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Civil Wars and Criminality: The Spillover of Violence

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Abstract

In this paper I address a negative externality of internal conflicts for neighboring countries: the rise in criminality associated with a civil conflict in a nearby state. I propose that two mechanisms may cause an increase in crime rates in countries located in the neighborhood of a war-torn country. First, the refugee flow leads to social tensions between the local population and the refugee groups. Second, the economic hardship created by the civil war in the neighboring country (disruption of trade, departure of investors). I test my hypotheses with panel data from the UN World Surveys on Crime Trends and Criminal Justice Systems (1970-1994). I run a simple fixed effects model and several robustness checks, and find empirical support for my arguments.

Introduction

Are there transnational factors that contribute to the rise of criminality? Does civil war have an impact on criminality and homicide rates in neighboring countries? The criminology literature has greatly contributed to our understanding of the causes of crime. Nonetheless, while country-level and individual-level analyses of crime are plentiful, there is little empirical work regarding the transnational factors that have an impact on criminality. The civil war literature has analyzed important issues such as the diffusion of civil conflict, and other negative externalities of civil wars (refugee flows, negative economic repercussions for neighboring countries). However, both literatures have neglected the study of the impact of civil violence in one country on crime rates in its neighboring countries. My goal in this paper is to bridge the gap between these two literatures and to contribute to fill the vacuum of research on the transnational factors that determine criminal behavior.

This work aims to start filling that gap by studying the impact of civil war on criminality in neighboring countries. The issue is important in its own right since it is essential to know more about this negative externality of civil wars so that the international community and countries that share borders with war-torn states can adopt policies to prevent the spread of violence during civil wars. But it is also essential to have a better understanding of the impact of civil conflict on crime rates in neighboring countries because the increase in criminality may be one of the intervening mechanisms that explain the

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diffusion of civil wars. If civil wars increase criminality in neighboring states they can create new grievances against the government among the population of those states. Moreover, the inflow of refugees from a civil war can produce a flow of weapons into a neighboring state, thereby creating an opportunity for rebel groups to organize. In sum, through the production of new grievances and opportunities, an increase in criminality may destabilize countries located near war-torn states, thereby creating the conditions in which the onset of a civil war is more likely.

This study aims to fill the gap in the analysis of transnational causes of crime by presenting a systematic empirical analysis that bridges criminology and civil war perspectives. This article argues that two negative externalities of civil wars (refugee flow and economic downturn) are intervening variables that explain the rise in criminality in states that share borders with a war-torn country. I test my hypotheses with panel data from the UN World Surveys on Crime Trends and Criminal Justice Systems (1970-1994). I run a simple fixed effects model and then several robustness tests, and I find strong empirical support for my arguments.

This paper will proceed as follows. First, I will review the relevant literature that addresses the negative externalities of civil wars and the causes of crime. Second, I will present my theoretical contribution about the rise of criminality in states located across the borders of war-torn countries. Third, I will present the data and the research design to assess the validity of my argument. Finally, I will present the empirical results and comment on the findings.

Negative Externalities of Civil Wars

There are a number of negative externalities civil wars impose on neighboring states. The first negative externality is the massive flow of refugees to neighboring countries which often results from civil wars (Schmeidl, 1997, Davenport et al., 2003). Large numbers of refugees can destabilize their host countries in at least two important ways. First, the refugee population often leads to sociopolitical instability in the receiving state. In fact, if their ethnic, tribal, or religious composition is different from the one existing in the receiving country, refugees can upset the "balance of power" at the national or the local level (McColl, 1993). Second, the refugee population may pose socioeconomic problems to the receiving country. If refugees are very numerous or very poor they may strain housing and transportation facilities. The refugees may also compete for scarce resources and jobs with the native population. In poor countries, the people entering the country may illegally occupy private or government land, and pose an ecological threat (water consumption, decimation of grazing land, production of waste). This situation may create resentment in the population of the host country, especially if the government diverts public expenditures to deal with the refugee inflow (Weiner, 1992-1993).

The second negative effect of civil wars for their environment is related to the pernicious impact of internal conflict on the economic situation in neighboring countries. Civil wars lead to several economic problems in the countries suffering the war. Several studies show that during the period of the war economic growth is reduced. For instance, Elbadawi (1999) argues that civil wars affect the economy through three mechanisms: they disrupt transactions-intensive activities (such as infrastructure and the production of manufacture), they divert expenditures from state services to citizens to war-related expenses, and they produce capital flight. Several empirical analyses reveal the negative effect of civil conflict on GDP per capita (Collier, 1999, Stewart et al., 2001). These negative economic repercussions in the war-torn country lead to a decrease in bilateral trade since the economic situation of a partner is one of the main determinants of trade between states. Moreover, during civil wars traders worry about their personal safety and communications tend to be less reliable and more expensive. Hence, trade between war-torn countries and neighboring states is disrupted (Bayer and Rupert, 2004). The disruption of trade is not the only negative consequence of civil wars on the economy of neighboring countries. Murdoch and Sandler (2002) demonstrate that the economic effects of civil violence spillover to neighboring nations. They find that civil conflicts create a significant negative influence on short-run growth in neighboring

countries. The countries more at risk are those that share large borders with the war-torn countries. Many reasons explain the spillover effect: disruption of trade, an increased risk perception by potential investors, collateral damage from the nearby conflict, and the diversion of resources to assist refugees (Murdoch and Sandler, 2002: 92).

The most extreme negative externality of internal conflict is civil war diffusion. A civil conflict in one state can lead to a "demonstration effect" that leads potential rebels to update their evaluations of the efficacy of armed upheaval (Kuran, 1998). Conflict can also spread through transnational ethnic ties when political actors in the neighboring state act in solidarity with their ethnic group in the war-torn country (Woodwell, 2004). Finally, conflict may diffuse through the negative externalities mentioned above. On the one hand, negative economic spillovers are likely to destabilize the neighboring country, thereby increasing the likelihood of civil war. On the other hand, the presence of large numbers of refugees from neighboring countries also makes the outset of civil war more likely (Salehyan and Gleditsch, 2006). Although the literature has paid a lot of attention to the spillover of violence through civil war diffusion, scant attention has been paid to a less extreme but probably more widespread form of diffusion of violence, i.e. the rise in criminality in nations sharing borders with war-torn countries.

Criminological theory has advanced many explanations of criminal behavior. It is important to briefly discuss the main theories of crime. Some of those theoretical accounts may be useful to understand the link between civil violence and criminality in neighboring states. In fact, many of the negative externalities of civil war presented above can be theoretically linked to the causes of crime.

The Causes of Crime

The Chicago School of Sociology advanced one of the first sociological explanations of criminality in the beginning of the twentieth century. The Chicago School perceived *social disorganization* as the root of criminal deviance. According to the sociologists of this school, such as Burgess or Park, immigration produce disorganized communities in which there are competing social values. Under those conditions, accepted social rules break down paving the way for criminal and pathological behavior. This is especially true in *zones of transition* where social life is highly mobile and transitory (Walklate, 2005). Crutchfield, Geerken and Gove (1982) similarly advance that social integration is inhibited by population turnover. According to these authors, the variation in crime rates among cities is linked to these migration dynamics. The social disorganization hypothesis is directly relevant for my study. As already mentioned, one of the negative externalities of civil wars is the flow of refugees to nearby states. If a neighboring country receives large numbers of refugees, the social equilibrium is likely to be upset, especially if the ethnic or religious composition of the refugees is different from that of the population living in the area hosting them temporarily. In this anomistic context, accepted social rules may break down and both the refugees and the population of the host country are more likely to indulge in criminal behavior.

Another criminological theory focuses on social structure and the availability of means. According to this strand of criminology, a large part of criminal behavior can be explained by the inability of certain sectors of society to reach their goals by legal means. Crime is seen as an alternative seized by individuals or groups because other channels to achieve their goals have been blocked or do not exist. In sum, individuals are pushed to criminality by poverty because they cannot satisfy their economic needs by legitimate means (Sykes, 1978: 240-268).[2] Several studies have shown that crimes that contain a property component (i.e., robbery, burglary, and larceny) tend to increase in times of economic hardship and rising unemployment (Cantor and Land, 1985, Chiricos, 1987).[3] This economic dimension of criminal behavior is also very relevant for my analysis. As shown above, civil wars tend to negatively affect the economic situation in neighboring countries. If the nearby countries are severely affected (decline in

[2] For a general discussion of the literature dealing with economic causes of crime see Chiricos (1987).

[3] Some studies argue that unemployment cannot explain long-run trends in crime, but they still show a significant impact of unemployment on short-run fluctuations in crime rates (Hale 1998).

growth, rise in unemployment), we can expect according to this branch of criminological theory an increase in criminality, at least in the short run. This is especially true if the countries suffering the negative spillover effect are already poor countries, which is almost always the case since civil wars tend to be clustered in poor regions (Collier and Hoeffler, 2002).

Another strand of criminological theory analyzes the individual characteristics of criminals. For instance, it is shown that criminal rates are higher when the population is younger. In fact, criminal behavior tends to rise in the teen years and decline during the late twenties (Gottfredson and Hirschi, 1983). Teenagers and young adults have a higher propensity to commit crimes. Moreover, large young cohorts tend to be more crime prone because they have access to fewer jobs and lower wages than smaller cohorts. Economic hardship produces mental stress and pessimism among young people, which in turn may lead to a rise in crime (Easterlin, 1987). Cohen and Land (1987) provide strong support for this theory in the US context. This insight can also be very important for the study of civil war's impact on criminality in nearby states. A recent study demonstrates that the costs and benefits of relocating are different for different individuals (Melander and Öberg, 2006). The study suggests that the oldest and weakest segments of the population tend to remain longer in the war-torn areas and often they do not leave at all. This is confirmed by UNHCR refugee statistics that show that young adults are overrepresented in refugee flows (UNHCR, 2006).[4] The relationship between gender and crime is also strong. Other things being equal, women are less likely to commit violent crimes than men (Nagel and Hagan, 1983). However, refugee statistics show a remarkable parity in sex distribution among refugees (UNHCR, 2006). Still, the arrival of large numbers of young male refugees with few or no resources may produce a rise in crime rates simply because they have the socio-demographic characteristics that many empirical tests have linked to higher propensity to indulge in crime.

Finally, the rational choice approach to criminology contends that individuals weigh the costs and benefits of criminal behavior before committing a crime. From this perspective, the best strategy to fight against criminality is to adopt deterrence policies to increase the costs of choosing criminal behavior –e.g. tougher prison sentences or death penalty– (Ehrlich, 1975). This approach can also help us understand the impact of civil wars on criminality in neighboring states. In fact, civil wars can create new strains for neighboring states that may be obliged to divert resources previously used to combat criminality in order to assist refugees and compensate the capital flight. As already mentioned, civil wars tend to reduce the GDP per capita and the growth rate in nearby countries. It is likely that these negative economic externalities weaken the capacity of the nearby state to impose law and order within its borders.[5] Hence, civil war can lead to a weakening of the state apparatus in neighboring countries, which will increase the likelihood of criminal behavior since the costs of committing a crime (or the perception thereof) will be reduced.

Civil Wars and the Diffusion of Violence

The focus of the civil war literature on conflict diffusion has neglected another form of violence spillover that is probably more common: the rise of criminality in states located in the neighborhood of war-torn countries. I contend that this effect is related to the other negative externalities of civil war presented above.

First, civil wars have a negative impact on the economic situation in neighboring countries. Civil conflicts negatively affect short-run growth in neighboring countries due to the disruption of trade, and

[4] For instance, in West Africa 17% of the refugee population located in camps is in the age category 12-17, 48% is in the age category 18-59, and only 3% is in the age category >60 in 2006. Unfortunately, the UNHCR statistics do not provide a more detailed breakdown of the data which would allow us to know the age ranges of refugees with more precision. However, it is clear that teenagers and young adults are overrepresented.

[5] Fearon and Laitin (2003) use GDP per capita as a proxy for a state's overall financial, administrative, police, and military capabilities.

the increased risk perception of international investors. In sum, civil wars may produce a severe economic crisis in neighboring countries. If the main trade partner of a given state is a war torn country *in its neighborhood*, it may lose a large share of its export revenues very rapidly creating economic hardship. The negative economic repercussions of internal conflicts on nearby states may lead to a rise in crime rates for two main reasons. First, a severe economic crisis can lead to an increase in poverty rates in the short run. Economic hardship can push individuals to engage in criminal behavior if other legal and socially accepted means to reach their economic needs are blocked because of the economic conjuncture. Second, a reduction in growth can temporarily reduce the capacity of the state to face criminal activity. If individuals perceive that the costs of crime decrease, the fear of punishment in turn dwindle. During a severe economic crisis the police and military capabilities of states may decline, and the perceived costs of crime for individuals may decrease. Civil wars are often located in poor regions where countries tend to have weak or even failed states. In this context, the decline in the law enforcement capabilities of the state is likely to be especially pernicious, and to produce a significant increase in criminality. I do not expect that the negative economic consequences of a civil war in a neighboring country will be felt immediately. In fact, the country may have financial resources to deal with the immediate impact of the economic crisis engendered by the internal conflict in the neighborhood. Moreover, investors in the country will carefully consider the security situation before fleeing the country. However, after a rather limited lapse of time a civil war in the neighborhood will create economic hardships, which will in turn provoke an increase in crime rates.

The main hypothesis of this paper follows from this argument:

> *H_{1a}: Civil wars should be associated with higher crime rates in the countries located near the borders of a war-torn state.*
>
> *H_{1b}: This effect should materialize only after a certain amount of time has passed since the negative economic externalities of civil wars are not immediate.*

The second theoretical reason why civil wars are expected to increase crime rates in nearby countries is that internal conflicts are often associated with refugee movements. Many countries located near war-torn states receive large inflows of refugees which can increase criminality for several reasons. First, refugees aggravate the problems presented above. Host countries must divert their scant resources to deal with this humanitarian problem. Moreover, the refugee population competes with the local population for jobs and scant resources and often occupies private or public lands without authorization. Hence, the inflow of refugees increases the likelihood of negative economic externalities and state weakening which can produce a rise in criminality. Both the native and the refugee population may engage in criminality in the territory of the host state. The local residents may see their means of survival disrupted by the refugee inflow. But the refugees are more prone to engage in criminal behavior - especially in the short run- because they have lost their homes and jobs, and depend on the generosity of the host state and the international community to make ends meet. Besides, several studies have shown that young adults are more prone to committing crimes than other demographic groups. The young cohort is overrepresented in refugee groups which is another element that should contribute to an increase in crime rates in the host country. Furthermore, the arrival of large numbers of refugees can contribute to social disorganization and lead to the breakdown of accepted social rules, especially when the host population and the refugees are from a different religion or ethnic group. Salehyan and Gleditsch (2006) argue that the arrival of refugees may lead to tensions between the local population and the refugees, which increases the likelihood of civil war diffusion. However, the spillover of violence does not necessarily lead to an internal conflict in the receiving state. In most cases, it is likely that the host state will be able to impose a minimum level of control in the regions where refugees are located, and civil war will not spread. But the tension and mistrust between the native and the refugee population should still lead to a significant increase in criminal behavior in the region of the country where refugees are located

if the ethnic or religious balance is upset by the refugee inflow.[6] Finally, refugee flows may lead to an illicit spread of arms, especially if some members of rebel groups cross the borders as refugees. The increase in crime rates may also reflect the easier access to arms when civil wars are taking place in the neighborhood. Such arguments yield the following hypothesis

> *H_2: Large refugee inflows from a neighboring war-torn state should lead to an increase in crime rates in the host country.*

Data

The criminality data used in this paper comes from the United Nations World Surveys on Crime Trends and Criminal Justice Systems (Burnham and Burnham, 1999). These data include many crime variables for the period 1970-1994. It is the most comprehensive crime dataset (211 countries are included) which allows us to study the impact of different variables on crime trends with a large-N cross-national study. Crime rates are often unreliable because when crime rises incumbent governments often prefer to hide the true rates to avoid losing power. The fact that these data were collected by an independent organ of the United Nations (the UN International Crime Prevention and Criminal Justice Branch) adds to the reliability of the data, and by extension, to the validity of the results of the present analysis.

Nonetheless, some characteristics of the database make the statistical analysis of the data problematic. On the one hand, some African countries are absent from the dataset. Many of these countries are located near the borders of war-torn states so knowing more about the crime trends in those countries would be very useful for this analysis. On the other hand, the data is organized in five waves, covering the years 1970-1975, 1975-1980, 1980-1986, 1986-1990, and 1990-1994. This is problematic because not all the countries are included in all the waves. Some countries drop from one wave to the other while others are included. Moreover, some countries drop in the middle of a wave.[7] However, enough countries bordering war-torn states are consistently present which allows for a meaningful statistical analysis to be conducted.

The effect of civil war in a neighbor state and refugee inflow will be estimated on two different dependent variables coming from this dataset (homicide rates and robberies). These two variables do not follow a normal distribution and are extremely unbalanced. Homicide rates range from 0 in Oman in 1970 to 75928 in India in 1992. In the same vein, robberies range from 0 in Oman in several years to 687730 in the United States in 1991. Both distributions are severely skewed so I take the natural log of the number of robberies and of homicide rates as the dependent variables in the statistical analysis.[8]

The main independent variables in this analysis come from Salehyan and Gleditsch's (2006) oft-cited paper[9]. First, I use the binary variable "civil war in neighbor" which reflects whether a civil war was taking place in a neighboring country in a given year. This variable was constructed with data coming from the Uppsala/PRIO dataset (Gleditsch et al., 2002). The second independent variable is a logged variable measuring the number of refugees from neighboring countries arriving to a state in a given year (borders falling within a distance of 100 kilometers or less) which also comes from Salehyan and Gleditsch (2006). I recoded as 0 all the cases in which refugees were received by a country that did not

[6] Even if the tension leads to an internal conflict in the host state, this is likely to take some time. In the short-run, the instances of violence between the host and the refugee population are instances of crime, and not of civil conflict.

[7] This is certainly related to the fact that the collaboration of the governments is required to collect this sensitive information. A government change or a regime change may have made the continuation of the data collection impossible in some cases.

[8] The appendixes 1 and 2 provide summary statistics for the dependent variables (before and after the logged transformation).

[9] I thank the authors of this paper for generously making replication data available.

have civil wars in the neighborhood, so as to be sure that I was estimating the impact of *civil war refugees* (as opposed to refugees in general) on criminality.

Control Measures

The argument put forward in this paper is that civil conflicts increase criminality in neighboring states. However, many other variables may have an independent effect on crime rates, as it was suggested in the literature review. Therefore, it is essential to control for the effect of other country-level variables to ensure that the findings are valid.

First, one branch of the criminology literature contends that criminal behavior is related to the inability of individuals to sustain themselves through legal means. In these studies, economic hardship is presented as one of the main predictors of criminality. To control for the effect of economic hardship on criminality, I include measures of GDP per capita from 1970 to 1994 coming from the Penn World Tables (Heston et al., 2009).

Second, several scholars have argued that crime is spurred by social disorganization. According to this branch of the literature, criminal behavior has social roots which are often associated with population turnover and migration dynamics. Two proxies for the social disorganization theory are included in the analysis. First, I control for population density. The data comes from the Cross-National Time-Series Data Archive (Banks, 2008). If this sociological theory is correct, an increase in population density should create social disorganization and, in turn, produce a rise in crime rates. Second, I include an ethnic fractionalization variable since some studies show that ethnic heterogeneity has a significant positive effect on criminality rates (Avison and Loring, 1986). This finding is in line with the social disorganization branch of criminality. The ethnic fractionalization data come from Alberto Alesina's fractionalization database (Alesina et al., 2003).

Third, it is important to control for demographic information because several studies in the criminology literature (Gottfredson and Hirschi, 1983; Cohen and Land 1987; Easterlin 1987) have argued that specific demographic groups are more prone to commit crimes. I will include in my model a variable measuring the percentage of young population in a country (persons ranging from 15 to 24 years of age) coming from the UN World Population Database.

Finally, I use the Polity-IV scores to control for level of democracy (Marshall et al., 2009).[10] The criminology literature shows that democratic governments punish major crimes more severely and minor crimes less severely than authoritarian regimes (Lin, 2007, Cheibub, 2002). Hence, I expect that the effect of democracy on crime will be negative for major crimes such as murders and positive for minor crimes such as robberies.

Research Design

The relationship between crime rates and the two independent explanatory factors of interest (civil war in the neighborhood and civil war related refugee inflows) is estimated with panel data fixed effects models. Fixed effects models use the repeated measures on the same units to provide efficient estimators of the model parameters. In this case, I estimate the impact of civil war in the neighborhood and inflow of refugees on different crime variables. Fixed effects models also allow us to control for the unobserved heterogeneity due to stable unmeasured variables that differ across units. This is the adequate model in this case since it is likely that a lot of stable unmeasured factors affect homicide rates and robberies in different countries. The fixed effects procedure allows for the incorporation of these stable factors into the

[10] Polity-IV scores range from -10 for fully authoritarian regimes to 10 for fully democratic regimes.

model. My analysis includes data from the five waves of the United Nations World Surveys on Crime Trends and Criminal Justice Systems (1970-1975, 1975-1980, 1980-1986, 1986-1990, 1990-1994).

The analysis of pooled cross-sectional time-series data is challenging since ordinary least squares (OLS) assumptions of homoskedasticity and uncorrelated error terms are likely to be violated (Stimson, 1985). Although OLS estimates are unbiased in the presence of autocorrelation, these estimates are not efficient, which may contaminate tests of statistical significance.

In order to overcome these problems, I assessed the impact of civil wars on criminality in neighboring states through a series of panel analyses. First, I run the fixed effects and the random effects models. Then, I performed the Hausman test which produced a highly significant test statistic (Prob>chi2 = 0.000). Hence, I rejected the random effects model and continued to work with the fixed effects setup. However, fixed effects models cannot estimate the effect of time-invariant variables, and produce very inefficient estimates of variables that rarely change. When such variables are introduced in the model as independent variables, "the fixed effect will soak up most of the explanatory power of these slowly changing variables. Thus, if a variable (…) changes over time, but slowly, the fixed effects will make it hard for such variables to appear either substantively or statistically significant" (Beck, 2001: 285). The FEVD estimation technique developed in Plümper and Troeger (2007) is designed for PTSCS/Panel data consisting of data on independent variables that rarely or never change through time. In this case, I used the same measure of ethnic fractionalization for every year so this variable cannot be measure by the basic fixed effects model. Moreover, population density changes very slowly and the level of democracy (as measured by the Polity-IV score) rarely changes so the FEVD estimation technique is appropriate.[11]

Finally, I performed a modified Wald test for groupwise heteroskedasticity in fixed effects models, which produced a significant test statistic (prob>chi2 = 0.00) suggesting that there is heteroskedasticity across units (countries).[12] Then, as a robustness check, I run the FEVD procedure with country clustered standard errors. If the results of the basic FEVD model are robust to the incorporation of this correction, we can be confident on their robustness.

The tables with the different models follow (see next two pages):

[11] The FEVD estimation requires that the researcher decides whether variables are considered "time-variant" or "time-invariant". I follow Plümper and Troeger's (2007) advice to consider a variable as "time-invariant" when the between variance exceeds the within variance by a factor of 2.00. Only two independent variables have a between to within ration higher than 2.00 in the dataset (population density and ethnic fractionalization) and they will be considered as time-invariant in the empirical analysis that follows.

[12] The last two estimators mentioned (Wooldridge test and modified Wald test) are available through the "xtserial" and the "xttest3" commands in STATA 10.0.

Table 1: Panel Data Models Estimation: the Impact of Civil War on Homicide Rates

	(1) FE Model	(2) FE Model	(3) FEVD Model	(4) FEVD Model with country clustered SE
Civil War Refugees	.034*	.030***	.030***	.030***
	(.007)	(.008)	(.005)	(.006)
Civil War Neighbor	.008			
	(.072)			
Civil War Neighbor (lagged)		.215**	.215***	.215***
		(.072)	(.044)	(.043)
Per Capita GDP	.050***	.047***	.047***	.047***
	(.008)	(.008)	(.004)	(.007)
Youth Population	-.007	.005	.005	.005
	(.020)	(.020)	(.011)	(.016)
Democracy Level (Polity IV)	.015***	.018**	.018***	.018***
	(.004)	(.005)	(.003)	(.004)
Population Density	.037**	.034**	.009***	.009***
	(.014)	(.013)	(.002)	(.000)
Ethnic Fractionalization	(omitted)	(omitted)	1.204***	1.203***
			(.097)	(.005)
Constant	5.432***	5.130***	4.746***	4.746***
	(.381)	(.400)	(.198)	(.003)
Rho	.89	.89		
R-squared	.09	.10	.90	.90
Observations	1174	1081	1081	1081
Number of countries	93	93	93	93

Table 2: Panel Data Models Estimation: Civil-War Refugees and the Rise in Criminality

	(1) FE Model	(2) FE Model	(3) FEVD Model	(4) FEVD Model with country clustered SE
Civil War Refugees	.018*	.024**	.024***	.028**
	(.010)	(.010)	(.006)	(.011)
Civil War Neighbor	.068			
	(.096)			
Civil War Neighbor (lagged)		.167*	.167***	.167*
		(.089)	(.059)	(.090)
Per Capita GDP	.124***	.121***	.121***	.121***
	(.011)	(.010)	(.005)	(.020)
Youth Population	.026	-.000	-.000	-.000
	(.026)	(.026)	(.013)	(.026)
Democracy Level (Polity IV)	.011**	.013**	.013***	.013
	(.006)	(.007)	(.003)	(.011)
Population Density	-.017	-.024	-.001	-.001**
	(.018)	(.017)	(.002)	(.000)
Ethnic Fractionalization	(omitted)	(omitted)	2.747***	2.747***
			(.123)	(.016)
Constant	6.460***	6.930***	5.705***	5.705***
	(.496)	(.497)	(.241)	(.007)
Rho	.86	.86		
R-squared	.138	.151	.882	.882
Observations	1,147	1,068	1,068	1,068
Number of countries	88	87	87	87

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Findings and Discussion

I estimated the impact of internal conflict in a neighboring country and of refugee inflow on two crime variables with a series of panel data models including data from the five waves of the UN World Surveys on Crime Trends and Criminal Justice Systems. The empirical results provide support for the hypotheses put forward in this paper.

First, as expected by my theory, the fixed effects models show that a refugee inflow from a bordering war-torn country tends to produce a strong and significant increase in crime rates. Controlling for GDP per capita, population density, the percentage of youth population, level of democracy, ethnic fractionalization and for the potentially biasing effects of unmeasured stable variables at the country level, a country receiving a large number of refugees when a civil war is taking place in its neighborhood is likely to see its homicide rates increase. This effect is strong and remains statistically significant in all the fixed effects models. The coefficients of models in which the dependent and independent variable of interest are in log form can be straightforwardly interpreted. The coefficient in this situation can be interpreted as a *partial elasticity* (ratio of the percent change in one variable to the percent change in another variable) since all other variables in the equation are held constant. Based on the regression results of the FEVD model with country clustered standard errors, a one percent increase in refugee inflow from a neighboring civil war is associated with a .03% increase in homicide rates. In other words, a 100% increase in the number of refugees arriving form a neighboring war-torn country leads to a 3% increase in homicide rates. The effect of refugee inflow on homicide rates confirms that the arrival of large numbers of refugees creates tensions between the population in the host country and the refugee groups. Homicides rates increase because population groups that mistrust each other and compete for the same resources are put in close contact.

The empirical results also indicate that refugee inflows from war-torn countries tend to increase robberies in the host countries. The relationship goes in the expected direction and is statistically significant in all the models in Table 2. Based on the regression results of the FEVD model with robust standard errors, a one percent increase in refugee inflow from a neighboring civil war is associated with a .028% increase in homicide rates. In other words, a 100% increase in the number of refugees arriving form a neighboring war-torn country leads to a 2.8% increase in robberies. The positive relationship observed between the number of refugees arriving to a country and robberies committed supports my theoretical expectation. Refugees arrive to their host countries without resources and also aggravate the economic hardships of the local population. The combination of these two factors explains why crimes that have a property component such as robberies increase when large numbers of refugees arrive from a neighboring war-torn country. In sum, my hypothesis concerning the relationship between refugee inflow from neighboring war-torn countries and rise in criminality is confirmed by the empirical findings.

But does civil war have an independent effect on crime rates in neighboring countries when the refugee inflow is already controlled for in the analysis? As theoretically expected, the models show that the relationship exists but only after a certain amount of time has passed. The fixed effects models estimating the synchronous impact of civil war in the neighborhood on homicide rates do not reach statistical significance. However, the models in which the variable is lagged show results more in line with my theory. Homicides rates tend to increase when civil wars are taking place in nearby states but only after a certain amount of time has passed since the beginning of the conflict. In all the models estimating the lagged impact of civil war in the neighborhood on homicide rates, the coefficient of the lagged (2 year lag) "civil war in neighbor" dummy variable goes in the expected direction and is statistically significant.[13] A civil war in a bordering country does not appear to have a simultaneous effect

[13] The coefficient for the 1-year lag of this variable is smaller (.159) than the coefficient for the 2-year lag (.215) but it is also statistically significant at the 5% level, suggesting that the impact of civil war on criminality in neighboring countries increases gradually.

on homicide rates. However, all the models with a two year-lagged measure of the dependent variable indicate that civil war in the neighborhood is a strong and significant predictor of homicide rates. In fact, from the FEVD model with country clustered standard errors we can conclude that if there is a civil war in a country's neighborhood we can expect a 24% yearly increase in homicide rates in that country after a two-year lag.[14]

In the same vein, the civil war dummy variable does not have the expected effect on robberies in the short term. This result is puzzling. It is possible that a civil war in the neighborhood pushes the neighboring states to temporarily increase the resources they use to insure law and order so as to avoid a spillover of the conflict. In the short run, this may have the effect of increasing the costs of criminal behavior thereby maintaining the likelihood of committing robberies at the same level as before. However, the theory put forward in this paper receives strong support when the independent variable of interest is lagged. All the models show a very strong and statistically significant impact of civil war in the neighborhood on robberies. When the civil war dummy variable is lagged two years, the expected relationship between civil wars in the neighborhood and the rise in crimes with a property component appears clearly[15]. In fact, from the FEVD model with country clustered standard errors we can conclude that if there is a civil war in a country's neighborhood we can expect an 18.2% yearly increase in robberies in that country after a two-year lag. This lag is consistent with my theory. My main argument is that a civil war leads to an increase in criminality by aggravating the economic situation in the neighboring countries. However, this effect is not likely to be immediate. The economic crisis will unfold gradually when trade with the war-torn country is severed, potential investors prefer to go elsewhere due to the poor security conditions, and state's resources are used inefficiently to deal with the negative externalities of the civil war in the nearby state. After a certain lapse of time (between one and two years according to my results), the effect of civil war in nearby states on crime rates is likely to be much stronger than immediately after the war as the empirical results confirm. Hence, my first hypothesis holds but only if we take this temporal dimension into account.

The Rho statistic is high in all my fixed effects models, ranging from .86 to .89. This shows that a lot of unit variance is explained by unmeasured country level factors not measured in my model. The fixed effects model allows me to control for these factors so I am confident in the reliability of the results. Moreover, the R-squared statistics in the FEVD models are quite high (.88 and .90) which indicates that the models are correctly specified.

As for the control measures, all the variables included in the model (except percentage of youth population) produce a significant effect on criminality. GDP per capita tends to significantly increase the homicide rates and the rates of crimes that have a property component. This result may reflect the fact that an increase in a country's wealth may lead to more opportunities to commit crimes for those that were left out of the overall growth. Population density is a strong and significant predictor of crime rates in all my models. Surprisingly, however, the sign of the coefficient changes for different types of crimes. As expected by the social disorganization theory, an increase in population density tends to produce an increase in homicide rates. On the contrary, population density appears to reduce the number of robberies committed. This effect, however, is not statistically significant in most of the models in Table 2 so we cannot attach a lot of confidence to this preliminary finding. As for the effect of level of democracy (as measured by the Polity-IV score) it appears that the distinction between minor and major crimes does not hold water. An increase in the level of democracy should be associated with a rise in criminality. This finding suggests that democratic regimes tend to be less effective than authoritarian regimes in repressing

[14] In order to substantively interpret the effect of dummy variables in models with log-transformed dependent variables, the following calculation has to be made = (exp(β) - 1)*100. In this case, (exp(.215)-1)*100= 23.98.

[15] When the variable is lagged one year, the size of the coefficient increases (as compared to the non-lagged variable) and approaches statistical significance. This also suggests that the effect of civil war in a neighboring country on criminality materializes gradually over time. The results of the models with a one year lag are not reported for ease of interpretation but are available from the author upon request.

criminal behavior.[16] Finally, ethnic fractionalization is a strong predictor of criminality as it can be seen in the model 5 with standardized coefficients. Higher levels of ethnic heterogeneity are associated with higher levels of criminality.

Conclusion and Policy Implications

This paper has analyzed the impact of civil wars and refugee inflows on criminality in countries that share borders with a war-torn country. My theoretical expectations were supported by the empirical results of the panel fixed effects models I estimated. One of the most important findings is that refugee inflows tend to increase robberies and homicide rates in host countries. Civil wars that produce many refugees may lead to diffusion of violence but not necessarily through a spillover of conflict. Rather the violence may be diffused because criminality is likely to increase in neighboring countries. The civil war dummy variable which serves as a proxy for the economic effects of civil wars on neighboring countries is also a significant predictor of crime rates. The effect is not synchronous since the negative economic externalities are not felt immediately in countries located near the borders of a war-torn country. However, after a rather limited lapse of time (2 years in my statistical analysis) civil war in a neighboring country is a strong and significant predictor of an increase in crime rates.

The policy implications that can be derived from this paper are straightforward. The state sharing borders with a war-torn country and facing strains in its budget due to this situation should try not to cut the money that is allotted to police, military, and law enforcement functions. On the contrary, if possible, the states that share borders with a country where a civil war is taking place should try to find extra money for these law enforcement functions. Failing to do so may be very costly in the long term.

States hosting large numbers of refugees should design policies to avoid mistrust between the local and the refugee population. Each group has to be made aware of the hardships of the other and a better understanding should be encouraged from the top. The state and the international community should defend not only the interests of the refugees but also be concerned about the plight of the local population during this tough period in which they have to compete for scant resources with large refugee groups. This is essential to eliminate tensions between the local and the refugee population that can lead to repeated acts of violence and criminality.

[16] Alternatively, it is also possible that democratic regimes are simply more open and provide more reliable statistics about criminality than authoritarian regimes.

Appendix 1: Summary Statistics of the Dependent Variables (before logged transformation)

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Homicide Rates	1275	1891.5	6274.9	0	75928
Robberies	1260	18912	77261.6	0	687730

Appendix 2: Summary Statistics of the Dependent Variables (after logged transformation)

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Homicide Rates	1275	5.7	2	0	11.2
Robberies	1260	7.5	2.3	0.7	13.4

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