

How banks do respond to violence?

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Abstract : This paper aims to analyze the channels of banks' responses to violence using the breakdown of the earning assets of 1224 banks located in 88 countries in Africa, Asia, and the Middle East (where violence is more pervasive) over the period from 1990 to 2021. We highlight a negative relationship between violence and banks' earning assets. We find that violence leads to a reduction in banks' earning assets. Our results also highlight that the reduction in earning assets comes from a larger contraction in the volume of loans. To compensate for the reduction of loans, we observe that banks adjust their assets by holding more securities. However, the increase in securities holdings was not sufficient to compensate for the reduction in lending. Moreover, our findings show that banks' responses to violence differ according to the type of securities held, the type of loans and the maturity of loans and advances to banks. Finally, we show that the impact of violence on banks differs according to the internal conflicts, the cycle of violence, and the number of rivals. Overall, our paper documents the exposures of banks' asset structure to different types of violence. In doing so, we provide the first cross-country evidence of the impact of violence on banks.

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1 Introduction

The phenomenon of armed violence has undergone significant changes in recent years. For instance, the number of civil wars in the world reached its peak in 2020 with more than 28 conflicts recorded¹. The same observation can be made concerning the phenomena of social movements (protests or riots) and violence against civilians (terrorist attacks, sexual violence or forced displacement). Compared to 2010, there has been a drastic increase of 2320% in 2020 in terms of protests, for example². All of these events are also taking place in a context of more intense inter-state rivalries. The consequences of the 'destructive power' (Vahabi, 2016) of economic agents are not only important in human (Arce, 2019), economic (Frey et al., 2009) and social (Geys and Hernaes, 2021) terms, but also in financial terms. Closely linked to a country's local stability and geopolitics, banking sectors are today strongly influenced by the phenomena of armed violence and regional rivalries. Especially since banks finance the bulk of economic activity. In other words, they are essential for collecting savings, granting loans, and providing customers with means of payment and trading activities. Banking activity is a powerful lever for economic development but remains sensitive to external phenomena such as crises or conflicts (Gaibulloev and Younas, 2016; Mishra and Ongena, 2019; Fisman et al. 2020; Ouedraogo et al. 2022; Phan et al. 2022).

During crises or episodes of violence, the surrounding uncertainty leads to an increase in the cost of doing business (investments in secure facilities, pressure on wages, insurance premium, loss of confidence, decline in business through demand) that could exacerbate the worst condition of the economic environment (Gaibulloev and Younas, 2016). Violence also affects the distribution of loans, as banks fearing, for example, an increase in the share of non-performing loans (linked to the deterioration of borrowers' repayment capacity) may proactively : (i) reduce the volume of loans (Haddou, 2022; Bordo et al., 2016 Ghosh, 2016); (ii) increase their interest rates (Mishra and Ongena, 2019); (iii) transfer excess reserves from violence-affected countries to their affiliates in foreign markets (Gaibulloev and Younas, 2016). As a result, banks' earning assets could in turn be negatively affected by the rise in violence and thus increase incentives for banks to either : First, diversify their sources of income by, for example, holding more securities (e.g., Fang and Lelyveld, 2014; Doerr and Schaz, 2021; Pierri and Timmer, 2022). Diversification thus provides banks with greater stability because of their ability to raise additional funds in times of distress (Doerr and Schaz, 2021). Second, banks could relocate their operations to a country or area less exposed to violence. Indeed, banks may indeed reallocate their financial assets in order to mitigate losses due to their activity in a country that is experiencing violence (Lojak et al., 2023; Šeho et al., 2023). Otherwise, the episodes of violence should impact on the earning assets of banks through a reduction in the volume of credit distributed. This contraction of credit will be at least partially compensated by an increase in the holding of securities. Indeed, previous studies

1. Author's calculation from UCDP/PRIO data (involving at least 25 deaths/year)

2. Author's calculation from ACLED data.

have shown that in response to violent episodes, such as terrorist attacks, financial market participants diversify their securities portfolios (Arin et al., 2016; Chesney et al., 2011; Johnston and Nedelescu, 2005) in order to be more resilient and enhance their ability to bounce back quickly from such shocks (Kollias et al., 2013).

In this context, the main objective of this paper is to empirically study the impact of violence on banks. Specifically, we analyze how violence affects banks' productive assets. Then, we decompose the productive assets in order to identify the channels through which banks respond to violence. The analysis draws on annual bank-level data for 1224 banks located in 88 African, Asian, and Middle Eastern countries between 1990 and 2021³. We complement the analysis by assessing how banks adjust their securities portfolio as well as their loan portfolio by type and maturity. To measure violence, we consider a set of violent events, namely internal violence (i.e. protests, riots, battles, and civil war), onside violence (sexual violence, forced displacement, and terrorist attacks), and rivalries. These elements allow us to have a broad view of the violence and thus better identify the channels of the response of the banks according. The choice of these regions is mainly due to the fact that they are the most exposed to violence. Since 1990, these regions have been mainly affected by civil wars (Syria, Iraq, Yemen, Afghanistan, and Ethiopia), political instability (Burkina Faso, Mali, and Sudan), and regional rivalries (India versus Pakistan and the Islamic Republic of Iran versus Saudi Arabia). We, therefore, believe that these regions would provide an excellent laboratory for our analysis.

This paper differs from the existing literature in two aspects. First, the granularity of our dataset allows us to precisely identify the channels through which banks' earning assets respond to violence at a fine level of disaggregation. Thus, we explore how total earning assets and their decomposition respond to violence. We also assess whether the impact of the violence differs according to : (i) the type of securities held by banks, and (ii) the maturities and types of loans made by banks. Second, we use a large sample of banks located in several countries that were experiencing severe violence and covering a long time period of thirty-one years. The inference in the empirical analysis is based on the temporal and cross-sectional variation in the detail of earning assets of 1224 banks operating in 88 countries in Africa, Asia, and the Middle East over the period from 1990 to 2021, or more than 15,000 annual bank observations. In doing so, our data have the advantage of capturing historical data on the types of violence that occurred over our study period.

The results of our analysis can be summarized as follows : Our findings indicate that violence negatively affects banks' earning assets. We provide additional evidence on the financial impact of violence/conflict. Moreover, we provide new evidence by showing that the components of earning assets that react the most to violence are loans and securities. We highlight that the negative impact of violence on earning assets would come from a reduction in the volume of loans. This reduction was only partially offset

3. Our study covers countries in the Middle East (19 countries), Africa (47 countries), and Asia (22 countries).

by an increase in the holding of securities. We also find that the impact of violence on banks varies according to : (i) type of violence; (ii) the type of security held; (iii) the maturity and type of loans. Overall, we show that violence affects the earning assets of banks through a contraction in the supply of loans and in response to this banks diversify their sources of income by holding more securities.

The remainder of the paper is organized as follows. Section 2 briefly presents related literature. Section 3 describes our data. Section 4 summarizes our empirical methodology and findings. Section 5 concludes.

2 Related literature

The analysis of the impact of violence on banks has received little attention in the literature. Indeed, the majority of studies in the literature generally explore The economic cost of conflict/violence in terms of direct losses, such as human lives (Arce, 2019), destruction of property and infrastructure (Johnston and Nedelescu, 2006), psychological impact), opportunity costs (loss of business opportunities, interruption of production chains), reduction in the savings capacity of agents, capital flight (Efobi and Asongu, 2016⁴ and the spread of violence beyond the country where they were originated. For instance, Blattman and Miguel (2010) and Collier (1999) give a big picture of the socioeconomic impact of civil war. This type of conflict leads to reduced production, destruction of capital, reduced saving, and capital flight (Collier, 1999). Civil wars also, cause massive casualties, destroy physical infrastructure, alter social and political institutions, fuel refugee flows, fuel infectious diseases, and encourage illicit drug trafficking (Blattman and Miguel, 2010). In addition, Blattman and Miguel's (2010) studies suggest that losses of human capital can have more lasting adverse effects on the economy than losses of physical capital. But the destructive effects of the civil war are long-lasting because restoring peace does not necessarily pay dividends. Rising military spending heightened risk of resumption of war, and declining capital stock continue to pose major challenges to economic recovery (Collier, 1999). Bandyopadhyay et al. (2018) show the negative effects of terrorism on the trade in medium-skilled and high-skilled manufacturing sector goods. These effects are larger than the negative effects on the trade-in labor-intensive sector goods. Broadly, transnational terrorism has a more damaging impact on trade than domestic terrorism. Another branch of the literature investigates the responses of financial markets (notably the performance of stock indices of non-banking companies) to violence (mainly terrorist attacks) and mainly located in advanced countries. For instance, Kollias et al. (2013) assess the reaction of energy and equity markets to geopolitical changes and major international terrorist incidents (i.e. 1988 Pan Am bombing, 9/11, the Madrid 2004, London 2005 bomb attacks and the first and second Iraqi wars) over the period from 1988 to 2008. They uncover a mild division with two of the four market indices the S&P500 and FTSE100 – remaining neutral to the terrorist events. CAC and DAX – both seem to be undermined by such episodes and, as a result, their relationship with oil is affected. This is particularly true when it comes to

4. They find that domestic, transnational, unclear and total terrorisms consistently increase capital flight.

center terrorist attacks rather than fringe ones. Terrorism attacks seem to affect in a significant manner the correlation and volatility of markets. Increased volatilities and reduced correlation among stock assets and oil imply significant diversification benefits for investors and portfolio managers over periods characterized by such security shocks. In the same vein, Johnston and Nedelescu (2005) also examine how financial markets respond to attacks and how authorities respond. The primary attack studied was 9/11. They uncover that despite having been the direct target of terrorism, which materially affected the market infrastructure and operations, following the 9/11 attacks, the financial markets demonstrated resilience capacity to return to normalcy quickly. This allowed the financial markets to perform one of their key functions : *"that of digesting the information on the economic and financial impact of the terrorist attacks after an initial shock and efficiently incorporating the information into asset prices so that it could be integrated into decisions about the future"* Johnston and Nedelescu (2005).

Furthermore, Arin et al. (2016) test the existence of a statistically significant causality effect running from terrorist activity to stock market returns and volatility in six different countries (Indonesia, Israel, Spain, Thailand, Turkey, and the UK). Their results show a negative and significant impact of terrorism on both stock market returns and volatility. These effects are larger in emerging markets. Arin et al. (2016) also show that the two European stock markets (Spain and the UK) are generally less affected by shocks of this nature both in mean and in variance. This suggests that financial investors in these two countries are more resilient to these events. Moreover, Liargovas and Repousis (2010) study the reaction of Greek banks' stocks to three major international terrorist events : September 11, 2001, attacks in New York, the Madrid train bombing on March 11, 2004, and the London train bombing on July 7, 2005. The authors find that among the three terrorist attacks chosen, only 9/11 resulted in significant abnormal returns in the Greek bank stocks⁵. The authors suppose that 9/11 was more catastrophic due to the dominant position of the USA economy worldwide.

Finally, Chesney et al. (2011) analyze the impact of terrorism on the behavior of a stock, bond, and commodity markets. Their results show that roughly two-thirds of terrorist attacks had a significant negative impact on at least one stock market (global, European, US, and Swiss). Swiss stocks were hit the most and U.S. stocks the least. The insurance and aviation industries are the most vulnerable to terrorism, while the banking industry is the least vulnerable. This is in stark contrast to the financial collapse, which had a strongly negative impact on the banking sector. Our analysis complements previous work by analysing banks' responses to violence in the regions most heavily affected by violence (i.e. Africa, Asia and the Middle East) over the period 1990-2021. We therefore provide new insights into the financial impact of violence.

In doing so, our study is part of a nascent and groping literature on the impact of violence on banks (among others Gaibulloe and Younas, 2016; Mishra and Ongena, 2019; Fisman et al., 2020; Ouedraogo

5. Positive and negative excess returns indicate that the Athens Stock Exchange may have overreacted to the terrorist attacks and pre-event negative excess returns may have driven by of an impending anomaly

et al., 2022; Phan et al., 2022). Moreover, these previous studies have mainly focused on banks' responses (in terms of credit) to violence. For example, Mishra and Ongena (2019) assess the effects of conflict on lending officers in the border areas of India and Pakistan over the period from January 2011 to June 2017. The authors show that banks located in areas affected by violence (i.e., shelling) increased cumulative loan pricing by about 10 basis points. Mishra and Ongena (2019) also observe that banks' lending requirements increase as bombing episodes are repeated. This could therefore undermine banking stability in violence-prone areas (Ouedraogo et al., 2022; Phan et al., 2022). For example, Phan et al. (2022) analyze how geopolitical risk affects banking stability. They find strong evidence that geopolitical risk contributes to bank fragility (or aggregate risk). Specifically, they show that a percentage increase in geopolitical risk is associated with a decrease of about 0.71% basis point to a 5.10% in the average value of bank stability. Furthermore, geopolitical risk increases bank instability by reducing bank profitability.

Gaibullov and Younas (2016) also find that conflicts negatively impact bank lending. Nevertheless, the authors point out that this impact on credit depends on the degree of ethnic fractionalization. Similarly, Fisman et al. (2020) show that while exposure to religion-based community violence increases intergroup hostility, exposure to insurgency will lead to lending decisions more consistent with borrowers' religious affiliations. For example, leaders of Hindu branches facing riots made relatively fewer loans to Muslim borrowers because they were less likely to repay the loans (Fisman et al., 2020).

Our analysis differs from this previous effort in at least three ways. First, while these studies consider only the loan supply of banks (Mishra and Ongena, 2019; Fisman et al., 2020; Phan et al. 2022), and focus on a country level (Gaibullov and Younas, 2016), we consider the total earning assets (and its decomposition) of 1224 individual banks. In doing so, we provide a detailed analysis of banks' responses to violence. Second, we extend previous studies by investigating how violence affects : (i) the maturity and types of loans ; (ii) the holding of securities as well as the types of securities held. Third, while previous studies mainly consider a specific event of violence in one country, we go further by considering the full range of types of violence (i.e., internal violence, onside violence and rivalries) realized in several cities in 88 countries over a long period from 1990 to 2021. Overall, we provide new insights into banks' responses to violence.

3 Data description

3.1 Sample

To gauge the relationship between bank earning assets and violence, we combine data from several sources. In this section, we successively examine data on violence, bank earning assets, and a series of bank- and country-specific control variables. We use the banking data from the Fitch Solutions database

as the starting point for our sample. Fitch Solutions provides a comprehensive record of balance sheet and income statement financial information for banks around the world. We download all bank-year observations on Fitch Solutions for commercial banks located in Africa, Asia, and the Middle East over the period from 1990 to 2021, which corresponds to the broadest historical data coverage on this database. If banks report information at the unconsolidated level, we remove consolidated data from the sample to avoid double counting. Finally, bank-level explanatory variables are winsorized at the 1% and 99% levels to reduce the influence of outliers and potential data errors (e.g., when total assets, and customer deposits are below zero).

Our final sample is thus composed of 1224 banks located in 88 countries, consisting of more than 17000 annual bank observations. Nevertheless, the sample size and thus the number of observations varies according to the regression specifications because not all variables are available for all observations in the banking year. Table A presents the distribution of the number of banks per country. In the rest of this section, we describe the violence data and the earning assets of banks. The descriptive statistics and the correlation matrix are presented in Tables B and C, respectively.

3.2 Measures of violence and rivalries

To measure the impact of violence on banks, we consider three types of violence families widely used in the literature (Fawaz and Le Quellec, 2022 ; Krcmaric, 2018, Toukan, 2019) namely internal violence, onside violence, and number of rivals. This consideration allows us to have a broad view of violence and thus better identify the banks' responses to it.

Internal violence. For internal violence, we consider the different phases of the conflict process, namely protests, riots, battles, and civil war. The data on protests, riots and battles were obtained from the ACLED database. These data have the advantage of being disaggregated to the city level and available over a broad time period from 1990 to 2021. For each type of violence, we calculate the number of events recorded (by city and year). We also control for the number of associated deaths to account for the intensity of the violence. The civil war variable is coded as a binary variable : a dummy equal to 1 for the year of civil war at the country level and 0 for each year of peace. This variable is taken from the database UCDP/PRIO Armed Conflict with a 1000 death/year threshold and is available until 2021. It includes civil wars involving a government and an armed group.

Onside violence To further document the banks' responses to violence, we also examine the effect of targeting civilians and terrorism by distinguishing between different targets : sexual violence (extracted from ACLED), forced displacement (ACLED) and attacks on businesses (Global Terrorism Database). All our variables extend to 2021 and are calculated by city and year.

Number of rivals. Data on rivalries are taken from Goertz et al. (2016) and are available until 2015. Goertz et al. (2016) consider a broad set of interactions between states to define rivalries (diplomatic relations, intergovernmental ties, interstate wars, etc.)⁶. We consider only contiguous rivalries in our econometric analysis⁷. The aim is to place particular emphasis on forms of contiguous rivalries where foreign interference is more likely to occur (Lee, 2018). For example, during the 1980s and 1990s, Iran and Iraq each supported armed groups on both sides in their territorial dispute over the 'Khalij-e Fars' (in Farsi) or 'Chatt-el-Arab' (in Arabic). Similarly, the support of the Pakistani authorities for the rebels in Kashmir and Jammu engaged in an extremely costly war for India is consistent with this (Roberts, 2009). To identify contiguous countries, we use the data from the *Correlates of War (Direct Contiguity Data)*.

3.3 Earning assets variables

In response to episodes of violence, banks may require more collateral and increase the cost of credit, which would exacerbate the chaos. This, in turn, could negatively impact the performance of banks and lead to instability in banking systems. To capture banks' responses to violence, we consider total earning assets (and their breakdown). The data on banks' earning assets come from the Fitch Solutions database. In their annual return, banks tend to report their total earning assets. Using this information, we construct the total earning assets of banks. In order to further document the impact of violence on banks, we decompose earning assets into (i) net loans; (ii) loans and advances to banks; (iii) reserve repos and securities borrowing; (iv) total securities; (v) equity investments in associates; (vi) other earning assets. This decomposition of total earning assets gives us a broad picture of the reaction of the exposure of banks' earning assets to different violence. Our choice of variables is partly dictated by the availability of data. For example, it would be useful to include derivatives (assets), investments in property, and insurance assets in the decomposition of earning assets. But for our sample, these data are not available.

3.4 Control variables

In the subsequent empirical analysis, we make use of a number of variables related to both bank- and country-specific controls. Indeed, in examining the relationship between violence and banks' earning assets we control for a number of bank- and country-level variables. The inclusion of these control variables can improve the empirical model, especially since there is considerable evidence that these

6. More specifically, Goertz et al. (2016) proposes an index of rivalry between countries defined as follows : 0 – severe rivalry; 0.25 – lesser rivalry; 0.5 – negative peace; 0.75 – warm peace; and 1 – security community. We consider as rivals the country with a score strictly lower than 0.5, that is those responding to the criteria 'severe rivalry' and 'lesser rivalry' (see Goertz et al., 2016). In the 'severe rivalry' category, states actually see each other as rivals and competitors (Colaresi et al., 2008). This is the highest level of rivalry. The existing rivalries between India and Pakistan since 1947 illustrate this first category. On the other hand, the category 'lesser rivalry' contains rivalries of lesser intensity, such as Colombia and Venezuela in the years 1900-1982.

7. For example, Lebanon and Israel are contiguous rivals.

variables are important in the decision-making of banks. These control variables are therefore assumed to affect banks' earning assets. Regarding banks' specific controls, we include in our estimations four variables widely used in the banking literature that reflect : (i) size (i.e. the natural logarithm of total assets); (ii) funding (i.e. customer deposits to total assets); (iii) liquidity (liquid assets to total assets); (iv) efficiency (cost to income ratio). While most of the bank-specific variables are ratios, the level variable, namely size, are expressed in US dollars.

In order to take into account the macroeconomic environment in which banks operate, we also include three country-specific controls, namely : (a) the natural logarithm of the total population; (b) the growth rate of GDP per capita; (c) the level of inflation. Furthermore, the inclusion of other variables at the country level can introduce multicollinearity, which in turn leads to model instability. Specifically, we control for the level of inflation because inflation can impact the decision making of banks and thus their earning assets. The inclusion of GDP per capita allows us to control for business cycle fluctuations and overall the economic development of a country. Population size allows us to proxy consumer demand. While bank controls are obtained from the Fitch Solutions database, country-specific controls are extracted from the World Bank database.

4 Empirical methodology and findings

4.1 Methodology

To investigate the impact of violence on banks, we estimate the following OLS regressions with fixed-effects :

$$Y_{i,c,k,t} = c + \alpha_1 Violence_{c,k,t} + \alpha_2 Controls_{i,c,k,t} + \theta_t + \lambda_c + \epsilon_{i,c,k,t} \quad (1)$$

In this setup, the indices i, c, k, t stand respectively for bank, city, country and time. $Y(i, c, k, t)$ denotes the total of earning asset of bank i located in city c in country k in year t . In a second step, we analyze the impact of violence on the decomposition of banks' total earning assets in order to further detail banks' responses. $Violence_{c,k,t}$ refers to the violence indicators (i.e., internal violence, onside violence, and number of rivals) recorded in city c in country k in year t . To control for omitted variable bias, we include a set of bank- and country specific variables in our estimates ($Controls_{i,c,k,t}$). $Controls_{i,c,k,t}$ refers to bank- and country-specific controls. Our estimates may also be subject to endogeneity bias, relating to reverse causality. Nevertheless, we assume that if this bias exists in our analyses it must be small because while violence would affect financial intermediaries (Liargovas and Repousis, 2010; Johnston and Nedelescu, 2005; Chesney et al., 2011), it is more difficult to accept that increasing (or decreasing) the earning assets of a bank leads to violence. θ_t, λ_c and $\epsilon_{i,c,k,t}$ are respectively time fixed-effect, time-invariant bank fixed-effects, and idiosyncratic error. Standard errors are robust and

clustered by banks to control for heteroscedasticity and dependence. We are interested in the α_1 coefficients that directly gauge the impact of difference type of violences on banks' earning assets. We expect a negative reaction of the banks' total earning assets to violence. The violence could create some instabilities in the banking system which may leads to a decreasing in banks profitability and performance (Ouedraogo et al., 2020, Phan et al., 2022). However, we believe that banks' responses may be different depending on the structure of the earning assets and/or the type of violence.

In the following section, we first present the results of earnings asset responses to different types of violence. Then, we go one step further by looking at the impact of violence on the components of banks' earning assets. We complete our analysis by examining the responses of different types of securities. In addition, we investigate the impact of violence on the different loan and credit maturities. Finally, we perform a set of robustness checks to validate our main results.

4.2 Results

4.2.1 Baseline results

In the following, we show how banks' earning assets respond to violence. Specifically, we illustrate the effect of violence (i.e. internal violence, onside violence and number of rivals) on : (i) total earning assets and their decomposition (Table 1 to 4); (ii) securities held by banks (Table 5 to 6); (iv) maturity of loans and advances (Table 7 to 8); (iii) types of loans granted by banks (Table 9 to 10).

Internal violence results :

The results of the analysis of the relationship between internal violence and banks' earning assets are reported in Table 1 with several specifications. While columns (1) to (5) of Table 1 include the different stages of the conflict process (except civil wars), the sixth column considers only civil wars. Because of the strong correlation between civil wars and the other stages (i.e. protest, riots, and battles) we have chosen to estimate them separately. Regardless of the inclusion of fixed effects in our estimates, we observe a negative and significant relationship between banks' earning assets and the stages of the conflict (except for riots which is positively and significantly associated). For example, in column 4 we observe that protests (-0.02) and battles (-0.03) negatively impact banks' earning assets. Similarly, an increase in the incidence of civil war leads to a reduction in total earnings assets (-1.4). These results are consistent with those of Liargovas and Repousis (2010) who find that violence related to terrorist acts negatively affects Greek banks' shares, which in turn affects Greek banks' earning assets. Indeed, the panic effect generated by the terrorist attacks is transmitted to the financial market and results in a drop

in the value of financial assets (stocks) and, in turn, the capital of banks⁸. Conversely, riots (column 4) are positively and significantly associated with total earning assets. In other words, banks appear to be less sensitive to riots than other stages of conflict. This result could be related to the fact that in the situation of riots, policymakers are forced to make concessions in order not to lose control of power. Instead, if the state fails to "buy off the opposition," i.e., deter rebellion by improving the quality of institutions or agreeing to distribute some resources to disaffected groups, it may engage in repression to deal with domestic dissidents (Silve and Verdier, 2018; Uzonyi, 2018). Overall, our results show a negative influence of violence on the earning assets of banks.

Oneside and rivalries results :

Previously, we have highlighted that different phases of violence (such as protests, battles, and civil wars) have an impact on the total earning assets of banks. Now we investigate the impact of targeting civilians, terrorism and contiguous rivalries on banks. Recent studies on civilian targeting agree that the consequences of this phenomenon on economic development (Frey et al., 2009) and on the social preferences of economic agents (Cecchi and Duchoslav, 2018) are important. Our objective is therefore to assess more specifically the effect of this phenomenon on the behavior of banks. Similarly, the consideration of the regional framework is in line with recent literature on the consequences of regional politics and rivalry on the economic and financial development of countries (Lee, 2018; Uzonyi, 2018; Toukan, 2019; Bak et al., 2020). The results of this analysis are reported in Table 2. While columns (1) and (2) present the results of targeting civilians and terrorism (i.e. oneside violence), column (3) shows the results related to contiguous rivalries. We highlight a positive and significant impact of terrorist attacks on banks. In other words, this result highlights that despite terrorist attacks on banks, they continue to generate income. One explanation could be that terrorist acts can cause only a temporary shock to the economy, with recovery occurring quickly as the effects of the shock fade (Chesney et al., 2011; Aslam and Kang, 2015; Gaibulloev and Younas, 2016). For example, analyzing the stock market in Pakistan, Aslam and Kang (2015) find a negative impact of the terrorist attacks (on the day of the attack) on the returns of the Karachi stock market. However, the stock market absorbed the event effectively and recovered quickly⁹.

8. Other analyses also show a negative impact of terrorist attacks on stock market valuations due to excess volatility (e.g. Chesney et al. 2011; Arin et al. 2008).

9. In the same vein, Bounou and Yatié (2022) highlight a stronger negative response of global stock market indices to the war between Ukraine and Russia, however, this response has become weaker as the conflict persists over time.

TABLE 1 – Banks' earning assets and internal violence

	Earning assets					
	Internal violence					
	(1)	(2)	(3)	(4)	(5)	(6)
# Protest	-0.0185*** (0.00396)	-0.0193*** (0.00299)	-0.0139*** (0.00426)	-0.0150*** (0.00320)	-0.00628** (0.00261)	
# Riots	0.0351*** (0.00697)	0.0168*** (0.00644)	0.0385*** (0.00738)	0.0195*** (0.00669)	0.00735 (0.00518)	
# Battles	-0.170*** (0.0228)	-0.0401*** (0.0141)	-0.163*** (0.0226)	-0.0345** (0.0138)	-0.0259 (0.0179)	
Civil war						-1.402** (0.661)
Size					0.0908 (0.208)	0.0968 (0.207)
Funding					0.0261** (0.0113)	0.0265** (0.0113)
Liquidity					-15.61*** (2.569)	-15.78*** (2.577)
Efficiency					-7.532*** (1.127)	-7.603*** (1.120)
Population					-0.603 (2.155)	-0.273 (2.211)
GDP					1.529 (3.930)	1.804 (4.026)
Inflation					-0.101** (0.0465)	-0.100** (0.0456)
City FE	No	Yes	No	Yes	Yes	Yes
Year FE	No	No	Yes	Yes	Yes	Yes
R ²	0.027	0.284	0.041	0.290	0.473	0.472
Obs.	23391	23391	23391	23391	15528	15528
Nb Banks	1591	1591	1591	1591	1224	1224
Nb Countries	89	89	89	89	88	88

Note : All estimates include bank-specific (i.e., natural logarithm of total assets, liquid assets to total assets, cost to income ratio, and deposits to total assets), and country-specific controls (i.e., natural logarithm of total population, GDP per capita growth rate, and inflation rate), city- and year-fixed effects. Robust standard errors clustered by banks in parentheses. The within R2 is reported. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels respectively.

Concerning the influence of contiguous rivalries on banks' earning assets (column 3 of Table 2), we find a negative and significant relationship. We observe that the increase in the number of rivals has a negative impact on the banks' earning assets (-0.91). Given that international rivalries have an effect on the internal economic development of countries, persistent rivalries can lead to the weakening of governments' state capacity, particularly through economic and/or diplomatic sanctions (Lee, 2018). This weakening of state capacity can lead to a reduction in the opportunity cost of rebellion for agents, given their reduced income from productive activities, and by extension promote the outbreak of civil war (Hendrix, 2010; Besley and Persson, 2011).

Overall, our results highlight a significant negative influence of violence on the revenue-generating capacity of banks. Put differently, in the face of rising violence of all types, the earning assets of banks react negatively. Given that the latter is composed of several income-generating elements (i.e. net loans, loans and advances to banks, reserve repos and securities borrowing, total securities, equity investments in associates, and other earning assets), it seems interesting to analyze the impact of violence on the decomposition of the earning assets. Specifically, this analysis allows us to identify how banks adjust their assets' structure in response to violence.

TABLE 2 – Banks' earning assets, onside, and rivalries

	Earning assets	
	<i>Onside violence</i>	<i>Rivalries</i>
	(1)	(2)
# Sexual violence	-0.581** (0.270)	
# Forced displacement	-0.00559 (0.0331)	
# Terrorist attack	0.0358** (0.0181)	
# Rivals		-0.914*** (0.323)
R^2	0.472	0.472
Obs.	15528	15528

Note : All estimates include bank-specific (i.e., natural logarithm of total assets, liquid assets to total assets, cost to income ratio, and deposits to total assets), and country-specific controls (i.e., natural logarithm of total population, GDP per capita growth rate, and inflation rate), city- and year-fixed effects. Robust standard errors clustered by banks in parentheses. Annual data from 1224 banks located in 88 countries over the period 1990–2021. The within R2 is reported. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels respectively.

4.3 Decomposition of earning assets

TABLE 3 – Decomposition of earning assets and internal violence

	Decomposition earning assets					
	<i>Internal violence</i>					
	Net loans	Loans & advances	Reserves	Securities	Other earnings	Equity invest.
	(1)	(2)	(3)	(4)	(5)	(6)
# Protest	0.0000734*** (0.0000229)	0.00400 (0.00345)	0.00409 (0.00386)	-0.0184*** (0.00431)	-0.000925 (0.00344)	-0.00464** (0.00222)
# Riots	-0.000110* (0.0000612)	-0.0100*** (0.00344)	-0.00194 (0.00299)	0.0298*** (0.00980)	-0.0175 (0.0212)	-0.00165 (0.00442)
# Battles	-0.000212 (0.000149)	-0.0269 (0.0227)	0.00953 (0.0239)	-0.00823 (0.0326)	-0.00860 (0.0148)	0.0184 (0.0226)
R^2	0.653	0.674	0.477	0.447	0.337	0.539
Obs.	15487	3351	1020	14495	1295	15518
Civil war	-0.0271*** (0.00818)	-3.482** (1.534)	-2.737** (1.245)	2.264* (1.313)	0.602 (1.183)	0.136 (0.761)
R^2	0.653	0.674	0.479	0.445	0.336	0.538
Obs.	15487	3351	1020	14495	1295	15518

Note : All estimates include bank-specific (i.e., natural logarithm of total assets, liquid assets to total assets, cost to income ratio, and deposits to total assets), and country-specific controls (i.e., natural logarithm of total population, GDP per capita growth rate, and inflation rate), city- and year-fixed effects. Robust standard errors clustered by banks in parentheses. Annual data from 1224 banks located in 88 countries over the period 1990–2021. The within R2 is reported. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels respectively.

In this sub-section, we analyze how earning assets decomposition respond to violence. To do so, we assess the impact of violence on the different components of earning assets. The results of this analysis are reported in Table 3 and Table 4. We find different effects of violence on the decomposition of earning assets. In other words, banks adjusted their earning assets differently in response to violence. For example, we observe that the negative impact of the protests on total earning assets (column 5 of Table 1) comes mainly from a reduction in total securities held (-0.018) as well as a reduction in equity investments (-0.005), despite an increase in net loans. Conversely, the riots had a significant negative impact on net loans and advances to banks. However, this reduction in net loans and loans and advances to banks was offset by an increase in securities holdings (column 4 of Table 3). Regarding the civil war, we continue to observe a negative impact on the breakdown of earning assets. Indeed, in response to

civil wars, banks reduce their lending activities¹⁰. In the same vein, Gaibulloev and Younas (2016) also find a negative impact of civil wars on the supply of bank loans. However, we find that this reduction in lending was only partially offset by an increase in securities. Overall, we highlight that banks react differently to internal violence. While riots and civil wars lead to a decrease in lending activity and an increase in securities holdings, banks react inversely to protests. Moreover, we highlight that in response to violence banks mainly adjust loans and securities. This is not surprising, especially since they constitute an important part of banks' earning assets.

TABLE 4 – Decomposition of earning assets, onside violence, and rivalries

Decomposition of earning assets						
<i>Onside violence</i>						
	Net loans	Loans & advances	Reserves	Securities	Other earnings	Equity invest.
	(1)	(2)	(3)	(4)	(5)	(6)
# Terrorist attack	0.000279* (0.000165)	-0.101 (0.0697)	-0.0514 (0.0323)	0.00431 (0.0255)	-0.0435 (0.0344)	0.0184 (0.0161)
# Sexual violence	-0.0102*** (0.00267)	-0.775* (0.439)	0.0177 (0.450)	0.789* (0.421)	0.0438 (0.315)	-0.236 (0.248)
# Forced displacement	-0.000887** (0.000373)	-0.193*** (0.0496)	-0.0490 (0.0473)	0.0904** (0.0436)	-0.0110 (0.0201)	0.0139 (0.0282)
R^2	0.653	0.674	0.476	0.445	0.338	0.539
Obs.	15487	3351	1020	14495	1295	15518
<i>Rivalries</i>						
# Rivals	-0.0156*** (0.00372)	-3.004*** (0.740)	-0.528 (0.508)	2.209*** (0.619)	0.243 (0.517)	-0.272 (0.355)
R^2	0.654	0.678	0.476	0.447	0.336	0.539
Obs.	15487	3351	1020	14495	1295	15518

Note : All estimates include bank-specific (i.e., natural logarithm of total assets, liquid assets to total assets, cost to income ratio, and deposits to total assets), and country-specific controls (i.e., natural logarithm of total population, GDP per capita growth rate, and inflation rate), city- and year-fixed effects. Robust standard errors clustered by banks in parentheses. Annual data from 1224 banks located in 88 countries over the period 1990–2021. The within R2 is reported. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels respectively.

Regarding onside violence and rivalries, we observe that the positive impact of terrorist acts on total earning asset comes from an increase in loan supply. In other words, these results reflect a lower sensitivity of loan supply to terrorist acts (Gaibulloev and Younas, 2016). For sexual violence, forced

10. In a robustness analysis, we consider other alternative measures of loan volume, namely the logarithm of net loans, the ratio of gross loans to total assets and the logarithm of gross loans. The results of these analyses are reported in Table E and Table F and leave our conclusions unchanged.

TABLE 5 – Decomposition of securities and internal violence

<i>Internal violence</i>					
Securities :					
	Total	Others	Government	Invstment	Trading
	(1)	(2)	(3)	(4)	(5)
# Protest	-0.0184*** (0.00431)	-0.00611** (0.00238)	-0.00828*** (0.00234)	-0.00758** (0.00301)	0.000228 (0.00156)
# Riots	0.0298*** (0.00980)	0.000603 (0.00552)	0.0119** (0.00487)	0.0107* (0.00553)	0.00775** (0.00321)
# Battles	-0.00823 (0.0326)	0.0163 (0.0375)	0.00822 (0.0275)	0.0312 (0.0208)	-0.0140 (0.0173)
R^2	0.447	0.507	0.436	0.421	0.508
Obs.	14495	7731	10603	10338	6811
Civil war	2.264* (1.313)	1.961** (0.821)	1.304 (0.842)	2.685* (1.391)	2.331*** (0.732)
R^2	0.445	0.506	0.434	0.420	0.509
Obs.	14495	7731	10603	10338	6811

Note : All estimates include bank-specific (i.e., natural logarithm of total assets, liquid assets to total assets, cost to income ratio, and deposits to total assets), and country-specific controls (i.e., natural logarithm of total population, GDP per capita growth rate, and inflation rate), city- and year-fixed effects. Robust standard errors clustered by banks in parentheses. Annual data from 1224 banks located in 88 countries over the period 1990–2021. The within R2 is reported. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels respectively.

displacement as well as rivals we find that banks respond to these events by reducing the supply of loans and loans and advances to banks, but partially compensate for this reduction by increasing the holding of securities. Overall, the results of this analysis mainly highlight the impact of the violence on banks' earning assets and their decomposition. We find that in response to the violence, banks act mainly on their two main sources of earning assets, namely the volume of loans and the volume of securities held. Specifically, we show that the reduction in total earning assets comes mainly from a reduction in the supply of loans in response to the violence. However, banks only partially managed to compensate for this reduction through an increase in the volume of securities held.

In order to further understand the impact of the violence on banks, in the following sections we attempt to provide additional evidence by analysing how banks adjust the portfolio in response to the violence across categories of securities (see Table 5 and Table 6), types of loans (Table 7 and Table 8) and maturities of loans and advances to bank (Table 9 and Table 10).

4.4 Decomposition of securities

In this section, we now analyse how banks diversify their securities holdings in response to the violence. Since the total securities consist of government securities, investment securities, trading securities and other securities, we analyse the individual responses of each component to further understand how

banks adjust their securities portfolios in response to violence. While the results for internal violence are reported in Table 5, the results for onside violence and rivalries are reported in Table 6. For ease of reading, we have carried over into Table 5 (column 1 "Total") and Table 6 (column 1 "Total") the previous total securities results carried over into column 4 of Table 3 and Table 4.

TABLE 6 – Decomposition of securities, onside violence and rivalries

<i>Onside violence</i>					
Securities :					
	Total	Others	Government	Invstment	Trading
	(1)	(2)	(3)	(4)	(5)
# Terrorist attack	0.00431 (0.0255)	-0.0173 (0.0261)	-0.0121 (0.0405)	0.0352** (0.0145)	-0.0114 (0.0195)
# Sexual violence	0.789* (0.421)	1.592*** (0.406)	0.136 (0.225)	-0.176 (0.274)	0.114 (0.186)
# Forced displacement	0.0904** (0.0436)	0.00973 (0.0371)	0.0116 (0.0207)	0.0527** (0.0241)	0.0437** (0.0203)
R^2	0.445	0.508	0.434	0.420	0.508
Obs.	14495	7731	10603	10338	6811
<i>Rivalries</i>					
# Rivals	2.209*** (0.619)	1.538*** (0.474)	1.105*** (0.357)	0.298 (0.401)	-0.0744 (0.287)
R^2	0.447	0.508	0.436	0.420	0.508
Obs.	14495	7731	10603	10338	6811

Note : All estimates include bank-specific (i.e., natural logarithm of total assets, liquid assets to total assets, cost to income ratio, and deposits to total assets), and country-specific controls (i.e., natural logarithm of total population, GDP per capita growth rate, and inflation rate), city- and year-fixed effects. Robust standard errors clustered by banks in parentheses. Annual data from 1224 banks located in 88 countries over the period 1990–2021. The within R2 is reported. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels respectively.

The results in Table 5 show that the negative impact of the protest on total securities (-0.018) comes mainly from a reduction in government securities (-0.008), investment securities (-0.008) and other securities (-0.006). In other words, in response to the protests banks adjusted the securities portfolio by holding less government securities, investment securities and other securities. For the riots, we observe that the increase in the holding of securities highlighted above (0.030) comes mainly from an increase in government securities (0.012), an increase in investment securities (0.011) and an increase in trading securities (0.008). Similarly, we also note that civil wars lead banks to hold more securities, notably

investment securities (2.69), trading securities (2.33) and other securities (1.96). In short, with the exception of battles, the securities held by banks and their breakdown are violent.

With regard to one-sided violence and rivalries, we continue to see an impact of these events on the securities portfolio of banks. In response to acts of violence, banks invest more in financial markets by holding more securities. For example, we show that banks react to forced displacement by holding more securities (0.09), mainly investment (0.05) and trading securities (0.04). Conversely, for rivals, banks prefer to hold more government and other securities. Similarly, sexual violence is positively and significantly associated with total securities held with a stronger effect on other securities. In other words, in response to sexual violence, banks would hold more other securities. Overall, the results of our analysis presented in this section highlight that banks diversify their securities holdings in response to violence related to both internal violence, onside and rivalries. Nevertheless, these adjustments may differ depending on the type of violence as well as the type of security held.

4.5 The maturity of loans and advances

Previously, we have observed that violence affects banks' incentive to lend. In other words, in response to the violence, banks distributed less credit to the economy. Now we investigate how banks adjust their loans and advances to banks of different maturities in response to the violence. Given that the maturity of a loan allows banks to organise their lending and borrowing activity in a risk-minimising way, the maturity of a loan thus appears to be an important instrument of banks in response to the violence. In this respect, we consider loans and advances of four different maturities, namely less than three months (" < 3 months"), between three months and twelve months (" $3-12$ months"), between one year and five years (" $1-5$ years") and more than five years (" > 5 years"). However, due to data limitations, not all banks in our sample report maturity information for their loan portfolio. Despite the loss of observations, we still decide to analyse the impact of violence on the loan portfolio at different maturities, as the loan maturities give us information on the risk strategies of the banks. The results of this analysis reported in Table 7 and Table 8 should to a lesser extent give us information on the banks' strategy in response to the violence.

While Table 7 reports the results of internal violence, Table 8 reports those of onside and rivals. Regarding Table 7, we find that protests are positively and significantly associated with loans with maturities between three and twelve months (column 2). In other words, in response to the protests, banks would mainly grant loans with a short maturity. This should therefore allow banks to have a better control of the risks in the presence of violence. On the other hand, banks are reducing very short-term loans (i.e. less than three months) in response to the protests. Concerning the onside violence and rivalries (Table 8), we highlight a negative impact of violence on loan maturities. We show, for example, that in response to forced displacement, banks would mainly reduce loans with maturities between three

TABLE 7 – The maturity of loans and advances, and internal violence

<i>Internal violence</i>				
Loans and advances :				
	< 3 months	3-12 months	1-5 years	> 5years
	(1)	(2)	(3)	(4)
# Protest	0.00267 (0.00223)	0.00440** (0.00209)	0.000110 (0.00190)	-0.000863 (0.00194)
# Riots	-0.00540 (0.00460)	-0.00362 (0.00364)	-0.00441 (0.00342)	0.00105 (0.00302)
# Battles	-0.00989* (0.00576)	-0.00579 (0.00621)	-0.0141 (0.0108)	-0.00179 (0.0192)
R^2	0.362	0.522	0.424	0.598
Obs.	3076	3289	3272	2436
Civil war	-1.679 (1.228)	-0.999 (1.023)	-0.703 (0.903)	-0.221 (0.832)
R^2	0.362	0.521	0.423	0.598
Obs.	3076	3289	3272	2436

Note : All estimates include bank-specific (i.e., natural logarithm of total assets, liquid assets to total assets, cost to income ratio, and deposits to total assets), and country-specific controls (i.e., natural logarithm of total population, GDP per capita growth rate, and inflation rate), city- and year-fixed effects. Robust standard errors clustered by banks in parentheses. Annual data from 1224 banks located in 88 countries over the period 1990–2021. The within R2 is reported. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels respectively.

months and five years. Put differently, the reduction in loans and advances to banks (-0.193), reported in column 2 of Table 4) linked to forced displacement would come from a negative response to loans and advances of less than three months (-0.082) and loans and advances of between one year and five years (-0.083). The surge of rivals on their side also affects the supply of loans of different maturities (except for short-term loans). Indeed, we find that regardless of the maturity, the increase in rivals is negatively associated with loan maturities. Faced with the surge in rivals, banks reduce the share of loans with different maturities, which explains why we obtain a significant negative impact of this type of violence on total loans and advances (column 2 of Table 4).

For the types of loans, we also face data limitations. Indeed, we investigate in a complementary analysis the impact of violence on the types of loans, namely mortgage loans, corporate loans, credit card loans, manufactured loans and agriculture loans. The results of this analysis are reported in Tables 9 and 10 and highlight the heterogeneity of banks' responses to violence. However, these results should be treated with caution given the limited data. They should nevertheless provide additional insights into understanding the impact of violence on banks. Overall, the results of these analyses highlight the influence of violence on the maturity and type of lending by banks. We highlight that banks' responses to violence differ according to maturity and type of loan.

TABLE 8 – The maturity of loans and advances, onside violence and rivalries

<i>Onside violence</i>				
Loans and advances :				
	< 3 months	3-12 months	1-5 years	> 5 years
# Terrorist attack	-0.0153 (0.0309)	0.0516 (0.0316)	-0.00395 (0.0403)	-0.0490 (0.0337)
# Sexual violence	-0.273 (0.287)	-0.185 (0.201)	-0.261 (0.303)	-0.305 (0.290)
# Forced displacement	0.00993 (0.0171)	-0.0824** (0.0337)	-0.0829*** (0.0223)	0.0304 (0.0394)
R^2	0.361	0.521	0.424	0.599
Obs.	3076	3289	3272	2436

<i>Rivalries</i>				
# Rivals	-0.636* (0.363)	-0.441 (0.356)	-0.696* (0.375)	-0.864* (0.455)
R^2	0.362	0.521	0.424	0.599
Obs.	3076	3289	3272	2436

Note : All estimates include bank-specific (i.e., natural logarithm of total assets, liquid assets to total assets, cost to income ratio, and deposits to total assets), and country-specific controls (i.e., natural logarithm of total population, GDP per capita growth rate, and inflation rate), city- and year-fixed effects. Robust standard errors clustered by banks in parentheses. Annual data from 1224 banks located in 88 countries over the period 1990–2021. The within R2 is reported. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels respectively.

TABLE 9 – Type of lending and internal violence

<i>Internal violence</i>					
	Mortgage loans	Corporate loans	Credit card loans	Manufactured loans	Agriculture loans
	(1)	(2)	(3)	(4)	(5)
# Protest	-0.000363 (0.00252)	-0.00553 (0.00699)	0.00146 (0.00120)	-0.000811 (0.00263)	0.00430*** (0.00126)
# Riots	0.0104 (0.00751)	0.0344*** (0.0126)	-0.00151 (0.00159)	-0.00454 (0.00413)	0.00236 (0.00255)
# Battles	0.0441 (0.0395)	0.0822*** (0.0277)	-0.00394 (0.00434)	-0.000462 (0.0115)	0.0291* (0.0175)
R^2	0.559	0.459	0.638	0.478	0.511
Obs.	2348	5811	720	2391	1991

Civil war	1.967 (2.905)	3.932* (2.080)	-1.168 (0.920)	1.625** (0.747)	-0.310 (0.314)
R^2	0.558	0.456	0.638	0.479	0.509
Obs.	2348	5811	720	2391	1991

Note : All estimates include bank-specific (i.e., natural logarithm of total assets, liquid assets to total assets, cost to income ratio, and deposits to total assets), and country-specific controls (i.e., natural logarithm of total population, GDP per capita growth rate, and inflation rate), city- and year-fixed effects. Robust standard errors clustered by banks in parentheses. Annual data from 1224 banks located in 88 countries over the period 1990–2021. The within R2 is reported. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels respectively.

TABLE 10 – Type of lending, onside violence and rivalries

<i>Onside violence</i>					
	Mortgage loans	Corporate loans	Credit card loans	Manufactured loans	Agriculture loans
	(1)	(2)	(3)	(4)	(5)
# Terrorist attack	-0.0326 (0.0617)	0.00307 (0.0205)	0.00981 (0.0251)	-0.000776 (0.107)	-0.0142 (0.0133)
# Sexual violence	0.213 (0.306)	0.0285 (0.322)	-0.0333 (0.177)	0.293 (0.349)	0.187 (0.293)
# Forced displacement	-0.0119 (0.0143)	-0.0614** (0.0269)	-0.00968 (0.00934)	0.00416 (0.0123)	-0.000102 (0.00791)
R^2	0.558	0.455	0.638	0.478	0.509
Obs.	2348	5811	720	2391	1991
<i>Rivalries</i>					
# Rivals	-1.427*** (0.492)	3.261*** (0.904)	-0.0681 (0.135)	-0.910 (0.879)	0.490 (0.329)
R^2	0.561	0.459	0.637	0.479	0.510
Obs.	2348	5811	720	2391	1991

Note : All estimates include bank-specific (i.e., natural logarithm of total assets, liquid assets to total assets, cost to income ratio, and deposits to total assets), and country-specific controls (i.e., natural logarithm of total population, GDP per capita growth rate, and inflation rate), city- and year-fixed effects. Robust standard errors clustered by banks in parentheses. Annual data from 1224 banks located in 88 countries over the period 1990–2021. The within R2 is reported. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels respectively.

5 Conclusion

To investigate the impact of violence on banks, this paper uses a large database of the breakdown of the earning assets of 1224 banks located in 88 countries in Africa, Asia and the Middle East (where violence is more pervasive) over the period 1990-2021. Our results highlight that violence (i.e. internal violence, onside violence and number of rivals) reduces banks' earning assets. The decomposition results show that this negative impact comes mainly from a reduction in the supply of loans by banks. The reduction in lending was only partially compensated by an increase in the holding of securities. Our result also show that this impact differs according to the type of securities held, the type of loans and the maturity of loans and advances to banks. Our study has important policy implications. Overall, our results should at least alert policy makers to the importance of preserving a climate of peace and trust, which is a key factor in economic development.

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Appendix

TABLE A – Number of banks per country and region

Region (# countries)	Country (# bank)
Africa (47 countries)	Angola (21); Benin (5); Botswana (8); Burkina Faso (10); Burundi (5); Cameroon (10); Cape Verde (6); Chad (4); Comoros (1); Congo (2); Democratic Republic of the Congo (14); Djibouti (5); Equatorial Guinea (1); Ethiopia (15); Gabon (6); Gambia (6); Ghana (28); Guinea (9); Guinea-Bissau (1); Ivory Coast (14); Kenya (25); Lesotho (1); Liberia (2); Madagascar (4); Malawi (5); Mali (11); Mauritania (13); Mauritius (16); Mozambique (15); Namibia (3); Niger (6); Nigeria (30); Rwanda (6); Sao Tome and Principe (1); Senegal (12); Seychelles (4); Sierra Leone (6); South Africa (14); South Sudan (1); Sri Lanka (10); Sudan (18); Swaziland (3); Tanzania (24); Togo (8); Uganda (20); Zambia (12); Zimbabwe (15)
Asia (22 countries)	Afghanistan (6); Bangladesh (17); Bhutan (3); Brunei (2); Cambodia (22); China (96); India (66); Indonesia (7); Japan (85); Kazakhstan (8); Kyrgyzstan (5); Malaysia (37); Maldives (1); Mongolia (3); Myanmar (4); Nepal (19); Pakistan (17); Philippines (18); Singapore (4); South Korea (26); Tajikistan (3); Thailand (12)
MENA (19 countries)	Algeria (16); Bahrain (4); Egypt (32); Iran (22); Iraq (29); Israel (8); Jordan (8); Kuwait (5); Lebanon (36); Libya (12); Morocco (21); Oman (13); Qatar (5); Saudi Arabia (1); Syria (12); Tunisia (23); Turkey (32); United Arab Emirates (17); Yemen (13)

TABLE B – Summary statistics - Earning asset variables

Variable	Obs	Mean	Std. Dev.	Min	Max	P25	P50	P75
Earning assets	23391	.81	.19	0	1	.77	.87	.93
Net loans	22205	.48	.21	0	1	.34	.49	.63
Loans and advances	4220	.48	.22	0	1	.34	.50	.65
Reserves	1488	.045	.09	0	.79	.002	.02	.05
Other earnings	2427	.04	.12	0	.99	0	.0027	.02
Equity invest	22989	.13	.20	0	1	0	.03	0.18
Securities	21070	.28	.24	0	1	.08	.23	.42

TABLE C – Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max	P25	P50	P75
Internal violence								
# Protest	28587	32.47	107.38	0	1056	0	0	10
# Riots	28587	7.16	39.88	0	659	0	0	2
# Battles	28587	2.46	16.21	0	408	0	0	0
Civil war	28587	.06	.23	0	1	0	0	0
Oneside violence								
# Sexual violence	28587	.06	.41	0	7	0	0	0
# Forced displacement	28587	.47	4.84	0	137	0	0	0
# Business	28587	1.27	10.49	0	268	0	0	0
Number of rivals								
# Rivals	28587	.61	.98	0	6	0	0	1
Control variables								
Size	23391	20.53	2.24	7.81	29.16	19	20.38	21.96
Funding	17849	.46	.25	0	6.633	.26	.48	.66
Liquidity	23274	.27	.2	0	1	.12	.22	.37
Efficiency	20688	.54	.21	0	1	.39	.54	.7
Population	27918	17.21	1.89	11.16	21.07	16.02	17.24	18.26
GDP	27608	.02	.05	-.51	.86	0	.02	.04
Inflation	27638	.1	1.68	-.3	267.66	.01	.05	.1

TABLE D – Correlation matrix

	Size	Funding	Liquidity	Efficiency	Population	GDP	Inflation
Size	1						
Funding	0.15	1					
Liquidity	-0.22	-0.19	1				
Efficiency	-0.17	0.10	0.07	1			
Population	0.38	0.13	-0.19	-0.03	1		
GDP	0.08	0.00	-0.04	-0.07	0.25	1	
Inflation	-0.02	-0.02	0.02	0.01	-0.00	-0.02	1

TABLE E – Alternative lending measures and internal violence

	<i>Internal violence</i>		
	Ln(Net loans)	Gross loans	Ln(Gross loans)
	(1)	(2)	(3)
# Protest	0.000270** (0.000107)	0.00797*** (0.00233)	0.000320*** (0.000109)
# Riots	-0.000103 (0.000202)	-0.00799 (0.00627)	-0.000112 (0.000242)
# Battles	-0.00310*** (0.000908)	-0.0245 (0.0168)	-0.00241* (0.00131)
R^2	0.552	0.633	0.903
Obs.	15487	15487	15487
Civil war	-0.0993*** (0.0318)	-2.494*** (0.852)	-0.142*** (0.0462)
R^2	0.549	0.632	0.903
Obs.	15487	15487	15487

Note : All estimates include bank-specific (i.e., natural logarithm of total assets, liquid assets to total assets, cost to income ratio, and deposits to total assets), and country-specific controls (i.e., natural logarithm of total population, GDP per capita growth rate, and inflation rate), city- and year-fixed effects. Robust standard errors clustered by banks in parentheses. Annual data from 1224 banks located in 88 countries over the period 1990–2021. The within R2 is reported. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels respectively.

TABLE F – Alternative lending measures, onside violence and rivalries

	<i>Onside violence</i>		
	Ln(Nel loans)	Gross loans	Ln(Gross loans)
	(1)	(2)	(3)
# Terrorist attack	0.000822 (0.00103)	0.0270 (0.0181)	0.0000369 (0.00201)
# Sexual violence	-0.0240** (0.0100)	-1.046*** (0.276)	-0.0110 (0.0191)
# Forced displacement	-0.00193 (0.00124)	-0.0942** (0.0396)	-0.00144 (0.00143)
R^2	0.548	0.633	0.903
Obs.	15487	15487	15487
	<i>Rivalries</i>		
# Rivals	-0.0451*** (0.0142)	-1.660*** (0.388)	-0.0594*** (0.0193)
R^2	0.549	0.634	0.903
Obs.	15487	15487	15487

Note : All estimates include bank-specific (i.e., natural logarithm of total assets, liquid assets to total assets, cost to income ratio, and deposits to total assets), and country-specific controls (i.e., natural logarithm of total population, GDP per capita growth rate, and inflation rate), city- and year-fixed effects. Robust standard errors clustered by banks in parentheses. Annual data from 1224 banks located in 88 countries over the period 1990–2021. The within R2 is reported. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels respectively.