by Fontanel and Hébert (1997) and is based on the will to be strategically independent. It encompasses nuclear deterrence, independent defense industry and ambiguous posture regarding NATO. This strategy implies significant budgetary means which are difficult to sustain due to recent economic crisis. In such a context, arms exports are necessary to preserve France's industrial and technological skills [9].

Meanwhile, "deciding on arms exports is a delicate matter in western democracies" (Platte and Leuffen, 2016, p. 1). Indeed, detaining the ability to produce and sell arms gives rise to a responsibility on peace promotion and on the spread of democracy. In the same vein, with the 1998 UE Code of Conduct on Arms Exports (and more recently 2008 EU Common Position), France commits itself on national and international level to taking into account the respect for human rights, the stability in the country of destination and the non-proliferation of MCW. Therefore France needs to set up an important system of control of MCW exports to achieve strategic autonomy without jeopardizing its commitments.

The main principle regarding the sale of MCW is prohibition. According to article 6, directive 95-589 of May 6, 1995: "Trading companies of war materials, weapons and munitions of defenses do not exert" [10]. But, the grandeur policy requires to authorize arms trade, under the multifaceted constraints (ethic, economic and diplomatic). Control is then promoted to avoid any offense relative to international agreements and to ensure that arms exports are adequate for national security. According to the Report of Parliament 1998, decisions are made considered three risks related to MCW exports: i) the risk on French security and regional stability, ii) the risk of transfers to third countries, iii) the risk that MCW could be used to internal repression.

Arms trade is authorized by a joint ministerial authority, the General Secretariat for Defence and National Security (Secrétariat Général à la Défense et la Sécurité Nationale) which directly reports to the Prime Minister. More specifically, the "joint ministerial commission for arms exports" (Commission Interministérielle pour l'Étude des Exportations de Matériels de Guerre) gathers members of different ministries. The Ministry of Defense ensures that the MCW exports do not exert risks for national security and allies or jeopardize strategic autonomy. In particular the French Procurement Agency (Direction Générale de l'Armement - DGA) checks whether the transferred technologies are not crucial. Indeed, some technologies, in particular the most innovative technology, are decisive to keep both leverage industry and a secret on french military

[9] see Livre Blanc 1994 p.129

[10] Even if this directive was repealed in 2013, arms trade is still prohibit and requires specific authorization.

capabilities. The Ministry of Foreign affairs evaluates arms trade both in terms of compliance regarding international agreements and geopolitical impacts. The Ministry of Economy indicates whether importers have financial capacities. The joint ministerial commission for arms exports granted an export license if the case is previously agreed. Therefore a decision to export MCW examines the influence of arms trade on economic, political and industrial issues.

However, one should note that, even if France claims that controls avoid any destabilizing event for the importing side, some NGOs indicate that French arms have been used during civil conflicts or political repressions. During a parliamentary audition, Mr. le Drian, minister of defense [11] recognizes that sometimes it is hard to balance between exports promotion and control.

4 Data and Empirical Issues

French legislation severely restricts the arms exports notably by considering their effects on recipient's stability. In French political discourse, arms sales by France do not exacerbate tension in recipient's countries. In order to highlight the relation between arms exports and conflict, an empirical investigation seems relevant. We consider two types of variables which affect intensity of conflict: greed and grievance (Collier and Hoeffler (2004)). The first refers to the avidity of human nature. Insurgents make use the opportunity to go after a part of country's wealth. The second models the frustration, the injustice which motive insurgence against a political power. On top of that, we add arms exports and the place of France in this trade. Given these features, the baseline estimated equation takes the following form:

$$Y_{i,t} = \gamma_0 + \gamma_1 W'_{i,t} + \gamma_2 Greed'_{i,t} + \gamma_3 Grievance'_{i,t} + \epsilon_{i,t} \tag{1}$$

where $Y_{i,t}$ is the dependent variable in our model and represents the internal conflict in country i at time t. $W'_{i,t}$ is the vector which includes arms exports variables. $Greed'_{i,t}$ and $Grievance'_{i,t}$ are the vectors which respectively include common controls for greed and grievance. $\epsilon_{i,t}$ represents the error term. To test this relation, we use data covering 161 countries from 1992 to 2014 (see Table (7) for the complete list of countries). As indicated above, the end of the Cold War is considered as a structural break in the international system and for exports of MCW. This evolution motives our analysis of intrastate conflict and allows us to focus on this recent period.

[11] http://discours.vie-publique.fr/notices/123002283.html

Internal Conflict

To measure the intensity of intrastate conflicts, we use data on battle-related deaths from the UCDP/PRIO dataset. As explained by Collier and Hoeffler (2004, p. 1315) "Ideally we would like to have information on the total number of battle-related deaths per year as a proper indicator for intensity. [...] Unfortunately, available information is quite limited and unreliable." To deal with this problem, our study takes into account two measures to estimate conflict: the intensity of conflict and the existence of major conflict.

First, for our main results, we use as dependent variable the intensity of intrastate conflict, $Intensity_{i,t}$. It is based on the estimation of battle-related deaths in intrastate conflicts, according to UCDP/PRIO conflict categories. This indicator distinguishes between major and minor conflicts (Bazzi and Blattman, 2014). The UCDP/PRIO database codes minor conflicts (low intensity) of at least 25 battle-related deaths per year. Major conflicts (high-intensity) are observed when battle-related deaths exceed 1000 battle-deaths per year. This measure allows us to identify the main evolution of conflict and explain major change in hostilities. The coding is then the following:

$$Intensity_{i,t} = \begin{cases} 0 & \text{if battle-related deaths are below 25} \\ 1 & \text{if battle-related deaths lie between 25 and 999} \\ 2 & \text{if battle-related deaths exceed 1000} \end{cases}$$

Note that the UCDP/PRIO database provides information by dyads. As we need information for each country, we decide to sum all the deaths by year and by dyad in case of multiple conflicts.

Second, the conflict variable (noted $Conflict_{i,t}$) is derived from the previous one. It is dummy variable, which codes 1 if there are at least 25 battle-related deaths per year. This indicator allows us to capture the existence of internal conflict and to confront peace and intrastate conflict periods for all the countries in our sample.

Arms Trade

Our core independent variable is French arms trade. Indeed, we want to know if a rise in military capabilities of the importing side has a significant impact on conflict intensity. Moreover, we check whether the influence of French MCW export is consistent to official doctrine which allows transfers if they are peace promoting for both France and importers. To do so, we use data from *Stockholm International Peace Research*

Institute (SIPRI). Arms trade is expressed in non monetary value, *Trend Indicator Values*(TIV). It measures the "transfer of military resources rather than the financial value of transfer."[12] As the military value of transfer is subject to major break given technological change, TIV database facilitates inter-temporal and international comparisons. The database provides information relative to countries (exporters or importers) and relative to type of MCW. Unfortunately, there is no information relative to both dimensions. In the following, we mostly refer to countries.

To distinguish the influence of MCW exports from France to MCW exports from other countries, we use two variables. Following Sislin (1994), $Share_{i,t}$ is the ratio between French MCW exports and total of MCW exports in world. It captures the proportion of French MCW in global MCW trade for each importing country in our sample. This relative measure reveals the existence of a multitude of suppliers on international market (Akerman and Seim, 2014). Thus, considering French export as a ratio allows us to take into account the substitution possibility between exporting countries. If the official French position on MCW trade is met, we should find that French weapons are peace promoting, so that the coefficient associated with $Share_{i,t}$ has to be negative. We only consider countries which import at least one TIV per two years [13]. Indeed, we assume that a so small amount of conventional weapons import does not influence the strategy of each side in conflict. We also remove Irak in our data. Since 2003, one key difficulty is to identify which battle-related deaths are rely to war with US and allies force or rely to internal conflict. We suspect also that MCW transfers in this country are quiet obscure and that many of these flux are not coded as government order (or not coded as import at all). However, this ratio does not fully model the influence of MCW trade. To deal with this issue, we add $lnXtot_{i,t}$. This variable is the world exports by country-year in log. We control the volume effect and in particular how to interpret changes of $Share_{i,t}$.

According to the literature (*e.g.*(Hirshleifer, 1995; Fearon and Laitin, 2003; Collier and Hoeffler, 2004)), the main sources of civil conflict may be classified in two categories: greed or grievance. (Grossman, 1999, p. 269) indicates that the "insurgents are indistinguishable from bandits or pirates". In this point of view, civil violence is motivated by greed, which relies to the idea that rebellion is a profitable opportunities. In the other hand, when civil violence is motivated by the existence of one or more injustices, it is analyzed as grievance. We present first economic context which expresses the opportunity to engage violent protest and conflict. Second, we turn to the grievance part, which captures social and political opposition in a country.

[12] See `https://www.sipri.org/databases/armstransfers/sources-and-methods`.

[13] It concerns 9 countries which are Belize, Bhutan, Comoros, Costa Rica, Guyana, Marshall Island, Palau, Solomon Islands and Tuvalu

Greed

The main economic factor which expresses greed is GDP per capita. We use data from *World Bank database*. We use the log (see Collier and Hoeffler (2004) and Bagozzi et al. (2015)), noted $\ln GDPpc_{i,t}$. This factor impacts civil claim and thus infra-state conflict. Indeed, most of the literature on civil war emphasis on greed to explain civil protest (Grossman, 1991; Collier and Hoeffler, 1998). They show that the likelihood of conflict is higher when wealth is lower. Opportunities model explain these relations by considering civil protesters as looters. When the wealth is low, opportunity cost of a violent action decreases (Acemoglu and Robinson, 2001). In our empirical analysis, we expect an negative influence of the logarithm of GDP per capita on the intensity of conflict.

The second component of economic environment is the oil revenues (in thousand barrels per day)[14]. It notes $Oil_{i,t}$ and comes from *U.S. Energy Information Administration*[15]. Oil production encourages conflict by motivating population's greed and providing resources to the government to handle opposition. Indeed, "oil revenues raises the value of the "prize" of controlling state power" (Fearon and Laitin, 2003, p. 23). This would imply that countries which are oil producers should be positively associated with probability of infra-state conflict.

On other necessary control is the population, noted $\ln Pop_{i,t}$. Our measures of greed are scaled by measures of country size. According to Collier and Hoeffler (2004), opportunities to protest should be approximately proportional to the size of population. A more populated country should lead to a higher probability of infra-state conflict. In the same way, the population size impacts also grievance, detailed in following sub-section.

The conflict intensity in neighborhood countries is an other necessary control. Indeed, proximity of instability can be open opportunities of rebellion and conflict in country. The propagation of insurgencies during Arab spring is a good example of this phenomena. This variable, $NGIntensity_{i,t}$, is edited by the *Global Conflict Risk Index* and builds from UCDP database. The coding is then the following:

$$NGintensity_{i,t} = \begin{cases} 0 & \text{if battle-related deaths in bordering countries are below 25} \\ 1 & \text{if battle-related deaths in bordering countries lie between 25 and 999} \\ 2 & \text{if battle-related deaths in bordering countries exceed 1000} \end{cases}$$

[14] We also run our test with the variable from World Bank which represent the share of natural gas resources related to GDP. But this variable isn't . This result is consistent with results in internal conflict literature

[15] see `http://www.eia.gov/cfapps/ipdbproject/IEDIndex3.cfm?tid=5&pid=53&aid=1`

Grievance

The political environment is captured by the degree of democratization and the peace duration. Following Collier and Hoeffler (2004), the political regime in a country is proxied by $Polity_{i,t}$ which comes from the *PolityIV database* hosted by the Center of Systemic Peace and George Mason University. This indicator captures this regime authority spectrum on -10 to 10, where -10 codes a consolidate autocracy and 10 if all criteria of democratic regime are respected [16]. The link between conflict and type of regime is quite clear. We expect that conflicts are more likely to occur in less democratic countries.

Peace duration is the second part of the political context. We use the variable $Peace_{i,t}$ which measures the length of peace period (in years) since the end of the previous war[17]. Following Collier and Hoeffler (2004, p. 569), this variable reflects "the gradual decay of conflict-induced grievances". The longer peace duration is, the less likely the conflict is.

Social environment is also a very important contextual element. Hirshleifer (1995) highlights the importance of grievances to explain civil conflicts. In order to take it into account, we consider, in addition to previous political variable, social cohesion. We proxy social fractionalization by a measure of linguistic fractionalization index. $Language_i$ comes from *Quality of government database* (Alesina et al., 2003). This variable measures the probability that two randomly drawn individuals from a given country to Bormann et al. (2015), language is more conflict promoting than religious opposition. Thus, this index seems the more relevant to explain civil conflicts. We expected that a greater linguistic fractionalization implies a more intense conflict.

Empirical Modeling : ZIOP, ZIOPC

Empirically, evaluating the determinants of internal conflicts requires an ordered discrete variable and then the econometric strategy relies on probit or ordered probit (OP), (see Bagozzi et al. (2015) for a discussion). One key issue arises in the interpretation of the zero category, which indicates peace in our context: complete peace (i.e. countries never involved in conflict such as Sweden or Switzerland) is augmented by peaceful period during two episodes of dispute and by observations that do not reach the threshold limit to be considered as a conflict (i.e. 25 for a minor conflict and 999 for a major conflict).

The absence of conflict is coded as zero but one can not consider this group as homogeneous: as noted

[16] see Codebook of the PolityIV, p.14

[17] For countries which never experienced infra-state conflict, we estimate the peace period since the end of World War II.

by Bagozzi et al. (2015, p. 729) "it is likely that the two types of zero observations posited previously may relate to two distinct sources". From an econometric perspective, it is necessary to overcome this problem by applying appropriate method. Harris and Zhao (2007) develop a model which allows to control the fact that a value coded zero is driven by different behaviors (here structural peace vs status quo between two periods of conflict). Standard OPs are not able to deal with this problem nor to overcome the issue of excess-zeros. Following Harris and Zhao (2007) or Bagozzi et al. (2015), the approach consists in a two stage model. The first stage is a split equation which determines whether one observation belongs to one regime or an other; this leads to the "inflation equation". The second stage is an OP, called the "outcome equation".[18]

For our presentation, we follow Harris and Zhao (2007). We note the dependent discrete ordered variable y. At the first stage (inflation), we split observations between two regimes: regime 0 ($r = 0$ for complete peace) and regime 1 ($r = 1$ for incomplete peace). r is related to a latent variable noted r^* which models the propensity to enter regime 1 and defined as $r = 1$ for $r^* > 0$ and $r = 0$ for $r^* \leq 0$. The inflation equation is then defined as:

$$r^* = \mathbf{x}^{'}\beta + \epsilon \tag{2}$$

where $\mathbf{x}$ is a vector of covariates which allows us to distinguish between both regimes, β the vector of coefficients and ϵ the error term, normally distributed.
Conflicts are based on a second latent variable noted $\tilde{y}^*$ which is based on a discrete variable $\tilde{y}$ conditionally determined by $r = 1$. We estimate the following equation by probit or OP:

$$\tilde{y}^* = \mathbf{z}^{'}\gamma + u \tag{3}$$

where $\mathbf{z}$ is a vector of explanatory variables, γ a vector of coefficients and u the error term normally distributed. The relationship between $\tilde{y}^*$ and $\tilde{y}$ is given by

$$\tilde{y} \begin{cases} 0 \ \text{ if } \ \tilde{y}^* \leq 0 \\ j \ \text{ if } \ \mu_{j-1} < \tilde{y}^* \leq \mu_j \ \ (j = 1, ..., J-1) \\ J \ \text{ if } \ \mu_{J-1} \leq \tilde{y}^* \end{cases} \tag{4}$$

where $\mu_j (j = 1, ..., J-1)$ are boundary parameters to be estimated, with $\mu_0 = 0$.

[18] A likelihood ratio test allows us to discriminate between a negative binomial regression and a zero inflated probit model.

While r and $\tilde{y}$ are not individually observable in terms of the zeros, they are observable via the criterion :

$$y = r\tilde{y} \tag{5}$$

To get $y = 0$, two cases are take into account: $r = 0$ (i.e. complete peace) and jointly $r = 1$ and $\tilde{y} = 0$ (i.e. peace period between two periods of conflict). To get $y = 1$, we jointly need $r = 1$ and $\tilde{y}^* > 0$. Under the assumption of independence of ϵ and u, the probabilities are defined as follow:

$$\Pr(y) = \begin{cases} \Pr(y = 0|\mathbf{z},\mathbf{x}) = \Pr(r = 0|\mathbf{x}) + \Pr(r = 1|\mathbf{x})\Pr(\tilde{y} = 0|\mathbf{z},\text{r}=1) \\ \Pr(y = j|\mathbf{z},\mathbf{x}) = \Pr(r = 1|\mathbf{x})\Pr(\tilde{y} = j|\mathbf{z},\text{r}=1) \quad (j = 1, ..., J) \end{cases} \tag{6}$$

These full probabilities can be also expressed as:

$$\Pr(y) = \begin{cases} \Pr(y = 0|\mathbf{z},\mathbf{x}) = [1 - \Phi(\mathbf{x}'\beta)] + \Phi(\mathbf{x}'\beta)\Phi(-\mathbf{z}'\gamma) \\ \Pr(y = j|\mathbf{z},\mathbf{x}) = \Phi(\mathbf{x}'\beta)[\Phi(\mu_j - \mathbf{z}'\gamma) - \Phi(\mu_{j-1} - \mathbf{z}'\gamma)] \quad (j = 1, ..., J - 1) \\ \Pr(y = J|\mathbf{z},\mathbf{x}) = \Phi(\mathbf{x}'\beta)[1 - \Phi(\mu_{J-1} - \mathbf{z}'\gamma)] \end{cases} \tag{7}$$

where Φ represents the cumulative distribution function. In equation (7), the probability of absence of conflict ($y = 0$) is the sum of two terms: the probability of absence of conflict in the OP process ($\Phi(\mathbf{x}'\beta)\Phi(-\mathbf{z}'\gamma)$) and the probability of complete peace in the split process ($1 - \Phi(\mathbf{x}'\beta)$).

5 Results

In this section, we present the empirical results obtained thanks to the model expressed by equation (1). As explained in the previous section, several methods can be used. Table (1) shows the main results and robustness checks are detailed in table (2).

Table (1) consists in 4 regressions from 3 different estimations methods. The first column is the standard ordered probit widely used in the civil conflict literature. The second and third columns present the results from a Zero Inflated Ordered Probit and Zero Inflated Ordered Probit with correlated errors models. The final column considers the model without French arms exports estimated with ZIOP(c) approach. The first panel of table (1) provides the results of the outcome equation and the second panel the results of the inflated equation (when justified by the econometric approach).

Table 1: Main results

	OP	ZIOP	ZIOPC	ZIOPC
Outcome equation				
$Share_{i,t}$	-0.82376^{***} (0.25573)	-0.86360^{***} (0.25928)	-0.84411^{***} (0.25311)	
$ln_X tot_{i,t}$	0.07213^{***} (0.02288)	0.10456^{**} (0.02611)	0.11419^{***} (0.02503)	0.12485^{***} (0.02470)
$lnGDPpc_{i,t}$	-0.13336^{***} (0.041768)	-0.10877^{**} (0.04483)	-0.09597^{**} (0.04739)	-0.11473^{***} (0.04717)
$Polity_{i,t}$	-0.00605 (0.00852)	0.01820^{**} (0.00943)	0.02651^{***} (0.01026)	0.028129^{***} (0.01029)
$lnpopulation_{i,t}$	0.17121^{***} (0.17121)	0.10054^{**} (0.04039)	0.10415^{**} (0.04326)	0.08582^{**} (0.04308)
$Peace_{i,t}$	-0.05410^{***} (0.00371)	-0.05259^{***} (0.00383)	-0.04929^{***} (0.00380)	-0.04982^{***} (0.003819)
$Langage_{i,t}$	0.44672^{***} (0.15066)	0.42233^{***} (0.15450)	0.40031^{***} (0.15248)	0.38557^{**} (0.15176)
$Oil_{i,t}$	-0.00004 (0.00003)	-0.00006^{*} (0.00003)	-0.00007^{*} (0.00004)	-0.00006^{*} (0.00003)
$Intensity_n g_{i,t}$	0.06919 (0.05406)			
Intercept		-1.32333^{*} (0.81374)	-1.50151^{*} (0.89647)	-1.13668 (0.89543)
Inflated equation				
$lnGDPpc_{i,t}$		0.25954 (0.21977)	0.01757 (0.15916)	0.01729 (0.15805)
$lnpopulation_{i,t}$		1.73667^{***} (0.42081)	0.15916^{**} (0.25611)	0.52236^{**} (0.25622)
$Polity_{i,t}$		-1.739636^{***} (0.3617862)	-0.88034^{***} (0.1982733)	-0.85987^{***} (0.19705)
$NGIntensity_{i,t}$		0.93008^{*} (0.50081)	0.47098^{*} (0.25736)	0.43263^{*} (0.25137)
Intercept		-17.75658^{***} (5.82116)	-1.59418 (4.09452)	-1.66958 (4.09401)
AIC	1595.315	1531.247	1527.264	1537.837
ρ			-0.78505^{***} (0.11096)	-0.79369^{***} (0.10879)
log likelihood	-786.6574	-734.9062	-747.6322	-753.9187

with *, **, *** respectively denotes a p-value below 10%, 5%, and 1% .

Relative to the inflated equation, we follow a parsimonious approach which consists in using the most relevant variables explaining the incomplete peace process. Consequently, we only employ the log of real GDP per capita ($\ln GDPpc_{i,t}$), the democracy index ($Democ_{i,t}$), the log of population ($\ln Population_{i,t}$) and the conflict intensity in neighboring countries ($NGintensity_{i,t}$). Note that these variables are consistent with those used by Dunne and Tian in their recent empirical evaluation of civil war.

The choice between each econometric approach can be done thanks to several criteria. In Table (1), we focus on Akaike Information Criteria (AIC) computed for each model and ρ which indicates whether errors are correlated between outcome and inflated equations and allows us to discriminate between ZIOP and ZIOP(c) models. It appears that AIC is minimized when we take into account control for inflation of zeros. Besides, ρ is significant, which gives empirical support for ZIOP(c) model relative to ZIOP model. Our favorite model is then ZIOP(c) model (third column). Nonetheless, the significance and magnitude are quite close for each specification, so that our conclusions are robust[19].

The results of the inflated equation lead to several interesting points. Remind that we distinguish here complete peace to incomplete peace. First, the log of real GDP per capita have a positive and non significant effect, which is quite surprising given the prevalence of conflicts within developing countries and the absence of conflicts within developed countries. However the same result is found by Dunne and Tian. Polity index has a strong negative influence: the less democratic a country is, the more likely it is to reach incomplete peace. The log of population is positively and significantly related to incomplete peace. Finally, the conflict intensity in neighboring countries influences positively and significantly the probability for the country to be in incomplete peace.

Turning to the greed variables in the outcome equation, log of real GDP per capita is significant with the expected sign. More the country is poor, more probably will be an intense conflict. Oil revenues have negative impact, perhaps because major oil country have the resources to impose to their population an authority which prevent violent conflict. It appears that greed factors, as modeled here, influence significantly the probability of intense intrastate conflicts. Besides, our results are consistent with those obtained in previous literature. Note that all the specifications presented in Table (1) lead to the same results.

Concerning the grievance variables in outcome equation, the influence of the polity index changes between models, which leads to consider that the type of political regime influences differently the probability of conflict and its intensity. The peace duration has a negative impact, so stability is an important issue for conflict intensity. Finally, ethnic fractionalization, measured here by linguistic differences, plays a positive role in understanding conflict intensity. Note that all the specifications lead to the same conclusion relative to grievance variables. These results are also consistent with previous literature (in particular when excess zeros are controlled). We argue that greed and grievance factors play both an important role, which is a different

[19]In order to solve identification problem induces by Stata estimation of threshold, we run two ZIP by separating intensity variable in two variables represents respectively major and minor conflicts. We find the same sign of betas. So, this problem does not challenge our findings.

conclusion compared to Collier and Hoeffler (2004) who emphasis opportunity variables as key factors in explaining civil conflicts.

We can now turn to the interpretation of the effects of MCW trade. For all the specifications presented in Table (1), the share of French MCW exports to total MCW exports has a negative and significant influence. On the contrary, total MCW exports seems to play a destabilizing effect on intrastate conflict intensity, except for the OP estimation. In the last column, the model is re-estimated without $Share_{i,t}$ and the results remain unchanged; as a consequence, this variable appears to not affected the global pattern of results.

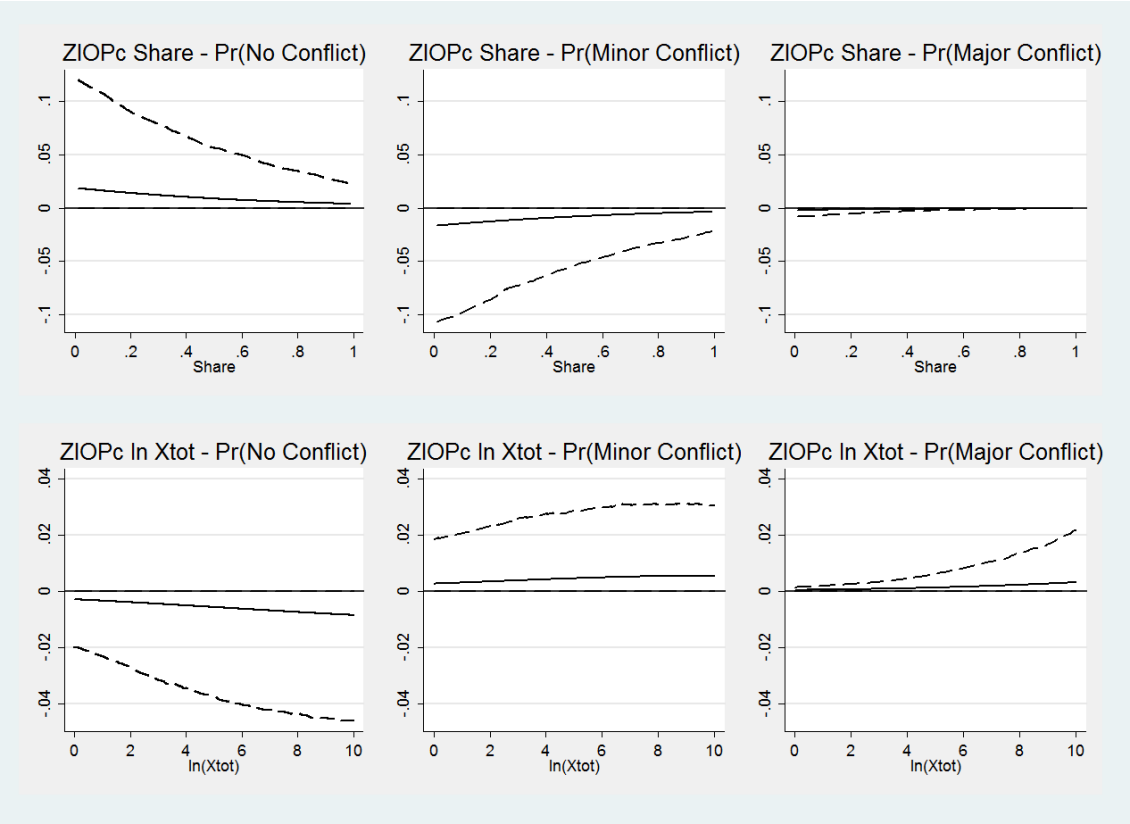

Figure 1: Marginal effects of arms trade

Given the sign of these relationships, one should conclude that French MCW exports decrease the probability of intense intrastate conflict and so have a stabilizing effect and that global MCW trade has destabilizing effects. But it is an hasty conclusion. Indeed, when we look at the marginal effect (see Figure 1), the influence of MCW trade may not as clear as the sign of coefficients suggests. For both $Share_{i,t}$ and $\ln Xtot_{i,t}$ and for all probabilities, one of the interval confidence limit is merged with horizontal axis. These finding are especially true when the conflict is highly intense (superior to 1000 battle related death, Pr(Major)).

Also, marginal effects show a negative and monotone relation at decreasing rate between French MCW exports and probability of intense conflict. On the contrary, the sum of all MCW exports have a negative and monotone impact on this probability, at decreasing rate. In view of the above, the influence of MCW trade is concentrated at the beginning of the distribution, especially for the sum of all exports. So, MCW exports have an important influence when the quantity is low and far less when the amount increases.

Finally, we observe that magnitude of influence of France arms is much higher than all arms exports. While $\ln Xtot_{i,t}$ impact at most 0.04 the probability of intense conflict, French exports influence it at most 0.1. So, we can conclude that French MCW exports affect more the probability of intense conflict than total MCW exports.

The results presented here lead to interesting comments relative to French MCW trade policy and more generally to MCW trade influence. First of all, our estimations provide empirical evidence that MCW trade is detrimental for stability. Then we illustrate the destabilizing school as analyzed by Anderton (1995). Second, our model indicates that France exports do not destabilize countries. This conclusion is quite in line with French official position relative to arms exports, namely avoid regional instability. It may reveal that the control process is effective in the sense that MCW trade seems to not change the balance of power as stated by French doctrine. Finally, it also confirms the importance of "strategic partnerships": French MCW exports are not only a commercial opportunity for defense firms but also play a major role in terms of foreign policy by consolidating military and diplomatic links and then fostering peace.

Table (2) presents the robustness checks. For each specification, we use the command robust as programmed in Stata. The first column only replicates the ZIOP results (as presented in Table (1)) with the robust command. The second column consists in estimating a ZIP model when the dependent variable is $Conflict_{i,t}$, which codes 1 when there is more than 25 battles-related death in year-country, and 0 otherwise (UCDP/PRIO database). The third column shows the results by replacing the the Polity IV score by democracy index [20]. The final column is a re-estimation of the baseline model by restricting the sample to countries to whose France has exported MCW.

Note that all the results are quite robust among the different specifications and tend to confirm our main findings. In the outcome equation, for M1, very little changes in magnitude are observed. When $Conflict_{i,t}$ is

[20]Democ is an index ranges from 0 to 10, where 0 codes no democratic rules in country and 10 if all criteria of democratic regime are respected. see Codebook of PolityIV, p.14.

Table 2: Robustness check

	M1	M2	M3	M4
Outcome equation				
$Share_{i,t}$	-0.86361^{***} (0.24615)	-0.78949^{**} (0.31379)	-0.87534^{***} (0.24176)	-0.33106^{*} (0.22653)
$ln_X tot_{i,t}$	0.10456^{***} (0.02964)	0.04131^{*} (0.02238)	0.09746^{***} (0.02973)	0.25685^{***} (0.09184)
$lnGDPpc_{i,t}$	-0.10877^{**} (0.04479)	0.00533 (0.03451)	-0.08533^{*} (0.04752)	-0.26729^{**} (0.11247)
$Polity_{i,t}$	0.01820 (0.00968)	0.00577 (0.00781)		-0.05713^{**} (0.02900)
$Democ_{i,t}$			0.00971 (0.01681)	
$lnpopulation_{i,t}$	0.10054^{***} (0.04221)	0.08054^{**} (0.03426)	0.12377^{***} (0.04272)	0.06334 (0.10715)
$Peace_{i,t}$	-0.05259^{***} (0.00827)	-0.10112^{***} (0.01577)	-0.05305^{***} (0.00813)	-0.09253^{***} (0.02101)
$Langage_{i,t}$	0.42233^{***} (0.16129)	0.37675^{***} (0.12936)	0.41924^{***} (0.16077)	0.01269 (0.37575)
$Oil_{i,t}$	-0.00006^{**} (0.00003)	-0.00004 (0.00003)	-0.00007^{**} (0.00003)	0.00009 (0.00006)
Intercept	-1.32333^{**} (0.85846)	-2.20475^{***} (0.68627)	-1.86333^{**} (0.86962)	0.35302 (2.37978)
Inflated equation				
$lnGDPpc_{i,t}$	0.25953^{***} (0.13778)	-0.37042 (0.41267)	0.25704^{**} (0.14616)	0.98605^{***} (0.36459)
$lnpopulation_{i,t}$	1.73667^{***} (0.38560)	-2.17713^{***} (0.34231)	1.77280^{***} (0.40190)	0.75577^{***} (0.26398)
$Polity_{i,t}$	-1.73964^{***} (0.21534)	-2.19814^{***} (0.54154)		0.92418^{**} (0.39019)
$Democ_{i,t}$			-1.78689^{***} (0.22045)	
$NGIntensity_{i,t}$	0.93008^{***} (0.57339)	-1.66501 (1.57412)	1.03408 (0.65759)	-0.47759 (0.68519)
Intercept	-17.75658^{***} (6.23378)	21.98192^{***} (6.15354)	-17.91575^{***} (6.53787)	-15.14011^{***} (4.76834)
AIC	1531.247	1335.460	1534.655	344.577
log likelihood	-750.624	-653.729	-752.328	-157.288
N	2188	2188	2188	700

with *, **, *** respectively denotes a p-value below 10%, 5%, and 1% .

the dependent variable (M2), both greed and grievance have significant influence in the outcome equation; for the inflated equation, the democracy index plays no role, meaning that it has no impact in the determining of complete peace here. In model 3 (M3), the democracy index has non significant impact in the outcome, and a negative one in the inflated equation. Other greed and grievance variables have the expected sign, except for language diversity which is not significant. Finally, in our fourth model (M4), some changes appear: the political decision relative to exports modifies the pattern of results.

Turning to the exports variables, we note that in each specification the share of French MCW exports is negative and significant in the outcome equation. We then confirm that for additional models presented here, there is no destabilizing effects of French MCW exports. The impact of total exports is less consistent when $Conflict_{i,t}$ is the dependent variable. Nonetheless, it appears for other specifications that it increases the probability of intense intrastate conflict.

In a nutshell, additional regressions broadly confirm the pattern observed in the main results. In particular, French MCW exports do not appear to increase conflict intensity whereas total MCW exports do.

6 Discussion

Our results indicate that if the total amount of MCW exported tends to exacerbate the intensity of a conflict, the share of French exports does not seem destabilize recipient countries. Following Kinsella (2013, p. 3), it may find its root in the fact that, "[a]mong other things, the types of weaponry involved, the strategic situation of the recipient, the policy stance of the supplier, and the relationship between supplier and client each affect the political and military consequences of arms". In the discussion we explore two possible reasons: the political choices of French government in terms of MCW exports and the nature of French MCW exports.

Political choices and French MCW exports

One explanation for the non-destabilizing effect exhibited in Table 1 would be that French government 'chooses' recipient countries which are more prone to use MCW on a peace-promoting manner. In order to explore this channel, we focus on the choice of recipient country. We use the dichotomous variable $DecisionXfr_{i,t}$ which equals 0 when France does not trade MCW with the country i during the year t, and 1 when it does. By discarding the volume dimension, we are able to capture the French "policy stance". We classify the explanatory variables in four categories. First, we use three variables to capture the domestic political instability: $PTS_{i,t}$, $Polity_{i,t}$ and $Peace_{i,t}$. Note that $PTS_{i,t}$ refers to Political Terror Scale (Wood and Gibney, 2010) which is an indicator focusing on the freedom from politically motivated imprisonment, torture, and murder in the country i. It is scaled from one to five, with one indicating a low level of abuse and higher scores reflecting greater levels of personal integrity rights abuse. Second, in order to take into account external political stability, we use the involvement of the country in an international conflict ($Inter_{i,t}$) provided by UCDP/PRIO. It corresponds to a dummy variable equals to 1 if the considered country is involved in at least one international conflict. We also use the intensity of conflict in neighborhood countries ($NGIntensity_{i,t}$) previously introduced and we account for the dummy variable $EmbargoUN_{i,t}$

which codes 1 if the country i is under United Nation's embargo in t and 0 otherwise. The third category of explanatory variables specifies the direct risk incurred by France. Indeed it appears quite logical to assess that the geographical distance matters. As a result, we consider the log of the distance between France and import country ($\ln Dist_i$). Then, we capture a possible entente between France and the recipient country ($Entente_{i,t}$). This dummy variable comes from the *Correlate of War database* (Gibler, 2009) and codes 1 if one or both states in the dyad had an understanding that consultations with the other state in the dyad take place if crisis occurred. Finally, our fourth category of explanatory variables represents the other economic and social characteristics of the recipient country, namely the GDP per capita ($\ln GDPpc_{i,t}$), the population ($\ln Pop_{i,t}$), the oil revenue ($Oil_{i,t}$), the language diversity ($Language_i$) and the level of military expenditure ($Milex_{i,t}$)[21].

Table 3: Factors influencing French MCW exports

	French decision to export MCW
$PTS_{i,t-1}$	-0.0471288^{***} (0.0129262)
$Polity_{i,t-1}$	-0.0014101 (0.0018392)
$Peace_{i,t-1}$	0.0004675 (0.000524)
$Inter_{i,t-1}$	0.194282^{**} (0.0816358)
$NGIntensity_{i,t-1}$	0.0597741^{***} (0.0147463)
$EmbargoUN_{i,t-1}$	-0.3154357^{***} (0.0931794)
$lnDist_{i,t-1}$	0.0611953^{***} (0.011925)
$Entente_{i,t-1}$	0.0557254^{*} (0.0320979)
$lnGDPpc_{i,t-1}$	0.1144485^{***} (0.0098083)
$lnPopulation_{i,t-1}$	0.1107842^{***} (0.0080155)
$Oil_{i,t-1}$	-0.00000715 (0.00000721)
$Language_{i,t-1}$	0.0621073 (0.0398677)
$Milex_{i,t-1}$	2.721963^{***} (0.406407)
log likelihood	-956.63212

Average marginal effects reported
with *, **, *** respectively denotes a p-value
below 10%, 5%, and 1%.

[21] Source : SIPRI

In order to ensure consistency with the (ZIO)Probit specification used above, we adopt here a Probit specification to study the factor influencing the choice of recipient countries[22]. Note that all the explanatory are lagged: as the SIPRI data report the delivery of arms in t, the French decision to export has necessarily been made prior to t. According to the French political discourse, we should observe negative coefficient associated with $PTS_{i,t-1}$ and positive ones with $Polity_{i,t-1}$ and $Peace_{i,t-1}$. To ease the reading, values presented in the Table 3 are the average marginal effects.

Results exhibited in Table 3 highlight that France is less prone to export MCW if the recipient country does not respect human rights. Indeed, the value of the PTS is negatively correlated with the French decision to sell MCW. Note that the PTS highlights "government abusiveness that is part of civil war" and "government abusiveness that causes a civil war onset" (Fearon, 2011, p. 22). As a result, the negative sign relation exhibited above empirically corroborates the French political discourse and could partly explain the non-destabilizing effect associated with French MCW exports. More surprisingly, both the polity index and the peace duration do not significantly affect French choices. Concerning the external context of the recipient country, Table 3 shows that France is more prone to trade arms with a country involved in international conflict: international conflicts stimulate the demand of MCW. Along the same line of reasoning, a conflict in the neighborhood of a country represents a threat which increase its demand of arms. Last, one could notice the negative sign associated with the existence of a UN embargo that reveals compliance to international agreements.

Nature of French arms exports

Let now consider the second potential explanation of the non-destabilizing effect of French MCW exports: the type of arms sold. Indeed, some types of MCW are more prone to encourage conflict than others. In Table 3, we show results of the test for equality of means based on the type of MCW distinguished by the SIPRI (see Table 5 for descriptive statistics).

We see that for the items "Artillery", "Engine", "Other" and "Ship", there is no significant difference between the french MCW exports and the rest of the world (RoW) ones. However, on the period 1992-2014, it appears that France exports relatively more "Air system defense", "Missile" and "Sensor" than the RoW. Interestingly, the first one is directly related to defense purposes. As a matter of fact it would tend to decrease the instability in the recipient country (or at least it would not destabilize it). The case of Sensor's exports is less obvious because they may be used by a government in a civil conflict to hunt rebel groups. Still, it is not an offensive MCW by nature. Finally, the structure of french MCW exports is more intensive in missile than the

[22]Results obtained with a Probit and a Logit specifications are similar.

Table 4: Type of arms sales between 1992 and 2014

Nature of arms	Share in french exports	Share in RoW exports	Equality of means
Air system defense	**6.59**	3.82	*Reject****
Aircraft	34.09	**45.45**	*Reject****
Armored vehicle	5.17	**14.03**	*Reject****
Artillery	1.4	1.86	*Accept*
Engine	3.88	3.21	*Accept*
Missile	**17.5**	12.45	*Reject***
Submarine weapon	0.08	**0.6**	*Reject****
Other	1.16	0.75	*Accept*
Sensor	**13.42**	5.25	*Reject****
Ship	20.72	14.89	*Accept*

with *, **, *** respectively denotes a p-value below 10%, 5%, and 1%. In bold the greatest mean when difference between French exports and the rest of the world ones is significant.

one of the RoW. This last evidence is puzzling because we would expect missiles to be more pro-conflict in the sense that they can easily by used against rebels facilities, or vehicles. On the other hand, the structure of arms exports of the RoW is made up of more "Aircraft", "Armored vehicles" and "Submarine weapons". The first two are MCW that can be deployed in civil conflict. As a result the fact that France exports relatively less of this type of MCW may constitute a potential explanation of our findings. The last type of MCW – submarine weapons – does not seem related to the intensity of a civil conflict (it is unlikely to see submarine used during a civil conflict) and cannot be fruitfully mobilized for our research question.

In a nutshell, there exists structural differences in MCW exports of France compared to the ones of the RoW. We believe hat the fact that France exports significantly less aircraft and armored vehicles and significantly more air system defenses and sensors can partly explain the results exhibited in Table 1.

7 Conclusion

French arms exports have an upward trend due to rising international tensions and then military budgets in many countries. This is notably the case for Middle-East countries. However, these sales may have an impact on security, even though the relationship between arms exports and security appears rather unclear on a theoretical basis (Anderton, 1995). Then, our approach sheds light on the influence of French arms exports on conflict intensity. To do so, we rely on the greed-grievance literature for the post Cold-War period over 161 countries. Furthermore, on the empirical side, due to excess zeros, we use zero inflated ordered probit model.

Our results indicate that both greed and grievance variables have the expected sign. Turning to the effects of MCW trade, French exports are stabilizing whereas total MCW exports exert the opposite impact or non-significant influence following marginal effects. These conclusions are robust as we run additional regressions for alternative specifications with little changes. We further investigate the reason behind these effects. We argue that French political decisions are made thanks to a thorough process which avoids selling MCW to destabilizing countries. Besides, French MCW exports are different to those from other exporting countries in terms of nature of equipment.

These results are in line with the French defense doctrine relative to arms exports. With our empirical model, we indicate that the French MCW exports do not increase conflict intensity the recipient country which is one of the main guidelines for political decisions. However, it does not necessary mean a decrease of intrastate conflicts as we focus on conflict intensity. We then believe to a deterrence effect, that is, French MCW exports avoid conflict by discouraging rivals. As French equipment are "combat proven" due to overseas operations[23], they provide a kind of insurance to those who import them.

The present article can be extended in several ways. It could be useful to investigate the consequences of MCW exports on political repression, to shed light on the human rights respect. In our empirical analysis, we focus on French MCW exports and one may think that disentangling total exports between main exporters. By doing so, differences in terms of exports control may be analyzed.

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[23]Note that, for the Rafale aircraft, some policy leaders acknowledge the importance of the Libyan operation in 2011 and emphasis this "showcase effect" for recent exports.

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Descriptive Statistics

Table 5: Descriptive Statistics

Variable	N	Mean	Std Dev	Minimum	Maximum	Median
$Intensity_{i,t}$	2259	0.23993	0.53735	0	2	0
NG$intensity_{i,t}$	2259	0.73950	0.71289	0	2	1
$Conflict_{i,t}$	2259	0.18638	0.38949	0	1	0
$Share_{i,t}$	2259	0.07958	0.22082	0	1	0
$lnXtot_{i,t}$	2259	4.01741	1.67347	0	10.31689	4.04305
$Xfr_{i,t}$	2259	16.90359	82.74156	0	1833	0
$Oil_{i,t}$	2254	672.90178	1678.93	-23.74542	14020.82	30.03316
$lnGDPpc_{i,t}$	2259	8.39789	1.61912	4.61208	11.5659646	8.44200
$Polity_{i,t}$	2236	3.43982	6.06489	-10	10	6
$Democ_{i,t}$	2237	5.53072	4.06613	0	10	7
$lnPopulation_{i,t}$	2259	16.41760	1.59337	11.32539	21.03389	16.37129
$Peace_{i,t}$	2259	31.24636	25.40379	0	68	29
$Language_i$	2211	0.38021	0.27603	0.00211	0.92268	0,34444
$PTS_{i,t}$	2288	2.52744	1.21039	1	5	2
$Entente_{i,t}$	2188	0.13368	0.23161	0	1	0
$Milex_{i,t}$	2146	0.02669	0.02680	0.00002	0.34376	0.01895

Table 6: Descriptive Statistics of type of weapon

	Variable	N	Mean	Std Dev	Minimum	Maximum	Median
Air defence systems							
	$Xtot_{i,t}$	23	951.26087	281.85154	588	1664	937
	$Xfr_{i,t}$	23	101.91304	67.13143	30	200	110
Aircraft							
	$Xtot_{i,t}$	23	10583.70	2127.91	7393.00	15350.00	10467
	$Xfr_{i,t}$	23	579.78261	386.44404	140	1619	4506
Armoured vehicles							
	$Xtot_{i,t}$	23	3106.65	870.59915	1837	5280	3189
	$Xfr_{i,t}$	23	86.04349	95.34077	4	289	41
Artillery							
	$Xtot_{i,t}$	23	482.95652	185.25056	136	792	479
	$Xfr_{i,t}$	23	21.73913	32.36189	0	107	6
Engines							
	$Xtot_{i,t}$	23	810.65217	282.89745	543	1466	694
	$Xfr_{i,t}$	23	50.60869	32.03796	4	120	49
Missiles							
	$Xtot_{i,t}$	23	2975.61	546.10503	2085	4286	2971
	$Xfr_{i,t}$	23	259.52174	115.66365	92	496	236
Naval weapons							
	$Xtot_{i,t}$	23	126	61.77672	46	257	104
	$Xfr_{i,t}$	23	1.34783	2.87004	0	10	5
Other							
	$Xtot_{i,t}$	23	210.60869	67.24159	100	334	199
	$Xfr_{i,t}$	23	16.30435	31.47212	0	105	0
Sensors							
	Xmonde	23	1308.04	196.94980	1014	1731	1302
	$Xfr_{i,t}$	23	177.73913	89.65653	25	388	172
Ships							
	$Xtot_{i,t}$	23	3772.96	858.3809	2360	5071	3718
	$Xfr_{i,t}$	23	382.47826	341.08235	0	1145	280

model (ZIP). M3 represents initial estimation (with ZIOP model) which switch $democ_{i,t}$ by $Polity_{i,t}$. M4 represents estimation on a sub-sample which consider only country-year observation where France exports arms, with ZIOP model and same control than initial estimation.

Table 7: List of countries

Afghanistan	Djibouti*	Lesotho	Rwanda
Albania*	Dominican Republic	Liberia	Saudi Arabia*
Algeria*	DR Congo*	Libya*	Senegal*
Angola	Ecuador*	Lithuania*	Seychelles
Argentina*	Egypt*	Luxembourg	Sierra Leone
Armenia	El Salvador	Macedonia*	Singapore*
Australia*	Equatorial Guinea	Madagascar*	Slovakia
Austria*	Eritrea	Malawi	Slovenia*
Azerbaijan	Estonia*	Malaysia*	Somalia
Bahamas	Ethiopia	Maldives	South Africa*
Bahrain*	Fiji	Mali	South Korea*
Bangladesh*	Finland*	Malta	Spain*
Barbados	Gabon*	Mauritania*	Sri Lanka*
Belarus	Gambia	Mauritius*	Sudan
Belgium*	Georgia	Mexico*	Suriname*
Benin*	Germany *	Micronesia	Sweden*
Bolivia*	Ghana	Moldova	Switzerland*
Bosnia-Herzegovina	Greece*	Mongolia	Syria
Botswana*	Guatemala	Morocco*	Tajikistan
Brazil*	Guinea	Mozambique	Tanzania
Brunei*	Guinea-Bissau	Myanmar	Thailand*
Bulgaria*	Honduras	Namibia	Timor-Leste
Burkina Fasso*	Hungary*	Nepal	Togo*
Cambodia*	Iceland	Netherlands*	Tonga
Cameroon*	India*	New Zealand*	Trinidad and Tobago
Canada*	Indonesia*	Niger*	Tunisia*
Cape Verde	Iran*	Nigeria*	Turkey*
Central African	Ireland	Norway*	Turkmenistan*
Chad*	Israel*	Oman*	UAE*
Chile*	Italy*	Pakistan*	Uganda
China*	Jamaica*	Panama	United Kingdom*
Colombia*	Japan*	Papua New Guinea	United States*
Congo	Jordan*	Paraguay	Uruguay*
Cote d'Ivoire*	Kazakhstan*	Peru*	Uzbekistan
Croatia	Kenya	Philippines*	Venezuela*
Cuba	Kuwait*	Poland*	Viet Nam*
Cyprus*	Kyrgyzstan	Portugal*	Yemen*
Czech Republic*	Laos*	Qatar*	Yugoslavia
Denmark*	Latvia	Romania*	Zambia
	Lebanon*	Russia*	Zimbabwe*

* denotes countries which have ordered French imports at least once between 1992 and 2014.