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Does youth resentment matter in understanding the surge of extremist violence in Burkina Faso?

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Tebkieta Alexandra. Tapsoba, Researcher, Institut Supérieur des Sciences de la Population, Université Joseph Ki-Zerbo, 03 BP 7118 Ouagadougou, Burkina Faso

Email address: teb_kieta@hotmail.com ; atapsoba@issp.bf

Jean-Louis Combes, Professor, Laboratoire d'Economie d'Orléans, Université Clermont Auvergne, 63000 Clermont-Ferrand, France

Email address: j-louis.combes@uca.fr

Pascale Combes Motel, Professor, Professor, Laboratoire d'Economie d'Orléans, Université Clermont Auvergne, 63000 Clermont-Ferrand, France. Corresponding author.

Email address: pascale.motel_combes@uca.fr

Phone number: +33 4 73 17 74 13

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Abstract

The year 2019 marked an unprecedented step in violence in Burkina Faso. Before 2018, attacks targeted central government officials and expatriates. In 2019, the victims of sexual assaults, attacks, abductions or forced disappearances, and assassinations were mostly local civilians. Many observers point to the youth of the attackers. This study investigates the motives that could drive young people to resort to violence in the country. It precisely aims to highlight the effect of youth resentment on violence against civilians in the country as of 2019. It takes advantage of one of the latest nationwide UNICEF-sponsored surveys conducted in Burkina Faso before some parts of the country became inaccessible because of attacks. Among other information, this survey collected data on youth resentment towards the ability of their kinship to fulfil their needs in 2018, namely before the shift in violence against civilians. We merge this survey into an original dataset that gathers data from the Armed Conflict Location and Event Data Project (ACLED), mining data from the MINEX project, and distances data computed using Burkina Faso's roads information. The results of an event count model show that youth resentment matters in understanding the occurrence of conflicts. Moreover, the presence of mining companies, the remoteness of infrastructures, ethnic diversity, and polarisation also significantly affect violence against civilians.

Keywords

Conflicts, Youth resentment, Relative deprivation, Burkina Faso

JEL Codes

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1 Introduction

*"Of course, there are Fulani among the jihadists ... But no more than in other ethnic groups. When armed groups offer young people in poverty and without education the chance to take up arms and get money, they are tempted. And it's not because he belongs to this or that group."*¹

What motives drive individuals to engage in acts of rebellion by enrolling in an armed group? Motivations are many (see, for instance, (Humphreys & Weinstein, 2008)). Some motives, such as ideology or social pressure, arguably play a crucial role. This study, however, addresses this question from an economic standpoint that draws attention to economic grievances and perceived relative deprivation. We focus on young people who are the most likely to join armed groups (see, e.g., (Cachalia, Salifu, & Ndung'u, 2016) in the case of Africa). We assess the hypothesis according to which youth resentment regarding the ability of households to fulfil their economic needs incentivises them to join violent armed groups. Our underlying assumption is that young people face a trade-off between the benefits and costs of violence: we hypothesise that whenever households unsatisfactorily meet the needs of young people, the latter is more likely to resort to violence, other things held equal. This approach is consistent with the literature according to which violent groups may also provide "services" to their members (see, e.g. (Dixit, 2004)). We test this hypothesis in the case of Burkina Faso that has experienced an increase in attacks by armed groups in 2019. The year 2019 marked an unprecedented step in violence in Burkina Faso. Before 2018, attacks targeted central government officials and expatriates. In 2019, the victims of sexual assaults, attacks, abductions or forced disappearances, and assassinations were mostly local civilians.

Terrorism in Burkina Faso is a multifaceted phenomenon, arguably fed by socioeconomic conditions and the Government's poor management (Savadogo, 2019). In this study, we take advantage of the latest nationwide UNICEF-sponsored survey (2018) before some parts of the country became inaccessible because of insecurity. This survey allows investigating the resentment of Burkina Faso's youth, which constitute the bulk of the population from which armed groups recruited just before the upsurge in attacks on civilians in 2019. This survey offers a rare opportunity to quantitatively capture the youth's feelings on the ability of their household to fulfil their needs, namely to feed, clothe, heal them in case of sickness, and offer them gifts. Next, we econometrically assess our hypothesis while

¹ This citation emanates from a tribal chief of the Sahel region (Gonin, 2020).

augmenting this survey with other relevant quantitative information. We specifically use data from the Armed Conflict Location and Event Data Project (ACLED), mining data from the MINEX project, and distance data computed using Burkina Faso's roads information. Next, we implement an event count model, namely a negative binomial regression. This econometric methodology evidences that youth resentment measured in 2018 positively and significantly impacts conflicts targeting civilians observed in 2019. We focus on 2019 because this year represents a significant change in both the number and the nature of terrorist attacks. Moreover, the presence of mining companies, the remoteness of the city capital, ethnic diversity, and polarisation also significantly affect violence against civilians.

We organise the rest of the article as follows. Section 2 describes the political context in Burkina Faso and the events that preceded an increase in terrorist attacks in 2019. Section 3 proposes a theoretical framework adapted to Burkina Faso's reality to examine young people's drivers towards rebellion. Section 4 presents data and descriptive statistics. We discuss the results in section 5.

2 The terrorist attacks in Burkina Faso – the 2019 shift

In the following, we document the rise of violence in Burkina Faso in the 2010s and then focus on the 2019 shift covered by our econometric analysis.

2.1 The rise of violence in Burkina Faso in the 2010s

The harmony reigning for hundreds of years within the Burkinabè population has long made this country famous. Burkina Faso counts more than 60 ethnic groups. One common feature they share is the “joking kinship” (“parenté à plaisanterie”) (Nyamba, 2001). This practice consists of making fun of another ethnic group, all in a joking way. Despite this social norm contributing to peace in the country, some secular conflicts still linger and are spread nationwide. Farmers' and herders' conflicts are examples of such recurrent conflicts (see, e.g., the recent study conducted by (McGuirk & Nunn, 2020)).²

Climate conditions and the political developments since 2014 exacerbate these conflicts (Sanfo, Savadogo, Abalo, & Zampaligré, 2015). The year 2014 was historical for Burkina Faso, as an insurrection led to the departure of president Compaoré, who had been in office for 27 years. Two years after he left office, an unprecedented number of attacks are recorded almost daily throughout the country. On

² The Burkinabè Ministry of Justice records other land conflicts such as those between landowners and the government, royal succession conflicts, and other miscellaneous conflicts such as interreligious and inter ethnics conflicts (Ministère de la Justice, 2015).

January 15, 2016, the country recorded its first-ever large-scale terrorist attack, targeting a hotel and a restaurant mainly frequented by expatriates, killing 30 people. This attack intervened two days after the newly elected president, Kaboré, set up his Government (Roger, 2016). For some, this might be a coincidence, but not for everyone. In an interview with the Belgian press, the newly elected president stated that the social peace Burkina Faso has been enjoying for years resulted from a deal between former president Compaoré and terrorist groups (Köpp & Quenum, 2019). As he refused to honour some engagements the former president had with terrorist groups, violence increased. Several observers share this point of view and attribute links between military dignitaries and Lyad ag Ghali, a known Malian jihadist who belongs to the GSIM (Group for the Support of Islam and Muslims) (Malagardis, 2018). The GSIM claimed the attack against the French embassy and the main military base in Ouagadougou in March 2018, killing eight people (Le Monde, 2018). Alongside GSIM, several jihadist groups and Katiba operate in Burkina Faso and the three-borders zone (Mali, Burkina Faso, Niger). The Islamic State has its representation in the area with the Islamic State in West Africa Province (ISWAP), including the Islamic State in the Greater Sahara led by Abou Walid al-Sahraoui. These foreign jihadist groups targeted foreign people, State representation such as military and police stations. However, Burkina Faso later started to record new forms of violence targeting nationals and perpetrated by a home-grown jihad, leading to nearly two million internally displaced people in all thirteen regions of the country. This new state of affairs, i.e. the shift of targets and the shift of violence's perpetrators, also led to a shift of the blame. Thus, public opinion started to blame the Fulani ethnic group.

2.2 The 2019 shift

According to the UN, Burkina Faso recorded a number of 80 people killed by terrorist attacks in 2016 (UN, 2020). This number reached 1 800 people in 2019, marking the year of the shift in terrorist groups targets. Burkinabè civilians actually became a target for these groups. In the same vein, the International Center for counter-terrorism argues that by 2019, the country experienced the most significant rise in terrorism-related deaths, with a percentage of 590% (ICCT, 2022). In 2019, these fatalities were in the Liptako-Gourma region, along the border of Mali and Niger. One crucial fact is that the Fulani ethnic group mainly populates this region. It led to a new shortcut, blaming Fulani for increasing attacks against civilians. Several radicalisation biographies showed that most young people joining jihadist groups in Burkina Faso, Mali, and Niger are indeed Fulani (de Bruijn M. , 2018). The question might be why this ethnic group is over-represented in armed groups. According to de Bruijn (2018), extremist groups exploit the intra-community tensions within the Fulani. They are rooted in the hierarchical organisation of castes or clans. Fulani are either *Dimo* or *Rimbe* (free men) or *Nyeenybe* (people of the caste). *Maccudo* and *Riimaaybe* constitute the "slaves" category (Tamari, 1991). Even

though slavery no longer exists, people of *Riimaaybe* or *Maccudo* origin are still less considered than others (de León Cobo & Rodríguez González, 2020). The cleavage between the Fulani “masters” descent and the *Riimaaybe* from slave descent is still present in the Sahel regions. The former cast is more affluent, most respected, and higher in society, while the latter is more impoverished and socially low.

Henceforth, armed groups present jihad as a social promotion channel by breaking down the traditional order and creating an order in which faith is above social groups and castes (Thiam, 2017). Ansaroul Islam founded by the Burkinabè preacher Malam Dicko,³ a native of the Sahel region, has been responsible for many attacks against civilians. He argued that the organisation of the Fulani in the North and the marginalisation based on castes are contrary to Islam. Dicko further denounced the chiefdom organisation of the society and the cleavage between Fulani masters' descent and the *Riimaaybe* (Roux, 2019). He advocated for equality between the population and the end of marabout families' enrichment at the expense of the poor.⁴ When Ansaroul Islam groups started their operations, they stayed in line with their speeches. Their exactions include the assassination of the leaders of this aristocratic society, such as spiritual guides, teachers, and government workers. Between 2016 and 2018, a report by Human Rights Watch (HRW) argues that most of the victims of “execution-style” killings by Islamist armed groups were village chiefs and local officials in the Sahel region (Human Rights Watch, 2018). The organisation also attacks state representation. The first one is the attack on the police station in Nassoumbou that killed twelve soldiers in December 2016 (International Crisis Group, 2017). Like Dicko, speeches echoed perfectly to unemployed and socially rejected young men who joined the cause. Hence, according to HRW, some Fulani community leaders were since 2015 concerned about the Islamists' exploitation of young people's frustration with poverty, government corruption, security forces' abusive behaviour and the Fulani clan leadership (Human Rights Watch, 2018). Another factor contributing to the reinforcement of Fulani young men into radicalisation is the Government's response to terrorism. It sometimes leads to abuses, as stated in the previous paragraph. Also, ethnic militia sometimes seeks revenge for the attacks they face by doing justice themselves. The well-known Yirgou drama, where 46 Fulani people lost their lives (according to the Government and 216 according to NGOs), is yet to be adequately investigated (Le Faso.net, 2020). This lack of justice and desire for revenge make it easier for armed groups to recruit young Fulani people (de León Cobo & Rodríguez González, 2020).

³ He has been allegedly killed in 2017, but his death has never been confirmed.

⁴ Being an Imam is inherited in this society due to history. New Muslim scholars such as Malam thought religious authority is not only for a selective few (International Crisis Group, 2017).

Several causes may explain the surge in terrorist attacks. However, young men's frustrations regarding their social status and fulfilling their basic needs deserve careful attention.

3 Why do youth rebel?

Black (1972) reviewed Gurr's book entitled "Why men rebel."⁵ He argues that the process that leads men to violence goes through three stages. The rebellion begins with frustration and discontent. Then, these feelings undergo a political transformation that can, in turn, lead to violence. Discontentment arises from the gap between what an individual thinks she deserves and what she believes she will get, given her living standard. This process gives perceived relative deprivation (Gurr, 2015, p. Chapter 2).⁶ (Yitzhaki, 1982) defines deprivation as a loss of utility due to a lack of commodity. This deprivation is relative to a reference group. There is a vast literature on relative deprivation (Smith & Pettigrew, 2014) and, in particular, its link with the revolts (Power, Madsen, & Morton, 2020). In particular, some work has sought to show the role of relative deprivation as a factor fueling socio-political instability (concerning the Arab Spring, see: (Korotayev & Shishkina, 2020). Siroky and al. (2020) assess how relative privation impacts collective violence. Kunst and Obaidi (2020) borrow the argument to explain extremism violence. The politicisation and violence that stems from relative deprivation appear when people view the existing political regime as unworthy of respect and legitimacy. Hence, they may see violence as an appropriate response to their problems. De Bruijn and Both argue that young people in Mali and Chad see the State authority as illegitimate (de Bruijn & Both, 2017). They seek a new legitimacy worthy of their trust and respect, which they think they will find in ethnic militias or armed groups.

It is striking that most arrested fighters are often young in the three-borders zone. The question may be, why? Childhood and adolescence are two sensible stages individuals go through. Faith and enthusiasm often characterise childhood, whereas adolescence is a period of scepticism and identity-seeking (Merelman, 1972). During puberty (12 to 17 years), people are more impressionable and subject to influence. At that age, young people are increasingly conscious of their social, economic, and political environment. They start having ideological thoughts (Peterson & Somit, 1982). Impatience and willingness to change things can also characterise this period, sometimes leading to violence.

⁵ The book was first published in the 60s and addressed the violence occurring in postcolonial states in Africa and Asia.

⁶ There is a vast literature on the concept of relative deprivation that has been discussed within numerous disciplines. One seminal contribution dates back to (Merton, 1968) who analysed under which circumstances individuals or groups engage in deviant behaviors conducive to anomie.

Therefore, it is not surprising that this age is the main target for recruitment in rebel groups. In Somalia, Botha and Abdile (2014) were able to conduct a study in Mogadishu. They interviewed former members of Al Shabaab, which means “the youth.” Their work showed that only 9% of interviewers joined the group after their 30s, majority of them joined before their 18th birthday. In West Africa, Central Mali has also been dealing with the radicalisation of its youth. Secular marginalisation and impoverishment of some parts of the population were the main drivers. Fulani nomads started in 2013 to break away from their elites, who were supposed to bridge them to the State. When realising that neither the traditional elites nor the State were doing anything tangible, people, especially youth, became permeable to the speeches of jihadist groups coming from the Tuareg rebellion (de Bruijn & Both, 2017).

The willingness of youth to join such radical groups is, therefore, undeniably linked to their living standards. We, therefore, hypothesise that resentment is a crucial driver of violence. Other factors also contribute to violence. Among the most important are ethnic diversity, natural resource endowment, and the availability of infrastructures.

Firstly, ethnic diversity could undermine the provision of public goods (Habyarimana, Humphreys, Posner, & Weinstein, 2007). When some may think ethnic diversity is detrimental to economic growth, Alesina and La Ferrara (2005) suggest that ethnic diversity can be beneficial at higher levels of development. Therefore, complementarities can emerge due to ethnic diversity. One plausible explanation is that rich countries have better institutions that maintain order. They also deter ethnic conflicts or dampen their effects when they occur. However, Africa is well known for its ethnic diversity and insufficient institutional entities. The literature finds a negative impact of diversity on socioeconomic conditions that can lead to conflicts. Hence, according to Easterly and Levine (1997), highly fragmented societies are more prone to disputes, given that fragmentation reduces growth. Collier and Hoeffler (1998) disagree somehow and argue that the impact of ethnographic and linguistic fragmentation is non-linear. Therefore, very homogeneous countries have similar probabilities of conflict occurrence compared to strongly heterogeneous societies. In most cases, the conflict resides in polarised societies with a quasi-equal distribution of two ethnic groups. Indeed, in this situation, the coordination costs of rebel groups are at their minimum; hence, the risk of civil war is maximum. Montalvo and Reynal-Querol (2005) also claim that ethnic polarisation matters more than fractionalisation.

Secondly, natural resource endowment may trigger conflicts. The literature dealing with this subject is vast (see, among others: (Hinkkainen Elliott & Kreutz, 2019), (Lujala, Gleditsch, & Gilmore, 2005) (Weinstein, 2005). If the rebellion motive is secession, the endowment of a specific region in natural

resources and its representation in the Government is likely to be the driving forces (Collier and Hoeffler, 1998). More precisely, the authors found that well-endowed countries have a probability of war of 0.56 against 0.12 for countries with no natural resources. However, this effect is not linear. On the one side, rebel groups are willing to capture the proceeds of the natural resource. On the other side, the financial resources of the country rise. Governments can pay for military expenditures to ensure the country's security (Collier & Hoeffler, 1998). In subsequent work, the same authors show that State's dependence on natural resources has a significant impact on the occurrence of civil separatist wars (Collier & Hoeffler, 2004). However, Fearon and Laitin (2003) challenged this result using the same indicator of natural resource endowment. They found no significant effect of the ratio of primary commodity exports over GDP on civil war. Other studies found mixed results (Elbadawi & Sambanis, 2002). Natural resources may have an impact. The result, however, depends on the model used (Ross, 2004). Bodea and al. (2016) eventually argue that the effect of natural wealth on conflicts is conditional on the size and the allocation of government spending, namely for welfare or the military.

Burkina Faso recently entered the club of gold producers, mainly because of industrial gold mining that started in 2008. Despite the richness of its subsoil, gold is the primary exploited resource, with 95% of exploitation by industrial companies (ITIE, 2017). Alongside industrial production, artisanal gold mining has been practised since the '80s and provides a livelihood for millions of people (Werthmann, 2017). A study by the National Institute of Statistics and Demography showed that out of the thirteen regions in the country, twelve are concerned by artisanal gold mining (INSD, 2017) and five by industrial mining (Chambre des mines, 2016). Despite the difficulty in measuring the production of artisanal gold mining sites, the INSD's study found that the production of gold was approximately 9 tons in 2016. The sector employs more than hundred and forty thousand people (Institut National de la Statistique et de la Démographie, 2017). These substantial amounts can attract some rebel groups. As stated by the International Crisis Group, "armed groups have been seizing gold mining sites in areas where the state is weak or absent since 2016, attracted by the boom of artisanal gold mining in the Saharan region" (International Crisis Group, 2019). According to Ouoba (2019), armed groups want to asphyxiate Sahelian countries such as Burkina Faso, Mali, and Niger and get their hands on gold mining zones. They also argue that these zones are suitable grounds for recruiting and training people for future actions (Ouoba, 2019). For example, in November 2019, a Canadian gold mining company convoy was attacked, killing 40 employees (International Crisis Group, 2019).

Thirdly, infrastructures, but more precisely, the remoteness from road infrastructures, are also key drivers. Raleigh and Hegre (2009) assumed that civil conflicts occur in regions far from the country's

city capital in central Africa. Indeed, these regions are not easily accessible to government military forces. When differences in local public investments cause civil conflicts, insurgencies might happen in areas far from the city capital that attracts most of the infrastructure. Therefore, rebel groups convert people easier, especially the youth (Raleigh and Hegre, 2009). Similarly, Alesina and Spolaore (2003) argue that public goods produce economies of scale so that individuals benefit from these goods within a limited perimeter. When inhabitants live far from the main cities, they do not feel the effect of these public goods.

4 Data and descriptive statistics

This study gathers three databases: the conflicts data of the ACLED (Armed Conflict Location and Event Data) project that provides us with our dependent variable built for 2019. The UNICEF-sponsored survey on youth conducted in 2018 allows us to construct our interest variable on youth resentment in Burkina Faso. The MINEX database on industrial mines provides us with information regarding the proximity of a mining site. We present descriptive statistics in Table 7 in Appendix.

4.1 Violent events in Burkina Faso

We base this work on an essential part of the violence in Burkina Faso, which is violence against civilians involving the responsibility of armed groups.

Figure 1 shows the evolution of all events in Burkina Faso since 1997. Between 1997 and 2010, the country was almost free of violent events, except in 1998, when Norbert Zongo's assassination, a famous journalist, caused indignation nationwide. Protests started to rise again in 2011 with soldiers' mutiny that caused a lot of looting. Since then, protests never really go down in Burkina Faso until 2014, with the popular insurrection. The focus of this work, which is the violence against civilians, started in 2016 when armed groups began targeting Burkina Faso. When comparing the violence against civilians caused by any actor and the violence against civilians caused by armed groups, we can see that the two graphs are close. This violence reflects sexual assaults, attacks, abduction or forced disappearance, assassination, etc. The year 2019 was unprecedented when it came to this particular violence. Nearly 40% of events recorded are violence against civilians. In this total number, armed groups were responsible for almost three-quarters of this violence. Ethnic militia, soldiers, and police officers were involved in the other violent events. Since 2019, domestic instead of foreign groups have been deemed responsible for violence (Dowd & Raleigh, 2013). The year 2019 is therefore selected to catch the spatial variability of violence.

We do not have individual data on youth recruitment into armed groups. The only information available is the occurrence of attacks. ACLED data gather information from international, regional, national, and local reports on violent events, demonstrations, and nonviolent events (ACLED, 2019)(Raleigh and al, 2010). Violent events result from battles between armed and organised groups, including State forces. The counts also record violent events associated with explosive devices such as IEDs (Improvised Explosive Devices). Armed groups (State forces, rebel groups, militias) can also intentionally inflict violence on unarmed people and civilians. Demonstrations are peaceful or non-peaceful protests and riots that are somehow violent with acts such as rock-throwing and property destruction. Nonviolent actions comprise strategic development that is not associated with violent events but may trigger future violence. In Burkina Faso, this strategic development refers mainly to looting, schools and police station burning, intimidation, and tentative abduction.

Insert figure 1 (to be found in section 8)

Map 1 presents the location of events since 1998 in Burkina Faso. Events are recorded nationwide, with a predominance of protests and riots disseminated across the country. When focusing on violence against civilians, we can see a slight difference. Even if this type of violence outbreaks throughout the country, their perpetrators are in specific areas. Another interesting point is that most violent events are far from the cities and main road infrastructures, homes of economic activities.

Insert map 1 (section 8)

Map 2 shows the location of violent events against civilians in 2019. We can see that violence committed by armed groups is located mainly in the northern and eastern parts of the country and near the borders the country shares with Mali and Niger.

Insert map 2 (section 8)

4.2 Assessing youth resentment in Burkina Faso

The second data source is a survey conducted in all thirteen regions and forty-five districts of Burkina Faso between March 22 and May 7, 2018, before the peak of violence in 2019. The UNICEF (United Nations Children Fund) undertook and financed this nationwide survey to assess children's physical, emotional and sexual well-being. It is one of the two last national surveys before some regions became inaccessible due to insecurity, to the best of our knowledge.⁷ The survey concerns children of

⁷ The latest nationwide work on population was the National survey in December 2019. It was not able to reach all districts.

0 to 17 years old. The parents⁸ answered questions on behalf of their 0 to 11 years old children. Children from 12 to 17 years old responded directly to the questions with the consent of their parents. The subpopulation of 12-17 years old represents 5,520 people, and 16 young people refused to sign the informed consent. The sample, therefore, embeds 5,504 people who answered the questions. The three following questions allow us to build 3 variables of interest:

- “Do you think your household has enough money to afford basic items such as food?”
- “Do you think your household has enough money to buy important items such as clothes, health fees, and school?”
- “Do you think your household has enough money to offer you extra items such as toys and vacation”

Therefore, the outcome variable will be a binary variable that takes the value of 1 if the answer is yes, and 0 otherwise. The youth would likely judge its situation relative to its reference group. It is, therefore, a measure of perceived relative (non)deprivation. The descriptive statistics show that most of them are satisfied with the first two items, and only 28% are with the last item.

Figure 2 presents the rate of adolescents that answered “No” to the above questions. The age bracket of 15 to 17 years old is the most pessimistic. These children consider their household is not able to fulfil their needs. They are also much closer to adult life and, therefore, can have a more significant potential for radicalisation. Between the three items, the majority consider their households cannot afford gifts and vacations for them.

Insert figure 2 (section 8)

Other demographic variables include the gender index that equals 1 if the respondent is a female. The marital status index takes the value of 1 if the adolescent has never been married and 0 otherwise. It assesses if forced marriage is still a practice in the locality, as people of their age are not supposed to be married. We think this variable will also help apprehend government structures' presence and control. This explanation also holds for the inclusion of educational variables. The secondary school attendance index equals 1 if the adolescent has attended secondary school and 0 otherwise. We use the secondary school level because a 12 to 17 years old child in Burkina Faso should typically be in secondary school. Finally, we include ethnic diversity variables relying on two indexes measured at the

⁸ In Burkina Faso, it is forbidden to ask questions directly to children under 11.

district (commune) level. The first one is the Ethno Linguistic Fractionalization (*ELF*) index widely used in the literature. *ELF* measures the likelihood of two randomly chosen people being from different ethnic groups (Easterly & Levine, 1997):

$$ELF = 1 - \sum_{i=1}^N \pi_i^2 = \sum_{i=1}^N \pi_i (1 - \pi_i)$$

Where π_i is the proportion of people who belong to the ethnic group i , and N is the number of ethnic groups. When all people in a district belong to the same ethnic group, the index equals 0, making the district perfectly homogeneous. On the contrary, the district is heterogeneous when the index equals 1. Though Burkina Faso counts more than 60 ethnic groups, 10 ethnolinguistic groups only are accounted for in surveys. The average value of the indicator is 0.30, which means that districts are somewhat fragmented in terms of ethnicity.

Following Montalvo and Reynal-Querol (2005), we also compute the polarisation index *POL* as follows:

$$1 - \sum_{i=1}^N \left(\frac{\frac{1}{2} - \pi_i}{\frac{1}{2}} \right)^2 \pi_i$$

The index captures the fact that a district comprises two ethnic groups, which is the underlying fuel for conflicts. The difference with the fractionalisation index is that the former will increase and be near 1 when almost all people in the district are of different ethnic groups. The latter will nearly be equal to 1 when a district comprises two ethnic groups, each with 50% of the population (Mavridis, 2015). Using this index, Montalvo and Reynal-Querol (2005a) found that ethnic polarisation exacerbates conflicts. This index better explains conflicts than the fractionalisation index (Mavridis, 2015).

4.3 Mining activities and road network

We draw on a third database from MinEX Consulting on industrial mines. Several variables allow us to disentangle the role of natural resource endowments as drivers of violence. MinEX Consulting estimates that the database covers 99% of worldwide giant-sized deposits, 95% of major deposits, 70% of moderate's ones, and 50% of minor deposits since 1950 (Ahlerup, Baskaran, & Bigsten, 2019). The database reports information such as the geographical location (longitude and latitude coordinates) and size of the site, the discovery year, the mine startup year, the nature of the ore exploited, and the

exploitation statuses. In Burkina Faso, five industrial gold mines have been effectively operating between 2011 and 2013. According to the mining law in Burkina Faso, companies are granted an exploitation permit for 20 years. It is renewable every five years until the depletion of the ore.⁹

Lastly, using geographically localised information (latitude and longitude coordinates) on the road network, we compute the distances to borders and two types of roads: trunk and primary roads. Trunk roads are found mainly in cities such as the political capital, namely Ouagadougou. Primary roads are national roads generally leading to rural areas. Those two variables proxy the distance and the remoteness of the location to the central political power. We compute these two variables while taking the distance from the centroid of a specific location to the roads. We also calculate distances to the nearest border using the main practicable roads to compute the exact distance to reach the border.¹⁰

5 Econometric analysis

Our dependent variable counts the number of violent events by district or “communes” in 2019, suggesting a count regression strategy. The Poisson estimator is not relevant. Indeed, one crucial assumption of this estimator is that the mean of the dependent variable is equal to its variance. This assumption does not hold in our case because the mean is 1.32 while the variance is 19.38. We then resort to using the negative binomial regression deemed more suitable for over-dispersed data. The likelihood ratio test of the specification's dispersion parameter (α) is significantly different from 0, which corroborates our choice. Moreover, we control unobservable spatial heterogeneity with village-fixed effects.¹¹

We present first our main results in section 5.1. Section 5.2 details the results according to different age groups and gender.

⁹ In Burkina Faso, TAPARKO (Centre Nord), BOMBORE (Plateau central), YUGA (Centre Est), and INATA (Sahel) are major size deposits (deposits superior or equal to 2.24 million of ounces). ESSAKANE (Sahel) and MANA (Boucle du Mouhoun) are classified as giant size gold deposits (deposits superior or equal to 11.18 million of ounces).

¹⁰ Burkina Faso shares borders with Mali, Niger, Ivory Coast, Ghana, the Republic of Benin and Togo.

¹¹ Given the important number of zeros reported for the dependent variable, we could have used zero-inflated regression models. However, it was difficult to find an adequate variable to make a distinction between “real peace” in the commune, and a “fake peace” because the event was not reported. Existing studies analyzing the determinants of conflicts with zero-inflated regression models use cross-country database where disentangling fake and real events seems making more sense (Dunne & Tian, 2016). In addition, there is no consensus on using zero-inflated models (see e.g. the debate between Allison and Greene <https://statisticalhorizons.com/zero-inflated-models> acceded May 29th, 2020).

5.1 Main results

Table 1 reports our baseline results relying on the negative binomial estimator. They show that youth satisfaction towards the three items cited above is negatively correlated with the occurrence of violent events in 2019. Although the possibility of an endogeneity bias cannot be completely ruled out due to lacking valid instrumental variables, several indications suggest that the risk is low. On the one hand, we control by village fixed effects and several variables that likely affect youth resentment and conflicts. On the other hand, there is no reason to believe that the conflicts of 2019, unprecedented in both scale and nature, should influence the youth resentment recorded in 2018. Hence, we interpret our main result in the following way: being satisfied in 2018 decreases the occurrence of violent events by one unit. In other words, relative deprivation fosters armed conflict. Of course, this result does not mean that most discontented young men do actually join rebel groups. On the one hand, the lack of data on recruitment makes it impractical to conclude this topic. On the other hand, participation in an armed group is a kind of “public good” and is subject to the free-rider or Olson’s paradox of collective action (Olson, 1971). Hence, many discontented young people will decide not to act violently.

Insert table 1 (section 9)

Moreover, when the commune is highly polarised, this has a very significant impact on conflicts. The table also reports the results using two different measures of ethnic diversity, namely polarisation (*POL*) and Ethno Linguistic Fractionalization (*ELF*). Both have the expected positive effect on the occurrence of violence. This result may seem surprising in the case of Burkina Faso. However, the actions of terrorist groups may exacerbate ethnic tensions, fueling mistrust between communities.

When introducing variables on mining in Table 2, we can see that an industrial mine in the commune positively impacts the occurrence of conflicts by approximately 2 counts. As an alternative measure to the presence of mines, we introduce the distance to the nearest mine site, which still has a positive effect though it is less significant and of lower magnitude. This result is interesting since, on average, the nearest industrial mine is 72 kilometres away from the commune, which is close. Therefore, the proximity of the industrial mine goes beyond its actual establishment in the commune. It expands to its geographical proximity. In Burkina Faso, artisanal gold mining is widespread and develops around industrial gold mining sites. As stated in section 3, armed groups target them to capture their proceeds. The distance to the industrial mine distance can also somehow capture artisanal gold mining sites.

Insert table 2 (section 9)

The proximity to borders favours the action of armed groups (Table 3). In these areas, they coordinate better and fall back in the nearest countries, especially in Mali and Niger, where the borders with Burkina Faso are blurred. The distance to the “trunk” road type has a positive effect, contrary to the “primary” road type. We interpret both as remoteness from cities and infrastructures. In fact, for the former, the result shows that the remoteness of highway roads, mainly found in the main cities, has a positive impact on conflicts, which is understandable. The latter has a negative effect, meaning conflicts are more frequent when the commune lies near primary roads. We explain this result as follows. Primary roads are mainly found in rural areas and are often of poor quality due to potholes, where armed groups place IEDs. In brief, these results emphasise that violent conflicts are more frequent in rural (remote) areas and less frequent in the main cities, where security forces are more likely to counteract armed groups' intrusions.

Insert table 3 (section 9)

5.2 Heterogeneity analysis

We investigate here the heterogeneous effect of satisfaction according to the age of the respondents. The coefficients of the age group between 15 and 17 years are the highest whatever the question. The satisfaction of the oldest individuals has a higher impact on conflicts, presumably because they are the preferred targets of armed group recruiters (Table 4).

Insert table 4 (section 9)

Table 5 then presents complementarities between the different indices of youth satisfaction. We think that satisfied people in two separate items will be even less prone to violent action.

Insert table 5

Table 6 presents the results regarding the subpopulation of males and females. We show that the impact of these different satisfactions is higher for male youth than for females, other things held equal. We understand this result as armed groups preferably recruit young males. Females are less engaged in these activities, and when they are, they are not primarily recruited as fighters.

Insert table 6 (section 9)

6 Concluding remarks

Burkina Faso has been making international headlines these past years because of the terrorist context the country has known. So many lives and military expenditures, but the fight is not over yet. A military solution alone seems not to be adequate for the situation, as stated by Bakary Sambe:

“Military solutions have not been successful in the fight against terrorism in the Sahel. The lessons of America’s war in Afghanistan should have forced the international community to face facts: Kalashnikovs alone cannot defeat ideology nor solve the structural problems feeding the radicalisation of the young people who continue to join Boko Haram and the Islamic State in the Greater Sahara.” (Sambe, 2019).

We address these structural problems in this paper. We focus this study on the role played by economic grievances and relative deprivation perceived by youths. We argue that youth resentment towards the ability of their households to fulfil several needs is a crucial determinant of the occurrence of violence in their districts. Results show that wherever young people were satisfied with the ability of their households to afford food, education, clothes, and other extra items in 2018, it lowered the probability of an attack against civilians in 2019. This result is more noticeable in the 15-17 age group, which is crucial in children's development. It also highlights the importance of considering the feelings of young people towards their living conditions to avoid their radicalisation.

Our results hold while considering other drivers. They are the presence of industrial mines in the vicinity, the ethnic fractionalisation and polarisation, the remoteness from the cities, and the proximity of the borders with countries characterised by insecurity. These other factors imply looking at the terrorist phenomenon in Burkina Faso from several angles, even if the role of living conditions is essential. Therefore, the fight against terrorism in the Sahel requires implementing repressive and preventive policies. This recommendation is even stronger in Burkina Faso and other Sahelian countries, of which adolescents and young adults represent more than 30% of the country's population. The aim is to dry up recruitment sources for terrorist groups by improving young people's material and psychological situation. Education is one way of doing this alongside development projects targeting young people.¹² In addition, a targeted youth employment policy must be a priority for national governments.¹³ It is, therefore, essential to encourage policies that aim to invest in remote

¹² See for instance, the Positive Youth Development framework.

¹³ See for instance, the recent statements issued by the United Nations Security Council on counter-terrorism in Africa: <https://www.un.org/press/en/2020/sc14140.doc.htm>

areas and reinforce the sense of belonging of young citizens to their homeland. All these initiatives are part of a broader project aiming to enhance young adults' and adolescents' health and well-being (Patton, et al., 2016).

7 References

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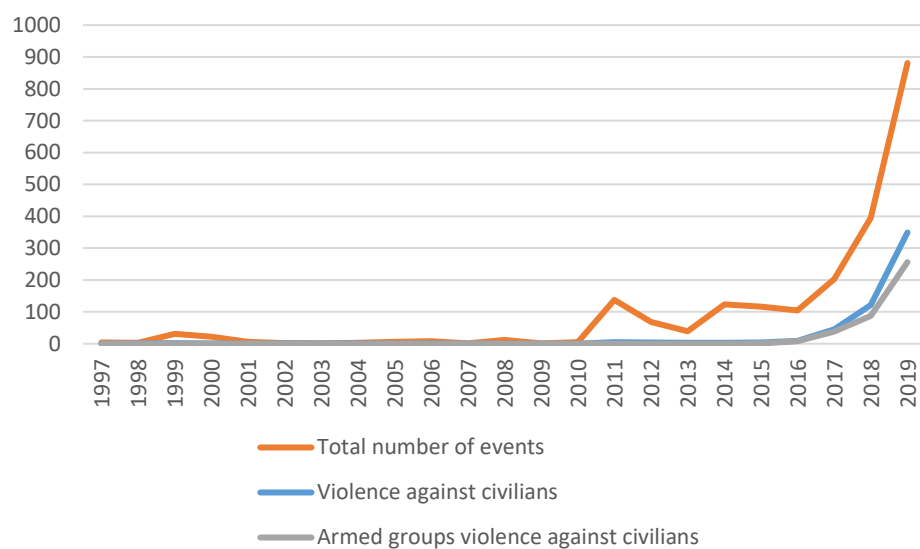
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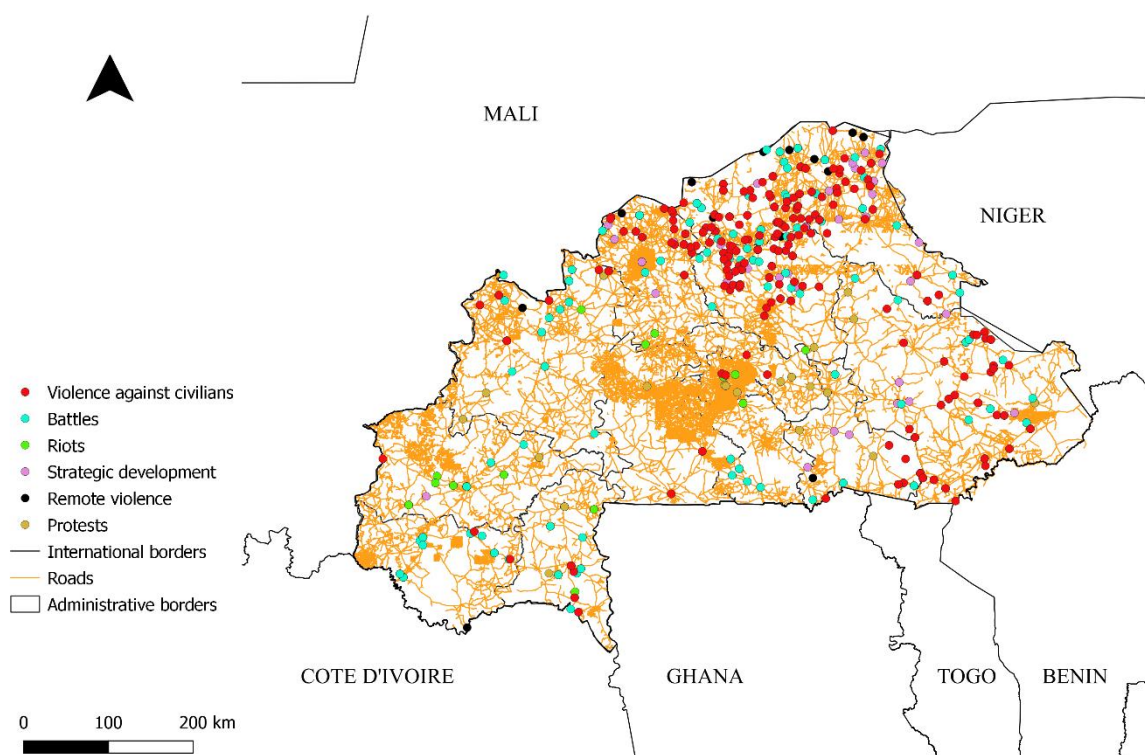
8 Figures and maps

Figure 1. Evolution of violent events in Burkina Faso



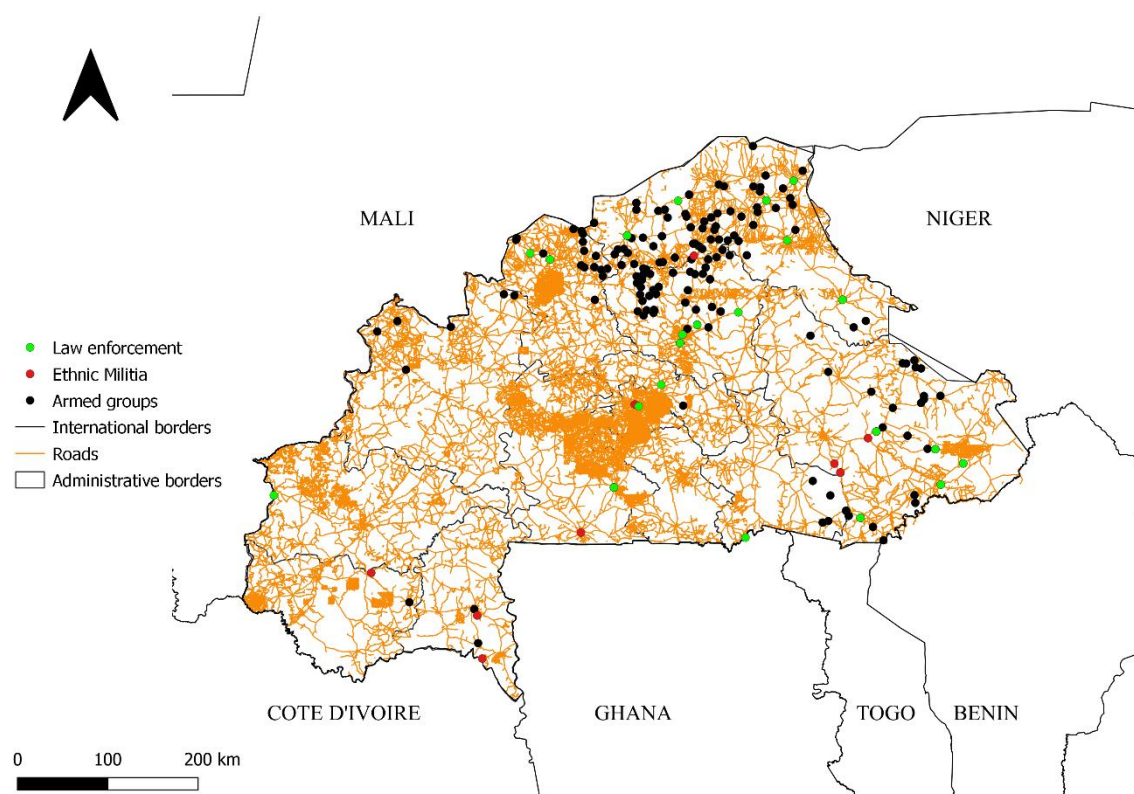
Source: ACLED Database (2019) and author's calculations

Map 1. Location of events in Burkina Faso since 1998



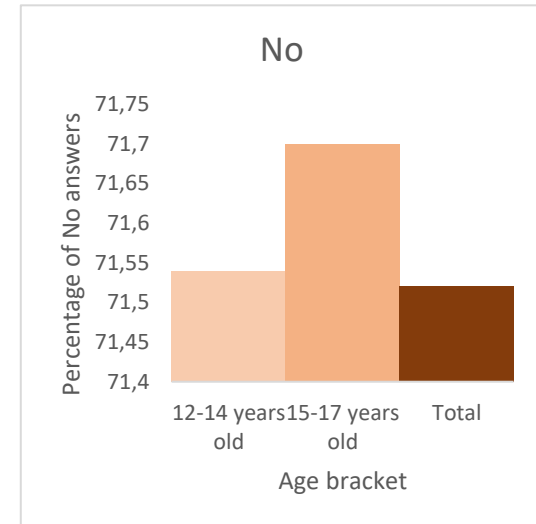
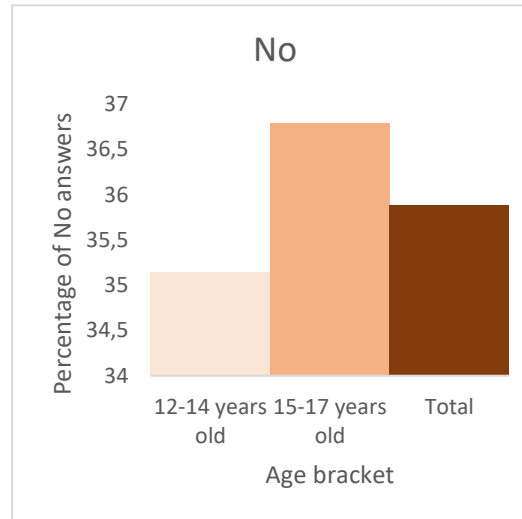
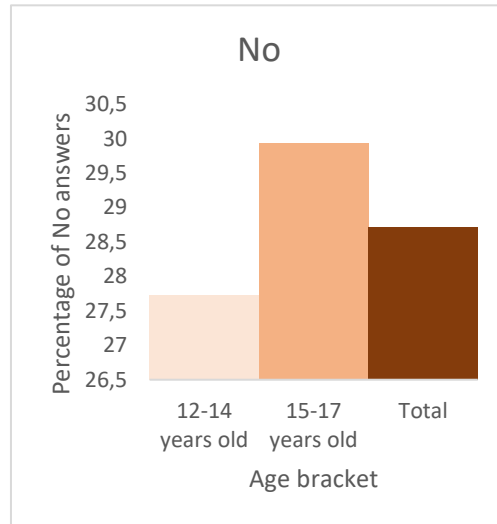
Source: ACLED data, OpenStreetMap data, FieldMaps data, and authors' calculations.

Map 2. Location of violent events against civilians in 2019 and their authors



Source: ACLED Data, OpenStreetMap data, FieldMaps data, and authors' calculations

Figure 2. Youth resentment in Burkina Faso



"Do you think your household has enough money
to afford basic items such as food?"

"Do you think your household has enough money
to buy essential items such as clothes, health,
and school fees?"

"Do you think your household has enough money
to offer you extra items such as toys and
vacation?"

Source: Authors' calculations from the 2018's survey on violence against children in Burkina Faso

9 Tables

Table 1. Determinants of violent events – Marginal effects - Baseline negative binomial estimator

Satisfaction_1	-1.160 *** (0.032)			-1.153*** (0.032)		
Satisfaction_2		- 1.195*** (0.040)			-1.191*** (0.041)	
Satisfaction_3			-0.993*** (0.062)			-1.04*** (0.068)
<i>POL</i>	3.791*** (0.260)	3.809*** (0.254)	3.837*** (0.261)			
<i>ELF</i>				3.609*** (0.268)	3.664*** (0.267)	3.646*** (0.269)
Marital_Status	-1.269 ** (0.029)	-1.284** (0.029)	-1.277** (0.109)	-1.269** (0.029)	-1.285** (0.030)	- 1.273** (0.030)
Secondary_status	-1.230 *** (0.038)	-1.251** (0.038)	- 1.253** (0.039)	- 1.242** (0.041)	- 1.264** (0.041)	- 1.262* (0.041)
R.Squared	0.367	0.364	0.3642	0.349	0.3461	0.3454
Observations	5,331	5,323	5,084	5,331	5,323	5,084

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Village fixed effects are introduced in each equation

Table 2. Determinants of violent events with mining activities– Marginal effects - Negative binomial estimator

Satisfaction_1	-1.157*** (0.032)			-1.168*** (0.033)		
Satisfaction_2		-1.192*** (0.041)			-1.204*** (0.041)	
Satisfaction_3			-0.980*** (0.062)			- 0.996*** (0.063)
Industrial Mine	2.151*** (0.340)	2.096*** (0.327)	2.271*** (0.363)			
Log (Distance to mine)				0.102* (0.0530)	0.102* (0.0535)	0.0694 (0.0544)
Polarisation	3.783*** (0.262)	3.804*** (0.256)	3.832*** (0.263)	3.782*** (0.256)	3.799*** (0.250)	3.822*** (0.259)
Marital Status	-1.271** (0.029)	-1.286** (0.029)	-1.281** (0.031)	-1.273** (0.029)	- 1.288** (0.030)	- 1.281** (0.031)
Secondary_status	-1.231*** (0.039)	-1.251** (0.039)	- 1.254** (0.040)	-1.232** (0.039)	-1.254** (0.039)	- 1.255** (0.040)
R.Squared	0.3679	0.3644	0.3648	0.3681	0.3647	0.3646
Observations	5,331	5,323	5,084	5,331	5,323	5,084

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1 Village fixed effects are introduced in each equation.

Table 3. Determinants of violent events with mining activities and distance to borders and roads – Marginal effects - Negative binomial estimator

Satisfaction_1	- 1.163*** (0.0766)			-1.159*** (0.0829)			-1.164*** (0.0762)		
Satisfaction_2		-1.178*** (0.0728)			-1.201*** (0.0803)			-1.184*** (0.0737)	
Satisfaction_3			- 1.021*** (0.0815)			-0.982*** (0.0852)			-1.085*** (0.0785)
Industrial Mine	2.315*** (0.156)	2.318*** (0.156)	2.399*** (0.155)	1.762* (0.167)	1.715 (0.165)	1.876** (0.169)	5.377*** (0.171)	5.376*** (0.169)	5.107*** (0.165)
Polarisation	2.823*** (0.301)	2.810*** (0.293)	2.873*** (0.299)	4.062*** (0.251)	4.074*** (0.247)	4.104*** (0.255)	4.368*** (0.314)	4.362*** (0.300)	4.338*** (0.312)
Marital status	-1.272* (0.0876)	-1.293 (0.0988)	-1.277* (0.0883)	-1.275** (0.127)	-1.288** (0.129)	- 1.284** (0.117)	-1.284** (0.0838)	-1.300* (0.0843)	-1.281** (0.0781)
Secondary level	-1.231** (0.0640)	-1.254** (0.0637)	-1.248* (0.0653)	- 1.239*** (0.0704)	- 1.259** (0.0700)	-1.264** (0.0705)	- 1.236** (0.0621)	-1.256** (0.0614)	- 1.247** (0.0631)
Log(distance to border)	-0.322***	-0.323***	-0.306***						

	(0.0315)	(0.0317)	(0.0317)						
Log(distance to primary roads)				-0.131***	-0.127***	-0.126***			
				(0.0372)	(0.0370)	(0.0376)			
Log(distance to trunk roads)							0.300***	0.305***	0.283***
							(0.0331)	(0.0328)	(0.0325)
R.squared	0.3843	0.3808	0.3796	0.3698	0.3662	0.3666	0.3849	0.3819	0.3796
Observations	5,331	5,323	5,084	5,331	5,323	5,084	5,331	5,323	5,084

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Village fixed effects are introduced in each equation.

Table 4. Determinants of violent events depending on the age of the respondents – Marginal effects - Negative binomial estimator

Satisfaction_1_12-14	-1.162**					
	(0.045)					
Satisfaction_1_15-17	-1.301***					
	(0.044)					
Satisfaction_2_12-14	-1.199**					
	(0.045)					
Satisfaction_2_15-17	-1.292**					
	(0.056)					
Satisfaction_3_12-14	-1.039***					
	(0.068)					
Satisfaction_3_15-17	- 1.121***					
	(0.087)					
Industrial Mine	149.304***	129.753***	130.131***	130.052***	116.413***	137.816***
	(72.544)	(60.958)	(61.104)	(58.513)	(50.337)	(64.810)
Polarisation	2.875***	2.394***	2.783***	2.462***	2.858***	2.384***
	(0.433)	(0.392)	(0.422)	(0.403)	(0.423)	(0.405)
Marital Status	-1.218	-1.388	- 1.257	- 1.396	- 1.224	-1.397
	(0.038)	(0.041)	(0.037)	(0.046)	(0.035)	(0.043)
Secondary status	-1.147*	-1.369	-1.191*	-1.373	-1.161*	-1.383
	(0.050)	(0.039)	(0.04)	(0.043)	(0.048)	(0.039)
Log (Distance to border)	-0.326***	-0.162***	-0.319***	-0.146**	-0.307***	-0.163***
	(0.0505)	(0.0525)	(0.0496)	(0.0568)	(0.0484)	(0.0527)
R.Squared	0.5071	0.4626	0.5020	0.4561	0.4992	0.4576
Observations	2,933	2,398	2,931	2,392	2,786	2,298

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1 Village fixed effects are introduced in each equation.

Table 5. Determinants of violent events testing complementarities with satisfaction motives - –

Marginal effects - Negative binomial estimator

Satisfaction_total	-1.095*** (0.032)		
Satisfaction_1_2		-1.157*** (0.033)	
Satisfaction_1_3			-1.003*** (0.050)
Industrial Mine	46.040*** (14.664)	122.205*** (41.681)	65.344*** (24.744)
Polarisation	3.140*** (0.381)	2.752*** (0.331)	3.009*** (0.389)
Marital Status	1.245** (0.0470)	1.244 (0.027)	1.259 (0.029)
Secondary level	1.241 (0.023)	- 1.198** (0.031)	1.256 (0.030)
Log (Distance to border)	-0.150*** (0.0435)	-0.246*** (0.0384)	-0.176*** (0.0381)
R.Squared	0.4938	0.4777	0.4799
Observations	2,945	4,590	2,839

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Village fixed effects are introduced in each equation.

Table 6. Determinants of violent events testing gender effects – Marginal effects - Negative

binomial estimator

Satisfaction_1	-1.224*** (0.0976)	-1.102*** (0.125)				
Satisfaction_2			- 1.237*** (0.0959)	- 1.111** (0.114)		
Satisfaction_3					-1.042*** (0.114)	-0.966** (0.125)
Industrial Mine	3.474*** (0.273)	1.873** (0.193)	3.433*** (0.279)	1.864** (0.189)	3.884*** (0.272)	1.855* (0.185)
Polarisation	2.405*** (0.428)	3.152*** (0.419)	2.390*** (0.420)	3.147*** (0.410)	2.360*** (0.418)	3.313*** (0.432)
Marital status	-1.334 (0.190)	- 1.163** (0.125)	-1.371 (0.180)	-1.157* (0.143)	-1.354 (0.152)	- 1.144** (0.134)
Secondary level	- 1.308 (0.0877)	- 1.116** (0.107)	-1.333 (0.0867)	- 1.139* (0.105)	-1.315 (0.0906)	- 1.153 (0.105)
Log(distance to border)	-0.403*** (0.0437)	-0.248*** (0.0464)	-0.407*** (0.0430)	-0.245*** (0.0472)	-0.399*** (0.0436)	-0.217*** (0.0470)
Gender M	Yes	No	Yes	No	Yes	No
Gender F	No	Yes	No	Yes	No	Yes
R.squared	0.4037	0.3723	0.4024	0.3672	0.3983	0.3690
Observations	2,814	2,517	2,813	2,510	2,700	2,384

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Village fixed effects are introduced in each equation

10 Appendix

Table 7. Descriptive statistics

Variable	Nb Obs.	Description	Mean	St.Dev	Min	Max	Source
Violent Conflicts	354	Nb of conflicts	1.33	4.42	0	33	ACLED Database (2019)
Satisfaction_1 Of which: 12_14 15_17	5,331	Equals 1 if the young person is satisfied regarding basic items	0.71	0.45	0	1	UNICEF Survey (2018)
Satisfaction_2 Of which: 12_14 15_17	5,323	Equals 1 if the young person is satisfied regarding school health, and clothing	0.64	0.48	0	1	UNICEF Survey (2018)
Satisfaction_3 Of which: 12_14 15_17	5,084	Equals 1 if the young person is satisfied regarding extra items like gifts	0.28	0.45	0	1	UNICEF Survey (2018)

Mine in commune	5,504	Equals 1 if there is an industrial mining site in the commune	0.24	0.15	0	1	MINEX Database (Operating mines that started in 2007, 2008 and 2010)
Never married	5,504	Equals 1 if the young person was never married	0.98	0.15	0	1	UNICEF Survey (2018)
Secondary level	5,504	Equals 1 if the young person ever attended secondary school	0.62	0.48	0	1	UNICEF Survey (2018)
Nearest border	5,504	Distance to the nearest border	98.22	68.43	0	249.51	UNICEF Survey and OpenstreetMap Data (2018)
Distance to the “Trunk” road type “	5,504	Distance to the nearest “trunk” type road	66.94	74.03	0	315.67	UNICEF Survey and OpenStreetMap Data (2018)

Distance to the road type “primary”	5,504	Distance to the nearest road type “primary”	15.37	21.76	0	118.73	UNICEF Survey and OpenStreetMap Data (2018)
Distance to Industrial Mine	5,504	Distance to the nearest industrial Mine	72.87	43.87	0	248.06	UNICEF Survey and MINEX Data (2018)
Fractionalization or <i>ELF</i>	5,504	Fractionalisation of ethnic groups index	0.30	0.25	0	0.81	UNICEF Survey (2018)
Polarisation or <i>POL</i>	5,504	Polarisation of ethnic groups index	0.43	0.32	0	1	UNICEF Survey (2018)