THE PATTERNS OF ETHNIC SETTLEMENT AND VIOLENCE. A LOCAL-LEVEL QUANTITATIVE ANALYSIS OF THE BOSNIAN WAR

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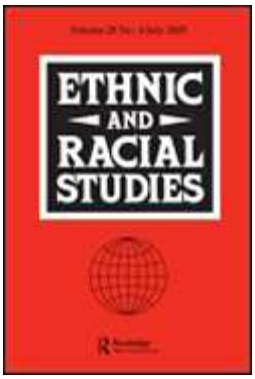

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THE PATTERNS OF ETHNIC SETTLEMENT AND VIOLENCE. A LOCAL-LEVEL QUANTITATIVE ANALYSIS OF THE BOSNIAN WAR[1]

Abstract: The debate on the link between ethnicity and violence has been raging in the political science literature after the end of the Cold War. Often, cross-country quantitative studies dismissed the importance of ethnic heterogeneity as a source of violent conflict. How the patterns of ethnic settlement within a country affect the severity of violence, though, has not yet been studied through similar techniques. In this essay, we build and analyze a dataset of major violence-related variables collected at the local level during the 1992-1995 war in Bosnia-Herzegovina. What emerges is that the local distribution of the population, in terms of the number and relative size of the groups, is a key factor in explaining the intensity of violence in the Bosnian municipalities.

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1. **Introduction**.

The relationship between ethnicity and violence has been one of the most hotly contested issues in the debate on the nature of war in the post-Cold War environment. Such a debate has been very lively, ranging from "primordialists" who argue that the new wars were the result of fixed cultural factors to "instrumentalist" scholars who insist that ethnic identities are, at best, one of the many cleavages that ruthless elites can mobilize. The rich empirical literature on civil wars that has blossomed in recent years has greatly contributed to the debate, offering different research strategies to address the ethnicity-violence link from an empirical standpoint. Cross-national quantitative studies have included repeated attempts to measure ethnic heterogeneity through numerical indexes and to analyze its impact on the onset of wars, while case studies and comparative analyses have tried to show the specific mechanisms behind such links, unmasking the role of elites or of other context-specific factors in determining the outbreak and the spread of violence. In the rich body of literature that emerged, though, it is difficult to find certainties and shared conclusions for the major issues at stake. Although the impact of ethnic heterogeneity on violence has been initially dismissed by a significant part of the literature, recently some scholars have reconsidered the link between the ethnicity and civil wars, successfully showing that the ethnic

dimension can be an important factor in understanding the onset and the dynamics of violence in intra-state conflicts (Buhaug, Cederman, Rød 2008).

This empirical study emerges in such a context and follows two guidelines in order to assess the impact of ethnicity on violence. First, it tries to address one specific subject within the broad label of "civil war", in our case, the severity of violence in a specific civil war - the one that occurred in Bosnia and Herzegovina between 1992 and 1995. The intensity of violence has been given less attention than its onset, and is widely believed to be one of the most promising fields of research on civil wars (Kalyvas 2006). We analyze the local context of violence using disaggregated data at the level of municipalities. This research strategy allows us to get "closer" to the conflict, taking the striking geographic diversity of violence that is typical of civil wars and so often overlooked in the scientific literature into due consideration (Kalyvas 2006). Using this approach, we also reduce the heterogeneity of the units of analysis, arguably one of the weakest points of cross-country studies, and focus on the contextual conditions that exert a more direct influence on local violence, defined very restrictively – but in accordance with the majority of the studies on the topic – as the number of deaths occurred in a given municipality. Our analysis clearly reveals that the patterns of ethnic settlement strongly influence the severity of fighting. High ethnic heterogeneity and the presence of relatively large different ethnic groups in an area (polarization) are accurate predictors of a high severity of violence at the local level. While we are conscious that the attempt to reduce a rich concept such as ethnicity to simple indexes fit for quantitative analysis runs the risk of biases and oversimplification (Malešević 2006), we still maintain that it is a valuable effort, as it contributes to shed light on how spatial patterns of "ethnic" settlement are conducive to violence.

The paper proceeds as follows. The first section briefly sums up the empirical literature on civil wars and ethnic conflict. The second section includes the presentation of the major hypotheses considered here, focusing on those related to ethnicity and the analysis of the data. The aim is to highlight the links among a series of contextual variables and the severity of violence in the

Bosnian civil war. Lastly, we draw conclusions and indicate potential patterns of new research in the field.

2. Violence, ethnic conflict and civil wars: Shared knowledge and open research questions.

Few subjects have recently received more attention in political science than large-scale political violence and intra-state conflicts. It has been noted how these forms of conflict replaced analyses of nuclear deterrence and conventional balance as the core subject of the studies on war following the end of the Cold War. In the vast body of political science literature that has emerged, macro-level empirical studies have often used quantitative analysis to investigate the structural variables associated with the outbreak, and less often the severity, of violence. While there is no definitive consensus on which variables are more often associated with the onset of civil wars, most scholars agree on two fundamental points. First, violence is characterized by its persistence: whatever its "causes", it tends to be strongly dependent on previous bouts of violence. As recorded by most studies, the previous occurrence of civil wars is a good predictor of the beginning of another civil war (Collier *et al.* 2003).

Second, income levels are negatively associated with violence. Here, though, it is the indicator (low income per capita is related to a higher probability of conflict onset) rather than the variable, that is to be shared. According to some, income represents a measure of poverty, thus pointing to the opportunity cost to join insurgencies. From this perspective, rebels are akin to bandits and the use of force is a direct way to improve their economic conditions (Collier et al. 2003). For others, notably James Fearon and David Laitin (2003), income is a proxy of state capacities, particularly of the ability of the state to control the territory and of its coercive agencies to curb insurgencies when they are weak, that is, when they initially arise. Insurgencies erupt where guerrilla warfare is difficult to be prevented, therefore where strong state institutions are not

present, but also in countries with mountainous terrain, which is an ideal environment for the "technique" of insurgency.

The issue on which the literature is arguably most divided, however, is the impact of "identity", most notably ethnic identities, on civil wars. The rich debate[2] can be briefly summarized with reference to the now consolidated tri-partition among primordialists, instrumentalists and constructivists (for a review, Smith 1998). Instrumentalists, argue that identity is just the creation of a conscious strategy of elites manipulating the masses, thus depriving ethnic identification of any independent impact: war is waged on ethnic grounds because it is a useful tool for elites to mobilize with such etiquette (Gagnon 2004). Primordialists, on the opposite side, support the idea that ethnic identities are somewhat fixed and have argued that – in given moments and circumstances – they represent per se causes of conflict (Van Evera 2001). Social constructivists take a more nuanced view, exploring the mechanisms that fix (or make more fluid) ethnic identities. Examples are Rogers Brubaker's work on the interplay between "construction from above" and "everyday ethnicity" (Brubaker 2004), Paul Brass' attempt to show the interaction between strategic elites and on-the-ground people pursuing their agendas (Brass 1997), or Gerard Prunier's reconstruction of the labelling of "Hutu" and "Tutsi" in Rwanda (Prunier 1995).

In the context of this rich debate, several quantitative studies have tried to transform "ethnicity" in an independent variable through the use of numerical indexes, and claimed that the ethnic dimension (intended as the number or the relative size of the ethnic groups in a given territory) does not have any relevant influence on the probability of the onset of civil war (Fearon and Laitin 2003). Still, other scholars have replied that such results may depend on an unreliable index (Posner 2004) or have highlighted the fundamental difference between ethnic and non-ethnic conflicts, maintaining that ethnic fragmentation only matters in the first category of wars (Sambanis 2001). Adopting a more nuanced approach in investigating the link between ethnic groups and the onset of civil wars, however, Buhaug, Cederman and Rød (2008) have shown that "ethnicity matters" in at least two cases. First, war is more likely when ethnic diversity is associated with

"ethno-political" configurations of power and thus fostering social and political exclusion. Second, the chances of conflict increase when there are related ethnic groups in countries peripheral to those present in the country (Cederman, Girardin and Gleditsch 2009).[3]

More recently, the empirical literature on civil wars has tried to abandon the traditional cross-country analyses to focus on disaggregated data and internal diversity, since these types of conflicts are really local phenomena and they tend to hide features that cannot be grasped through national "averages". Using this approach, Buhaug et al. (2009) have highlighted that local differences in income can lead to different outcomes in the onset of conflicts in different areas of the country. Also, due to the impact of the work on the local dynamics of civil wars done by Kalyvas (2006), a sizeable part of recent research has adopted an approach focused on the recognition of the internal heterogeneity of civil wars, and has aimed to take disaggregated data to discuss the "micro-foundations" and the dynamics of violence at a more local level. Also, this type of study supports the view that civil wars are a complex phenomenon and thus should be somewhat "unpacked" and studied "internally" (Kalyvas 2006). Contrary to the works on civil war onset though, this part of empirical literature does not focus exclusively on the determinants of outbreaks of violence, but rather on what happens during the course of the hostilities that take place. Violence can be indiscriminate or selective, subject to the competition for control of certain areas of the country (Kalyvas 2006), or it can be more or less severe against civilians depending on the organizational features of the armed groups (Weinstein 2007).

This paper attempts to merge, insofar as possible, the most recent strand of empirical studies on the links between ethnic heterogeneity and civil war with research looking at the severity of violence when the conflict began. The use of disaggregated data helps us to assess if there is any robust relationship between the local ethnic configuration and the level of violence experienced in a war that took place in an ethnically diverse country.

3. The patterns of ethnic settlement and violence

The main purpose of this paper is to tackle a question that emerges from macro-level studies and that is the indeterminacy surrounding the role played by ethnic heterogeneity. We try to answer this question and to contribute to the existing literature by analyzing "disaggregated" violence (the approach taken in micro-level studies) in the Bosnian War, starting in 1992, when hostilities and sporadic conflict escalated to a full-fledged civil war, and ending in 1995 (the year of the Dayton agreements).[4] Violence is disaggregated spatially at the level of municipalities (109 local institutions). Figure 1 below shows the variation of violence at the local level and thus confirms an important finding in the recent literature on civil wars regarding the extreme heterogeneity in the levels of violence registered within a civil war (Kalyvas 2006).

FIGURE 1 HERE

While most of the literature mentioned above focuses on the origins of war, this study explores the intensity of violence and does not tackle the causes of its onset by looking at the severity of violence across space (in the different municipalities), thus allowing to more closely observe the contexts in which violence emerges. In other words, this reduction in scale addresses at least some of the critiques of qualitative scholars by controlling for cross-national differences and by getting closer to the phenomena the analysis focuses on, mitigating the so-called aggregation problem which has often been deemed necessary in studies of "ethnic violence" (Brubaker and Laitin 1998).

Clearly, testing the impact of ethnicity on violence firstly requires specifying what we mean by "ethnicity" here. In this paper, we adopt a configurational approach based on indexes capturing dispersion (Laitin 2007), and use census data on self-identification in order to build numerical indexes that grasp ethnic heterogeneity. Operationally, in the census surveys, the citizens of the Republic of Bosnia and Herzegovina in the Yugoslav Federation were asked to indicate the national group they felt they belonged to. The possible answers were: "Muslim", "Croat", "Serbian", "Yugoslav", and "Other" (for specific details on the indexes, see also below, par. 5)[5]. This process took place in 1991, just before the outbreak of the war. The choice results of course in a simplification: first, ethnic groups so defined are taken as unitary entities, what Brubaker criticizes as "grouping", which they clearly are not. Second, numerical indexes do not account for the full scale of configurations of the distribution of population (Posner 2004). Still, while recognizing that quantitative analysis cannot provide complete answers to the mentioned questions, we wish to follow a now consolidated set of studies, so that our results are more directly comparable to existing literature, and that they can provide hints for future research as well as a map that gives a broad perspective on the drivers of violence in the Bosnian war.

With direct reference to the variables used, we consider ethnic fractionalization, ethnic polarization, and ethnic dominance. These variables share at least one underlying feature, and that is that in the quasi-anarchic system that war creates, where the state is weak or perceived exclusively as the representative of a faction, ethnic groups should try to create ethnically homogeneous areas (Posen 1993) in order to overcome the "ethnic version" of the classic inter-state security dilemma. However, the specific logic that connects these different dimensions of ethnic settlements to violence is partially different. The index of ethnic fragmentation used here is widely used in the relevant literature (Alesina et al. 2003) and measures the number of groups in a given territory (for measurement, see below, par. 4). A high level of ethnic fractionalization makes encounters and clashes more frequent (for a similar argument, Humphreys and Weinstein 2006) as well as strategic calculations more difficult. Recent literature on civil war onset similarly stressed a higher proneness

to conflict for groups that are highly intermixed (Melander 2009). In more fragmented areas, armed groups have to fight against many enemies whereas on the other hand, we find a larger pool of divergent political and military preferences makes it more difficult to reach an agreement on an eventual point of equilibrium if none of the parties are able to annihilate the others (Doyle and Sambanis 2000). Such features of the context tend to increase the violence and therefore in areas characterized by high ethnic fragmentation, there should be higher levels of violence.

Besides fragmentation, an index that has been frequently used in recent studies is ethnic polarization (Reynal-Querol 2002). This index measures the relative size of the ethnic groups in an area, which, according to a classic study by Donald Horowitz, should be a better predictor of violence than fractionalization. Violence should emerge (and in our case, mutatis mutandis, should be higher) in the presence of two groups of similar size that are in a situation of high polarization (Horowitz 1985). This relationship between polarization and severity is also linked to the expected harshness of clashes due to the attempts of groups to establish numerical superiority (homogeneity) over the territory. In such circumstances, with all other things being equal, each faction has to fight against relatively strong enemies and therefore to engage in tough clashes to reach its goals.[6]

An opposite condition to that of high polarization is one of "ethnic dominance". In this case, the population of a territory is relatively homogeneous, with a large majority belonging to the same ethnic group. This leads to a logically contradictory hypothesis on the severity of violence. Violence should be relatively low for two major reasons. First, the large group has an already established supremacy and its armed groups do not need to engage in bloody clashes to reach their objective (which is either there or easy to reach, even without large scale violence). Also, the smaller group cannot reasonably expect to subvert the status quo, operating in a situation where the imbalance of forces would lead to suicidal and probably unsuccessful acts. Thus the small group will have incentives to accept the other's dominance. The assumption here, consistent with at least one part of the literature, is that even in conflicts described as characterized by primordial hatred, the choice of groups to resort to violence cannot totally escape a somewhat rational calculation of

means and ends. In other words, there might be grievances, but there is no opportunity (Ellingsen 2000). For these reasons, we expect that violence will be lower in cases where a group is dominant. Moreover, in order to investigate whether the different ethnic groups behave differently in cases of a predominant presence in a certain area, we have also created three separate variables measuring the ethnic dominance of each ethnicity. If the rationale that points at the importance of opportunity has a general validity, the identity of the ethnic groups should not make any difference for the influence of such variables on violence, provided that such groups embody the relevant actors. Thus, we will try to check if a situation of "asymmetry" like the one represented by a municipality where an ethnic group is a large majority leads to different outcomes in terms of violence depending on the identity of the major group.

Hp. 1: The level of ethnic fractionalization should be positively correlated with the severity of violence.

Hp. 2: The level of ethnic polarization should be positively correlated with the severity of violence.

Hp. 3: In a situation of "ethnic dominance", violence should be lower.

Also, we believe that it is important to evaluate the impact of the "geographic dimension" of ethnicity. The political geography of the context in which "military" operations take place affects both the likelihood of onset and the dynamics of violence and it cannot be arbitrarily limited to the territory of the state under scrutiny (Cederman, Girardin and Gleditsch 2009). Ethno-spatial variables, for want of a better name, can be related to the presence of internal and external borders. Even when civil wars do not fully escalate to the level of international wars through the massive intervention of external actors, a transnational dimension is nonetheless often present (Gleditsch 2007) as contiguous states can directly or indirectly influence the dynamics of the conflict at stake. For instance, contiguous states may decide to intervene directly in order to "protect" co-ethnics, respond to incursions operated on their own territories, prevent such incursions or expand their

influence in a situation of crisis (Cederman, Girardin and Gleditsch 2009), bordering areas should result in being characterized by high levels of violence. The same should happen if external states intervene in the conflict indirectly, that is, providing support to one faction and relying on it to reach the aforementioned goals. In one of the few quantitative studies considering such a dimension, Lacina (2006) argues that civil wars characterized by external intervention are more violent than the "purely" internal ones. Lacina uses the temporal collocation of the civil war in the Cold War (civil wars in that period, she argues, were very often characterized by external intervention) as a proxy, but we find such operationalization unconvincing and in any case it does not fit with our study. Here, we use two simple dichotomous variables to indicate if the municipality is on the border of Croatia or Serbia. Following the hypotheses already presented in the recent literature and considering the well-known interventions operated at least by Serbia in the Bosnian war, we assume that the bordering municipalities should show a higher intensity of violence.

Hp. 5: The contiguity with Serbia and Croatia should be positively associated with the intensity of violence.

4. Control variables

The first set of control variables specifically concern the nature of the terrain where the percentage of territory dedicated to agriculture and that of urbanized territory are considered. The first variable is a proxy of "open terrain", a terrain free from dense vegetation (such as forests) and that is not mountainous, which would provide better shelter and space for action related to insurgent-style operations. The second variable, instead, measures urbanization. The presence of more densely-built urban areas on one hand should affect violence by favouring guerrilla activities and on the other hand, by increasing the risk of military activities involving civilians. Civilian involvement and

death can be both the result of precise intention and the outcome of unintended "collateral damage". In the empirical analysis we dedicate two models to investigate the influence of the ethnic variables previously described on the victimization of civilians, expressed in terms of civilian deaths. The aim is checking whether our hypotheses hold or need to be modified following a change in the dependent variable to focus on this particular type of victims. With reference to geographic variables, we take into account if the municipality under scrutiny was on what then became the border between the Federation of Bosnia Herzegovina and the Republika Srpska. Because of the way in which the war developed, and since the peace negotiations recognized that the "situation on the field" was meant to be respected in any possible agreement, we assume that harsh clashes could have taken place in such areas, giving rise to relatively higher levels of violence, especially in the second half of the war. Also, we try to include a different test for border contiguity to Croatia, which might be a biased measure as Croatia established a Republic of Herceg-Bosnia in December 1991 in areas of Bosnia-Herzegovina with vast presence of Bosnian Croats. Thus, we control for municipalities on the border between the Republic of Herceg-Bosnia and Bosnia-Herzegovina.

As mentioned above, income, although through different causal mechanisms, has been widely considered a fundamental variable in studies concerning the onset of civil wars (Fearon and Laitin 2003). The most recent literature on the relationship between civil war and social and economic conditions at the local level (Buhaug et al. 2009) has highlighted that increasing the disaggregation of data on the purely economic logic seems more relevant than the "state capacity hypothesis". In the same vein, we recover a proposition by Paul Collier which states that there should be a trade-off between violence and income and have adapted it to our research, which does not deal with the onset of civil war but with the intensity of violence within a civil war. Accordingly, we assume that in areas with higher levels of income, there should be fewer incentives to join the "rebels" (Collier et al. 2003) and therefore lower levels of violence. Several recent studies have focused on the role of natural or lootable resources in civil wars (Weinstein 2007) and one main hypothesis assumes a

higher level of violence in primary goods-rich areas, but this is not applicable as the territory of Bosnia does not provide such resources.

Lastly, since civil wars have been erupting more frequently in countries that had already experienced one before, we also consider the effects of previous violence on the severity of violence in a given year. The rationale here is to study whether there is a vicious circle of violence within a civil war (Bussmann, Haer and Schneider 2009).

5. Data and methods.

The municipalities of Bosnia-Herzegovina represent our units of analysis, while our dependent variable is the severity of violence, which is measured by the number of victims that have been recorded in each municipality.[7] Violence is of course a more complex concept, which might include also other data besides victims, such as cases of torture, rape, forced removals, all of which were widely present in the Bosnian war. The reasons for sticking to the amount of deaths are at least two. First, to our knowledge there are no other databases offering a collection of data on violence in Bosnia-Herzegovina as fine-grained as the one concerning the victims of war that has been recently constructed by the Research and Documentation Center of Sarajevo (RDC)[8] under the auspices of the Norwegian Ministry of Foreign Affairs. Second, issues of accumulation of knowledge also point to use death-related data as they are the most commonly used in contemporary research on violence and civil wars (Kalyvas 2006, Balcells 2010). In addition to its usefulness for academic purposes, such a database is also an essential tool to put an end to political exploitation of the very different estimates that were released during the years (e.g. SIPRI 1993). The project produced the largest database on the victims of the Bosnian war grounded in documentary sources, without resorting to large-scale estimates. The staff of the RDC worked for three years and collected data from primary and secondary sources such as local civil registers, military lists and newspapers articles. All the entries have been double-checked using multiple sources, including more than 50.000 photos, 8.000

oral statements and 3.500 hours of video material. The researchers also visited 363 mass graves and only the names of the victims for whom well-documented proof exists were included in the database. It is always very difficult to provide precise data on war victims, but the RDC database is definitely more accurate and reliable than existing estimates on the Bosnian war. The total number of losses recorded (97.207) includes only victims directly related to military activities.

Data concerning the population of the municipalities and its ethnic composition come from the archives of the Bosnian National Institute of Statistics (BNIS) and they refer to the last national survey carried out in 1991, on the eve of the war. Fractionalization is defined as "the probability that two randomly selected individuals from a population belong to different groups" (Alesina et al. 2003). Polarization, instead, "provides a ranking order of the different distributions of the population" with a value of the index equal to 1 being the most polarized case (Reynal-Querol 2002).[9] For example, in the municipality of Mostar, 33.99 per cent of the population was composed by Croats; 34.63 per cent by Bosniaks; 18.83 per cent by Serbs, while 10.08 per cent of people self-identified as Yugoslavs and the index of fractionalization was 0.72. In the municipality of Čajniče, 0.06 per cent of the population was composed by Croats; 44.93 per cent by Bosniaks; 52.50 per cent by Serbs, while 0.86 per cent of people self-identified as Yugoslavs and the index of polarization was 0.97. Ethnic dominance takes the form of a dummy variable, which equals 1 when at least 75 per cent of the population of a municipality belongs to a particular ethnic group or when the largest group includes at least 70 per cent of the population and the second largest one does not reach 20 per cent. The three variables that detect the predominant presence of a particular ethnicity have been constructed similarly, simply by substituting a particular group for the general case. All our models also include the total population of the municipality under scrutiny, used as a control variable in order to avoid distortions in the evaluation of the effects exerted by other independent variables on the number of victims that appeared in a given place. The variable that accounts for the open terrain is simply the percentage of cultivated land relative to the total surface of each municipality, while the variable that refers to urban areas is represented by the percentage of

municipal soil occupied by buildings. Both these variables and income pro capita are derived from the statistics of the BNIS and they refer to 1991.

The functional form of all models is semi-logarithmic: the dependent variable and the independent continuous variables are expressed in logarithmic form, while the dummy variables and the indexes that assume values between 0 and 1 are expressed in their original form. This way we can effectively deal with the skewed distribution of the dependent variable and we do not predict meaningless negative values of the victims (Heger and Salehyan 2007). Table 1 consists of a series of cross-sectional OLS regressions with clustered robust standard errors that deal with eventual problems of serial correlation and heteroskedasticity, even though the White tests we have carried out did not show any relevant problem of the latter kind.

TABLE 1 ABOUT HERE

6. Results and comments.

Our analysis clearly shows the salience of the patterns of ethnic settlement. Contrary to what has been found in some important studies concerning the onset of civil wars, ethnic fragmentation and polarization resulted in being strictly related to the severity of violence at the local level in the Bosnian war and the result is consistent across different models. Assessing the relative importance of the two variables and the mechanisms that link them to violence is more difficult, because they are strongly correlated[10] (and for this reason never included in the same model). Nonetheless, it is possible to understand something more about these two different aspects of the ethnic dimension. A systematic comparison of the suitability relative to the models performed on data that embrace the whole war (not included for reasons of space) shows that fractionalization constantly provides higher values of R^2 than polarization does, but the latter variable has a stronger predictive power for what concerns the highest levels of violence. As a matter of fact, four municipalities that belong to

the list of the ten most polarized areas (Foča, Rogatica, Vlasenica and Zvornik) are also included in the list of the ten most violent municipalities,[11] while none of the ten most fragmented municipalities appear in such a list. This suggests that severe violence conceived as a high number of casualties could be linked to a polarized rather than to an extremely fragmented situation. In other words, violence develops where there is a plurality of groups, but such groups must also be rather large in order to cause high levels of severity. Our Hp.3 on ethnic dominance confirms this pattern from another standpoint, since areas where one group is much larger than others have resulted in being relatively less violent and this finding is confirmed irrespective of the ethnic group. In other words, violence is higher where the relevant actors represented by the ethnic groups have to fight harder in order to achieve the supremacy and lower where such supremacy is already attained or very unlikely to be attained. The saliency of the ethnic variables is confirmed also if we investigate their effect on the amount of civilian victims (models 8-9), so that the links between ethnic settlements and the severity of war do not seem to change if we change our dependent variable according to the civilian-military division. Moreover, the logic of the ethnic dominance seems to be applied by all ethnic groups, even if in model 6 of table 1, the variable on Bosnian dominance is not significant. A strong asymmetry in the numerical presence of the ethnic groups on a given area is associated with relatively low levels of violence, irrespective of the identity of the major group. As a matter of fact, if we exclude the outlier represented by Srebrenica from the analysis (model 7), such a variable behaves consistently with the ones that indicate cases where the Serbs and the Croats represent the dominant ethnicities, showing a significant and negative coefficient.[12] The tragically famous case of Srebrenica represents an outlier not only because it is the most violent municipality of the country, but especially because most of the victims were civilians coming also from other municipalities and caught in an area that was defined “safe” by the United Nations. In fact, as Susan Woodward noticed, safe areas were somewhat paradoxically very violent. This is because they were used, or at least perceived as used, as a refuge by militia fighters,

then drawing direct intervention of the opponents, as in the case of Bihać, where Bosniaks where besieged by Bosnian Serbian forces almost for the whole duration of the war (Woodward 1995).

Contiguity of the municipalities with neighbouring countries (Hp. 5) leads to rather interesting results. Contiguity with Serbia is associated with intense violence, while contiguity with Croatia, in contrast, is consistently associated with relatively lower levels of violence. This is arguably due to the different behaviour of the two neighbouring states and especially to the less "active" conduct of Croatia, whose involvement during the four years of the war was limited to specific areas of Bosnia (such as the area of Mostar, densely populated by Bosnian-Croats). A similar outcome emerges if we substitute the municipalities on the border between Croatia and Bosnia-Herzegovina with the ones that were located on the border of the self-proclaimed Republic of Herceg-Bosnia, which are significantly less violent than the others (Model 5).

On the whole, the results of these two variables highlight the importance of the transnational dimension in civil wars and suggest further research on this issue. Of some importance is the "internal border" dimension. Municipalities located on what have since become the internal boundaries between the Federation of Bosnia Herzegovina and the Republika Srpska have experienced somewhat higher levels of violence, especially when violence is measured in terms of civilian victims. This confirms the idea that violence follows a precisely strategic pattern, and reaches high levels in the most contested and politically significant areas. The actions of the international community during the course of the negotiations (with an inclination to recognize the situation "on the field" as a starting point for designing new territorial arrangements) have arguably been a push towards the way violence developed in the final phases of war. Contestation à la Tilly actually seems to be a major driver of violence. The location of municipalities on open terrain does not result to influence the severity of violence, but as expected the empirical analysis shows that the severity of violence against civilians is particularly high in urban areas (Models 8-9).

Differently from a result common to most mainstream studies on the onset of civil wars, income is not a fundamental variable that explains the variation in the level of violence. While this

finding seems to refute a commonly-held hypothesis, it is not in contrast to the overall rationale of this study. On the one hand, more broadly, it strengthens the idea that the origins of civil wars and the intensity of violence in civil wars are two distinct phenomena that thus require different types of analyses. On the other hand, if we consider income together with variables on the presence of groups in the territory through the use of disaggregated data, it is possible to better understand how income can be taken as just expressing relative wealth/poverty (and not as a more indirect proxy for state capabilities). It is worth highlighting that even though Yugoslavia was a communist state, income disparities were remarkable. For instance in 1988, three years before the breakdown of the state, income per capita in Bosnia-Herzegovina was approximately 50 per cent of the Croatian one and 30 per cent of Slovenian one (Federal Statistical Bureau 1998). A remarkable difference in the levels of income was present also within Bosnia-Herzegovina, looking at the different municipalities.[13] It is difficult to precisely assess if the lack of significant effects of income on the severity of violence is a specific feature of Bosnia, of all "ethnic" conflicts, or if it applies to civil wars in general. However, a similar result is found in the cross-country analysis of Lacina (2006).

7. Conclusions.

In the very rich, and burgeoning, political science literature on civil wars, there are still relatively few attempts to quantitatively analyze the variation of internal violence in a country during a civil war. Similarly, while discussion on ethnic conflict raged at the macro-level, an attempt to quantitatively analyze the impact of ethnicity at a lower level of analysis has been missing. This study is an attempt to address such issues by focusing on the war that ravaged Bosnia-Herzegovina in the early nineties, and hopefully to provide a quantitative complement to richer political/ethnographic literature on the case (Bax 2000). Whatever the "root cause" (or causes) of the war, the ethnic dimension results turned out to be extremely relevant. In fact, the number and relative size of groups are good predictors of the severity of violence, which seems to indicate that

the homegeneization of an area was a primary objective to be attained through violence. Various factors thus concur to strengthen the view that "contestation" is a major source of violence so that areas where the groups can count on a similarly large presence are likely to experience high levels of violence. The impact of ethnicity can also be assessed with variables accounting for its geographic dimension where the massive external intervention of Serbia and some clashes over the definition of the "new" internal borders seem to be relevant to understand violence. Admittedly, ethnic polarization cannot explain all cases of contestation: the variable cannot account, for instance, for intra-Bosniaks clashes (between the ArBiH and the local formation of APZB led by Fikret Abdić) in Velika Kladuša.

We believe that this study opens up other questions that should possibly lead to further research on the subject and its findings (as well as a clear recognition of its limits) allow, at least, a couple of observations on the direction for future research to take now. First, with reference to the limits of this analysis, we believe that the major one is the persistence of a certain level of indeterminacy regarding the mechanisms that underlie the relationships found through quantitative analysis. A similar approach clearly calls for more thorough and theory-led case studies that take an in-depth look at the dynamics of internal violence of civil wars that can benefit from the insights of an analysis of fine-grained data.

Second, some of the results presented here, such as those on internal and external borders, hint at the importance of looking at the impact of strategic and operational dimensions as a driver of violence. A research strategy taking into account variations over time could shed more light on how the violence in the Bosnian war evolved. In addition, further insights could be gained by determining to what extent the same variables are valid for the whole war or whether their weight changed during the course of hostilities, and, possibly, to assess the impact of the intervention of UN peacekeeping on the violence that took place.

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Endnotes

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[2] A recent summary of the debate on ethnicity can be found in Jenkins (2008); with more direct reference to ethnic conflict and violence see Laitin (2007) and Brubaker and Laitin (1998).

[3] As clear from the study of Buhaug, Cederman, Rød (2008), the two explanations are in fact intertwined.

[4] The year 1995 is entirely included in our dataset.

[5] The dimension of ethnic identities used to be so important that only 5.5 per cent of the inhabitants of Bosnia-Herzegovina considered themselves as "Yugoslavs".

[6] The relationship between these two different measures of ethnic composition can also be captured thanks to descriptive statistics: low levels of fractionalization and polarization refer to the same areas so that the municipalities with the ten lowest levels of fractionalization and polarization are exactly the same. On the contrary, the indexes strongly diverge when we look at their highest values, causing different predictions concerning the highest levels of violence.

[7] Melander (2009) and Slack and Doyon (2001) represent similar efforts to study the local dimension of violence in Bosnia-Herzegovina, but they use very different research designs and no multivariate analysis.

[8] http://www.idc.org.ba/.

[9] The fractionalization index can be expressed with the formula: $FRAG = 1 - \sum s_{ij}^2$, where s stands for the percentage of the ethnic group i in the municipality j. The index of polarization is instead expressed by the formula: $POLAR = 1 - \sum(0.5 - \pi_i)^2 \pi_i/0.25$, where π_i represents the percentage of an ethnic group in a given municipality.

[10] The index of correlation is 0.859.

[11] In this case, the level of violence is measured by the number of deaths/population of the municipality.

[12] The case of Srebrenica has been included in the other models because it does not alter the results in relevant ways.

[13] The variable that accounts for the level of income per capita in 1991 has mean = 4890.899 and Std. Dev. = 1006.351. The values are expressed in Dinars.

References

ALESINA, ALBERTO et al. 2003, 'Fractionalization', *Journal of Economic Growth*, vol. 8, no. 2, pp. 155-194

BALCELLS, LAIA 2010, 'Rivarly and Revenge: Violence against Civilians in Conventional Civil Wars', *International Studies Quarterly*, vol. 54, no. 2, pp. 291-313

BAX, MART 2000, 'Warlords, Priests and the Politics of Ethnic Cleansing: A Case-study from Rural Bosnia-Hercegovina', *Ethnic and Racial Studies*, vol. 23, no. 1, pp. 16-36

BRASS, PAUL 1997, *Theft of an Idol*, Princeton, NJ: Princeton University Press

BRUBAKER, ROGERS 2004, *Ethnicity without Groups*, Cambridge, MA: Harvard University Press

BRUBAKER, ROGERS and LAITIN, DAVID 1998, 'Ethnic and Nationalist Violence', *Annual Review of Sociology*, vol. 24, pp. 423-452

BUHAUG, HAVARD, CEDERMAN, LARS-ERIK and RØD, JAN KETIL 2008, 'Disaggregating Ethno-nationalist Civil Wars: A Dyadic Test of Exclusion Theory', *International Organization*, vol. 63, no. 3, pp. 531-551

BUHAUG, HAVARD *et al.* 2009, 'Revolt of the Paupers or the Aspiring? Geographic Wealth Dispersion and Conflict', unpublished manuscript

BUSSMANN, MARGIT, HAER, ROOS and SCHNEIDER, GERALD 2009, 'The dynamics of mass killings: Testing time-series models of one-sided violence in Bosnia', paper presented at the ISA Convention, New York, 15-18th February.

CEDERMAN, LARS-ERIK, GIRARDIN, LUC and GLEDITSCH, KRISTIAN S. 2009, 'Ethnonationalist Triads. Assessing the Influence of Kin Groups on Civil Wars', *World Politics*, vol. 61, no. 3, pp. 403-437

COLLIER, PAUL *et al.* 2003, *Breaking the Conflict Trap. Civil War and Development Policy,*

Washington, DC: Oxford University Press and The World Bank

DOYLE, MICHAEL AND SAMBANIS, NICHOLAS 2000, 'International Peacebuilding: A Theoretical and Quantitative Analysis', *American Political Science Review*, vol. 94, no. 4, pp. 779-801

ELLINGSEN, TANJA 2000, 'Colorful Community or Ethnic Witches' Brew? Multiethnicity and Domestic Conflict During and After the Cold War', *Journal of Conflict Resolution*, vol. 44, no. 2, pp. 228-249

FEARON, JAMES D. and LAITIN, DAVID D. 2000, 'Violence and the Social Construction of Ethnic Identity', *International Organization*, vol. 54, no. 4, pp. 845-877

-- 2003, 'Ethnicity, Insurgency, and Civil War', *American Political Science Review*, vol. 97, no. 1, pp. 75-90

FEDERAL STATISTICAL BUREAU 1988, *Statistical Yearbook of Yugoslavia*, Belgrade.

GAGNON, V.P. 2004, *The Myth of Ethnic War. Serbia and Croatia in the 1990s*, Ithaca, NY: Cornell University Press

GLEDITSCH, KRISTIAN S. 2007, 'Transnational Dimensions of Civil War', *Journal of Peace Research*, vol. 44, no. 3, pp. 293-309

HEGER, LINDSAY AND SALEHYAN, IDEAN 2007, 'Ruthless Rulers: Coalition Size and the Severity of Civil Conflict', *International Studies Quarterly*, vol. 51, no. 2, pp. 385-403

HOROWITZ , DONALD L. 1985, *Ethnic Groups in Conflict*, Berkeley: University of California Press

HUMPHREYS, MACARTAN AND WEINSTEIN JEREMY D. 2006, 'Handling and Manhandling Civilians in Civil War', *American Political Science Review*, vol. 100, no. 3, pp. 429-447

JENKINS, RICHARD 2008, *Rethinking Ethnicity: Arguments and Explorations*, 2nd edition, London: Sage Publications

KALYVAS, STATHIS 2006, *The Logic of Violence in Civil War*, Cambridge/New York: Cambridge University Press.

KAUFMANN, CHAIM 1996), 'Possible and Impossible Solutions to Ethnic Civil Wars', *International Security*, vol. 20, no. 4, pp. 136-175

LACINA, BETHANY 2006, 'Explaining the Severity of Civil Wars', *Journal of Conflict Resolution*, vol. 50, no. 2, pp. 276-289

LAITIN, DAVID 2007, *Nations, States and Violence*, Oxford/New York: Oxford University Press

MALEŠEVIĆ, SINISA 2006, *Identity as Ideology: Understanding Ethnicity and Nationalism*, London: Palgrave Macmillan

MELANDER, ERIK 2009, 'The Geography of Fear: Regional Ethnic Diversity, the Security Dilemma, and Ethnic War', *European Journal of International Relations*, vol. 15, no. 1, pp. 95-124

POSEN, BARRY 1993, 'The Security Dilemma and Ethnic Conflict', *Survival*, vol. 35, no. 5, pp. 27-57

POSNER, DANIEL 2004, 'The Political Salience of Cultural Difference: Why Chewas and Tumbukas are Allies in Zambia and Adversaries in Malawi', *American Political Science Review*, vol. 98, no. 4, pp. 529-545

PRUNIER, Gérard 1995, *The Rwanda Crisis: History of a Genocide*, New York: Columbia University Press

REPUBLIKA BOSNA I HERCEGOVINA DRŽAVNI ZAVOD ZA STATISTIKU 1992, *Statistički Godišniak Republike Bosne i Hercegovine 1992*, Sarajevo.

RESEARCH AND DOCUMENTATION CENTER SARAJEVO 2008, *Human Losses in Bosnia and Herzegovina 91-95*, Sarajevo.

REYNAL-QUEROL, MARTA 2002, 'Ethnicity, Political Systems and Civil Wars', *Journal of Conflict Resolution*, vol. 46, no. 1, pp. 29-54.

SAMBANIS NICHOLAS 2001, 'Do Ethnic and Non-Ethnic Civil Wars Have the Same Causes?: A Theoretical and Empirical Inquiry, Part 1', *Journal of Conflict Resolution*, vol. 45, no. 3, pp. 259-282

SLACK, J. ANDREW AND DOYON, ROY R. 2001, 'Population Dynamics and Susceptibility for Ethnic Conflict', *Journal of Peace Research*, vol. 38, no. 2, pp. 139-161

SMITH, ANTHONY 1998, *Nationalism and Modernism*, London: Routledge

STOCKHOLM INTERNATIONAL PEACE RESEARCH INSTITUTE 1993, *SIPRI Yearbook 1993*, Stockholm.

TILLY, CHARLES 1978, *From Mobilization to Revolution*, Reading, MA: Addison-Wesley

VAN EVERA, STEVEN 2001, 'Primordialism Lives!', *Newsletter of the Organized Section in Comparative Politics of the American Political Science Association*, vol. 12, no. 1, pp. 20-22

WEINSTEIN, JEREMY 2007, *Inside Rebellion. The Politics of Insurgent Violence*, Cambridge/New York: Cambridge University Press

Table.1: Severity of Violence in Bosnia and Herzegovina

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Ethnic Frag.	2.140***			2.060***	3.025***
	(.536)			(.510)	(.592)
Ethnic Polar.		1.962***			
		(.401)			
Ethnic Dom.			-.590***		
			(.183)		
Income *per*	-.001	-.001	-.001	-.001	-.001
capita	(.000)	(.000)	(.000)	(.000)	(.000)
Population	.889***	.986***	.993***	.894***	.842***
	(.125)	(.092)	(.105)	(.127)	(.122)
Contiguity SRB	.842***	.592**	.682*	.906***	.811**
	(.310)	(.297)	(.350)	(.309)	(.321)
Contiguity CRO	-.512***	-.404*	-.679***	-.455**	
	(.195)	(.215)	(.220)	(.207)	
Contiguity					-.436***
Herceg-Bosnia					(.143)
Internal Border				.234*	
				(.127)	
Urban	108.323			184.961	77.210
Areas	(119.957)			(132.480)	(127.461)
Open Terrain		.046	.251		
		(.513)	(.578)		
Constant	-3.632***	-5.087***	-3.628***	-3.799***	-3.408***
	(1.099)	(.882)	(1.033)	(1.090)	(1.110)
Observations	109	108	108	109	109
R^2	.669	.644	.707	.678	.663

Note: Clustered robust standard errors in parentheses. * $p < 0.10$; ** $p < 0.05$ *** $p < 0.01$.

Table.1 (continued): Severity of Violence in Bosnia and Herzegovina

Variables	Model 6	Model 7	Model 8	Model 9
Ethnic Frag.			3.301***	-.858***
			(.660)	(.293)
BOSN Dom.	-.114	-.298**		
	(.207)	(.133)		
CRO Dom.	-1.200***	-2.051***		
	(.253)	(.248)		
SRB Dom.	-.528***	-.564***		
	(.168)	(.165)		
Income *per*	-.001	-.001	-.001	-.001
capita	(.000)	(.000)	(.000)	(.000)
Population	.900***	.879***	.701***	.899***
	(.086)	(.081)	(.185)	(.174)
Contiguity SRB	.637*	.417	1.688***	1.481***
	(.334)	(.300)	(.502)	(.554)
Contiguity CRO	-.183	-.161	-.281	-.439
	(.137)	(.132)	(.316)	(.310)
Internal Border			.550**	.524**
			(.234)	(.249)
Urban	117.183	137.524	592.715**	535.550**
Areas	(106.563)	(94.966)	(228.743)	(226.496)
Constant	-3.100***	-2.662***	-4.075**	-4.399**
	(.872)	(.840)	(1.603)	(1.669)
Observations	109	108	108	108
R^2	.757	.774	.492	.450

Note: Clustered robust standard errors in parentheses. * $p < 0.10$; ** $p < 0.05$ *** $p < 0.01$. Model 7 does not include the case of Srebrenica in the analysis. The dependent variable in models 8 and 9 is the number of civilian victims in a given municipality.

FIGURE 1: VIOLENCE IN BOSNIA-HERZEGOVINA, 1992-1995.