ERF Working Papers Series

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ECONOMIC RESEARCH FORUM
منتدى البحوث الاقتصادية

Working Paper No. 1538
February 2022

ECONOMIC, SOCIAL, AND INSTITUTIONAL DETERMINANTS OF INTERNAL CONFLICT IN FRAGILE STATES

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First published in 2022 by
The Economic Research Forum (ERF)
21 Al-Sad Al-Aaly Street
Dokki, Giza
Egypt
www.erf.org.eg

Abstract

In this paper, we use fixed-effect Poisson regressions (FEPR) with robust standard errors and instrumental variables (IV) to study the economic, social, and institutional determinants of internal conflicts in 58 fragile states from 2004 to 2017. We show that effective institutions (measured by judicial efficiency) and higher incomes could help reduce conflict in fragile states. In contrast, trade reform does not seem to mitigate violence in these countries. It also appears that educational and democratic institutions can fuel conflict in some cases. These results imply that education and trade liberalization do not have the expected effects in fragile countries, which should first improve their social, economic, and institutional situation before benefiting from economic reform and education. This may also be the case for political reforms, as democratic experiences seem to lead to increased violence in some countries in our sample.

Keywords: Conflict, fragile countries, economic reforms, institutions, education, democracy.
JEL Classifications: C23, D74, O10.

ملخص

في هذه الورقة، نستخدم انحدارات بواسون ذات الثأثير الثابت (FEPR) مع أخطاء معيارية قوية ومتغيرات آلية (IV) لدراسة المحددات الاقتصادية والاجتماعية والمؤسسية للنزاعات الداخلية في 58 دولة هشة في الفترة من 2004 إلى 2017. كما أننا نوضح أنه قد تساعد المؤسسات الفعالة (التي يتم قياسها بالكفاءة الحكمية) والدخل المرتفع في الحد من النزاعات في الدول الهشة. وفي المقابل، لا يبدو أن إصلاح التجارة يخفف من حدة العنف في هذه البلدان. كما يبدو أن المؤسسات التعليمية والديمقراطية يمكن أن تؤجج النزاع في بعض الحالات. وتشير هذه النتائج إلى أن التعليم وتحرير التجارة لا يحققا الآثار المتوقعة في البلدان الهشة التي ينبغي أولًا أن تحسن وضعها الاجتماعي والاقتصادي والمؤسسي. قبل أن تستفيد من الإصلاح الاقتصادي والتعليم. كما قد يكون هذا هو الحال بالنسبة للإصلاحات السياسية، حيث أوضحت أن عينة الدراسة أن التجارب الديمقراطية تؤدي إلى زيادة العنف في بعض البلدان.

1. Introduction

Over the past decade, the Uppsala Conflict Data Program (UCDP) has recorded an upward trend of violence in the world. The number of armed conflicts increased from 33 in 2006 to 49 in 2016. The number of terrorist actions reached a peak in 2014, with the death of more than 100,000 people that year (Allansson et al., 2017). In addition to human suffering, civil strife causes considerable damage to economies due to its negative effects on infrastructure, public spending, political stability, foreign direct investment, trade, and growth, among others. As a result, while extreme poverty is declining worldwide, it is increasing in fragile countries affected by conflicts (World Bank, 2018). Conflicts also have a destabilizing effect on neighboring countries, with political instability in a country threatening the stability of the entire region (Teydas et al., 2011). The civil unrest in Syria, for example, has led many other states and international organizations to participate directly in the conflict. If left unchecked, nearly half of the world's poor will live in fragile countries facing conflict situations by 2030 (World Bank, 2018), and the expansion of armed conflict around the world will cause more harm to populations (Pettersson et al., 2019).

Several studies have suggested that armed violence occurs most of the time in fragile countries with poor social, economic, and political conditions (World Bank, 2011 and 2018). Collier (2007) states that "seventy-three percent of people of the bottom billion have recently been through a civil war or are still in one." Stewart (2002) notes that most of the economies with the lowest level of human development have experienced civil wars over the last three decades. Ostby (2008) shows that poverty, inequality, and dependence on natural resources are at the root of most conflicts in the world. Lai (2007) states that low income levels and high income inequality are positively associated with terrorism. Countries with fragile political conditions are also more vulnerable to domestic violence. Coggins (2015) found that political collapse has a positive correlation with armed conflicts. Newman (2007) and Piazza (2008) confirm that it is easier for extremist groups to establish their organizations in failed states.

Economic growth and wealth, however, are not always a source of peace and non-violence in fragile countries, as Caruso and Schneider (2011) explain in their theory of "immiserizing modernization." When growth changes the distribution of wealth, as described by Olson (1963), it can lead to social and political unrest fueled by groups of people who lose from the change. If perceived as a threat, economic reforms may lead to civil unrest as well, as explained by Freytag et al. (2011) for globalization. Gur (1970) confirms that when individuals feel economically disadvantaged, they may be willing to fight to change their situation. When inequalities create grievances among the poor, it becomes easy for extremist organizations to recruit them to fight the government in hope of a better life.

Rational Choice theory also explains the emergence of civil conflicts in fragile countries by suggesting that human actions are based on the "calculation of risk, cost and incentive" (Teydas

et al., 2011). Wintrobe (2006) assumes that extremists are rational and choose the best way to achieve their goal. Becker (1968) argues that individuals commit a crime if the expected benefits outweigh the costs. Caplan (2006) suggests that the use of illegal force is the product of a cost-benefit analysis. The benefits derived from this use are increased power and wealth. Similarly, the "opportunity-based approach" indicates that the most important factor in becoming a rebel is the expectation of personal gain or reward (Teydas et al., 2011). Collier and Hoeffler (2004) argue that "rebellion can occur when lost income is low." Freytag et al. (2011) suggest that if the opportunity cost of the use of illegal force is high, people will choose material wealth rather than mental rewards.

In this study, we explore the social, economic, and institutional determinants of domestic conflict in 58 fragile countries. Due to poor economic, social, and political conditions, fragile countries are particularly exposed to the risk of instability (World Bank, 2011 and 2018). This makes these countries fertile ground for the study of the mechanisms at work in the emergence of violence. Our aim has therefore been to better understand the factors explaining this violence so that governments can reduce this source of instability. It may be thought that governments counter these risks by improving the standard of living of the population. Freytag et al. (2011) and Burgoon (2006) show that public spending and social protection policies reduce violence by improving people's socio-economic conditions. George (2018) suggests that, in failed states, an effective counter-terrorism measure is to build reliable institutions. Providing better living conditions for citizens and equal opportunities to generate wealth and investing in human development, political rights, and effective institutions could help governments decrease the people's grievances and increase the opportunity cost and risk of violence, thus isolating the extremists from their supporters.

In this study, we use the annual number of conflict-based domestic incidents processed from the Global Terrorism Database (GTD) as a proxy for internal conflict.[3] We analyze the development of violence for four different groups of countries from 2004 to 2017: (i) total sample of fragile countries, (ii) fragile Islamic states, (iii) fragile countries with more than one main religion,[4] and (iv) states affected by major conflicts.[5] These countries were selected from the Fund for Peace (FFP) database, which publishes a fragility index for 178 countries around the world annually.[6] In addition to an objective of robustness, our choice to work on different categories of countries was motivated by the search for specificities in order to refine the understanding of the mechanisms of violence as well as the recommendations of economic policy. We note, for

[3] https://www.start.umd.edu/data-tools/global-terrorism-database-gtd. See section 3.2.1 for more details on the GDT variables and database.

4 Countries where more than ten percent of people belong to a different religious group

[5] Countries having had at least five conflict-related incidents per year for at least half of the period studied

[6] https://fragilestatesindex.org/data/ . See section 3.3. for more details on the database and the Fragility Index.

example, that Muslim countries and those hosting several religions were particularly unstable over the period studied. Muslim countries in particular were hit by social and political unrest during the Arab Spring waves, as well as by a surge of religious and political radicalization. The reasons to fight in these countries may differ from those in other countries. The same variables may also not have the same effect on conflict. These considerations will be discussed in more detail in section 3.3.

In the empirical part of this study, we show that effective institutions (measured by judicial effectiveness) and higher incomes contribute to reduced conflict in our sample of fragile countries. In contrast, trade reforms do not seem to mitigate violence. It also appears that human development and democratic institutions could fuel violence in several of our fragile countries. This would imply that states first improve the social, economic, and institutional conditions of their populations before benefiting from economic reform and education. The same conclusion can be drawn for political reforms since democratic experiences seem to lead to an increase in violence in some of the countries in our sample.

These results are important in the context of the increasing number of conflicts around the world, which undermine progress in improving living standards and reducing poverty in fragile countries (World Bank, 2018). They help explain the difficulties faced by governments in reducing violence and point to a progressive approach to long-term conflict reduction.

These results are robust because they have been tested on different panels of countries and are based on appropriate quantitative methods. The use of fixed effect (FE) Poisson estimators (while most studies use Negative Binomial Regressions (NBR) in case of count data) is well adapted and provides originality to our approach (see Krieger and Meierrieks, 2011 for a synthesis). The Poisson estimator is particularly suitable in the case of rarity of events, which corresponds to the nature of our conflict variable by providing greater precision and efficiency than the other estimators (Simcoe, 2008; Silva and Tenreyro, 2009. See also section 3.3 for a more detailed discussion). The use of instrumental variables (IV) is another originality of our research, which aims to address the possible endogeneity problems underlying our regressions.

Another particularity of our work lies in the use of the Global Terrorism Database (GTD), as well as the choice of our conflict variable. Although a lot of literature on conflict has emerged over time, fewer studies are based on GTD data, which provide very detailed information on the many aspects of conflict (Krieger and Meierrieks, 2011; Berkebile, 2017. See also section 3.2.2 for more discussion). The advantage of GTD in our case has been to access the number of violent events, which constitutes more precise information on the intensity of the conflict than dummy

variables or the probabilities used in many studies.[7] This variable also provides additional information compared to, for example, the "number of people killed" variable because it measures the frequency of the disruptive effect of the conflict, and therefore the ability of the rebels to act and destabilize the power in place.

Another advantage linked to the use of GTD has been to isolate the domestic component of conflicts, which is by far the most common (between 80 and 90 percent of total attacks in the world) but the least studied because of a lack of cross-national data on the transnational component in particular (Enders et al., 2011; Berkebile, 2017). The high precision of the explained variable therefore allowed us to explore a better perception and explanation of the causes of violence in the countries studied.

The rest of the article is organized as follows. Based on the literature, section 2 summarizes our theoretical framework and reasons that motivate violence in fragile countries. Section 3 presents our model of conflict and justifies the variables used in the analysis and the data sources. Section 4 highlights the methodological aspects related to our estimates of violence. Section 5 presents the results of the empirical analysis for our various samples of countries. The last section concludes with our main findings and policy recommendations.

2. Conflict motivation: A theoretical framework

The motivation of the use of illegal force can be studied using the Rational Choice Theory framework. Rational behavior implies that individuals perform a cost-benefit analysis before acting. In the case of conflict, the expected benefits of violence include a redistribution of power and wealth, while the costs include a reduction in resources and sanctions (Frey and Luechinger, 2003; Harrisson, 2006).

Sanctions can be legal or military. LaFree et al. (2009) state that these sanctions can have two contradictory effects on violence: a "deterrent" effect, or an "amplification" effect. Deterrence models assume that the threat or imposition of a sanction changes the behavior of individuals. According to Nagin and Paternoster (1993), deterrence works when the expected benefits of illegal actions are lower than the expected costs. LaFree et al. (2009) define two types of deterrence: "specific" deterrence which dissuades individuals from repeating their actions, and "general" deterrence which discourages members of a society from opting for a given action by fear of possible sanctions. Dezhbakhsh et al. (2003) confirm that the probability of arrest, conviction, or execution results in a significant decrease in the crime rate of a population.

[7] For example, Collier and Hoeffler (2004) and Hess (2003) define their variable of conflict as a dummy, which takes the value of one when there are at least 1,000 deaths per year (25 combat deaths per year in the case of Miguel, 2004), Humphreys (2003) as the probability of a civil war, and Caruso and Schneider (2011) as the number of people killed. Malik (2011), however, chose the number of violent attacks as its proxy of conflict.

On the contrary, Higson-Smith (2002) puts forward the idea that conflict may get worse as a result of government sanctions. This is the case when extremists use the public's potential for sympathy to recruit new members, or when opponents become more radicalized by sanctions, for example. Sherman (1993) explains that deterrence or amplification effects depend on how offenders accept sanctions. If they do not consider them to be legitimate, it will create new grievances. The hostile reaction to sanctions may be "specific" when offenders view the sanctions as unfair and continue the use of illegal force, or "general" when society considers the sanctions unjustified and then supports activists. If a society's legal system is ineffective and the activists consider the sentence illegitimate, they can seek support from the public to legitimize their actions. People who have grievances but do not trust the legal system may also find it legitimate to achieve justice by force.

With regards to the cost/benefit ratio of the use of force, Freytag et al. (2011) focus on the trade-off between loss of material wealth (the opportunity cost of illegal actions) and mental reward (the benefit of armed dissent). They suggest that if the opportunity cost of terror (such as the likelihood of sanctions or loss of income) outweighs the benefit, people will choose to preserve their material wealth rather than the mental reward of an act of terrorism. On the other hand, in the case of poverty or a slowdown in economic activity, as the relative price of material wealth increases, citizens will opt for conflict more easily; seeing it also as a means of imposing change in addition to seeking a mental reward.

This may also be the case after economic reforms. In their theory of "immiserizing modernization," Caruso and Schneider (2011) explain that reforms can lead to a decrease in the wealth of some stakeholders, which can lead to more conflicts because of the lower opportunity cost of violence for these categories. Wintrobe (2006) confirms that trade reforms and globalization in particular can be seen as a threat of loss of income for part of the population. By limiting the economic opportunities of the affected population, in addition to reducing the opportunity cost of violence, economic reforms can create grievances against the government, thus increasing the risk of civil unrest (Harrison 2006). Violence in these cases can also be seen as a way of resisting change. Blomberg and Hess (2008) and Kurrild-Klitgaard et al. (2006), however, find an inverse relationship between trade reform and conflict, which would make reform an opportunity rather than a threat; thereby reducing violence and promoting development. More generally, adverse socio-economic conditions can lead to violence by making conflicts more profitable because of potential positive spin-offs, particularly with regards to the redistribution of wealth, but also because of low direct costs, including the low cost of recruiting opponents.

Bernholz (2004) describes the ideological content of certain conflicts through the concept of "supreme values." These values refer to one or more objectives that are preferred above all

others, the achievement of which is more important than any other value (Wilkens, 2011). Black (2001) suggests that these extreme beliefs (e.g. religious) are based on deeply inculcated doctrines to achieve the goals of extremist groups (Wintrobe, 2006). Bernholz (2004) states that people with supreme values may want to implement these values by force. In this case, if the grievance concerns problems other than poverty, such as injustice or unequal treatment of certain regions, ethnic groups, or religions,[8] an increase in wealth increases the resources for extremists' organizations and rebels' activities. Wintrobe (2006) adds that terrorist activities are based on a compromise between "autonomy" and "solidarity." A person can give up their beliefs (autonomy) to experience social belonging and solidarity.

It is within this theoretical framework that our empirical model, as presented in the following section, fits.

3. Presentation of the model and of the variables

3.1. The model

The equation used to study the determinants of conflict in fragile states is as follows:

$$Confl_{it} = \alpha_0 + \alpha_1 (GDPc_{it}) + \alpha_2 (Inequal_t) + \alpha_3 (Contracts_{it}) + \alpha_4 (H_{it}) + \alpha_5 (Open_{it}) + \alpha_6 (Demo_{it}) + \alpha_7 (Pop_{it}) + \alpha_8 (EthnTens_{it}) + \alpha_9 (ReligTens_{it}) + \alpha_{10} (NatRes_{it}) + \varepsilon_t \quad \text{Eq (1)}$$

Where *Confl* is the count data variable for measuring conflict, *GDPc* is the logarithm of real GDP per capita, $Inequal_t$ is the measure of income inequalities, *Contracts* is the proxy for judicial effectiveness, *H* is the human capital index, *Open* is the indicator of trade openness, *Demo* is the proxy for democratic institutions, *Pop* is the logarithm of population, $EthnTens_{it}$ *and* $ReligTens_{it}$ are the variables for ethnics and religious tensions, and $NatRes_{it}$ is the natural resources indicator. e *i* is the cross sections index, *t* is the time dimension, and $\mathcal{E}$ is the error term. $\alpha 0$ to $\alpha 6$ are the parameters to estimate.

3.2. The variables

3.2.1. Annual conflict-based domestic incidents as a proxy for internal conflict

We have processed our proxy for internal conflict, the annual conflict-based domestic incidents, from the Global Terrorism Database (GTD, 2018), which contains information on cross-national terrorist events from 1970 to 2017. Unlike many other databases, the GTD systematically covers both transnational and domestic incidents. The GTD also contains a large number of variables that can be manipulated by researchers, making it possible to deal with a wide range of research

[8] See Huntington (1996), Piazza (2008), Basuchoudhary and Shughart (2010), Krueger and Maleckova (2003), or Kurrild-Kligaard et al. (2006) for the political, ethnic, and institutional causes of conflict.

questions, in addition to transparent coding.[9] In the empirical literature, as mentioned in the introduction, GTD has been used less than other databases, although it provides more information on the use of violence (Krieger and Meierrieks, 2011; Berkebile, 2017).[10]

The conflict-based incidents in the GTD codebook are defined as "the threatened or actual use of illegal force and violence by a non-state actor to attain a political, economic, religious, or social goal through fear, coercion, or intimidation." To be included in the database, incidents must (i) be intentional, (ii) result in a certain level of violence or an immediate threat of violence against property and/or people, and (iii) be perpetrated by subnational actors. Attack types are also listed as assassination, hijacking, kidnapping, barricade incident, bombing/explosion, unknown armed assault, unarmed assault, and facility/infrastructure attack.

To construct our conflict variable, we included the incidents that meet the following criteria: (i) the act was aimed at attaining a political, economic, religious, or social goal; (ii) there is evidence of an intention to coerce, intimidate, or convey some other message to a larger audience (or audiences) than the immediate victims; and (iii) the action was outside the context of legitimate warfare activities.

Following Enders et al. (2011), we isolated domestic incidents from transnational incidents by eliminating events where the nationality of one of the victims was different from the country where they occurred. The time period for the annual data is from 2004 to 2017 (see descriptive statistics in Table A.1 in the Appendix).

3.2.2. GDP per capita as a proxy for income and wealth

The empirical evidence for the impact of income and wealth on internal conflict yields mixed results. Some of the literature identifies poverty and low income as causes of violence. Humphreys (2003) indicates that low resources increase the likelihood of civil wars. Collier and Hoeffler (2004) show that low incomes increase domestic conflict. By contrast, Caruso and Schneider (2011) find a positive relationship between increased income and the number of people killed in conflict-based incidents. Freytag et al. (2011) and Shahbaz (2012) confirm that

[9] For each incident, information is available for at least 45 variables (more than 120 for the most recent years).

[10] One of the most widely used **cross-national** databases, the International Terrorism Attributes of Terrorist Events (ITERATE) dataset is dedicated to transnational terrorism only (https://library.duke.edu/data/sources/iterate). Another interesting source is the RAND Database of Worldwide Terrorism Incidents (RDWTI), which collects a lot of data on terrorism, both transnational and domestic, and provides limited coverage (data are available from 1998 to 2009 only, and few variables are monitored). Thus, the many sources available today show, most of the time, limited geographic coverage, duration, or type of variables (see also the ICT's Incidents and Activists Database: https://www.ict.org.il/Articles.aspx?WordID=25#gsc.tab=0), or the MIPT Terrorism Knowledge Base: https://franklin.library.upenn.edu/catalog/FRANKLIN_9941455883503681).

there is a positive correlation between increasing GDP per capita and increased violence. Piazza (2008), however, does not find a significant association between the two variables. Freytag et al. (2011) and Lai (2007) show on their side that the use of the quadratic form of GDP per capita inverts the sign of the relation. They conclude that a country must go beyond a certain threshold of development to counter conflict by an increase in wealth. In this study, we hypothesize that economically disadvantaged people in fragile states develop grievances against their government, and that poor economic conditions make violence more likely because direct costs (including rebels' recruitment) and opportunity costs are low.

GDP per capita is our measure of income and wealth. The data comes from WDI (2017). For some countries, we collect data from national sources and other international institutions for missing values. The study uses the logarithm of the variable in real terms (see the descriptive statistics in Table A.1 in the Appendix). In line with one part of the literature, we expect a negative influence of this variable on our variable of conflict.

3.2.3. Income inequalities as a proxy for unequal distribution of wealth

Like poverty, the unequal distribution of wealth can increase grievances among the population and fuel conflict. For example, in his theory of relative deprivation, Gurr (1970) argues that people assess their economic situation in relation to that of others and describes a positive relationship between income inequality and violence. In the literature, relatively unfavorable economic conditions are thus generally described as leading to increased frustration and conflict.

The empirical literature also illustrates this positive link between income inequalities and conflicts. Krieger and Meierrieks (2019) show that these inequalities do increase violence in their sample of countries. They also highlight that countries which redistribute more experience fewer internal conflicts. Piazza (2011) also finds that greater income inequality increases the likelihood of violence. However, some authors struggle to validate this link, such as Kurrild-Klitgaard et al. (2006), who do not demonstrate in their model the significant impact of income inequalities on conflict.

For inequalities, we use the richest ten percent share of pre-tax national income from the World Inequality Database (WID). In line with the literature, we expect a positive sign of this variable with our indicator of conflict.

3.2.4. Effective judiciary as a proxy for deterrence and institutions

Countries with fragile institutions are vulnerable to violence (Ross 1993, Basuchoudhary and Shughart 2010). It is easier for extremist groups to operate in states where institutions are weak (Newman, 2007, Piazza, 2008). People who have grievances and do not trust the institutions may

also find it legitimate to use force. If the justice system is effective and the penalties are perceived as fair, the threat of punishment can change the behavior of individuals. Freytag et al. (2011) state that the possibility of punishment is a cost to opponents. Dezhbakhsh et al. (2003) confirm that the likelihood of punishment leads to a decrease in crime. George (2018) shows that, in failed states, building reliable institutions is a counter-terrorism measure.

We use the "Time for Enforcing Contracts" variable from the Doing Business database as an indirect indicator of the ineffectiveness of the judiciary. If the judiciary punishes in a timely manner, the population will be reluctant to use violence. On the other hand, if the justice system is ineffective and extremists may not be punished, then it is easier for them to continue the use of illegal force. If the justice system in a country is effective and citizens trust its decisions, it will deter violent activities (see descriptive statistics in Table A.1 in the Appendix). In this study, we expect a positive impact of the judicial ineffectiveness variable on conflict.

3.2.5. Education as a proxy for human capital

Human development might be seen as a way to reduce violence. Higher human development can limit the risk of conflict by reducing people's grievances (Bravo and Dias, 2006; Kurrild-Kitgaard et al., 2006). Educated people may also be less likely to choose illegal force because they can use their own reasoning to form their own opinion. This is especially true in the case of illegal actions based on supreme values where education can help develop critical thinking and reject extremism (Ghosh et al., 2017). Educated people can also use their knowledge to improve their economic and social situation (Berrebi, 2007). Advances in education thus increase the opportunity cost of conflict by providing better opportunities for people (Freytag et al., 2011).

At the empirical level, Hamilton and Hamilton (1983) note that illiteracy is positively correlated with armed violence. Collier and Hoeffler (2004) and Azam and Thelen (2008) highlight the negative impact of education on conflict. However, Brockhoff et al. (2015), Berrebi (2007), Testas (2004), and Nasir et al. (2011) show a positive relationship between education and the use of illegal force. Brockhoff et al. (2015) show that education can exacerbate discontent in countries where social, economic, political, and demographic conditions are unfavorable. If access to education does not translate into the expected better life, it will increase frustration and civil unrest. People may consider joining opponents' organizations if career path returns are below expectations (Krueger, 2008). In addition, extremist groups may have an interest in recruiting educated people, as this can increase the chances of success of their activities and contribute to a better image for their propaganda in the media (Krueger and Maleckova, 2003).

We use the average number of years of schooling of individuals aged 25 or older from the United Nations Development Program (UNDP)[11] as a proxy for human capital (see descriptive statistics in Table A.1 in the Appendix). In accordance with part of the literature, we assume that education provides people with more economic opportunities that increase the opportunity cost of using illegal force, as well as a level of knowledge that encourages them not to choose violence. A negative sign in the equation is therefore expected.

3.2.6. Trade openness as a proxy for trade liberalization and economic reforms

The influence of economic reforms on violence is another dimension studied in the literature. The impact of trade liberalization and globalization has been the subject of discussion. Trade liberalization can be a factor in the growth and modernization of the economy (Frankel and Romer, 1999; Dollar and Kraay, 2003). New opportunities created by trade can reduce the discontent of the population and increase the opportunity cost of violence, thus reducing the risk of civil unrest. Blomberg and Hess (2008) and Kurrild-Klitgaard et al. (2006) find an inverse relationship between trade openness and the use of illegal force, which would confirm that reforms can help reduce violence.

Another part of the literature, however, emphasizes the destabilizing effect of economic reforms. Caruso and Schneider (2011) state that reforms can reduce the wealth of some stakeholders. Freytag et al. (2011) and Wintrobe (2006) confirm that globalization can be seen as a threat to part of the population. In this case, reforms can lead to political and social unrest fueled by groups of people who lose or fear losing because of change (Harrison, 2006; Gaibulloev and Sandler, 2019).

In this study, we use the ratio of exports plus imports to GDP (in real terms) as a proxy for trade reform and globalization using data from national and international sources (see descriptive statistics in Table A.1 in the Appendix).

3.2.7. Democratic accountability as a proxy for political liberalization

The impact of the political regime on violence and civil unrest in a country is another dimension with contradictory empirical evidence. Some of the literature emphasizes that democratic regimes allow people to express their demands and be heard, thereby reducing the grievances they may have towards the government. This is the case of Eyerman (1998) and Li (2005) who highlight a positive relationship between democracy and the absence of violence. However, other authors point out that it is easier and cheaper for extremists to engage in violent activities when they enjoy more civil liberties and political rights. For instance, Li and Schaub (2004) and Rizvi and Véganzonès-Varoudakis (2019) note an increase of violence in fragile countries during

[11] http://hdr.undp.org/en/content/human-development-index-hdi

democratic periods. Eubank and Winberg (1998) find that terrorism occurs more often in democracies than in more authoritarian regimes. Li (2005) and Muller (1985) demonstrate a non-linear relationship between political repression and the use of illegal force.

We use the Democratic Accountability variable, derived from the International Country Risk Guide (ICRG), as an indicator of the type of regime to explain internal conflicts in fragile states (Howell, 2011). A high value indicates more democratic institutions and vice versa (see descriptive statistics in Table A.1 in the Appendix). In line with one part of the literature, we expect a positive relationship of the variable with the conflict variable for our different samples of fragile countries.

3.2.8. The role of population

In addition to the above variables, we study the impact of the size of a country's population as a control variable for the development of conflicts in that country. Krueger and Maleckova (2003), Burgoom (2006), Freytag et al. (2011), Piazza (2008), and Richardson (2011) point out that more populous countries tend to face more violence. Gaibulloev and Sandler (2019) and Taydas et al. (2011) argue that it is difficult for governments to manage, serve, and respond to the demands of all in the case of large populations, partly due to great diversity. According to this literature, we expect a positive relationship between population and conflict in our samples of fragile countries. We use the population variable from WDI (2017) in logarithm (see descriptive statistics in Table A.1 in the Appendix).

3.2.9. Ethnic and religious tensions

Ethnic and religious differences are two other issues explored in the conflict literature. Several studies have used ethnic diversity as an explanatory variable for violence. Montalvo and Reynal-Queral (2005) state that countries with more ethnic polarization are more likely to face internal conflicts. Horowitz (1985) considers that countries that are both very homogeneous and very heterogeneous can face less violence. Fearon and Laitin (2003) also point out that countries with more diversity face less violence because minority groups can share political platforms through alliances and coalitions. Collier and Hoeffler (2004) hypothesize that if political loyalties are ethnically based, the likelihood of conflict increases when an ethnic group has a small majority.

Empirically, Fearon and Laitin (2003) show that ethnic fragmentation has no significant impact on conflict. Collier and Hoeffler (2004) use different indicators of ethnic diversity in their grievance model and highlight a positive impact of ethnic dominance on violence. Danzell et al. (2019) find that ethnic polarization increases the risks of internal conflict in a country. Basuchoudhary and Shughart (2010) use ethnic tensions from the ICRG database and conclude that these tensions increase conflict.

Regarding religious differences, Collier and Hoeffler (2004) argue that, like ethnic diversity, a population that is more religiously heterogeneous faces less conflict. Bandyopadhyay and Younas (2011) use religious fragmentation as an explanatory variable of conflict, and stress that countries with greater religious diversity experience less violence. Collier and Hoeffler (2004) and Abadie (2006), however, find an insignificant impact of religious fragmentation on conflict.

In the empirical part of this study, we use ethnic and religious tensions from the ICRG database as control variables in our conflict model. The ICRG data for ethnic and religious tensions range from zero to six, where higher values indicate lower tensions. Following part of the literature, we hypothesize a negative sign which would show that a decrease in ethnic and religious tensions would decrease violence.

3.2.10. The role of natural resources

A country with abundant natural resources offers financial resources to each party to support or fight the conflict. On the one hand, natural resources provide useful funding for governments to control insurgencies (Collier and Hoeffler, 2004). On the other hand, natural resources can attract rebellion, as the financial gains from controlling these resources increase the potential benefits of an outcome in their favor of the conflict.

Collier and Hoeffler (2004) use exports of primary goods to GDP as an indicator of natural resources and find a significant non-monotonic relationship with conflict. They conclude that the availability of financing, through the possible extortion of these assets, makes rebellion more feasible and attractive. Lujala (2010) and Farzanegan et al. (2018) also show that the abundance of natural resources increases the risk of internal violence.

In the empirical part of this study, we use the natural resource rents from the World Development Indicators (WDI) as a control variable to proxy a country's natural resources. We expect a positive sign from this variable with our variable of conflict.

3.3. Estimation of the model: Methodological aspects

This study focuses on fragile countries selected from the Fund for Peace (FFP) database that publishes an annual Fragile States Index (FSI). This Index ranks 178 countries based on the quantification of different pressures the countries face. The FSI is calculated from 12 key qualitative and quantitative indicators (political, social, and economic) from a variety of public sources.[12]

[12] The **Economic** part of the ***FSI*** is structured around three areas: (i) Economic Decline and Poverty, (ii) Uneven Development, and (iii) Human Flight and Brain Drain. The **social** component is organized around two topics: (i) Demographic Pressures and (ii) Refugees and Internally Displaced Persons (IDPs). The **political** part

We choose to work on the countries for which the index was above 70 for the analysis, which corresponds to a high degree of fragility.[13] We analyze the development of conflict activities from 2004 to 2017 for four different groups: (i) total sample of fragile countries, (ii) Islamic fragile states, (iii) fragile countries with more than one important religion,[14] and (iv) states affected by major conflicts[15] (see the list of countries in Table A.2 in the Appendix). As explained in the introduction, our choice to work on different categories of countries was motivated by the desire to refine our understanding of the mechanisms of violence. In Muslim countries, for example, conflicts may have religious content. In this case, increasing wealth or education may not have the same effects on violence as in countries where unrest is fueled by poverty or an uneven distribution of wealth. In the latter case, we can assume that an increase in income, a policy of redistribution, better access to education, health, and (more generally) a higher level of development would contribute to reducing social dissatisfaction and therefore conflict. If the reason for the violence is religious rather than economic, an increase in income or education can, on the contrary, fuel the conflict.

Since we have the annual number of conflict-based domestic incidents from the GTD as a proxy for violence, this implies that our dependent variable is a non-negative integer (count data).[16] We use Fixed Effect Poisson Regressions (FEPR) with robust standard errors to address the issues related to count data. Poisson estimators are particularly suitable in the case of rare events, which correspond well to our situation. Many empirical researchers have used Poisson regression or Negative Binomial Regression (NBR) for count data models (see Krieger and Meierrieks, 2011, for a synthesis).[17] Berrebi and Ostwald (2011), however, suggest that while NBR offers potential efficiency gains, the consistent estimates provided by Poisson regression are more valuable than efficiency. Wooldridge (1999) confirms that Poisson regression with fixed effects is robust and consistent for count data models. Although the problem of under/overdispersion when applying Poisson regression has been highlighted in various studies, FEPR has been preferred to NBR by several authors for these reasons (Guimaraes, 2008; Berrebi and Ostwald, 2013; Ranson, 2014; Gardeazabal and Sandler, 2015; Lee and Eck, 2021).[18] We also choose FEPR with clustered

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revolves around three subjects: (i) State Legitimacy, (ii) Public Services, and (iii) Human Rights and Rule of Law. The **Cohesion** component is structured around three lines: (i) Security Apparatus, (ii) Factionalized Elites, and (iii) Group Grievance. ***FSI*** also comprises an **External Intervention** dimension which considers the "influence of external actors in the functioning of a state." See https://fragilestatesindex.org/data/

[13] The Fund for Peace (FFP) defines ten levels of fragility according to the FSI score: Very high alert (above 110); High alert (between 100 to 110); Alert (90 to 100); High warning (80 to 90); Elevated warning (70 to 80); Warning (60 to 70); More stable (40 to 60); Very stable:(30 to 40); Sustainable (20 to 30); Very sustainable (less than 20).

[14] Countries where more than ten percent of people belong to a different religious group.

[15] Countries having had at least five conflict-related incidents per year for at least half of the period studied.

[16] For more details on count data regression see Cameron and Trivedi (2013).

[17] See George (2018) and Piazza (2008) for Negative Binomial Regression

[18] Gourieroux et al. (1984) and Wooldridge (1999) explain that the Poisson estimator (with robust standard errors) does not make any assumptions about the distribution of the errors,

standard errors, which allows us to estimate our model with robust standard errors (Simcoe, 2008; Santos Silva and Tenreyro, 2009). These standard errors are robust to clustering, over/underdispersion, arbitrary heteroscedasticity, and arbitrary serial correlation, as explained in Wooldridge (1999) and repeated by Berrebi and Ostwald (2011).[19]

Following Silva and Tenreyro (2006), we also perform Ramsey's (1969) RESET[20] specification test to verify the adequacy of our model.[21] The results of the test show that our model is not misspecified and there is no omitted variable bias.

Moreover, the question of possible endogeneity of the explanatory variables of conflicts (growth or income in particular) has been raised by some authors (Ajide and Alimi, 2021; Krieger and Meierrieks, 2019, for example). However, most of the time, the literature pays little attention to this question and alternately explains conflicts (Collier and Hoeffler, 2004; Kurrild-Klitgaard et al., 2006; Caruso and Schneider, 2011; Freytag et al., 2011; Piazza, 2008 and 2011, among others), or the impact of conflicts on other variables, particularly income (Abadie and Gardeazabal, 2003 and 2008; Crain and Crain, 2006; Gaibulloev and Sandler, 2008 and 2011, for example).

In this study, we address the possible endogeneity issue underlying our regressions by re-estimating our initial specifications using the two-step control function (CF) approach. It is not possible to capture the fixed effects in the Instrumental Variable Poisson Regression (IVPR); Wooldridge (2015) illustrates that the CF is an efficient instrumental variable (IV) mean to answer endogeneity. In the first stage of the control function approach, we explain the endogenous variable (the GDP per capita in our case) by all explanatory variables plus the instrument (i.e. the lag form of the endogenous variable). This allows us to predict the residuals of this first stage equation. In the second stage, along with our explanatory variables of conflict, we also control for the residuals of the first equation in our fixed effect Poisson regression with robust standard error. The CF approach has been used in numerous empirical studies (see for example Ajide and Alimi, 2021; Dreher et al., 2021; Hou, 2021; Kim et al., 2021; Dreher et al., 2019).

Finally, as a robustness check and to answer a possible selection bias of our samples, we re-run our regressions on the whole sample with a dummy variable for each of our groups.

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[19] Regressions using the Negative Binomial Regression (NBR) method were also performed for our analysis. The results are consistent with those obtained with fixed effect Poisson regressions (FEPR) and are available upon request.

[20] Regression Specification Error Test.

[21] To perform the test, Silva and Tenreyro (2006) construct an additional regressor $(x'b)^{2,}$ where the bi represent the vector of the estimated factors and the xi are obtained from the data in memory. The null hypothesis of absence of misspecification (i.e. the non-significance of this additional regressor) corresponds to a coefficient equal to zero.

4. The results of the estimations

Table 1 presents the results for the total sample of countries, Table 2 for the Islamic states, Table 3 for the countries affected by major conflicts, and Table 4 for the countries with more than one main religion. For each specification, we give the results respectively for simple and IV fixed effects Poisson regressions (FEPR). We also present in the appendix the regressions on the whole sample and incorporate the dummy variables corresponding to each group (see tables A.2.1 to A.2.4 in the appendix). The results are consistent between the two sets of regressions.

4.1. The general results

For almost all specifications, estimators, and groups of countries, low income, ineffectiveness of the justice system, and size of the population are positively linked to domestic conflicts in our sample of fragile states. These results corroborate the findings of Humphreys (2003), Collier and Hoeffler (2004), Lai (2007), and Ostby (2008), who show that low incomes are positively associated with violence. When poverty is high, disadvantaged people can develop grievances against their government. In this case, the use of violence is more likely since the opportunity cost of illegal force and the cost of recruiting rebels are low. Improving incomes thus seems to be a policy variable that governments could use to reduce violence in fragile states.

Our results also indicate that another way to reduce conflict in fragile countries could be to improve institutions, especially the justice system. This finding is consistent with that of LaFree et al. (2009) and Dezhbakhsh et al. (2003) who confirm the dissuasive effect of the threat of sanctions. According to Freytag et al. (2011), the possibility of government sanction increases the opportunity cost and risk of violence. If the legal system punishes in a timely manner, the population will be reluctant to resort to violence and rebels will be reluctant to continue the conflict. More generally, our results indicate that countries with fragile institutions seem more vulnerable to violence (as seen in Ross 1993, and Basuchoudhary and Shughart 2010).

With regards to the population size variable, our results are in line with those of Gaibulloev and Sandler (2019) and Taydas et al. (2011), who show that fragile countries with big populations are more exposed to violence.

Our results for education, trade liberalization, and democratic accountability are less stable than those obtained for population, institutions, and incomes. Trade liberalization does not seem to be related to the variable of conflict, except in the case of countries with more than one religion for some specifications (see tables 4 and A.3.4). Also, the sign of the coefficient of the trade openness variable varies according to the specifications, although it is not significant. Nevertheless, education and democratic institutions appear to be more regularly associated with violence.

Our results also show a positive relationship between the variables of education and democratic accountability with that of conflict. The impact of these factors on violence has been discussed in the literature. Our findings indicate that education in fragile countries may not translate into an opportunity to improve living conditions or as a means of strengthening critical thinking against terrorism, as stated in Berrebi (2007) and Brockhoff et al. (2015). In a state with adverse social, economic, and political conditions, education can increase frustration if the situation of educated people does not improve, especially since they are more aware of the limits of their government.

This conclusion can be extrapolated to democracy, which seems to give more voices to discontented groups, thereby increasing violence as in Eubank and Winberg (1998) and Li and Schaub (2004). This means that when some fragile countries go from authoritarianism to democracy, they can face more civil unrest**.** Democracy also does not seem to allow for conflict resolution and a reduction in violence in most of our groups (as in Eyerman, 1998 and Li, 2005), which poses the question of the impact of improving democratic institutions on violence.

As for trade liberalization, our finding does not allow us to discriminate between the two options described in the literature. Trade reforms do not seem to be seen more as an opportunity to improve people's prospects and incomes (as in Blomberg and Hess, 2008 and Kurrild-Klitgaard et al., 2006) than as a threat of loss of income or worsening inequalities (as in Freytag et al., 2011 and Wintrobe, 2006), except in countries with more than one religion in some cases (see tables 4 and A.3.4).

Thus, improving the level of education and liberalizing trade may not have the desired effects in fragile states which should probably first improve the social, economic, and institutional conditions of their population before benefiting from economic reforms and education. This may also be the case with political reforms in countries where our democratic accountability variable increases violence.

4.2. The sub-samples specificities

A more detailed analysis shows interesting differences between our groups of countries. The relationship of the conflict variable to that of income, although relatively stable in most groups and specifications, seems stronger in countries with more than one main religion (and to a lesser extent in Muslim countries, see tables 2, A.3.2, 4 and A.3.4). This is an interesting finding which could indicate that public policies aimed at improving people’s incomes and living conditions could be more effective in these particularly poor and fragile countries. The results are fairly similar for the population size variable, the relationship of which with the conflict variable is stronger for this group as well (see tables 4 and A.3.4). This may be due to the fact that several

highly populated countries belong to this group, illustrating the difficulties faced by governments in meeting the needs of a large and diverse population.

The results are more diverse for the judicial system. The improvement in the efficiency of justice is more strongly related to the decrease in violence in Muslim states than in the other groups (see tables 2 and A.3.2). This is interesting because some countries in this group may be less involved in long-term and high-intensity violence than those in the group of countries affected by major conflicts. Improving the judicial system, in addition to incomes and, more generally, the institutions, could therefore prevent the escalation of violence in these fragile countries. As for countries with more than one main religion, the results are more difficult to interpret because they vary according to the specification. However, the efficiency of justice may also play an important role in reducing violence in some cases (see tables 4 and A.3.4).

The results for the education variable are more constant from one specification to another and significant mainly for two groups (total fragile countries and countries affected by major conflicts, see tables 1, A.3.1, 3, and A.3.3). This may be related to the fact that ethnic tensions (and religious tensions in some groups) are an important factor in conflicts in most of our fragile countries. In this case, education could serve the cause of terrorists by allowing certain segments of the population to be more involved in violence. Although education does not appear to fuel violence in Muslim countries and countries with more than one main religion, these findings should be viewed with caution. In fact, human capital seems to participate in the escalation of violence in Muslim countries when one considers the Penn World Tables (PWT) proxy.[22] Likewise, education seems to participate in the upsurge of conflicts in countries with several main religions in one specification as well (see tables 4 and A.3.4).

The results are also different for trade liberalization, the effect of which on violence is never significant except in countries with more than one main religion (in some specifications). This means that the governments of these countries should pay more attention to economic reforms so as not to further destabilize already vulnerable populations. Violence in the other groups does not appear to be exacerbated by the changes brought about by trade reforms.

As for political liberalization, democratic experiences seem to be a source of increased violence in most of our fragile countries (as in Eubank and Winberg, 1998 and Li and Schaub, 2004), except in the group of countries with more than one main religion, perhaps because some countries in this group have historically experienced the relatively long presence of democratic institutions. The strong disorganization and the social, political, ethnic, or religious polarization

[22] Results are available upon request. The Penn World Tables (PWT) human capital indicator is generated from the rate of return to education and the average years of schooling in the country from Barro and Lee (2013) updated http://www.barrolee.com/ (Feenstra et al., 2015).

in most of the countries affected by conflicts probably do not allow them to benefit from the political reforms which would allow the parties in presence to express their demand, to dialogue, and to find solutions to their differences. These experiments, which give voice to opponents and result in an upsurge in violence, should probably only take place in a more stabilized political context.

4.3. The role of the other control variables

Apart from the role of the population size, which is very significant in explaining conflicts in our fragile countries and which we have commented on previously, the role of our other control variables does not seem to be validated in a general and robust way by the data. The ethnic tensions variable seems to participate in the dynamics of conflicts only in the non-instrumented specification for the total sample and that of the countries affected by major conflicts, which weakens the result. In a single configuration in countries with more than one main religion, its role seems robust.

The same conclusion can be drawn for income inequalities, religious tensions, and natural resources, the role of which is never demonstrated, except in the case of this group of countries in a number of specifications. This result nonetheless highlights, once again, the specificity of these fragile countries, the conflict dynamics of which seem to follow a somewhat different path that that of the average for other fragile countries. Ethnic and religious tensions in particular, the role of which has been highlighted in violence by many authors (Collier and Hoeffler, 2004; Basuchoudhary and Shughart, 2010; Bandyopadhyay and Younas, 2011; Danzell et al., 2019) seem to be important dimensions that governments could take into account in order to reduce the violence in these countries.

However, our more general results do not seem to validate the role of inequalities, studied by Krieger and Meierrieks (2019) and Piazza (2011) for example, or of natural resources, which have also been highlighted in the literature (notably Collier and Hoeffler, 2004, Lujala, 2010, or Farzanegan et al., 2018) in the violence of our sample of fragile countries.

Table 1. Fixed Effect Poisson Regression for total fragile countries

Dependent variable: annual number of conflict-based domestic incidents (*Confl*)

Variables	FEPR Spec.1	FEPR Spec.1(iv)	FEPR Spec.2	FEPR Spec.2(iv)	FEPR Spec.3	FEPR Spec.3(iv)	FEPR Spec.4	FEPR Spec.4(iv)	FEPR Spec.5	FEPR Spec.5(iv)
lgdpc	-1.164***	-1.148***	-1.163***	-1.147***	-1.090***	-1.045***	-0.974***	-0.885***	-0.181	0.268
	(0.315)	(0.305)	(0.322)	(0.315)	(0.320)	(0.310)	(0.294)	(0.279)	(0.626)	(0.755)
Contracts	1.353*	1.403*	1.344*	1.395*	1.213	1.239	1.000	1.036	1.412	1.524
	(0.766)	(0.824)	(0.763)	(0.821)	(0.783)	(0.877)	(0.908)	(1.018)	(0.990)	(1.114)
Edu	0.758***	0.680***	0.790***	0.722***	0.790***	0.707***	0.767***	0.656***	0.752**	0.615**
	(0.173)	(0.183)	(0.207)	(0.217)	(0.213)	(0.226)	(0.215)	(0.228)	(0.295)	(0.286)
Open	-0.320	-0.216	-0.283	-0.178	0.133	0.367	0.262	0.434	0.569	0.959
	(0.999)	(0.977)	(1.044)	(1.011)	(0.973)	(1.036)	(1.052)	(1.073)	(1.355)	(1.499)
Demo	0.113**	0.092	0.114**	0.094	0.104	0.106*	0.105*	0.126**	0.128**	0.170***
	(0.057)	(0.062)	(0.056)	(0.060)	(0.064)	(0.064)	(0.059)	(0.062)	(0.053)	(0.065)
lpop	4.318***	4.317***	4.253***	4.227***	4.142***	4.168***	3.851***	3.814***	2.807***	2.305**
	(0.697)	(0.599)	(0.729)	(0.652)	(0.628)	(0.555)	(0.561)	(0.503)	(1.009)	(1.051)
Inequal			-1.211	-1.719	-1.035	-1.571	-1.045	-1.590	-3.041	-3.709
			(6.345)	(6.353)	(5.994)	(6.182)	(5.972)	(6.196)	(5.929)	(6.050)
EthnTens					-0.453**	-0.562	-0.393**	-0.441	-0.439**	-0.602*
					(0.223)	(0.384)	(0.199)	(0.366)	(0.173)	(0.318)
ReligTens							-0.277	-0.374	-0.094	-0.156
							(0.259)	(0.345)	(0.231)	(0.288)
NatRes									-0.012	-0.018
									(0.018)	(0.019)
Res		-0.149		-0.144		-0.177		-0.211		-0.909
		(0.231)		(0.227)		(0.228)		(0.195)		(0.664)
RESET	0.941	0.996	0.969	0.887	0.839	0.924	0.911	0.855	0.592	0.628
Obs	812	754	812	754	812	754	812	754	795	738
Groups	58	58	58	58	58	58	58	58	57	57

<u>Note</u>: *GDPc* is the logarithm of real GDP per capita, *Contracts* the Time for Enforcing Contracts variable from Doing Business, *Edu* the average number of years of schooling of population aged 25 or older from UNDP, *Open* the ratio of exports plus imports to GDP from various national and international sources, *Demo* the Democratic Accountability variable from ICRG, *Pop* the logarithm of population from WDI, $Inequal_t$ the share of top one percent pre-tax national income in total gdp from WID, $EthnTens_i$ *and ReligTens* the indicators of ethnics and religious tension respectively from ICRG, *NatRes* the natural resources rent from WDI. *Res* is the residual of the 1rst stage estimation of the two-step control function (CF) procedure. *Reset* is for RESET Test- P Values. Robust standard errors are given in parenthesis. Significance level: ***. **, * is less than one, five, and ten percent, respectively.

Table 2. Fixed Effect Poisson Regression for fragile Muslim countries

Dependent variable: annual number of conflict-based domestic incidents (*Confl*)

Variables	FEPR Spec.1	FEPR Spec.1(iv)	FEPR Spec.2	FEPR Spec.2(iv)	FEPR Spec.3	FEPR Spec.3(iv)	FEPR Spec.4	FEPR Spec.4(iv)	FEPR Spec.5	FEPR Spec.5(iv)
lgdpc	-1.251***	-1.199***	-1.192***	-1.139***	-1.145***	-1.139***	-1.009***	-0.930***	-0.383	-0.085
	(0.268)	(0.288)	(0.274)	(0.297)	(0.283)	(0.307)	(0.266)	(0.291)	(0.879)	(0.937)
Contracts	2.425***	2.459***	2.824***	2.884***	2.705***	2.885***	2.456**	2.756**	2.640**	2.835**
	(0.806)	(0.872)	(0.928)	(1.010)	(0.910)	(1.024)	(1.025)	(1.184)	(1.058)	(1.165)
Edu	0.591	0.530	0.487	0.428	0.480	0.428	0.409	0.283	0.565	0.427
	(0.400)	(0.429)	(0.430)	(0.459)	(0.425)	(0.486)	(0.439)	(0.526)	(0.520)	(0.557)
Open	-0.082	-0.120	-0.211	-0.256	-0.071	-0.259	0.335	-0.022	0.821	0.443
	(1.134)	(1.090)	(0.960)	(0.942)	(0.960)	(1.105)	(1.135)	(1.181)	(2.278)	(2.405)
Demo	0.158**	0.134*	0.218***	0.207**	0.211***	0.207**	0.220***	0.242**	0.224**	0.251**
	(0.064)	(0.074)	(0.078)	(0.096)	(0.077)	(0.095)	(0.083)	(0.100)	(0.099)	(0.115)
lpop	4.431***	4.319***	4.468***	4.381***	4.424***	4.380***	4.215***	3.998***	2.698**	2.443*
	(0.920)	(0.854)	(0.900)	(0.877)	(0.854)	(0.923)	(0.812)	(0.920)	(1.327)	(1.285)
Inequal			-18.081	-17.331	-17.659	-17.331	-17.550*	-17.499	-17.321*	-17.272
			(11.793)	(11.424)	(11.197)	(11.415)	(10.588)	(10.788)	(10.297)	(10.577)
EthnTens					-0.213	0.003	-0.140	0.517	-0.220*	0.170
					(0.216)	(0.686)	(0.189)	(0.732)	(0.117)	(0.519)
ReligTens							-0.361	-0.666	-0.126	-0.362
							(0.296)	(0.432)	(0.248)	(0.291)
NatRes									-0.017	-0.016
									(0.021)	(0.021)
Res		-0.129		-0.094		-0.093		-0.161		-0.459
		(0.244)		(0.215)		(0.220)		(0.171)		(0.410)
RESET	0.450	0.447	0.898	0.976	0.947	0.973	0.704	0.721	0.238	0.275
Obs	350	325	350	325	350	325	350	325	336	312
Groups	25	25	25	25	25	25	25	25	24	24

Note: *GDPc* is the logarithm of real GDP per capita, *Contracts* the Time for Enforcing Contracts variable from Doing Business, *Edu* the average number of years of schooling of population aged 25 or older from UNDP, *Open* the ratio of exports plus imports to GDP from various national and international sources, *Demo* the Democratic Accountability variable from ICRG, *Pop* the logarithm of population from WDI, $Inequal_t$ the share of top one percent pre-tax national income in total gdp from WID, $EthnTens_i$ *and ReligTens* the indicators of ethnics and religious tension respectively from ICRG, *NatRes* the natural resources rent from WDI. *Res* is the residual of the 1rst stage estimation of the two-step control function (CF) procedure. *Reset* is for RESET Test- P Values. Robust standard errors are given in parenthesis. Significance level: ***. **, * is less than one, five, and ten percent, respectively.

Table 3. Fixed Effect Poisson Regression for fragile countries affected by major conflicts

Dependent variable: annual number of conflict-based domestic incidents (*Confl*)

Variables	FEPR Spec.1	FEPR Spec.1(iv)	FEPR Spec.2	FEPR Spec.2(iv)	FEPR Spec.3	FEPR Spec.3(iv)	FEPR Spec.4	FEPR Spec.4(iv)	FEPR Spec.5	FEPR Spec.5(iv)
lgdpc	-1.180***	-1.157***	-1.178***	-1.155***	-1.098***	-1.047***	-0.989***	-0.887***	-0.072	0.419
	(0.308)	(0.301)	(0.317)	(0.312)	(0.317)	(0.305)	(0.291)	(0.280)	(0.684)	(0.804)
Contracts	1.511*	1.606*	1.501*	1.597*	1.362*	1.441	1.151	1.236	1.618	1.773
	(0.801)	(0.846)	(0.799)	(0.846)	(0.822)	(0.907)	(0.971)	(1.066)	(1.077)	(1.203)
Edu	0.750***	0.664***	0.792***	0.717***	0.788***	0.697***	0.766***	0.644***	0.715**	0.557*
	(0.179)	(0.194)	(0.214)	(0.229)	(0.222)	(0.241)	(0.225)	(0.245)	(0.317)	(0.311)
Open	-0.441	-0.372	-0.399	-0.332	0.030	0.223	0.150	0.286	0.379	0.718
	(1.062)	(1.028)	(1.102)	(1.054)	(1.024)	(1.090)	(1.099)	(1.122)	(1.389)	(1.580)
Demo	0.122**	0.106	0.123**	0.109*	0.113*	0.122*	0.113*	0.141**	0.143**	0.197***
	(0.061)	(0.068)	(0.060)	(0.066)	(0.068)	(0.069)	(0.063)	(0.067)	(0.058)	(0.069)
lpop	4.195***	4.173***	4.108***	4.056***	3.992***	4.002***	3.728***	3.657***	2.635**	2.064*
	(0.658)	(0.526)	(0.692)	(0.594)	(0.589)	(0.514)	(0.529)	(0.495)	(1.049)	(1.137)
Inequal			-1.497	-2.046	-1.300	-1.870	-1.290	-1.866	-3.438	-4.191
			(6.539)	(6.560)	(6.170)	(6.374)	(6.146)	(6.391)	(6.101)	(6.252)
EthnTens					-0.464*	-0.567	-0.413*	-0.458	-0.459**	-0.641
					(0.246)	(0.438)	(0.219)	(0.417)	(0.189)	(0.390)
ReligTens							-0.250	-0.354	-0.104	-0.193
							(0.266)	(0.357)	(0.250)	(0.313)
NatRes									-0.010	-0.017
									(0.018)	(0.020)
Res		-0.111		-0.104		-0.141		-0.175		-0.824
		(0.206)		(0.201)		(0.196)		(0.159)		(0.581)
RESET	0.922	0.890	0.810	0.781	0.986	0.834	0.772	0.748	0.681	0.649
Obs	308	286	308	286	308	286	308	286	294	273
Groups	22	22	22	22	22	22	22	22	21	21

Note: *GDPc* is the logarithm of real GDP per capita, *Contracts* the Time for Enforcing Contracts variable from Doing Business, *Edu* the average number of years of schooling of population aged 25 or older from UNDP, *Open* the ratio of exports plus imports to GDP from various national and international sources, *Demo* the Democratic Accountability variable from ICRG, *Pop* the logarithm of population from WDI, $Inequal_t$ the share of top one percent pre-tax national income in total gdp from WID, $EthnTens_i$ *and ReligTens* the indicators of ethnics and religious tension respectively from ICRG, *NatRes* the natural resources rent from WDI. *Res* is the residual of the 1rst stage estimation of the two-step control function (CF) procedure. *Reset* is for RESET Test- P Values. Robust standard errors are given in parenthesis. Significance level: ***. **, * is less than one, five, and ten percent, respectively.

Table 4. Fixed Effect Poisson Regression for fragile countries with more than one main religion

Dependent variable: Annual number of conflict-based domestic incidents (*Confl*)

Variables	FEPR Spec.1	FEIV Spec.1(iv)	FEPR Spec.2	FEIV Spec.2(iv)	FEPR Spec.3	FEIV Spec.3(iv)	FEPR Spec.4	FEIV Spec.4(iv)	FEPR Spec.5	FEIV Spec.5(iv)
lgdpc	-1.529***	-1.500***	-1.397***	-1.382***	-1.164***	-1.139***	-0.775***	-0.772***	1.183	0.687
	(0.085)	(0.096)	(0.100)	(0.142)	(0.086)	(0.097)	(0.091)	(0.093)	(1.236)	(1.416)
Contracts	2.967	2.478	2.290	1.940	2.983	2.611	5.498*	5.049	6.996**	6.314**
	(2.589)	(2.460)	(2.833)	(2.843)	(2.761)	(2.756)	(3.019)	(3.337)	(3.207)	(3.017)
Edu	0.724***	0.713***	0.244	0.298	0.151	0.200	0.385	0.478	0.270	0.338
	(0.266)	(0.265)	(0.347)	(0.416)	(0.331)	(0.392)	(0.339)	(0.367)	(0.224)	(0.233)
Open	1.852	1.626	0.968	0.949	1.100	1.056	2.649**	2.692**	5.594**	5.680***
	(1.629)	(1.818)	(1.730)	(2.010)	(1.235)	(1.401)	(1.096)	(1.234)	(2.208)	(2.116)
Demo	-0.154	-0.149	0.027	0.009	-0.067	-0.089	-0.008	-0.022	-0.204	-0.130
	(0.450)	(0.459)	(0.475)	(0.504)	(0.433)	(0.453)	(0.345)	(0.360)	(0.364)	(0.467)
lpop	8.302***	7.641***	9.569***	8.873***	10.13***	9.423***	8.132***	7.325***	7.177***	7.140***
	(2.892)	(2.709)	(2.969)	(2.827)	(3.021)	(2.928)	(2.561)	(2.530)	(1.495)	(1.774)
Inequal			6.753**	5.801	6.336**	5.446	3.837	2.530	-5.007	-5.272
			(3.225)	(3.921)	(3.058)	(3.930)	(2.968)	(3.355)	(5.637)	(5.997)
EthnTens					-1.264***	-1.467***	-0.589	-0.775*	-0.747**	-0.947***
					(0.487)	(0.513)	(0.404)	(0.403)	(0.323)	(0.302)
ReligTens							-2.128***	-2.186***	-0.827*	-0.820*
							(0.470)	(0.460)	(0.482)	(0.454)
NatRes									-0.059*	-0.058*
									(0.031)	(0.034)
Res		-0.108		-0.180		-0.144		0.135		3.213
		(0.133)		(0.178)		(0.095)		(0.125)		(3.582)
RESET	0.000	0.000	0.007	0.008	0.006	0.004	0.528	0.534	0.094	0.122
Obs	224	208	224	208	224	208	224	208	210	195
Groups	16	16	16	16	16	16	16	16	15	15

Note: *GDPc* is the logarithm of real GDP per capita, *Contracts* the Time for Enforcing Contracts variable from Doing Business, *Edu* the average number of years of schooling of population aged 25 or older from UNDP, *Open* the ratio of exports plus imports to GDP from various national and international sources, *Demo* the Democratic Accountability variable from ICRG, *Pop* the logarithm of population from WDI, $Inequal_t$ the share of top one percent pre-tax national income in total gdp from WID, $EthnTens_i$ *and ReligTens* the indicators of ethnics and religious tension respectively from ICRG, *NatRes* the natural resources rent from WDI. *Res* is the residual of the 1rst stage estimation of the two-step control function (CF) procedure. *Reset* is for RESET Test- P Values. Robust standard errors are given in parenthesis. Significance level: ***. **, * is less than one, five, and ten percent, respectively.

5. Conclusion

In this paper, we use Fixed Effect Poisson Regression (FEPR) with robust standard errors and instrumental variables (IV) to study the social, economic, and institutional determinants of conflict in 58 fragile states divided into four groups. We explore different reasons for conflict in fragile countries and analyze different theories and empirical determinants.

We show that poverty and weak institutions (weak judicial systems in particular) are two important dimensions positively related to violence in our samples of fragile countries. These

results are consistent with those of Collier and Hoeffler (2004), Lai (2007), and Ostby (2008), who show that low incomes are positively associated with civil conflict. When poverty is high, disadvantaged people are especially likely to resort to violence since the opportunity cost of using force and the cost of recruiting extremists are low. Our results are also consistent with those of LaFree et al. (2009) and Dezhbakhsh et al. (2003), who confirm the deterrent effect of the threat of sanctions. According to Freytag et al. (2011), effective justice increases the opportunity cost and the risk of violence.

On the other hand, education, trade liberalization, and democratic accountability do not seem to help reduce violence in fragile states; our proxy variables show a positive relationship with conflict in the case of education and democratic institutions. These results confirm those of Berrebi (2007) and Brockhoff et al. (2015) who show that education in fragile countries can increase frustration if the situation of educated people does not improve, especially since they are more aware of the limits of their government. This conclusion can be extrapolated to democratic institutions, which can give more means of expression to the discontented and the extremists, thus increasing the violence, as shown by Eubank and Winberg (1998) and Li and Schaub (2004). Our results imply that education and democratic reforms do not have the desired effects in fragile states, which would first have to improve the social, economic, and institutional conditions of their population before they can benefit from political freedom and education. This can be the case for economic reforms since our indicator of trade openness does not seem related to conflict reduction.

Although this general pattern works fairly well for most of our country groups, some groups experience somewhat different situations. This is the case for countries with more than one major religion, where the improvement of incomes and the efficiency of the justice system, on the one hand, and the reduction of economic inequalities at the same time as ethnic and religious tensions, on the other hand, appear to be more effective in reducing violence than in other groups. This is an interesting finding that governments could take into account to reduce the escalation of violence in these particularly fragile countries. Muslim states also appear to be particularly sensitive to the deterrent effect of sanctions and, to a lesser extent, to the improvement of income, which could be an effective means of combating violence for governments. However, countries with more than one main religion seem sensitive to the destabilizing effect of trade liberalization for vulnerable populations, and Muslim states to that of democratic improvement. These issues should also be taken into account when implementing political and economic reforms so as not to fuel violence in these countries.

Conflicts in fragile states cause great suffering for people, as well as delays in development. If nothing is done, the World Bank (2018) predicts that by 2030 nearly half of the world's poor will live in fragile countries facing conflict situations This study highlights some tools that governments could use to try to limit violence in their country. Improving people’s standard of

living and restoring strong and reliable institutions are measures that could bear fruit in most fragile countries. These results are in line with the work of Burgoon (2006) and Freytag et al. (2011) who show that public spending and social protection policies can reduce violence, and George (2018) who suggests that, in failed states, an effective counter-terrorism measure is to build reliable institutions. On the other hand, the question of the role of education, democratic institutions, and economic reforms is more complex to deal with. If these instruments do not seem to contribute to the reduction of conflicts and violence in the countries concerned in the short term, the priority of fragile states may be to provide their populations with a stable economic, political, and institutional environment before these populations can benefit from more advanced reforms.

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Appendix

Table A.1. Descriptive statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
Conflict	812	78.81	280.4	0.00	3367
lgdpc	812	7.68	1.05	2.80	9.98
Contracts	812	1.86	0.84	0.62	4.00
Edu	812	6.49	2.62	1.30	12.30
H	714	2.1	0.53	1.3	12.3
Open	812	0.58	0.30	0.12	2.21
Demo	812	3.38	1.37	0.04	6.00
Inequal	812	0.48	0.06	0.32	0.65
lPop	812	17.07	1.39	13.52	21.05
ReligTens	812	3.51	1.16	1.00	6.00
EthnTens	812	4.01	1.41	0.83	6.00
NatRes	799	12.14	13.59	0.00	67.92

Table A.2. List of countries

Total countries		Countries with more than one main religion	Countries affected by major conflicts	Muslim countries
Algeria	Madagascar	Burkina Faso	Algeria	Algeria
Angola	Mali	Cameroon	Bangladesh	Azerbaijan
Azerbaijan	Mexico	Demo Rep. of Congo	Colombia	Bangladesh
Bangladesh	Moldova	Ethiopia	Demo Rep. of Congo	Burkina Faso
Belarus	Morocco	Ghana	Egypt	Egypt Arab Rep.
Bolivia	Mozambique	India	India	Gambia
Burkina Faso	Nicaragua	Indonesia	Indonesia	Guinea
Cameroon	Niger	Kenya	Iran	Indonesia
China	Nigeria	Lebanon	Iraq	Iran Islamic Rep.
Colombia	Pakistan	Mozambique	Kenya	Iraq
Demo Rep. of Congo	Paraguay	Nigeria	Lebanon	Jordan
Dominican Rep.	Philippines	Sierra Leone	Libya	Lebanon
Ecuador	Rep. of Congo	Sri Lanka	Mali	Libya
Egypt Arab Rep.	Russia	Syria	Nigeria	Mali
Ethiopia	Saudi Arabia	Tanzania	Pakistan	Morocco
Gabon	Senegal	Togo	Philippines	Niger
Ghana	Sierra Leone	Uganda	Russia	Nigeria
Guatemala	Sri Lanka	Vietnam	Sri Lanka	Pakistan
Guinea	Sudan		Sudan	Saudi Arabia
Guyana	Syrian Arab Rep.		Syria	Senegal
Honduras	Tanzania		Turkey	Sierra Leone
India	Tunisia		Yemen	Sudan
Indonesia	Turkey			Syria
Iran Islamic Rep.	Uganda			Tunisia
Iraq	Ukraine			Turkey
Jordan	Venezuela			Yemen Rep.
Kenya	Vietnam			
Lebanon	Yemen Rep.			
Libya	Zimbabwe			

Table A.3.1. Fixed Effect Poisson Regression for total fragile countries

Dependent variable: Annual number of conflict-based domestic incidents (*Confl*)

Variables	FEPR Spec.1	FEPR Spec.1(iv)	FEPR Spec.2	FEPR Spec.2(iv)	FEPR Spec.3	FEPR Spec.3(iv)	FEPR Spec.4	FEPR Spec.4(iv)	FEPR Spec.5	FEPR Spec.5(iv)
lgdpc	1.965**	1.694	1.865**	1.606	2.613***	2.741**	1.847	2.319	2.208	3.197*
	(0.934)	(1.218)	(0.934)	(1.253)	(0.969)	(1.367)	(1.488)	(1.613)	(1.649)	(1.763)
lgdpcFrag	-3.13***	-2.867**	-3.027***	-2.777**	-3.703***	-3.816***	-2.821*	-3.239**	-2.389	-3.149*
	(0.986)	(1.202)	(0.988)	(1.235)	(1.021)	(1.334)	(1.516)	(1.595)	(1.764)	(1.680)
Contracts	-0.895	-0.981	-0.774	-0.867	-1.235	-1.204	-1.218	-1.209	-1.166	-1.083
	(0.787)	(0.910)	(0.582)	(0.699)	(0.968)	(0.898)	(1.003)	(0.937)	(0.965)	(0.852)
ContrFrag	2.247**	2.385*	2.119**	2.263**	2.448**	2.444**	2.218	2.245	2.578*	2.618*
	(1.099)	(1.219)	(0.960)	(1.070)	(1.245)	(1.246)	(1.353)	(1.375)	(1.382)	(1.378)
Edu	0.251*	0.155	0.248	0.153	0.334**	0.234	0.324**	0.227	0.294*	0.133
	(0.151)	(0.170)	(0.160)	(0.176)	(0.158)	(0.196)	(0.154)	(0.186)	(0.159)	(0.212)
EduFrag	0.508**	0.525**	0.542**	0.570**	0.456*	0.474*	0.443*	0.430	0.457	0.499
	(0.230)	(0.220)	(0.261)	(0.260)	(0.265)	(0.280)	(0.265)	(0.285)	(0.335)	(0.325)
Open	0.251	-0.009	0.277	0.021	0.633	0.492	0.480	0.428	0.233	0.112
	(1.720)	(1.857)	(1.684)	(1.822)	(1.516)	(1.799)	(1.665)	(1.824)	(1.515)	(1.713)
OpenFrag	-0.571	-0.204	-0.560	-0.195	-0.500	-0.121	-0.218	0.010	0.336	0.843
	(1.989)	(2.099)	(1.981)	(2.085)	(1.801)	(2.079)	(1.969)	(2.120)	(2.032)	(2.280)
Demo	0.338***	0.304**	0.336***	0.302**	0.261**	0.278**	0.244**	0.265**	0.239**	0.275**
	(0.122)	(0.123)	(0.119)	(0.123)	(0.126)	(0.126)	(0.121)	(0.127)	(0.119)	(0.124)
DemoFrag	-0.224*	-0.211	-0.222*	-0.208	-0.157	-0.171	-0.139	-0.139	-0.111	-0.106
	(0.135)	(0.140)	(0.131)	(0.138)	(0.142)	(0.143)	(0.134)	(0.142)	(0.130)	(0.140)
Inequal			-2.021	-1.703	-4.491	-4.076	-3.485	-3.506	-3.810	-3.391
			(4.163)	(3.678)	(4.145)	(3.811)	(3.974)	(3.715)	(4.138)	(3.921)
IneqFrag			0.810	0.046	3.456	2.581	2.440	1.995	0.769	-0.198
			(7.589)	(7.372)	(7.287)	(7.304)	(7.173)	(7.272)	(7.230)	(7.391)
Pop	5.315**	5.662**	5.336**	5.680**	4.205	4.603	4.194	4.515	5.268**	5.914**
	(2.354)	(2.442)	(2.388)	(2.463)	(2.561)	(2.839)	(2.574)	(2.840)	(2.170)	(2.360)
PopFrag	-0.996	-1.323	-1.083	-1.430	-0.063	-0.405	-0.343	-0.665	-2.461	-3.499
	(2.455)	(2.513)	(2.496)	(2.548)	(2.637)	(2.892)	(2.635)	(2.882)	(2.393)	(2.586)
EthnTens					-0.263***	-0.233*	-0.187	-0.196	-0.211	-0.234
					(0.065)	(0.136)	(0.132)	(0.154)	(0.151)	(0.172)
EthTenFrag					-0.190	-0.327	-0.207	-0.244	-0.228	-0.363
					(0.232)	(0.407)	(0.239)	(0.395)	(0.230)	(0.358)
ReligTens							-0.167	-0.105	-0.108	-0.003
							(0.146)	(0.087)	(0.190)	(0.120)
RelTenFrag							-0.110	-0.264	0.014	-0.176
							(0.297)	(0.348)	(0.299)	(0.311)
NatRes									0.047	0.056
									(0.040)	(0.035)
NatResFrag									-0.059	-0.073*
									(0.043)	(0.040)
Res		-0.492		-0.480		-0.583		-0.692		-1.564
		(0.741)		(0.741)		(0.743)		(0.638)		(1.135)
Obs	1,185	1,107	1,185	1,107	1,185	1,107	1,185	1,107	1,168	1,091
Groups	88	88	88	88	88	88	88	88	87	87

Note: *GDPc* is the logarithm of real GDP per capita, *Contracts* the Time for Enforcing Contracts variable from Doing Business, *Edu* the average number of years of schooling of population aged 25 or older from UNDP, *Open* the ratio of exports plus imports to GDP from various national and international sources, *Demo* the Democratic Accountability variable from ICRG, *Pop* the logarithm of population from WDI, $Inequal_t$ the share of top one percent pre-tax national income in total GDP from WID, $EthnTens_i$ *and ReligTens* the indicators of

ethnics and religious tension respectively from ICRG, *NatRes* the natural resources rent from WDI. *Res* is the residual of the 1rst stage estimation of the two-step control function (CF) procedure. Robust standard errors are given in parenthesis. Significance level: ***. **, * is less than one, five, and ten percent, respectively.

Table A.3.2. Fixed Effect Poisson Regression for Muslim fragile countries

Dependent variable: Annual number of conflict-based domestic incidents (*Confl*)

Variables	FEPR Spec.1	FEPR Spec.1(iv)	FEPR Spec.2	FEPR Spec.2(iv)	FEPR Spec.3	FEPR Spec.3(iv)	FEPR Spec.4	FEPR Spec.4(iv)	FEPR Spec.5	FEPR Spec.5(iv)
lgdpc	-0.282	-0.397	-0.437	-0.620	-0.425*	-0.572*	-0.486*	-0.598	-0.783	-1.136
	(0.280)	(0.320)	(0.276)	(0.472)	(0.225)	(0.343)	(0.250)	(0.397)	(0.851)	(0.910)
lgdpcFrag	-0.969**	-0.787*	-0.755*	-0.507	-0.720**	-0.553	-0.523	-0.315	0.400	1.001
	(0.388)	(0.404)	(0.389)	(0.542)	(0.361)	(0.437)	(0.366)	(0.479)	(1.224)	(1.163)
Contracts	-0.848	-0.976	-1.299	-1.482	-1.722	-1.860	-1.575	-1.805	-1.541	-1.899
	(1.120)	(1.194)	(0.928)	(1.009)	(1.236)	(1.283)	(1.099)	(1.243)	(1.116)	(1.334)
ContrFrag	3.273**	3.456**	4.123***	4.387***	4.427***	4.766***	4.032***	4.557***	4.181***	4.713***
	(1.379)	(1.470)	(1.312)	(1.416)	(1.535)	(1.637)	(1.503)	(1.707)	(1.538)	(1.770)
Edu	0.185	0.099	0.097	-0.015	0.181	0.063	0.120	0.051	0.183	0.094
	(0.197)	(0.174)	(0.224)	(0.195)	(0.243)	(0.219)	(0.242)	(0.219)	(0.187)	(0.175)
EduFrag	0.406	0.413	0.390	0.429	0.298	0.349	0.289	0.214	0.383	0.319
	(0.446)	(0.458)	(0.485)	(0.498)	(0.490)	(0.532)	(0.501)	(0.571)	(0.552)	(0.573)
Open	0.397	0.480	0.119	0.142	0.349	0.461	0.042	0.350	-0.074	0.202
	(1.039)	(1.101)	(0.994)	(1.035)	(1.028)	(1.187)	(1.117)	(1.200)	(1.087)	(1.180)
OpenFrag	-0.479	-0.625	-0.330	-0.415	-0.420	-0.731	0.293	-0.382	0.896	0.222
	(1.538)	(1.547)	(1.382)	(1.400)	(1.406)	(1.620)	(1.593)	(1.679)	(2.524)	(2.684)
Demo	0.163*	0.121	0.128	0.066	0.037	-0.021	0.068	-0.002	0.053	-0.008
	(0.089)	(0.106)	(0.108)	(0.127)	(0.106)	(0.163)	(0.113)	(0.164)	(0.134)	(0.161)
DemoFrag	-0.006	0.017	0.090	0.145	0.174	0.232	0.152	0.246	0.171	0.262
	(0.110)	(0.131)	(0.133)	(0.160)	(0.131)	(0.190)	(0.140)	(0.192)	(0.166)	(0.199)
Inequal			3.791**	4.728***	3.578	4.257**	4.556***	4.596**	5.008**	5.937**
			(1.912)	(1.804)	(2.188)	(2.105)	(1.714)	(1.949)	(2.163)	(2.442)
IneqFrag			-21.872*	-22.011*	-21.236*	-21.534*	-22.107**	-22.004**	-22.328**	-23.083**
			(11.947)	(11.525)	(11.409)	(11.554)	(10.726)	(10.904)	(10.522)	(10.840)
Pop	9.038***	9.451***	9.131***	9.726***	8.397***	9.136***	8.504***	9.025***	8.765***	9.897***
	(1.745)	(1.390)	(1.769)	(1.439)	(1.832)	(1.483)	(1.841)	(1.490)	(2.003)	(1.898)
PopFrag	-4.607**	-5.113***	-4.663**	-5.327***	-3.973**	-4.733***	-4.290**	-5.001***	-6.067**	-7.487***
	(1.973)	(1.662)	(1.985)	(1.714)	(2.021)	(1.785)	(2.012)	(1.786)	(2.402)	(2.269)
EthnTens					-0.230**	-0.199	-0.149	-0.174	-0.140	-0.144
					(0.113)	(0.181)	(0.160)	(0.187)	(0.156)	(0.179)
EthTenFrag					0.017	0.194	0.009	0.693	-0.080	0.298
					(0.244)	(0.707)	(0.248)	(0.755)	(0.195)	(0.552)
ReligTens							-0.388***	-0.383**	-0.407***	-0.410**
							(0.114)	(0.186)	(0.120)	(0.200)
RelTenFrag							0.028	-0.295	0.282	0.018
							(0.317)	(0.471)	(0.275)	(0.360)
NatRes									0.004	-0.016
									(0.053)	(0.056)
NatResFrag									-0.021	-0.000
									(0.057)	(0.060)
Res		-0.210		-0.157		-0.163		-0.226		-0.792
		(0.280)		(0.239)		(0.244)		(0.192)		(0.630)
Obs	1,185	1,107	1,185	1,107	1,185	1,107	1,185	1,107	1,168	1,091
Groups	88	88	88	88	88	88	88	88	87	87

Note: *GDPc* is the logarithm of real GDP per capita, *Contracts* the Time for Enforcing Contracts variable from Doing Business, *Edu* the average number of years of schooling of population aged 25 or older from UNDP, *Open* the ratio of exports plus imports to GDP from various national and international sources, *Demo* the

Democratic Accountability variable from ICRG, *Pop* the logarithm of population from WDI, $Inequal_t$ the share of top one percent pre-tax national income in total gdp from WID, $EthnTens_t and\ ReligTens$ the indicators of ethnics and religious tension respectively from ICRG, *NatRes* the natural resources rent from WDI. *Res* is the residual of the 1rst stage estimation of the two-step control function (CF) procedure. Robust standard errors are given in parenthesis. Significance level: ***. **, * is less than one, five, and ten percent, respectively.

Table A.3.3. Fixed Effect Poisson Regression for fragile countries affected by major conflicts

Dependent variable: Annual number of conflict-based domestic incidents (*Confl*)

Variables	FEPR Spec.1	FEPR Spec.1(iv)	FEPR Spec.2	FEPR Spec.2(iv)	FEPR Spec.3	FEPR Spec.3(iv)	FEPR Spec.4	FEPR Spec.4(iv)	FEPR Spec.5	FEPR Spec.5(iv)
lgdpc	-0.272	-0.304	-0.274	-0.308	-0.261	-0.278	-0.357*	-0.334	-0.400	-0.581
	(0.200)	(0.241)	(0.202)	(0.236)	(0.191)	(0.212)	(0.183)	(0.227)	(0.998)	(1.189)
lgdpcFrag	-0.908**	-0.846**	-0.904**	-0.840**	-0.837**	-0.764**	-0.632*	-0.546	0.329	0.726
	(0.367)	(0.358)	(0.376)	(0.363)	(0.370)	(0.331)	(0.344)	(0.335)	(1.211)	(1.277)
Contracts	-0.532	-0.465	-0.626	-0.585	-0.894	-0.822	-0.660	-0.760	-0.107	-0.194
	(0.838)	(0.793)	(0.850)	(0.836)	(1.027)	(0.970)	(0.993)	(0.984)	(0.886)	(0.810)
ContrFrag	2.043*	2.071*	2.127*	2.180*	2.256*	2.255*	1.812	1.972	1.725	1.905
	(1.159)	(1.149)	(1.166)	(1.181)	(1.316)	(1.320)	(1.388)	(1.443)	(1.394)	(1.420)
Edu	0.799**	0.595	0.826*	0.629	0.922**	0.736	0.688	0.636	0.666	0.560
	(0.394)	(0.367)	(0.441)	(0.414)	(0.464)	(0.462)	(0.506)	(0.453)	(0.553)	(0.411)
EduFrag	-0.049	0.063	-0.034	0.080	-0.134	-0.046	0.078	0.000	0.049	0.014
	(0.432)	(0.415)	(0.490)	(0.474)	(0.515)	(0.523)	(0.554)	(0.518)	(0.638)	(0.509)
Open	0.709	0.597	0.670	0.531	0.874	0.833	0.411	0.705	1.929	2.551
	(1.019)	(1.307)	(0.948)	(1.218)	(0.926)	(1.314)	(1.186)	(1.373)	(1.623)	(2.065)
OpenFrag	-1.150	-0.988	-1.069	-0.883	-0.844	-0.628	-0.261	-0.437	-1.550	-1.973
	(1.472)	(1.666)	(1.454)	(1.613)	(1.381)	(1.708)	(1.618)	(1.772)	(2.136)	(2.595)
Demo	0.204***	0.153	0.198***	0.145	0.142*	0.103	0.167*	0.114	0.135**	0.045
	(0.064)	(0.103)	(0.073)	(0.111)	(0.083)	(0.143)	(0.087)	(0.145)	(0.068)	(0.150)
DemoFrag	-0.082	-0.045	-0.075	-0.035	-0.029	0.020	-0.053	0.028	0.007	0.146
	(0.088)	(0.124)	(0.095)	(0.130)	(0.107)	(0.161)	(0.108)	(0.160)	(0.089)	(0.168)
Inequal			2.428	3.090	0.923	1.439	3.551	2.581	2.184	1.478
			(6.941)	(6.586)	(7.288)	(6.332)	(6.482)	(6.126)	(5.822)	(5.106)
IneqFrag			-3.925	-5.061	-2.223	-3.233	-4.841	-4.380	-5.622	-5.600
			(9.536)	(9.283)	(9.549)	(8.975)	(8.932)	(8.845)	(8.433)	(8.109)
Pop	5.949**	6.991**	5.858**	6.851**	5.490*	6.520**	5.737**	6.435**	4.387	5.066*
	(2.811)	(2.719)	(2.852)	(2.760)	(2.976)	(2.975)	(2.926)	(2.899)	(2.939)	(2.682)
PopFrag	-1.754	-2.824	-1.751	-2.799	-1.498	-2.515	-2.009	-2.777	-1.751	-2.903
	(2.887)	(2.766)	(2.935)	(2.819)	(3.034)	(3.017)	(2.973)	(2.937)	(3.121)	(2.866)
EthnTens					-0.160**	-0.131	-0.037	-0.083	-0.073	-0.115
					(0.067)	(0.113)	(0.097)	(0.116)	(0.083)	(0.112)
EthTenFrag					-0.304	-0.433	-0.376	-0.369	-0.386*	-0.491
					(0.255)	(0.451)	(0.240)	(0.431)	(0.206)	(0.400)
ReligTens							-0.384***	-0.325**	-0.361***	-0.383**
							(0.120)	(0.158)	(0.111)	(0.178)
RelTenFrag							0.133	-0.032	0.257	0.185
							(0.292)	(0.393)	(0.274)	(0.361)
NatRes									-0.109*	-0.132*
									(0.059)	(0.075)
NatResFrag									0.099	0.118
									(0.062)	(0.077)
Res		-0.195		-0.190		-0.230		-0.258		-1.166
		(0.250)		(0.248)		(0.253)		(0.214)		(0.785)
Obs	1,185	1,107	1,185	1,107	1,185	1,107	1,185	1,107	1,168	1,091
Groups	88	88	88	88	88	88	88	88	87	87

<u>Note</u>: *GDPc* is the logarithm of real GDP per capita, *Contracts* the Time for Enforcing Contracts variable from Doing Business, *Edu* the average number of years of schooling of population aged 25 or older from UNDP, *Open* the ratio of exports plus imports to GDP from various national and international sources, *Demo* the

Democratic Accountability variable from ICRG, *Pop* the logarithm of population from WDI, $Inequal_t$ the share of top one percent pre-tax national income in total gdp from WID, $EthnTens_t and\ ReligTens$ the indicators of ethnics and religious tension respectively from ICRG, *NatRes* the natural resources rent from WDI. *Res* is the residual of the 1rst stage estimation of the two-step control function (CF) procedure. Robust standard errors are given in parenthesis. Significance level: ***. **, * is less than one, five, and ten percent, respectively.

Table A.3.4. Fixed Effect Poisson Regression for fragile countries with more than one main religion

Dependent variable: Annual number of conflict-based domestic incidents (*Confl*)

Variables	FEPR Spec.1	FEPR Spec.1(iv)	FEPR Spec.2	FEPR Spec.2(iv)	FEPR Spec.3	FEPR Spec.3(iv)	FEPR Spec.4	FEPR Spec.4(iv)	FEPR Spec.5	FEPR Spec.5(iv)
lgdpc	-0.365	-0.326	-0.456	-0.394	-0.446	-0.400	-0.356	-0.279	-0.305	0.085
	(0.630)	(0.697)	(0.644)	(0.702)	(0.655)	(0.695)	(0.625)	(0.599)	(0.634)	(0.746)
lgdpcFrag	-1.165*	-1.151*	-0.941	-0.978	-0.718	-0.728	-0.419	-0.497	1.487	0.789
	(0.635)	(0.674)	(0.652)	(0.681)	(0.661)	(0.680)	(0.632)	(0.608)	(1.389)	(1.533)
Contracts	1.190	1.310	1.658	1.737	1.470	1.723	1.382	1.586	1.365	1.627
	(0.875)	(0.923)	(1.073)	(1.111)	(1.119)	(1.165)	(1.145)	(1.223)	(1.166)	(1.254)
ContrFrag	1.777	1.184	0.632	0.188	1.513	0.858	4.117	3.111	5.631*	4.861
	(2.733)	(2.621)	(3.029)	(3.074)	(2.979)	(3.023)	(3.229)	(3.730)	(3.412)	(3.484)
Edu	0.733**	0.611**	0.579*	0.484	0.609*	0.486	0.529	0.374	0.572	0.390
	(0.287)	(0.281)	(0.340)	(0.331)	(0.332)	(0.327)	(0.327)	(0.339)	(0.366)	(0.377)
EduFrag	-0.009	0.087	-0.335	-0.193	-0.458	-0.301	-0.143	0.024	-0.301	-0.020
	(0.391)	(0.381)	(0.486)	(0.519)	(0.469)	(0.503)	(0.471)	(0.499)	(0.429)	(0.448)
Open	-1.075	-1.031	-1.051	-1.042	-0.881	-1.030	-0.829	-0.940	-0.608	-0.654
	(0.969)	(1.024)	(0.826)	(0.878)	(0.837)	(0.939)	(0.866)	(0.956)	(1.153)	(1.281)
OpenFrag	2.926	2.618	2.019	1.962	1.982	2.036	3.479**	3.335**	6.202**	6.088**
	(1.895)	(2.090)	(1.918)	(2.158)	(1.492)	(1.670)	(1.397)	(1.536)	(2.491)	(2.654)
Demo	0.126***	0.112**	0.206***	0.201***	0.188***	0.200***	0.201***	0.230***	0.208**	0.248***
	(0.040)	(0.047)	(0.065)	(0.068)	(0.065)	(0.069)	(0.074)	(0.077)	(0.086)	(0.091)
DemoFrag	-0.280	-0.262	-0.179	-0.188	-0.255	-0.284	-0.209	-0.243	-0.412	-0.522
	(0.452)	(0.463)	(0.479)	(0.510)	(0.438)	(0.460)	(0.352)	(0.377)	(0.374)	(0.405)
Inequal			-15.702	-14.623	-15.250	-14.632	-15.017	-14.697	-14.954	-14.341
			(13.137)	(13.018)	(12.783)	(13.003)	(12.665)	(12.669)	(12.571)	(12.678)
IneqFrag			22.455*	20.575	21.586	20.296	18.854	17.997	9.946	9.749
			(13.527)	(13.561)	(13.143)	(13.543)	(13.008)	(13.092)	(13.777)	(14.215)
Pop	3.044***	3.125***	3.499***	3.529***	3.425***	3.537***	3.235***	3.306***	2.672**	2.441*
	(0.882)	(0.953)	(1.016)	(1.081)	(0.961)	(1.061)	(0.847)	(0.847)	(1.212)	(1.284)
PopFrag	5.257*	4.555	6.070*	5.385*	6.708**	5.940*	4.897*	4.241	4.505**	4.054**
	(3.023)	(2.860)	(3.138)	(3.035)	(3.170)	(3.128)	(2.697)	(2.702)	(1.924)	(1.988)
EthnTens					-0.142	-0.007	-0.102	0.044	-0.135	-0.003
					(0.094)	(0.125)	(0.105)	(0.123)	(0.100)	(0.122)
EthTenFrag					-1.123**	-1.457***	-0.487	-0.836**	-0.612*	-0.981***
					(0.496)	(0.524)	(0.417)	(0.424)	(0.338)	(0.343)
ReligTens							-0.258	-0.377	-0.195	-0.319
							(0.182)	(0.267)	(0.194)	(0.248)
RelTenFrag							-1.870***	-1.715***	-0.632	-0.560
							(0.504)	(0.516)	(0.519)	(0.518)
NatRes									-0.009	-0.012
									(0.018)	(0.019)
NatResFrag									-0.050	-0.054
									(0.035)	(0.037)
Res		-0.286		-0.247		-0.228		-0.142		-0.641
		(0.300)		(0.262)		(0.240)		(0.191)		(0.493)
Obs	1,185	1,107	1,185	1,107	1,185	1,107	1,185	1,107	1,168	1,091
Groups	88	88	88	88	88	88	88	88	87	87

Note: *GDPc* is the logarithm of real GDP per capita, *Contracts* the Time for Enforcing Contracts variable from Doing Business, *Edu* the average number of years of schooling of population aged 25 or older from UNDP, *Open* the ratio of exports plus imports to GDP from various national and international sources, *Demo* the

Democratic Accountability variable from ICRG, *Pop* the logarithm of population from WDI, $Inequal_t$ the share of top one percent pre-tax national income in total gdp from WID, $EthnTens_t and\ ReligTens$ the indicators of ethnics and religious tension respectively from ICRG, *NatRes* the natural resources rent from WDI. *Res* is the residual of the 1rst stage estimation of the two-step control function (CF) procedure. Robust standard errors are given in parenthesis. Significance level: ***. **, * is less than one, five, and ten percent, respectively.