Trade and Civil Conflicts

Hoda Assem

WORLD BANK GROUP
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Abstract

This paper investigates the impact of civil conflicts on international trade. First, it quantifies how much civil conflicts suppress trade and explores the underlying mechanisms within a structural gravity model. Trade openness can lower the risk of civil conflicts because expected gains from international trade could discourage both governments and rebels from igniting conflicts (deterrence mechanism). Alternatively, international trade could act as a substitute for internal trade, lowering the opportunity cost of civil conflicts (insurance mechanism). This paper empirically investigates both mechanisms. Second, the paper investigates the spillovers of civil conflicts on trade for neighboring countries uninvolved in the conflict. Third, it examines if the impact of civil conflicts is contemporaneous or persistent through time. The paper uses data on violent civil conflicts and international and intra-national trade data from 142 countries to estimate a structural gravity trade model for 1989–2006. The results show that civil conflicts in a country can reduce its trade with other countries by over 40 percent. Spillovers of neighboring civil conflicts are also highly detrimental. Finally, the impact of civil conflicts is highly persistent through time and increases with the duration of the conflict.

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Hoda Assem [*]

[*]ETC consultant, Office of the Chief Economist of the Middle East & North Africa of the World Bank
Email: hodaassem10@worldbank.org.

1 Introduction

Civil conflicts are an endemic form of violence in poor countries. Since the end of the Second World War, 57% of countries involved in a civil conflict experienced at least one conflict afterward (World Bank, 2011). Collier & Sambanis (2002) coin this the conflict trap: once a country experiences a civil conflict, it is significantly more likely to suffer more violence. This kind of pervasive warfare has a debilitating effect on a country's economy. A civil war costs an average developing country 30 years of GDP growth, and it takes 20 years for trade to go back to pre-war levels (World Bank, 2011). Therefore, it is important to understand the economic costs of escalating internal tensions into civil conflicts. This paper aims to examine the effect of civil conflicts on international trade. More specifically, it quantifies how much civil conflicts affect trade and explores the underlying mechanisms within a structural gravity model.

Martin et al. (2008a) examine how trade openness impacts the risk of civil conflicts, and they identify two possible mechanisms relating international trade and civil conflicts: the deterrence mechanism and the insurance mechanism. According to the deterrence mechanism, trade openness lowers the risk of civil conflicts. Civil conflicts suppress international trade by increasing trade costs (due to the destruction of roads and infrastructure, the closing of borders, disregard of the rule of law, etc.). The expected gains from international trade represent the opportunity cost of civil conflicts, discouraging both governments and rebels from igniting them. In that sense, larger trade openness acts as a deterrent to civil conflicts. According to the insurance mechanism, trade openness can increase the risk of civil conflicts if international trade acts as a substitute for internal trade. This lowers the opportunity cost of civil conflicts. This paper empirically investigates both the deterrence and the insurance mechanisms. For the deterrence mechanism, it investigates whether civil conflicts destroy international trade and whether more intense civil conflicts have a stronger impact on trade. For the insurance mechanism, it examines whether international trade can substitute intra-national trade during civil conflicts.

The second question discussed in this paper is the persistence of the impact of

civil conflicts on international trade. Civil conflicts can be more damaging than international conflicts, particularly in the long run. While international wars use more sophisticated warfare technologies that result in higher casualties and major destruction of infrastructure as well as physical and human capital(Collier, 1999), civil wars can undermine the state by destroying institutions such as the rule of law and property rights(Herbst, 1990; Collier, 1999). Civil conflicts are also more likely to cause social disorder, weaken trust and deepen ethnic and religious differences within a society (Collier, 1999). Continued conflicts can alter the population's risk preference, trust and preference for market participation (Callen et al., 2014; Cassar et al., 2011). In fact, prolonged violent conflicts can represent a long-term tax on economic activity, leading to lower capital formation and a reallocation of resources across sectors (D'Souza, 2014). All of this would lead to poorer economic performance, particularly for international trade. Martin et al. (2008a) find the impact of civil conflicts on trade becomes larger with time and remains persistent at around 40% 25 years after the onset of conflict.

The paper also studies spillovers of civil conflicts on trade for neighboring countries uninvolved in the conflict. Civil conflicts in neighboring countries can increase trade costs by destroying trade roads and the closure of borders. It may become dangerous to transfer goods across countries if rebels control the roads. This effect would be more important the more a country depends on its neighbors for transportation of goods. For example, if it is landlocked. By contrast, positive spillovers of neighboring civil conflicts may also occur through trade diversion, particularly if a country is far enough from the conflict to be deemed safe. The paper differentiates between civil conflicts occurring in contiguous and non-contiguous neighbors. Additionally, it looks at spillovers of neighboring conflicts for landlocked countries.

The contribution of this paper is threefold. First, to the best of my knowledge, this paper is the first to estimate the impact of civil conflicts within a structural gravity model that correctly accounts for multilateral resistance terms (MRT). As the civil conflicts variable varies by country and year, both the variable and directional time-varying fixed effects cannot be included. This paper uses a novel methodology outlined in Heid et al. (2017) and Beverelli et al. (2018) to identify and estimate effects of unilateral variables on

bilateral trade flows. They propose including internal trade flows as well as international trade flows to allow for the estimation of country specific effects. Second, this paper offers a complete picture of the impact of civil conflicts on international trade by measuring both the direct effects of domestic civil conflicts as well as the spillovers of civil conflicts on neighboring countries. Previous literature has looked at spillovers of conflicts for contiguous countries (Qureshi, 2013). this paper expands the study of spillovers to include neighboring but non-contiguous countries. This refers to countries from the same region as the exporter but which are not contiguous to the exporter. For this purpose, the paper uses the rich data in the Major Episodes of Political Violence dataset (MPEV) which distinguishes between contiguous and non-contiguous conflicts. Thirdly, it investigates the impact of different types of civil conflicts on trade. More specifically, it examines two types of civil conflicts identified by the MPEV dataset: ethnic versus political civil conflicts. Ethnic civil conflicts refer to conflicts involving the state and a distinct ethnic group such as the ongoing ethnic war in Myanmar, while political conflicts include conflicts between rival political groups.

One potential issue affecting this investigation is the possible endogeneity between international trade and armed conflict (Martin et al., 2008b). However, endogeneity and reverse causality are less apparent in the case of civil conflicts. Civil conflicts only affect one country (either the exporter or the importer), while trade is defined at the country-pair (bilateral) level. Therefore, it is not evident how bilateral trade flows can impact intra-state conflicts.[1] This paper also takes several steps to mitigate possible endogeneity by the inclusion of a rich set of fixed effects (exporter-time, importer-time, and country-pair) and lagging the independent variable.

This empirical analysis offers robust evidence that civil conflicts are highly detrimental to trade relations. It finds that civil conflicts in a given country reduce its international trade compared to its internal trade by almost 40%. Additionally, the impact of civil conflicts is highly persistent through time and increases with the duration of civil conflict. it also finds that the impact of ethnic civil conflicts on international trade is neg-

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[1]Martin et al. (2008a) find an impact of trade openness on civil conflicts. However, trade openness is measured as multilateral import flows as a ratio of income.

ative and significant, while that of political civil conflicts is insignificant. As for spillover effects, the results show that having an additional neighbor involved in a civil conflict has a significant and negative impact on a country's international trade whether the neighbor is contiguous or non-contiguous. International trade is reduced by up to 12% (6%) if an additional contiguous (non-contiguous) neighbor is involved in a civil conflict. The spillover effects of civil conflicts are even stronger for landlocked countries.

This paper is related to the literature on the two-way relationship between international trade and armed conflicts. Martin et al. (2008b) build a theoretical model which predicts that the probability of interstate war is lower for countries that trade more bilaterally but higher for countries that engage in multilateral trade. The data supports the model's predictions. In fact, empirical evidence shows a negative relationship where countries that trade more bilaterally are less likely to engage in interstate conflicts (Polachek, 1980; Martin et al., 2008b). On the other hand, there is evidence that conflicts disrupt trade. Pollins (1989) constructs a trade model where importers take into account the price, quality, and origin of imports and their relationship with the exporting country. He finds evidence of the negative impact of bilateral conflicts on trade. Other papers find similar results; Blomberg & Hess (2006) estimate the impact of terrorism, internal and external conflicts to a 30% tariff on trade. Martin et al. (2008b) estimate a 22% fall in trade during an interstate conflict and find that negative effects persist for 10 years after its end.

The literature on trade and armed conflicts has, to a large degree, ignored civil conflicts. It has focused on international conflicts (Glick & Taylor, 2010; Martin et al., 2008b) or grouped internal and external conflicts in one category (Blomberg & Hess, 2006; De Sousa et al., 2018). One notable exception is Martin et al. (2008a) who examine the relationship between trade openness and civil conflicts. They find that trade openness deters the most severe civil wars but also increases the risk of lower-scale conflicts. They estimate that the effects of civil conflicts are substantial on contemporaneous trade and very persistent over time. The fall in trade is estimated at 25% in the first year of conflict and is still present at 40% 25 years after the onset of conflict.

This paper is also related to the literature on spillovers of conflicts to economies of uninvolved neighbors. Indeed, the negative effects of conflicts are not limited to coun-

tries involved in them. Previous research has found negative spillovers of conflicts on economic growth and trade of neighbors (Ades & Chua, 1997; Qureshi, 2013; De Groot, 2009; De Sousa et al., 2018). There is some evidence of positive spillovers on distant neighbors, in other words, countries far enough from conflict to be deemed "safe" (De Groot, 2009; De Sousa et al., 2018). A possible explanation is the redirection of the trade from conflict-plagued countries to more peaceful countries in the same region, which are more likely to have similar resources (De Groot, 2009).

The rest of the paper is organized as follows. Section 2 presents the data used as well as stylized facts on civil conflicts and trade. Section 3 offers a brief review of the structural gravity model and explains the empirical strategy used. Section 4 discusses the results obtained. Section 5 concludes.

2 Data and Descriptive Statistics

The data used in this paper covers 142 countries over the period 1989 to 2006. The paper uses trade, production, and gravity-related data and data on civil conflicts, which will be explained in this section.

First, bilateral trade data are obtained from the BACI data set provided by the CEPII. Trade flows are identified by the exporter i, the importer j, the product category k, and the year t. The data set provides information on trade flows' value (v, in thousands of US dollars). For the purpose of this paper, trade flows are aggregated at the country pair-year level giving yearly bilateral trade flows. Second, data on production and internal trade flows are obtained from the TradProd database provided by the CEPII. Internal trade flows are obtained by subtracting a country's exports from its gross production.[2] The data is provided at the sectoral level for 26 industrial sectors. Again, the data is aggregated at the country-year level. Third, standard gravity variables are obtained from the CEPII's gravity data set. It gives information on variables such as GDP of importer

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[2]Trade flows may be badly reported during conflict time. To investigate the reliability of the measurement of trade flows during years of conflict, Figure A2 plots the distribution of intra-national and international trade flows (in logs) for years with civil conflicts and years without civil conflicts. The shape of both distributions is very similar, which suggests that there is no mismeasurement of trade flows due to civil conflicts.

and exporter countries, bilateral distance, common language, colonial link, etc. Merging these three data sets gives trade, production, and gravity data for 142 countries for the period 1989-2006.

Finally, to measure civil conflict, the paper relies on the Major Episodes of Political Violence database (MEPV), provided by the Center for Systemic Peace (CSP).[3]This data set comprises 329 episodes of armed conflicts in 174 countries over the period 1946-2019, accounting for all major armed conflicts in the world over this period. The paper focuses on the countries and time period for which trade and production data is available, namely 142 countries for the period 1989-2006.

According to the MPEV data set, an armed conflict is considered a major episode of political violence if there is "systematic and sustained use of lethal violence by organized groups that result in at least 500 directly related deaths over the course of the episode". Each episode is assigned a time period with a start year and an end year of conflict. It is also assigned a magnitude score on an eleven-point scale from 0 to 10, where 10 indicates the highest level of violence and 0 indicates no episode of conflict in a given year. The magnitude score of each episode represents "an assessment of the full impact of the violence on the societies directly affected." The effects of political violence represent "fatalities and casualties, resource depletion, destruction of infrastructure, and population dislocations, among other things such as the psychological trauma to individuals and adverse changes to the social psychology and political culture of affected social identity groups." The magnitude score is comparable across episodes and over time, allowing for comparisons of different episodes occurring in different countries and/or time periods. Additionally, if more than one episode occurs in a single country in a single year, each episode's score is summed to obtain one score. The data set provides information on the presence of armed conflicts as well as their overall magnitude scores for each state and each year.[4]

The data set identifies two types of armed conflicts: interstate conflicts and intrastate/civil conflicts. Interstate conflicts occur between two or more states, while in-

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[3]http://www.systemicpeace.org/inscrdata.html

[4]http://www.systemicpeace.org/inscr/MEPVcodebook2015.pdf

trastate/civil conflicts occur in one state between the government and one or more opposition groups. This paper focuses on civil conflicts. Civil conflicts in the MPEV data set are classified into two categories: ethnic or political conflicts. An ethnic civil conflict involves the government of a state against a distinct ethnic group; one example is the Yemeni civil war between the internationally recognized governments and Houthi rebels. On the other hand, a political civil conflict involves the state against political rival groups as the Libyan civil war, where militias and the government fight over control of oil revenues. The data set also distinguishes between civil violence and civil war. Civil violence refers to an episode of violence where "the use of instrumental violence without necessarily exclusive goals". In contrast, a war involves "violence between distinct, exclusive groups with the intent to impose a unilateral result to the contention". The distinction between civil violence and civil war seems complex and arbitrary. Therefore, the paper does not distinguish between them and uses the term civil conflict, which aggregates both.

The MEPV data set identifies the list of contiguous countries for each state. They are states sharing a contiguous land border or water border of two-mile width or less. The number of contiguous countries experiencing a civil conflict and the overall magnitude score of these conflicts for each year are provided for each state. Additionally, the data set divides the world into 10 regions: West Africa, North Africa, East Africa, South Africa, Middle East, South Asia, East Asia, South America, Central America, and Europe/North America. Each state is assigned a region. The number of states involved in a civil conflict in a region and the overall magnitude score of these conflicts for each year are provided. Thus, for each state, the data set provides information on domestic civil conflicts, civil conflicts in its contiguous neighbors, and civil conflicts in its geopolitically relevant region. There are some exceptions to the regional score. Straddle states are states assigned to more than one geopolitical region and have a regional score which is the average score of these regions. Also, island states are assigned a regional score of 0 as they are isolated from possible regional effects of armed conflicts.

Tables 1-3 provide some summary statistics for the MEPV data set. The data set covers 142 countries over the period 1989 to 2006. Table 1 describes the main differences between civil and interstate conflicts. Countries in the sample have not experienced a lot

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of violence over the period covered. However, civil conflicts are more common than interstate conflicts. In fact, 18% of the countries have gone through a civil conflict compared to only 2% for interstate conflict. Figure 1 shows the evolution of the share of countries with conflicts over time. The share of countries with an interstate conflict increased slightly over the period covered, but this share remains much lower than the one observed for civil conflicts. As mentioned previously, the intensity of a conflict is measured on a scale from 1 to 10, accounting for the impact of violence on the societies directly affected. The average intensity of a civil conflict (respectively interstate conflicts) is 3.25 (respectively 2.85), suggesting that civil conflicts are on average more destructive. An important difference between civil and interstate violence is their duration. Civil conflicts are much more persistent, lasting an average of 15.25 years with a maximum of 59 years. Interstate conflicts last an average of 3.6 years with a maximum of 15 years. The average duration of civil conflicts seems to be increasing over time, while that of interstate conflicts is more or less stable, according to Figure 2.

Table 2 focuses on spillovers of neighboring conflicts. In a given year, a state has on average 0.79 contiguous neighbors involved in a civil conflict compared to 0.1 involved in an interstate conflict. The average intensity of a contiguous civil conflict is 2.09, while that of an interstate conflict is 1.07. For regional variables, 3.66 regional neighbors are on average involved in a civil conflict in a given year compared to 0.33 regional neighbors for interstate conflicts. Tables 1 and 2 show that civil conflicts are more frequent, intense, and persistent than interstate conflicts. In fact, civil violence is the most prevalent form of violence in today's world.

According to table 3, 13% of the countries in the sample were involved in an ethnic civil conflict, while 6% experienced a political civil conflict. Ethnic conflicts are slightly more intense than political conflicts, and it is much more persistent. The average duration of an ethnic civil conflict is 16.79 years, while the average duration of a political civil conflict is 9.77 years. Figure 3 shows that the share of countries experiencing either form of civil conflict has declined over the period. However, Figure 4 shows that the average intensity of ethnic civil conflicts has been rising, while that of political civil conflicts has been decreasing. Figure 5 shows a similar trend for the average duration of

these conflicts. Thus, civil conflicts are becoming more ethnically motivated, intense and persistent over time.

3 Empirical Strategy

3.1 Gravity Framework

This paper relies on the structural gravity model, which is the workhorse of empirical trade literature. It has been used extensively to estimate the impact of trade determinants such as distance, trade agreements, WTO membership, etc. This paper considers the structural gravity model accounting for the recent development in gravity literature. The structural gravity model can be derived theoretically from a large class of microeconomic foundations. It is given by the following equation:

$$X_{ijt} = Y_{it}E_{jt}\frac{t_{ijt}}{\Pi_{it}P_{jt}} \tag{1}$$

where X_{ij} represents bilateral trade flows between exporter i and importer j. The first term Y_iE_j is the size term where Y_i denotes total value of production in exporter i and E_j denotes total value of expenditure in importer j. The size term captures the hypothetical level of frictionless trade between i and j, assuming no trade costs.

The second term $\frac{t_{ij}}{\Pi_iP_j}$ captures the effect of trade costs which drives a wedge between realized and frictionless trade Beverelli et al. (2018). t_{ij} denotes bilateral trade costs between i and j, which include bilateral distance, common language, trade agreements, etc. The structural terms Π_i andP_j represent the outward and inward multilateral resistance terms, respectively (Anderson & Van Wincoop, 2003). These terms capture the fact that bilateral trade between two countries i and j depends on how isolated they are from the rest of the world. This means that any change in trade costs between any two countries would affect all other countries (Beverelli et al., 2018).

Civil conflicts in the exporter can be a significant trade cost. The presence of a civil conflict increases transportation costs due to the possible destruction of roads and extra security checks. Also, they can increase transaction costs. Increased uncertainty

due to a prolonged civil conflict may make firms less willing to invest in long-term trade relationships with countries experiencing these conflicts. Additionally, civil conflicts can impact trade flows on the demand side through the preference channel. Consumers may be less willing to import goods from countries with civil conflicts, particularly if these consumers are concerned with human rights violations or have an ethnic or religious link with opposition groups involved in these conflicts.

The structural gravity model can be estimated econometrically as follows:

$$X_{ijt} = \exp(ln S_{it} + ln M_{jt} + ln D_{ij} + \beta Z_{ijt}) + e_{ijt} \tag{2}$$

where X_{ijt} represent bilateral trade flows between exporter i and importer j in year t. S_{it}, M_{jt}, D_{ij} represent origin-time, destination-time and country-pair fixed effects respectively. Z_{ijt} includes all trade-related bilateral variables as regional trade agreements. e_{ijt} is the error term.

Origin-time (S_{it}) and destination-time fixed effects (M_{jt}) are crucial to account for the multilateral resistance terms (Baldwin & Taglioni (2006); Hummels, 2011; Feenstra, 2015). Failure to include them will lead to biased and inconsistent gravity estimates (Anderson & Van Wincoop, 2003). In addition, these fixed effects absorb the size variables, Y_{it} and E_{jt} as well as any other country-specific variable that varies over time (Yotov et al., 2016). Country-pair fixed effects (D_{ij}) are included in the gravity equation as a way to reduce the endogeneity of trade determinants. In fact, country-pair fixed effects absorb all observable and unobservable time-invariant trade costs that may be correlated with both the variable of interest and the error term (Baier & Bergstrand, 2007; Yotov et al., 2016). Equation (2) uses PPML instead of OLS. PPML takes into account zero trade flows which are otherwise dropped from the estimation when OLS is used. Additionally, trade data suffers from heteroscedasticity and PPML can help overcome this problem (Silva & Tenreyro, 2006; Yotov et al., 2016).

3.2 Identification Strategy

This paper estimates the impact of civil conflict on bilateral trade. The civil conflicts variable varies by country and time. Therefore, it cannot be estimated using the gravity model specification discussed above. Simply put, including origin-time and destination-time fixed effects will absorb the civil conflict variable. The empirical trade literature proposes several solutions to estimate the impact of country-specific variables within a structural gravity model. One solution is to construct a new bilateral variable that takes into account both the exporter and the importer countries (Anderson & Marcouiller, 2002; Álvarez et al., 2018; Yu et al., 2015). However, this solution is unsatisfactory since it is difficult to interpret this new variable. Another solution is to include the variable of interest without the directional time fixed effects which gives unreliable estimates.

A simple and theoretically consistent solution is to include intra-national trade flows in addition to international flows. This allows the identification of country-specific variables as civil conflicts within a structural gravity model even with directional time-varying fixed effects. Heid et al. (2017) propose the addition of intra-national trade flows to gravity estimates in order to identify the impact of unilateral non-discriminatory trade policies on bilateral trade such as MFN tariffs on the importer side and export subsidies on the exporter side. Beverelli et al. (2018) extend this approach to identify the impact of national institutions on bilateral trade. Additionally, this solution is consistent with gravity theory as consumers choose among domestic as well as foreign varieties (Yotov et al., 2016).

To estimate the impact of civil conflicts on international trade, an interaction term between civil conflicts and a dummy for international trade flow (*Intl flow*) is defined.[5] This dummy is equal to 1 for international trade flows and 0 for domestic ones. By construction, this interaction term captures the differential impact of civil conflicts on international trade flows relative to internal trade flows. Moreover, since the interaction term is set to 0 for domestic trade flows, the impact of civil conflicts can now be identified even with origin-time and destination-time fixed effects (Beverelli et al., 2018).

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[5]The dummy for *Intl flow* itself is captured by the country-pair fixed effects as it is time-invariant.

For this purpose, the following structural gravity equation is estimated:

$$X_{ijt} = exp[lnS_{it} + lnM_{jt} + lnD_{ij} + Z_{ijt} + \boldsymbol{DomesticCivilConflict_{it} * Intlflow_{ij}}$$
$$+\boldsymbol{ContiguousCivilConflict_{it} * Intlflow_{ij}} \quad (3)$$
$$+\boldsymbol{RegionalCivilConflict_{it} * Intlflow_{ij}}] + e_{ijt}$$

$DomesticCivilConflict_{it} * Intlflow_{ij}$ is an interaction term between the dummy variable for international trade and a measure of domestic civil conflict. By definition, this interaction term measures the differential impact of domestic civil conflicts on international trade compared to internal trade. The interaction term can be defined on the exporter side ($DomesticCivilConflict_{it} * Intlflow_{ij}$) or on the importer side ($DomesticCivilConflict_{jt} * Intlflow_{ij}$) without any quantitative implications for the corresponding estimates. In their paper on the impact of national institutions on international trade, Beverelli et al. (2018) demonstrate empirically the equivalence of the estimates obtained (i) on the exporter side; (ii) on the importer side; and (iii) for intra-national trade.[6] This is because national institutions (similar to civil conflicts) apply equally to exports and imports. Therefore it is not possible to disentangle the impact of institutions on exports and imports separately.

To measure possible spillovers of neighboring civil conflicts, two other interaction terms are defined. The first interaction term, $ContiguousCivilConflict_{it} * Intlflow_{ij}$ multiplies the dummy for international trade with a measure of civil conflicts in contiguous countries, i.e., countries with whom the exporter shares a border. The second interaction term, $RegionalCivilConflict_{it} * Intlflow_{ij}$ multiplies the dummy for international trade with a measure of civil conflicts in neighboring non-contiguous countries, i.e., neighboring countries with whom the exporter does not share a border with.

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[6]Since the estimates on the exporter and importer side are equivalent they cannot both be added in the same specification due to multicollinearity

4 Estimation Results

This section discusses the results. First, it shows the impact of domestic civil conflicts on international trade. Then, it examines the spillovers of civil conflicts in neighboring countries. Finally, several robustness checks examine the validity of these results for different specifications.

4.1 The effect of domestic civil conflicts

4.1.1 The presence of domestic civil conflicts

Table 4 presents the results for the impact of domestic civil conflicts on international trade. It uses data on trade flows for 142 countries from 1989-2006. Column 1 estimates the gravity equation using OLS and without origin-time, destination-time, or country pair fixed effects. Standard gravity variables are included to proxy for bilateral trade costs (bilateral distance, contiguity, common language, colonial ties, trade agreement, and GATT membership). The estimates of column 1 capture the fact that bilateral distance is an important impediment to international trade. In contrast, contiguity, common language, colonial ties, trade agreements, and GATT membership promote trade flows, all else equal. Overall, the gravity estimates from column 1 are comparable with those of the gravity literature.

The civil conflict variable in column 1 is defined using the MPEV data set. It is a bilateral variable measuring civil conflicts in both the exporter and the importer. It is equal to 1 if either the exporter or the importer experiences an ongoing civil conflict in year t and 0 otherwise. This definition of the civil conflict variable is similar to the one used by Martin et al. (2008a). The estimate obtained from column 1 shows that the presence of a civil conflict in either the exporter or the importer is a significant impediment to bilateral trade flows. A civil conflict reduces bilateral trade by 21.5%. This result is comparable to the results obtained by Martin et al. (2008a) who find a 25% reduction in trade due to civil conflict.

Column 1 does not include exporter-time and importer-time fixed effects. As

mentioned previously, these fixed effects are crucial to properly account for MRT and obtain reliable gravity estimates (Hummels, 2011; Feenstra, 2015). Additionally, they absorb and control for all observable and unobservable country-specific links between trade and civil conflicts. Therefore, the estimate obtained in column 1 should be interpreted with caution. Column 2 reports the estimates of the gravity model using PPML. The estimates of PPML are more suitable than the estimates of OLS as it addresses the problem of heteroskedasticity in trade data (Silva & Tenreyro, 2006) and can use the information contained in the zero trade flows. Therefore, the remaining columns also use the PPML estimator.

Column 3 introduces the exporter-time and the importer-time fixed effects. Since the civil conflicts variable varies by country and time, it will be absorbed by the fixed effects. The variable of interest is now an interaction term between a dummy for international trade flows and a dummy for civil conflicts in the exporter. By construction, this interaction term defines the impact of civil conflicts on international trade relative to internal trade. The effect of this term can be identified even with directional-time varying fixed effects as the interaction term is set to zero for internal trade flows.

The results from column 3 do not include estimates for the GDP of the exporter or importer as the fixed effects absorb these terms. Estimates for the remaining gravity variables are in line with the gravity literature. The coefficient for the interaction term between civil conflicts and international trade is negative and significant. It captures the fact that civil conflicts impede international trade relative to internal trade. This result reinforces the argument for a negative relationship between civil conflicts and international trade from existing studies that use bilateral variables or do not appropriately control for MRT.

As mentioned above, the inclusion of intra-national trade flows in the structural gravity model means that the coefficient associated with civil conflict is interpreted as the differential impact of civil conflicts on international trade relative to intra-national trade (Beverelli et al., 2018). Therefore, if the coefficient of civil conflict is negative, the deterrence mechanism is stronger than the insurance mechanism. In other words, the destruction of international trade flows is greater than the destruction of intra-national trade

flows. If the coefficient is positive, the insurance mechanism is stronger than the deterrence mechanism. And if it is insignificant, both mechanisms are equal in magnitude. Based on the results obtained here, the deterrence mechanism dominates.

In the next column, country-pair fixed effects are added to the gravity equation. Thus, the results from column 4 do not include estimates of the effects of distance, contiguity, common language, and colonial ties as they are absorbed by the country-pair fixed effects. The estimate for trade agreement is still positive, although not statistically significant. As expected, the estimated coefficient of the interaction term is still negative and statistically significant. However, the coefficient is smaller in magnitude than in column 2. Indeed, the impact of civil conflicts on trade is now entirely due to time variation within a given country pair, which is not very large as 80% of the sample did not experience civil conflicts. Furthermore, the inclusion of country pair fixed effects reduces possible endogeneity and reverse causality. The coefficient for the interaction term is equal to -0.599, which indicates that a domestic civil conflict is expected to reduce, on average, international trade relative to internal trade by $(e^{0.599} - 1) * 100 = 45\%$. This provides evidence of the deterrence mechanism.

Looking at the coefficients associated with the civil conflicts variable in columns 2-4, we can see that the inclusion of the full set of fixed effects (exporter-time, importer-time, and country-pair) as demonstrated in the gravity literature (Yotov et al., 2016) is necessary to estimate the impact of civil conflict on trade flows correctly.

The results from column 5 are obtained with the same specification as in column 4. However, the interaction term is now constructed by multiplying the dummy for international trade with the dummy for civil conflicts in the importer instead of the exporter. The results are identical. Beverelli et al. (2018) demonstrate empirically the equivalence of the estimates obtained on the exporter side, importer side, and using domestic flows. Therefore, the interaction term can be defined on the exporter or the importer side without any impact on the estimates because civil conflicts affect a country equally as an exporter and an importer.

4.1.2 The intensity of domestic civil conflicts

Do more intense civil conflicts destroy more trade? To answer this question, Table 5 repeats the same specifications of Table 4 using the intensity of civil conflicts instead of a dummy. In the MEPV data set, the intensity of a civil conflict is defined on an eleven-point scale from 0 to 10, where 0 denotes no conflict and 10 being the highest level of conflict. This score reflects an assessment of the impact of violence on the societies affected, including fatalities, casualties, destruction of infrastructure, population dislocation, etc. The interaction term now interacts the dummy for international trade flows with the intensity of the civil conflict. The coefficient for the interaction term is equal to -0.181, which indicates that one unit increase in the intensity of a national civil conflict is expected to reduce international trade relative to internal trade by $(e^{0.181} - 1) * 100 = 16.5\%$. This provides further evidence in support of the deterrence mechanism. The estimates of the remaining covariates are identical to table 4.

Column 5 introduces the intensity and intensity squared of civil conflicts. The coefficient for the intensity of civil conflicts is negative, while the coefficient for the intensity squared is positive. Therefore, more intense civil conflicts destroy more trade. However, this effect is decreasing in conflict intensity. Column 6 differentiates between less intense conflicts which are limited in location, magnitude, and technology of destruction and more intense conflicts that have a more extensive impact. The impact of limited conflict on international trade relative to internal trade is negative and significant. On the other hand, the coefficient for extensive conflicts is insignificant. To explore this result further, Figure A1 in the appendix plots international and intra-national trade flows as a share of GDP in case of no conflict, limited conflicts, and extensive conflicts. Interestingly, intra-national trade is also severely destroyed in extensive conflicts (as shown in Figure A1 in the appendix).

To conclude, this paper finds evidence for the deterrence mechanism: civil conflicts destroy trade, and more intense conflicts destroy more trade. However, the deterrence mechanism is limited as this effect is decreasing in intensity. Intra-national trade is also destroyed as conflicts become more intense, and at the extreme, both international

and intra-national trade are destroyed at the same level. The paper does not find evidence of the insurance mechanism where international trade substitutes internal trade.

According to the previous results, the presence of civil conflicts in a country in a given year reduces its international trade on average by 45% relative to its domestic trade, while a one-unit increase in the intensity of civil conflicts reduces international trade by almost 16%. But how does the eruption of a civil conflict destroy a country's international trade? A civil conflict can destroy international trade through several channels. First, violent conflicts, civil or otherwise, could inevitably destroy infrastructure, physical and human capital. This would lead to lower production and lower trade both domestically and internationally. In all the previous specifications, the level of GDP is controlled for by using exporter-time fixed effects. Therefore, conditional on a country's level of GDP, the results show that a civil conflict can still destroy international trade. Another channel is increasing trade costs. Destruction of roads, infrastructure, telecommunications networks etc. can greatly increase transportation costs leading to lower trade with the rest of the world. Additionally, civil conflicts undermine the state by destroying institutions such as the rule of law and property rights (Herbst, 1990; Collier, 1999). They are also more likely to cause social disorder, weaken trust and deepen ethnic and religious differences within a society (Collier, 1999). All of this leads to the deterioration of the economic environment, which is very likely to persist for a long time after the end of the conflict.

4.1.3   Ethnic versus political civil conflicts

To shed more light on the channels through which civil conflicts can impact trade, this paper distinguishes between two types of civil conflicts. Civil conflicts are classified into political conflicts and ethnic conflicts. Political conflicts include conflicts between rival political groups as the Greek civil war of 1946 or the current Libyan civil war. Ethnic conflicts involve the state and a distinct ethnic group as the ongoing ethnic war in Myanmar or the civil war in Yemen. Table 6 estimates the impact of these different types of civil conflicts on international trade. For columns 1-3, the variable of interest is introduced as an interaction term between the dummy for international trade and the dummy for civil conflicts. Columns 4-6 replicate the same estimations using the intensity of the

civil conflicts instead. Ethnic conflicts destroy trade and more intense ethnic conflicts destroy trade more. This provides evidence of the deterrence mechanism. On the other hand, political conflicts have no significant impact on international trade. A possible explanation could be the higher intensity and duration of ethnic civil conflicts than political ones.

4.1.4 The dynamic effect of civil conflicts

Civil conflicts are highly persistent over time. A civil conflict lasts, on average, 15 years. Therefore, it is important to study the dynamic effects of these conflicts. Table 7 examines this question. To ease comparison, column 1 reproduces the estimates from column 1 of Table 4. Column 2 introduces a new interaction term between the dummy for international trade and a dummy for a new conflict which is equal to one if a new conflict erupts in country i in year t. This coefficient is positive and significant, indicating that a new conflict erupting in year t has less impact on international trade than ongoing conflicts. To make sense of this result, column 3 introduces an interaction term between the dummy for international trade and a dummy that is equal to one if the civil conflict is ongoing. The coefficient is negative and significant. In column 4, the duration, as well as the duration squared of the civil conflict, are introduced. The coefficient for the duration is negative and significant. The more persistent a civil conflict is, the more negative its effect on international trade. However, the estimate of the duration squared is positive and significant, which implies that the negative effect decreases with time. This can be evidence of adaptation to persistent conflicts. The final column introduces lagged variables of civil conflicts. Civil conflicts can have significant negative effects on international trade up to 24 years after the eruption of the conflicts. These results are in line with Martin et al. (2008a) who find persistent effects of civil conflicts that reach 40% 25 years after the onset of a conflict. Table 7 underscores the detrimental effect of falling into the civil conflict trap.

4.2   The effect of neighboring civil conflicts

This section examines the spillover effects of neighboring civil conflicts. Table 8 investigates the impact of the presence of neighboring civil conflicts on international trade. To ease comparison, column 1 reproduces the estimates from column 1 of Table 4. Column 2 introduces a new interaction term measuring civil conflicts in contiguous states. A contiguous state is one with whom the exporter shares a land border or a water border of two miles width or less. The interaction term is constructed by multiplying the number of neighboring countries involved in a civil conflict with the dummy for international trade. The estimate on the interaction term is negative and significant, which reflects spillover effects of contiguous civil conflicts. An additional contiguous neighbor involved in a civil conflict reduces a country's international trade, on average, by 11%. The estimate of the interaction term for domestic civil conflict is still negative and significant, albeit of a smaller magnitude. The smaller magnitude could be the result of the correlation between domestic and contiguous conflicts.

In column 3, an interaction term measuring civil conflicts in non-contiguous neighbors is added. Non-contiguous states are those in the same region as the exporter, but with whom the exporter does not share a border. Similarly, the interaction term is constructed by multiplying the number of non-contiguous countries involved in a civil conflict with the dummy for international trade. Again, the estimate on the interaction term is negative and significant, which suggests spillover effects even for contiguous neighbors. An additional non-contiguous neighbor involved in a civil conflict reduces international trade, on average, by 6%. Finally, column 4 takes this investigation further by introducing a new interaction term for landlocked states, which are states with no access to oceans or seas. The estimates in column 4 show that spillover effects of neighboring civil conflicts are stronger for landlocked countries. This result highlights the increase in trade costs due to the destruction of infrastructure and roads as an important channel through which civil conflicts impact international trade. Landlocked countries are heavily dependent on their neighbors for the transportation of exports and imports. Then, spillovers of neighboring conflicts will be higher for landlocked countries.

Table 9 replicates Table 6 but uses the intensity of civil conflicts instead of a dummy. An increase in the intensity of civil conflicts in neighboring countries has a significant negative impact on a country's international trade. On average, a one-unit increase in the intensity of civil conflicts in contiguous countries reduces a country's international trade relative to its internal trade by $(e^{0.0441} - 1) * 100 = 4\%$, while a one-unit increase in the intensity of civil conflicts in regional neighbors reduces it by $(e^{0.0181} - 1) * 100 = 1.79\%$. The spillover effects are even stronger for landlocked countries.

4.3 Robustness checks

Table 10 provides several robustness checks. Column 1 of Table 10 replicates the results of column 1 of Table 4 for comparison. Column 2 introduces civil conflicts lagged by one year to investigate reverse causality. The estimate obtained is very similar to the one reported in column 1. We can, therefore, conclude that reverse causality does not play a significant role. The baseline results show that civil conflicts have a significant negative impact on international trade relative to internal trade. However, both international and internal trade are affected by civil conflicts. Additionally, Figure A1 in the appendix shows that extensive conflicts cause severe destruction of internal trade. This puts in question the reliability of the measurement of internal trade flows. As a robustness check, column 3 estimates the gravity model on a sub-sample of the dataset, including less-intense (limited) civil conflicts where production and internal trade data should be measured more precisely. Observations with the most intense civil conflicts where the fighting is extensive are excluded. The results remain unchanged. In column 4, the civil conflict variable is weighed by intensity, assigning more weight to observations with limited conflicts and less weight to observations with extensive conflicts. The results are again very similar to the baseline results. Thus, we can confidently conclude that the intensity of civil conflicts does not affect the results' reliability. Column 5 introduces a regressor for interstate conflicts. The estimate for domestic civil conflicts is almost unchanged. Finally, column 6 reports the same specification with the addition of an in-

teraction term between international trade and the GDP per capita as a measure of the exporter's level of development. Again, the estimate for civil conflict is unchanged.

5 Conclusion

This paper investigates the impact of civil conflicts on international trade. It uses international trade and production data from 1989-2006 provided by the BACI data set to carry out this empirical analysis. Additionally, it uses data on civil conflicts from the MPEV data set for the same period. For this purpose, a structural gravity model is estimated with exporter-time, importer-time, and country-pair fixed effects. The presence of directional time-varying fixed effects is crucial to obtain consistent and reliable estimates. However, in this case, country-year specific variables such as civil conflict can no longer be estimated as they are absorbed by the fixed effects. To fix this issue, a new methodology outlined by Heid et al. (2017) and Beverelli et al. (2018) is used where internal trade data is used to identify the impact of civil conflicts on international trade.

This paper finds that civil conflicts in a country have a highly detrimental effect on trade flows. On average, a civil conflict in a given year decreases international trade by over 40% in this year. Moreover, this effect is highly persistent over time. Distinguishing between political and ethnic civil conflicts, this paper shows that ethnic conflicts destroy trade more than political ones. Thus, one of the main channels through which civil conflicts impact international trade is by causing social disorder and deepening ethnic and religious differences within a society. This can lead to a significant deterioration of the economic environment affecting trade relations with the rest of the world. Additionally, this paper examines the spillover effects of civil conflicts to neighboring countries. It shows that an additional contiguous country involved in a civil conflict reduces international trade flows by up to 11%, while an additional regional neighbor experiencing a civil conflict reduces trade by 6%.

In conclusion, civil conflicts are the most prevalent form of violence today. Moreover, they tend to occur in poor countries, making them poorer over time. This paper has shown the highly detrimental and persistent impact they can have on international

trade. Given the essential role international trade plays in supporting inclusive and sustainable economic development in less developed countries, developing countries need to find non-violent ways of conflict resolution instead of escalating internal tensions into non-ending violent conflicts.

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Figures and Tables

Figures

Figure 1: Share of countries with civil and interstate conflicts (1989-2006)
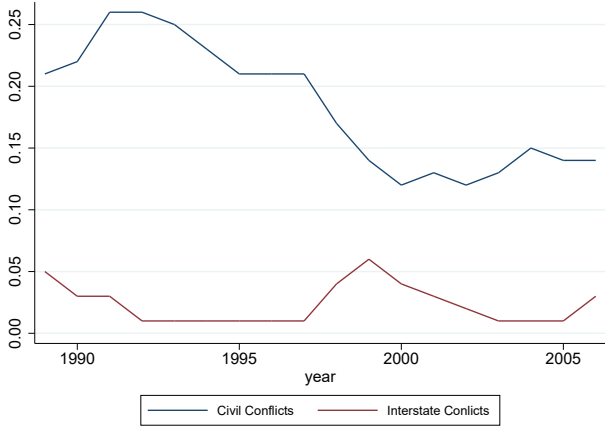
Notes: This figure plots the share of countries in the sample experiencing civil conflicts (blue line) and interstate conflicts (red line) over the period (1989-2006) computed at the country-pair level. Constructed by the author using the MPEV data set.

Figure 2: Average duration of civil and interstate conflicts (1989-2006)
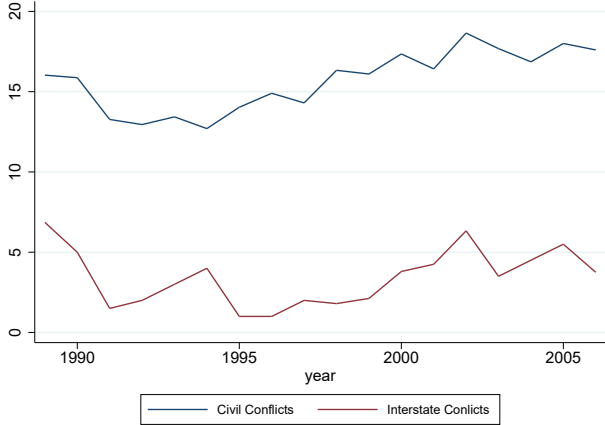
Notes: This figure plots the average duration in the sample of civil conflicts (blue line) and interstate conflicts (red line) over the period (1989-2006) computed at the country-pair level. Constructed by the author using the MPEV data set.

Figure 3: Share of countries with ethnic and political civil conflicts (1989-2006)
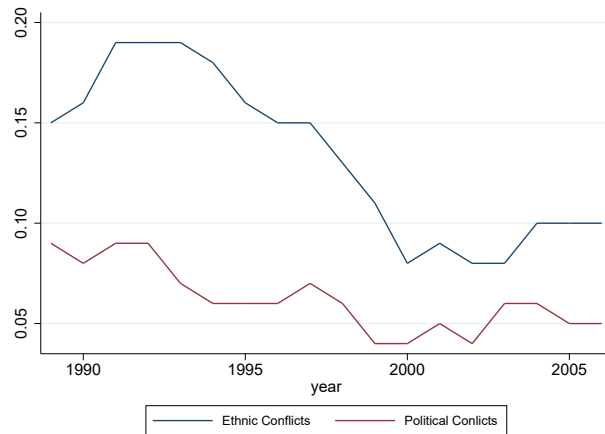
Notes: This figure plots the share of countries in the sample experiencing ethnic civil conflicts (blue line) and political civil conflicts (red line) over the period (1989-2006) computed at the country-pair level.
Constructed by the author using the MPEV data set.

Figure 4: Average intensity of ethnic and political civil conflicts (1989-2006)

Notes: This figure plots the average intensity in the sample of ethnic civil conflicts (blue line) and political civil conflicts (red line) over the period (1989-2006) computed at the country-pair level.
Constructed by the author using the MPEV data set.

Figure 5: Average duration of ethnic and political civil conflicts (1989-2006)

Notes: This figure plots the average duration in the sample of ethnic civil conflict(blue line) and political civil conflicts(red line) over the period (1989-2006) computed at the country-pair level. Constructed by the author using the MPEV data set.

Tables

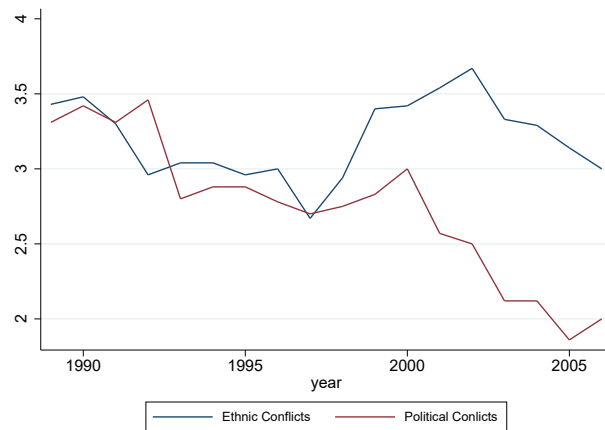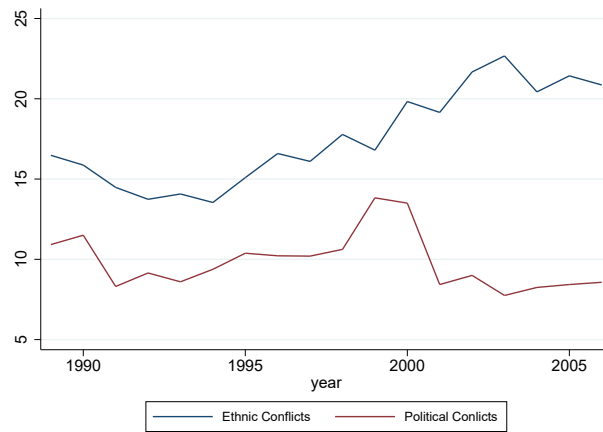Table 1: Summary statistics of civil and interstate conflicts for 142 countries for the period (1989-2006):

Variable	Obs	Mean	Std.	Min	Max
Dummy for Civil Conflict	362952	0.18	0.39	0	1
Average Intensity of Civil Conflict*	6674	3.25	1.98	1	10
Average Duration of Civil Conflict*	6674	15.25	13.98	1	59
Dummy for Interstate Conflict	362952	0.02	0.15	0	1
Average Intensity of Interstate Conflict*	8804	2.85	1.66	1	6
Average Duration of Interstate Conflict*	8804	3.6	3.14	1	15

Source: Author's calculations based on the MPEV database computed at the country-pair year level.
* average intensities and duration of episodes are calculated at the country-pair year level on countries that experienced a conflict.

Table 2: Summary statistics of spillovers of civil conflicts for 142 countries for the period (1989-2006):

Variable	Obs	Mean	Std.	Min	Max
Number of Contiguous neighbors with Civil Conflict	362952	0.79	1.09	0	7
Average Intensity of Contiguous Civil Conflict*	74834	2.09	1.35	0.21	7
Number of Regional neighbors with Civil Conflict	362952	3.66	2.47	0	10
Average Intensity of Regional Civil Conflict*	74834	1.44	0.76	0.15	3.8
Number of Contiguous neighbors with Interstate Conflict	362952	0.1	0.36	0	3
Average Intensity of Contiguous Interstate Conflict*	5538	1.07	0.59	0.14	2.6
Number of Regional neighbors with Interstate Conflict	362952	0.33	0.76	0	4
Average Intensity of Regional Interstate Conflict*	5538	0.51	0.42	0.06	1.3

Source: Author's calculations based on the MPEV database computed at the country-pair year level.
* average intensities and duration of episodes are calculated at the country-pair year level on countries that experienced a conflict.

Table 3: Summary statistics of ethnic and political civil conflicts for 142 countries for the period (1989-2006):

Variable	Obs	Mean	Std.	Min	Max
Dummy for Ethnic Civil Conflict	362952	0.13	0.34	0	1
Average Intensity of Ethnic Civil Conflict*	48422	3.16	1.91	1	10
Average Duration of Ethnic Civil Conflict*	48422	16.79	14.91	1	59
Dummy for Political Civil Conflict	362952	0.06	0.24	0	1
Average Intensity of Political Civil Conflict*	22578	2.82	1.34	1	6
Average Duration of Political Civil Conflict*	22578	9.77	8.25	1	32

Source: Author's calculations based on the MPEV database computed at the country-pair year level.

* average intensities and duration of episodes are calculated at the country-pair year level on countries that experienced a conflict.

Table 4: Presence of civil conflicts and international trade

Dependent Variable: bilateral trade flows$_{ijt}$	(1) (OLS)	(2) (PPML)	(3) (PPML)	(4) (PPML)	(5) (PPML)
GDP of Exporter$_{it}$	1.131***	0.765***			
	(0.006)	(0.019)			
GDP of Importer$_{jt}$	0.926***	0.759***			
	(0.006)	(0.025)			
Distance$_{ij}$	-1.153***	-0.459***	-0.451***		
	(0.019)	(0.038)	(0.041)		
Contiguity$_{ij}$	0.946***	0.716***	0.612***		
	(0.084)	(0.098)	(0.069)		
Common language$_{ij}$	0.774***	0.448***	0.308***		
	(0.039)	(0.089)	(0.068)		
Pair in colonial relationship $_{ij}$	1.334***	0.351***	0.281*		
	(0.115)	(0.112)	(0.145)		
RTA $_{ijt}$	0.390***	0.277***	0.799***	0.035	0.035
	(0.044)	(0.080)	(0.063)	(0.044)	(0.044)
Exporter is GATT/WTO member$_{it}$	0.297***	-0.302***			
	(0.034)	(0.105)			
Importer is GATT/WTO member$_{jt}$	0.056*	0.095			
	(0.030)	(0.080)			
Civil Conflict$_{ijt}$	**-0.194***	**-0.057**			
	(0.023)	**(0.043)**			
Domestic civil conflicts in exporter$_{it}$ * $Intlflow_{ij}$			**-1.146***	**-0.599***	
			(0.234)	**(0.216)**	
Domestic civil conflicts in importer$_{jt}$ * $Intlflow_{ij}$					**-0.599***
					(0.216)
Observations	216,783	270,445	275,628	261,956	261,956
R-squared	0.697	0.721	0.874	0.993	0.993
Importer time FE	No	No	Yes	Yes	Yes
Exporter time FE	No	No	Yes	Yes	Yes
Country pair	No	No	No	Yes	Yes

Notes: The results in this table are estimated from equation (3) for 142 countries from 1989 to 2006 to study the impact of civil conflicts on international trade. Columns (3)-(5) include exporter-time and importer-time fixed effects, while columns (4) and (5) additionally include country-pair fixed effects. Estimates of the fixed effects are omitted for brevity. Column 1 uses the OLS estimator, while columns 2-5 rely on the PPML estimator. Columns 1 and 2 consider civil conflicts at the country-pair year level. Columns 3 and 4 rely on civil conflicts in the exporter, and column 5 uses civil conflicts in the importer. Variation in the number of observations is due to missing values and observations dropped due to being singletons or separated by fixed effects. Standard errors, clustered by country pair, are reported in parentheses.***, ** and * represent statistical significance at the 0.01, 0.05 and 0.10 levels, respectively. See text for further details.

Table 5: Intensity of civil conflicts and international trade

Dependent Variable: bilateral trade flows$_{ijt}$	(1) (PPML)	(2) (PPML)	(3) (PPML)	(4) (PPML)	(5) (PPML)	(6) (PPML)
GDP of Exporter$_{it}$	0.763*** (0.018)					
GDP of Importer$_{jt}$	0.757*** (0.025)					
Distance$_{ij}$	-0.457*** (0.038)	-0.456*** (0.040)				
Contiguity$_{ij}$	0.720*** (0.099)	0.612*** (0.068)				
Common language$_{ij}$	0.455*** (0.089)	0.314*** (0.068)				
Pair in colonial relationship $_{ij}$	0.369*** (0.110)	0.284* (0.146)				
RTA $_{ijt}$	0.264*** (0.081)	0.784*** (0.062)	0.036 (0.044)	0.036 (0.044)	0.034 (0.044)	0.036 (0.044)
Exporter is GATT/WTO member$_{it}$	-0.318*** (0.107)					
Importer is GATT/WTO member$_{jt}$	0.079 (0.079)					
Intensity of Civil Conflict$_{ijt}$	**-0.035*** (0.011)**					
Intensity civil conflicts in exporter$_{it}$ * $Intlflow_{ij}$		**-0.302*** (0.043)**	**-0.181** (0.083)**		**-0.325** (0.129)**	
Intensity civil conflicts in importer$_{jt}$ * $Intlflow_{ij}$				**-0.181** (0.083)**		
Intensity square$_{it}$ * $Intlflow_{ij}$					**0.028* (0.015)**	
Limited civil conflicts in exporter$_{it}$ * $Intlflow_{ij}$						**-0.602*** (0.214)**
Extensive civil conflicts in exporter$_{it}$ * $Intlflow_{ij}$						**0.656 (0.756)**
Observations	270,445	275,628	261,956	261,956	261,956	261,956
R-squared	0.722	0.874	0.993	0.993	0.993	0.993
Importer time FE	No	Yes	Yes	Yes	Yes	Yes
Exporter time FE	No	Yes	Yes	Yes	Yes	Yes
Country pair	No	No	Yes	Yes	Yes	Yes

Notes: The results in this table are estimated from equation (3) for 142 countries from 1989 to 2006 to study the impact of civil conflicts on international trade. Columns (2)-(6) include exporter-time and importer-time fixed effects, while columns (3)-(6) additionally include country-pair fixed effects. Estimates of the fixed effects are omitted for brevity. All columns rely on the PPML estimator. Columns 1 and 2 consider civil conflicts at the country-pair year level. Columns 3 and 4 rely on civil conflicts in the exporter, and column 5 uses civil conflicts in the importer. Variation in the number of observations is due to missing values and observations dropped due to being singletons or separated by fixed effects. Standard errors, clustered by country pair, are reported in parentheses.***, ** and * represent statistical significance at the 0.01, 0.05 and 0.10 levels, respectively. See text for further details.

Table 6: Type of civil conflicts: Ethnic conflicts versus Political conflicts

Dependent Variable:	(1)	(2) Presence	(3)	(4)	(5) Intensity	(6)
bilateral trade flows$_{ijt}$	Ethnic Conflicts	Political Conflicts	Civil Conflicts	Ethnic Conflicts	Political Conflicts	Civil Conflicts
RTA $_{ijt}$	0.033	0.046	0.033	0.032	0.046	0.032
	(0.044)	(0.045)	(0.044)	(0.043)	(0.045)	(0.043)
Domestic ethnic conflicts$_{it}$ * $Intlflow_{ij}$	**-0.712***			**-0.711***		
	(0.203)			**(0.199)**		
Domestic political conflicts$_{it}$ * $Intlflow_{ij}$		**-0.091**	**-0.054**			
		(0.312)	**(0.250)**			
Intensity of ethnic conflicts$_{it}$ * $Intlflow_{ij}$				**-0.258***		**-0.258***
				(0.087)		**(0.088)**
Intensity of political conflicts$_{it}$ * $Intlflow_{ij}$					**0.026**	**0.003**
					(0.071)	**(0.055)**
Observations	261,956	261,956	261,956	261,956	261,956	261,956
R-squared	0.993	0.992	0.993	0.993	0.992	0.993
Importer time FE	Yes	Yes	Yes	Yes	Yes	Yes
Exporter time FE	Yes	Yes	Yes	Yes	Yes	Yes
Country pair	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The results in this table are estimated from the gravity equation (3) for 142 countries from 1989 to 2006 to study the impact of civil conflicts on international trade. All columns include exporter-time, importer-time, and country-pair fixed effects. Estimates of the fixed effects are omitted for brevity. All columns employ the PPML estimator. Columns 1-3 use a dummy for the presence of civil conflicts, while columns 4-6 rely on the intensity of civil conflicts. Columns 1 and 4 focus on ethnic conflicts, while columns 2 and 5 include political conflicts. Columns 3 and 6 use both ethnic and political conflicts. Standard errors, clustered by country pair, are reported in parentheses.***, ** and * represent statistical significance at the 0.01, 0.05 and 0.10 levels, respectively. See text for further details.

Table 7: Persistence of Civil conflicts

Dependent Variable:	(1)	(2)	(3)	(4)	(5)
bilateral trade flows$_{ijt}$	Presence of conflicts	Onset of conflicts	Persistent conflicts	Duration of Conflicts	Lagged conflicts
RTA$_{ijt}$	0.035	0.034	0.034	0.030651	0.028
	(0.044)	(0.044)	(0.044)	(0.043264)	(0.044)
Domestic civil conflicts$_{it}$*Intlflow$_{ij}$	-0.599***	-0.629***	-0.272*	-0.141	-0.441***
	(0.216)	(0.213)	(0.142)	(0.234516)	(0.123)
New civil conflicts$_{it}$*Intlflow$_{ij}$		0.357***			
		(0.136)			
Ongoing civil conflicts$_{it}$*Intlflow$_{ij}$			-0.357***		
			(0.136)		
Duration of civil conflicts$_{it}$*Intlflow$_{ij}$				-0.059***	
				(0.0115)	
Duration squared of civil conflicts$_{it}$*Intlflow$_{ij}$				0.0015***	
				(0.000246)	
Domestic civil conflicts$_{i,t-4}$*Intlflow$_{ij}$					-0.398***
					(0.133)
Domestic civil conflicts$_{i,t-8}$*Intlflow$_{ij}$					-0.058
					(0.097)
Domestic civil conflicts$_{i,t-12}$*Intlflow$_{ij}$					0.103
					(0.150)
Domestic civil conflicts$_{i,t-16}$*Intlflow$_{ij}$					-0.097**
					(0.047)
Domestic civil conflicts$_{i,t-20}$*Intlflow$_{ij}$					0.018
					(0.083)
Domestic civil conflicts$_{i,t-24}$*Intlflow$_{ij}$					-0.141**
					(0.071)
Observations	261,956	261,956	261,956	261,956	261,956
R-squared	0.993	0.993	0.993	0.993	0.994
Importer time FE	Yes	Yes	Yes	Yes	Yes
Exporter time FE	Yes	Yes	Yes	Yes	Yes
Country Pair FE	Yes	Yes	Yes	Yes	Yes

Notes: The results in this table are estimated from the gravity equation (3) for 142 countries from 1989 to 2006 to study the impact of the persistence of civil conflicts on international trade. All columns include exporter-time, importer-time, and country-pair fixed effects. Estimates of the fixed effects are omitted for brevity. All columns employ the PPML estimator. Column 1 replicates baseline results for comparison. Columns 2 and 3 compare the impact of new and ongoing civil conflicts on trade. Column 4 includes the duration and duration square of conflicts. Column 5 uses lags of civil conflicts up to 24 years. Standard errors, clustered by country pair, are reported in parentheses.***, ** and * represent statistical significance at the 0.01, 0.05 and 0.10 levels, respectively. See text for further details.

Table 8: Spillover of neighboring civil conflicts on bilateral trade : Presence of civil conflict

Dependent Variable: Bilateral Trade Flows$_{ijt}$	(1) Domestic Conflicts	(2) Contiguous Conflicts	(3) Regional Conflicts	(4) Landlocked
RTA$_{ijt}$	0.035	0.030	0.028	0.028
	(0.044)	(0.043)	(0.043)	(0.043)
Domestic civil conflicts$_{it}$*Intlflow$_{ij}$	-0.599***	-0.532***	-0.471**	-0.476**
	(0.216)	(0.182)	(0.191)	(0.191)
Contiguous civil conflicts$_{it}$*Intlflow$_{ij}$		-0.159***	-0.124**	-0.123**
		(0.046)	(0.055)	(0.055)
Regional civil conflicts$_{it}$*Intlflow$_{ij}$			-0.059***	-0.056***
			(0.009)	(0.009)
Contiguous civil conflicts for landlocked exporter$_{it}$*Intlflow$_{ij}$				-0.379***
				(0.143)
Regional civil conflicts for landlocked exporter$_{it}$*Intlflow$_{ij}$				-0.086***
				(0.015)
Observations	261,956	261,956	261,956	261,956
R-squared	0.993	0.993	0.993	0.993
Importer time FE	Yes	Yes	Yes	Yes
Exporter time FE	Yes	Yes	Yes	Yes
Country Pair FE	Yes	Yes	Yes	Yes

Notes: The results in this table are estimated from the gravity equation (3) for 142 countries from 1989 to 2006 to study the impact of the spillover effects of civil conflicts on international trade. All columns include exporter-time, importer-time, and country-pair fixed effects. Estimates of the fixed effects are omitted for brevity. All columns employ the PPML estimator. Column 1 replicates baseline results for comparison. Columns 2 includes a dummy for the presence of civil conflicts in contiguous countries, while column 3 uses a dummy for the presence of civil conflicts in non-contiguous neighbors. Standard errors, clustered by country pair, are reported in parentheses.***, ** and * represent statistical significance at the 0.01, 0.05 and 0.10 levels, respectively. See text for further details.

Table 9: Spillover of neighboring civil conflicts on bilateral trade:Intensity of civil conflict

Dependent Variable: Bilateral Trade Flows$_{ijt}$	(1) Domestic Conflicts	(2) Contiguous Conflicts	(3) Regional Conflicts	(4) Landlocked
RTA$_{ijt}$	0.036	0.031	0.028	0.028
	(0.044)	(0.043)	(0.042)	(0.042)
Domestic civil conflicts$_{it}$ * Intlflow$_{ij}$	-0.181**	-0.161**	-0.151**	-0.152**
	(0.083)	(0.074)	(0.070)	(0.071)
Contiguous civil conflicts$_{it}$ * Intlflow$_{ij}$		-0.045***	-0.044***	-0.044***
		(0.011)	(0.011)	(0.011)
Regional civil conflicts$_{it}$ * Intlflow$_{ij}$			-0.018***	-0.017***
			(0.003)	(0.003)
Contiguous civil conflicts for landlocked exporter$_{it}$ * Intlflow$_{ij}$				-0.057**
				(0.027)
Regional civil conflicts for landlocked exporter$_{it}$ * Intlflow$_{ij}$				-0.027***
				(0.006)
Observations	261,956	261,956	261,956	261,956
R-squared	0.993	0.993	0.993	0.993
Importer time FE	Yes	Yes	Yes	Yes
Exporter time FE	Yes	Yes	Yes	Yes
Country Pair FE	Yes	Yes	Yes	Yes

Notes: The results in this table are estimated from the gravity equation (3) for 142 countries from 1989 to 2006 to study the impact of the spillover effects of civil conflicts on international trade. All columns include exporter-time, importer-time, and country-pair fixed effects. Estimates of the fixed effects are omitted for brevity. All columns employ the PPML estimator. Column 1 replicates baseline results for comparison. Columns 2 includes a measure of the intensity of civil conflicts in contiguous countries, while column 3 uses the intensity of civil conflicts in non-contiguous neighbors. Standard errors, clustered by country pair, are reported in parentheses.***, ** and * represent statistical significance at the 0.01, 0.05 and 0.10 levels, respectively. See text for further details.

Table 10: Robustness checks: Additional controls

Dependent Variable: Bilateral Trade Flows$_{ijt}$	(1) Civil Conflicts	(2) Lagged Civil Conflicts	(3) Exclude Intense conflicts	(4) Weighted by Intensity	(5) Interstate Conflicts	(6) Additional Controls
RTA$_{ijt}$	0.035	0.032	0.034	0.035	0.035	0.030
	(0.044)	(0.044)	(0.044)	(0.044)	(0.044)	(0.043)
Domestic civil conflicts$_{it}$ * $Intlflow_{ij}$	-0.599***		-0.594***	-0.597***	-0.598***	-0.558**
	(0.216)		(0.215)	(0.215)	(0.215)	(0.224)
Domestic civil conflicts$_{i,t-1}$ * $Intlflow_{ij}$		-0.614***				
		(0.207)				
Interstate conflicts$_{it}$ * $Intlflow_{ij}$					0.063*	
					(0.037)	
GDP per capita$_{it}$ * $Intlflow_{ij}$						0.000015***
						(0.000003)
Observations	261,956	261,956	258,857	261,956	261,956	258,075
R-squared	0.993	0.993	0.993	0.993	0.993	0.993
Importer time FE	Yes	Yes	Yes	Yes	Yes	Yes
Exporter time FE	Yes	Yes	Yes	Yes	Yes	Yes
Country pair FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The results in this table are estimated from the gravity equation (3) for 142 countries from 1989 to 2006. All columns include exporter-time,importer-time fixed effects, and country-pair fixed effects. Estimates of the fixed effects are omitted for brevity. All columns employ the PPML estimator. Column 1 replicates baseline results for comparison. Column 2 includes a dummy for the presence of civil conflicts lagged by one year. Column 3 excludes the most intense conflicts, while column 4 weighs civil conflicts by their intensity. Column 5 controls for interstate conflicts, and column 4 controls for the exporter's level of development. Standard errors, clustered by country pair, are reported in parentheses.***, ** and * represent statistical significance at the 0.01, 0.05 and 0.10 levels, respectively. See text for further details.

A Appendix

A.1 Figures

Figure A1: Total value of international and intra-national trade flows according to the intensity of civil conflicts
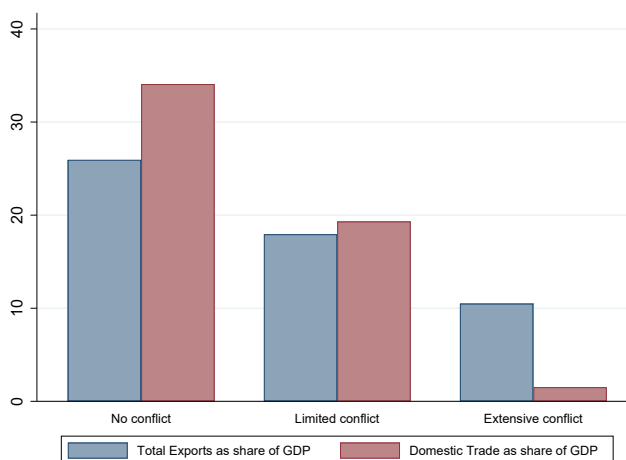
Notes: This figure plots the total value of international and intra-national trade flows as a share of GDP in case of no civil conflicts, limited civil conflicts, and extensive civil conflicts.
Constructed by the author using the MPEV and the CEPII data.

Figure A2: Distribution of international and intra-national trade flows
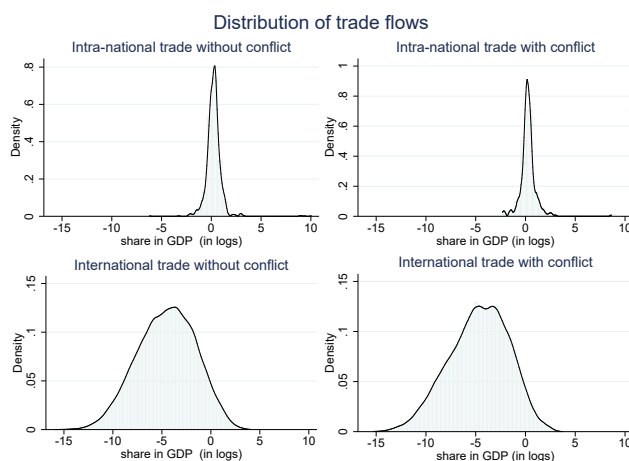
Notes: This figure plots the distribution of international and intra-national trade flows as a share of GDP in case of absence versus presence of conflicts.
Constructed by the author using the MPEV and the CEPII data.