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Abstract

We investigate the long-term relationship between conflict-related migration and individual socioeconomic inequality. Looking at the post-conflict environment of Bosnia and Herzegovina (BiH), a former Yugoslav state most heavily impacted by the conflicts of the early 1990s, the paper focuses on differences in educational performance and income between four groups: migrants, internally displaced persons, former external migrants, and those who did not move. The analysis leverages a municipality-representative survey (n≈6,000) that captured self-reported education and income outcomes as well as migration histories. We find that individuals with greater exposure to conflict had systematically worse educational performance and lower earnings two decades after the war. Former external migrants now living in BiH have better educational and economic outcomes than those who did not migrate, but these advantages are smaller for individuals who were forced to move. We recommend that policies intended to address migration-related discrepancies should be targeted on the basis of individual and family experiences caused by conflict.

Keywords: conflict, education, forced migration, inequality

JEL classification: D74, F22, K42, Z18

1. Introduction

In recent years, the displacement of individuals has increased on a global scale. Individuals can be forced to move externally and internally for a number of reasons, including economic crisis, climate change, conflict exposure, and persecution (UNHCR 2018). Understanding the driving factors behind this movement is increasingly important as the number of displaced people rises—especially as displacement can have implications for a wide range of individual and aggregated socioeconomic outcomes (Williams and Efendic 2019). Conflict economies experience significant migration and ongoing economic and demographic challenges caused by the violence (Brinkerhoff 2011; Williams and Krasniqi 2018). This leads to the emergence of a displaced population—often both outside the country (refugees) and within the country's borders (internally displaced individuals). There is abundant evidence on the differences between displaced individuals and those who have not been forced to move, including their earnings (e.g. Borjas 1999; Efendic and Pugh 2018) and the level of social cohesion (e.g. Spence 2009; Jurajda and Kovac 2021). However, evidence on the sources of such differences is sparser.

Our study uses unique data from a post-conflict country to provide evidence on the mechanisms driving these differences and which policies could help reduce them. Specifically, we use rich survey data from Bosnia and Herzegovina (BiH) to study how exposure to the conflict of 1992-1995 correlates with modern-day social inequalities between conflict-related migrants and host population. During the conflict, over 50% of BiH's population moved internally or externally. This caused a tectonic shift in the social and economic landscape of this society (Kadusic and Suljic 2018), with unexplored long-run consequences on these individuals.

We compare the levels of social inequality, in terms of income and educational performance, between individuals with four different migration statuses: voluntary migrants (both internal and external); internally displaced persons, or IDPs (those forced to move by the conflict who stayed within the country), former refugees (those forced to move by the conflict who crossed international borders), and those who did not move (the host or non-migrant population).

Our findings for BiH suggest that migrants from localities with significant exposure to conflict had systematically lower educational attainment and earnings two decades after the conflict. This relationship is weaker among those who moved internationally and later returned. Interestingly, emigration abroad is associated with significant increases in income and education. Those who migrated externally and then returned to BiH make more on average than those who stayed, but the long-run positive association is weaker for former external migrants who were refugees (i.e., forcefully displaced). Internal migrants, including those who were internally displaced, did not have different educational or income outcomes than those who stayed in place (non-migrants).

The remainder of this paper proceeds as follows: Section 2 gives context for the research. Section 3 provides a brief literature review. Section 4 analyses our data, empirical strategy and discuses obtained results. Section 5 concludes and includes policy implications.

2. The historical context of the conflict in Bosnia and Herzegovina

Bosnia and Herzegovina is located in the Western Balkans, it was one of the republics of the former Socialist Federal Republic of Yugoslavia (SFRY) during the period 1943-1992. This socialist state created in the aftermath of World War II (WWII) united six republics and several different ethnic groups under a single communist regime. In 1991, tensions between the groups erupted with a series of wars of independence, insurgency, and ethnic conflict across the region.

After the dissolution of SFRY, BiH proclaimed its independence in March 1992 and was admitted to the United Nations in May 1992. The Bosnian war started already in April 1992 and lasted till November 1995. It was the most violent conflict in this region and often described as Europe's deadliest war since World War II. This conflict was marked by many war crimes, crimes against humanity, ethnic cleansing and rape, including genocide[1] and many key individual participants in it were subsequently charged with war crimes. The International Center for Transitional Justice estimates the Yugoslav Wars resulted in the deaths of 140,000 people, of which around 100,000 in BiH only (Tokaca 2012).

The Dayton Peace Agreement (DPA) was signed in November 1995, it ended four years long war in BiH and established new BiH constitution. By some estimates, BiH had over 20 percent fewer people in 1995 than it had had in 1991. Its industrial production dropped more than 90 percent, and the unemployment rate approached 90 percent (World Bank 1996,1997). Estimated GDP per capita in BiH fell from US$1,900 in 1991 to US$500 in 1995. The total damage in terms of the replacement costs of productive capacities was estimated in the range of US$15–20 billion, while the total material damage from the conflict was an estimated US$50–70 billion (World Bank 1996, 1997). The scale of BiH's economic

[1] The massacre of Bosniaks in Srebrenica in July 1995 by Serbian forces was classified by the international courts ICTY and ICJ as genocide, the first such crime in Europe since WWII.

collapse was unprecedented in Europe since the end of World War II (Efendic and Hadziahmetovic 2015).

Today, Bosnia and Herzegovina can be classified as post-conflict European transition country aspiring to become part of the European Union[2]. According to the last official census, it had 3.5 million people in 2013, while many estimates suggest that nowadays (because of large and ongoing emigrations over the last decade) it can have less than three million (ASBiH 2020). When BiH was part of SFRY (1945–1992), it was a republic with 4.1 million citizens (1991 census) and was particularly well-known for its multi-ethnic, multi-cultural, multi-religious environment, as well as for being the republic with the highest level of ethnic tolerance (Hodson et al. 1994, Dyrstad 2012).

The conflict in Bosnia and Herzegovina caused that more than half of the population was forcibly displaced in the face of acts of ethnic cleansing and mass murder (Olzak 2011)[3]. These included 1.2 million people who left the country and a million who were displaced internally. Most of the refugees relocated to neighbouring states; about 40% of BiH citizens emigrated to Croatia, Serbia, Montenegro, and Slovenia between 1992 and 1995. These countries, together with Germany and Austria, hosted 75% of Bosnian forced migrants (Kadusic and Suljic 2018).

The immediate post-conflict migration period from 1996-2000 was characterized by a mass return (repatriation) of refugees from abroad and a significant return of internally displaced people to their former homes. During this period, approximately 40% of Bosnian refugees were repatriated (MHRRBiH 2006). It is estimated that by 2010, almost half a million people had returned from abroad and that altogether, including IDPs, more than one

[2] Bosnia and Herzegovina has been recognised by the EU as a "potential candidate country" for accession since the decision of the European Council in Thessaloniki in 2003.
[3] The Bosnian War was characterised by bitter fighting, indiscriminate shelling of cities and towns, ethnic cleansing, killing civilians and systematic mass rape (Kadusic and Suljic 2018).

million people had returned to their pre-war homes (UNHCR 2004). According to the 2013 Population Census, 451,000 citizens had returned home from foreign countries (Kačapor-Džihić and Oruč 2012).

The drivers and patterns of conflict-related migration in BiH were complex. Forced (international) migration was typically a two-stage process, which started with conflict and forced internal displacement in the first stage, then emigration in the second stage (Oruc et al. 2019). This emigration often happened after people had returned to their pre-war homes or after the conflict had ended. In his empirical analysis, Kondylis (2010) codes all movements of people in BiH up to 2000 as conflict related. Similarly, Eastmond (2006) explains that return of former external migrants or refugees to BiH should be better conceptualized as a dynamic and open-ended process, one that might extend over long periods of time, involving mobility between places both inside and outside of the country.

Finally, it is worth noting that the war in Bosnian and Herzegovina, and related migrations, caused a structural break in the demographic and ethno-regional composition of the country. Namely, the population was significantly reduced; there was also a shift from ethnic diversity to ethnic homogeneity across most areas (Efendic and Pugh 2018) [4]. The shift toward homogenisation across much of BiH was imposed largely exogenously by violence (Malcolm 1996), and with negative consequences for the economic welfare of individuals (Efendic and Pugh 2018), growth aspirations of young businesses (Efendic et al. 2015), and social capital of the society (Efendic 2020).

[4] An interactive map with comparative results of censuses 1991 and 2013, including municipalities' ethnic structure, is available on the website of the Agency for Statistics of BiH (2021): http://www.statistika.ba/.

3. Literature review

There is broad consensus that exposure to conflict has a detrimental effect on education and individual earnings (e.g. Ichino and Winter-Ebmer 2004; Merrouche 2011; Rodriguez and Sanchez 2012; Andrew and Saumik 2014; Swee 2015; Diwakar 2015; Silwal 2016; Bertoni et al. 2019). Studies consistently report that conflict has negative long-run impacts on years of education completed (e.g. Ichino and Winter-Ebmer 2004; Merrouche 2011; Andrew and Saumik 2014; Bertoni et al. 2019). Some find similar effects for both genders (e.g. Diwakar 2015), while others find significant differences (e.g. Justino et al. 2014). Several of these studies also find that conflict exposure has a negative long-term effect on earnings (e.g. Ichino and Winter-Ebmer 2004; Merrouche 2011; Galdo 2013), which could be a consequence of an interruption to or loss of formal schooling.

We identify several papers from the region particularly relevant to our work. Looking at data from five years after the conflict in BiH, Eder (2014) investigates the effect of forced displacement on parents' expenditures on their children's education. Eder treats conflict-induced displacement as a form of migration where survival is the most important push-factor, making it possible to assume that the migration decision was exogenous. The study reports that displaced parents spent 20-30 percent less on educating their children in primary and secondary school than parents who were not displaced. The author suggests that this lower spending is linked to exposure to violence and the altered preferences, increased uncertainty for the future, and financial constraints that ensued.

Shemyakina and Plagnol (2013) analyse how individual and municipal variations in conflict exposure affect subjective well-being in post-conflict BiH. While the authors find that those living in conflict-exposed municipalities were no worse off than others after the conflict, they find a negative and lasting effect of individual conflict exposure on subjective

well-being. Although the life satisfaction had recorded upward trend, a persistently high unemployment in the examined period significantly affected life-satisfaction, which authors explain as an indirect effect of the conflict.

Kondylis (2010) explores the effect of displacement on labour market outcomes in BiH and finds that displaced individuals are less likely to be employed relative to those who did not move. Fasani et al. (2021) report such findings for a broader sample of displaced people across European Union countries, and shows that forced migrants do worse than other types of migrants.

The research most related to our study is Swee (2015), who investigates the relationship between war intensity and educational attainment in BiH. This research reports that cohorts who endured a greater level of war intensity are less likely to complete secondary school but finds no similar effect for primary school. Swee concludes that these results are mainly driven by older male cohorts who were eligible for the military draft. According to Swee (2009), the mechanism of conflict exposure linked to locality and individual exposure includes direct and indirect channels. A direct channel is that the localities exposed to conflict suffered a loss of educational infrastructure, including the destruction of buildings and educational facilities as well as the displacement of teachers, making education less accessible. Moreover, given the dangers of shelling and sniper fire in these areas, there would be a lower demand for schooling. Indirect channels include displaced families facing more difficulty sending their children to school in new places because of unfamiliar locations, different enrolment procedures, uncertainty about the length of stay, or the state of shocks caused by the movement, which are also influences linked to the displacement itself.

While the war exposure literature from the region provides number of relevant findings on the socio-economic consequences of the wars, none of the related research distinguishes the effects of war exposure on internal and external migrants, which is the main novelty of our approach, and indeed, a focus that has brought new knowledge not existing in these studies. Moreover, none of the authors investigate the war consequences for all levels of education, but these papers considered at most the primary and secondary education (e.g. Eder 2014, Swee 2015). It is hard to ignore that the tertiary education is equally important for investigation of the war exposure consequences on human capital performance two decades after the war.

A different body of literature reports that forced displacement is not always detrimental; it can actually have positive effects in the long run. Forced displacement typically leaves individuals with deep trauma, but it also compels them to reinvent themselves. For example, Nakamura et al. (2016) investigate the effect of a mobility shock generated by a destructive volcanic eruption in Iceland and find a positive effect of forced migration on education and earnings. Becker et al. (2020) study the long-run educational effects of forced migration on a group of Poles who were forcibly relocated from the eastern to the western part of the country during World War II. The authors find that refugees with a family history of forced migration are significantly more educated today than other Poles, as evidenced by preferences toward investing in human capital over other material possessions.

Our literature review establishes that the effect of exposure to armed conflicts or other similar shocks could have different socio-economic outcomes depending on the context of investigation, which signifies the importance of our research question: What are the effects of conflict exposure and related migrations on individuals' educational and earning outcomes in BiH two decades after the conflict?

4. The data and empirical analysis

Our main data source that we use in our empirical investigation is a representative survey of the general population (n=6,021) implemented by a professional research agency in 2015[5]. The survey randomly selected households, and the individuals in each household whose birthday was closest to the survey date were asked to interview. The survey was designed so that each municipality would have at least 40 participants and the total number from all municipalities would be at least 6,000. The sample includes 138 out of 143 municipalities in BiH. The survey collects information on migration status (i.e., non-migrants, internal migrants, and external migrants), the reason for migration or return (including influences of the conflict), perception of socioeconomic environment, and a wide range of individual characteristics (including education, income, age, gender, and occupation).

This BiH survey has two main outcomes of interest observed at the individual level. The first is level of education completed (primary, secondary, undergraduate, and postgraduate degree). Results show that 5% of survey respondents have no education, 23% have completed primary education only, 54% have completed secondary level, and 16% have a university degree or higher.

The second outcome of interest is personal monthly income in local currency, expressed on a scale of 1-6. Results show that close to 30% of respondents have no regular income, in line with the official unemployment rate of around 28% in 2015 (SEEJGD 2019). 30% report net monthly income at or below 350 euro, while the remainder report income above this level. For context, the average net monthly income in BiH in 2015 was approximately 420 euro (ASBiH 2020).

[5] This survey was done by Prism Research, a marketing, media and social research company in BiH. The survey was funded by the Regional Research Promotion Programme, project: Social Capital and Migration—Evidence from a Post-Conflict Environment. Approximately 50% of survey respondents moved during the conflict, which is in alignment with census-level statistics.

Using this survey data, we measure two aspects related to conflict: (a) how intense was the fighting in the municipality where respondents live now; and (b) did the individual move because of conflict?

To calculate municipal fighting intensity, we look at the total number of per capita deaths for each municipality, using 1991 population data as a baseline. The data are taken from the *1991-1995 Bosnian Book of Dead* (Tokaca 2012), and this is a continuous variable. Across the municipalities of BiH, the average rate of recorded deaths is 2.4%. The municipality of Srebrenica, well known for the genocide of 1995, ranks highest at approximately 20%. These measures are well established and are used in the related literature focused on BiH, including Kondylis (2010), Shemyakina and Plagnol (2013), and Swee (2015).

Next, we explore whether individuals moved away from their homes during the conflict. This variable indicates whether the observed individuals were directly exposed to fighting or not. We find that nearly 50% of respondents had to move, either for a short time (approximately 10%), a longer period (24%), or permanently (16%)[6].

A small percentage of our respondents moved from their houses during the war but did not declare themselves migrants in 2015 survey. This may have been the case if they moved temporarily for security reasons, as many people did early in the conflict before the front lines were firmly established. However, our method of measuring war exposure captures this group. Similar measures based on conflict-induced displacement have been used in other studies (for example, Justino et al. 2014's study of Timor Leste).

As we are particularly interested in learning about conflict exposure for different types of migrants, we will observe how exposure to conflict, at both the municipal and

[6] The original question was: During the last war, did you ever move your home. Responses are elaborated.

individual level, interacts with respondents' migration status, as well as the socioeconomic impacts as a whole. We will distinguish between those who moved outside the country (external migrants and refugees) and within the country (internal migrants and IDPs). Thus, we categorise respondents into five migrant categories, as summarized in Table 1.

[Table 1 around here]

In measuring conflict's impact on socioeconomic status, it is possible that there are other characteristics of the socioeconomic environment besides our variables of interest that affect individuals' educational and economic performance. If these were omitted from the model, their influence could be wrongly attributed to conflict exposure and migration, causing a biased estimate. To account for this possibility, we include several relevant controls. First, following Swee (2015), we consider in our specification a potential endogeneity bias produced by unobserved pre-conflict conditions, which could affect both post-conflict education and conflict intensity. For example, municipalities' pre-conflict economic development is a potential candidate to predict conflict intensity, introduced by Collier et al. (2009), which in turn decreases the level of municipal economic performance. Then, differences in post-conflict socioeconomic outcomes between low and high conflict intensity localities may reflect differences in pre-conflict municipal development, which would prevail in the absence of conflict. To account for this potential source of endogeneity, we introduce a variable that measures the pre-conflict per-capita gross domestic production at the municipal level and include it as a control in our specification (*gdppc1991*). Second, we control for urban (*urban*) and suburban (*suburban*) areas. This accounts for the fact that urban regions are generally more developed than rural ones (omitted category), host a higher number of international organizations and institutions, and have a better educational,

economic, and public infrastructure—things that might attract citizens and affect their economic and educational achievements. Third, we control for the effect of entities that compose BiH (*fbih, rsbih*) to account for the decentralised and asymmetric structure of the state, which can produce different outcomes for individuals living in these different administrative units.

Apart from socioeconomic characteristics, we also account for respondents' individual characteristics, including age (*age*), gender (*gender*), and self-reported ethnicity (*ethnbosniak, ethnserb, ethncroat*). The importance of ethnicity in our model is a factor specific to BiH, which we discuss further in the next section.

Our estimating equations for Bosnia and Herzegovina will be:

$$Outcomes_i = \alpha + \beta_1 MigrantType_i + Controls_i + \varepsilon_i \quad (1)$$

$Outcomes_i$ are education outcomes (the level of education that is completed) and economic outcomes (the level of net personal monthly income) for individual *i*; $MigrantType_i$ is a set of dummies indicating whether individual $_i$ is an external migrant, internal migrant or non-migrant; $Controls_i$ account for a range of pre-treatment factors such as age, gender, marital status, area of living, and municipalities' pre-conflict economic conditions; and ε_i is the error term with standard characteristics.

The model also controls for the effect of 17 regions and reports cluster-robust standard errors to allow for arbitrary patterns of correlation at the level of (138) municipality. This estimation strategy minimises the possibility of omitted variables related to location and adopts a conservative approach to inference (Efendic and Pugh 2018). These models are estimated separately to investigate the effects of migration on education and income

differences. We use an ordinary least square (OLS) method for estimation and later ordered probit estimate (OP) to check consistency of the obtained results.

In the next stage, we include the effect of conflict exposures (geographical and individual) and their interaction with migration status. $War_{m,i}$ is a conflict exposure (*warexpose*) indicator for, firstly, the current location (municipality $_m$) of individual $_i$. It captures the long-run effect of the conflict's destruction of the municipalities (proxied through per capita deaths during the conflict) where our respondents live two decades after the conflict. Second, at the individual level, we use individual conflict exposure War_i to capture whether respondent $_i$ moved from their house as the consequence of conflict (*warmove*). We include both conflict exposure measures in the specification individually and their interaction with the migration status. Thus, we obtain the following final specification where outcome variables are, again, education and income:

$$Outcomes_i = \alpha + \beta_1 MigrantType_i + \beta_2 War_i + \beta_3 War_{m,i} + \beta_4 MigrantType_i x War_i + \beta_{54} MigrantType_i x War_{m,i} + Controls_i + \varepsilon_i \quad (2)$$

To sum up, our empirical strategy is to estimate the long-run effect of conflict exposure and migration status on educational and economic outcomes of individuals living in BiH including several steps: (1) We test the association between these variables and our measures for outcomes—namely, individuals' completed level of education and personal net-monthly income. (2) We include the effects of the interaction between migration status and conflict-induced movement to measure the differential consequences of conflict exposure by

forced migrant status (i.e., refugees and IDPs)[7]. (3) We control for a range of potential confounding factors, including individual and geographical characteristics and pre-conflict influences. (4) We check the stability of our results against changes to the model specifications and method of estimation.

Having laid out our estimation strategy, a few important questions on other possible influences remain. First, are more educated individuals more likely to self-select into external migration—and in particular, to migrate to more developed countries that will provide them more educational opportunities? The literature for BiH suggests that highly skilled individuals may self-select into international migration as a result of conflict (Oruc 2009; Oruc et al. 2019). However, given the limitations of our dataset, we can examine only those migrants who returned to BiH—i.e., former refugees and economic migrants. To explore the differences between external migrants educated abroad and those educated domestically, we looked at external migrants who were less than 18 years old in 1990 and thus had to continue their higher (tertiary) education after migration. Our data suggests that external migrants as a whole, including those who were directly affected by the conflict, invested more in higher education than the average BiH population, which is consistent with similar studies (e.g. Halilovich et al. 2018). This mechanism might drive differences in personal income as well, as a higher income level is correlated with higher education in the long run (Ichino and Winter-Ebmer 2004) and identified in our data. Overall, external migrants had both a higher investment in education and a higher personal income than those in other categories (Table 2).

[7] We interact external and internal migration status with individual conflict exposure (i.e., whether an individual was forced to move) to obtain the closest proxy to an estimation of refugees and IDPs during the conflict. A refugee is defined as someone forced to flee their country because of persecution, war, or violence, while an internally displaced person (IDP) is defined as someone forced to flee their home who never crosses an international border (UNHCR 2011).

[Table 2 around here]

Another factor that could affect our estimation is respondents' ethnicity. Rates of both conflict-related migration and conflict exposure may be different for different ethnicities, which could in turn lead to different post-conflict outcomes along ethnic lines. Shemyakina and Plagnol (2013) recognize that though individuals within each ethnic group had different levels of conflict-related experience, ethnic groups also had different levels of exposure to conflict as a whole. Indeed, if we examine war exposure at the municipal level for the three dominant ethnic groups (namely, Bosniaks, Croats, and Serbs), we find differences in the rates of conflict-related experience and death[8]. As a model that does not account for ethnicity could lead to imprecise estimates of our variables of interest, we include ethnicity dummies as explanatory variables.

Finally, Kondylis (2010) points out that upon their return to BiH, former external migrants were free to settle in the municipality of their choice, and that many did not necessarily choose their pre-migration homes. These location choices might reflect the effect of self-selection based on certain characteristics, economic or otherwise, of certain regions and/or municipalities. This possibility also applies to internal migrants and their choice of destination. Eder (2014) argues that these pull-factors do not pose a problem to the estimation of a causal effect if municipality fixed effects are included in the model. Our baseline specifications control for the regions of BiH, but we will also check this argument when all

[8] Of the total number of persons killed or missing at the end of the conflicts, over 60% were of Bosniak ethnic origin, 27% were Serbs, and 8% were Croats (Tokaca 2012). Bosniaks thus constitute the majority of casualties (Swee 2009) in both absolute and relative terms. Consistently, Ringdal et al. (2008) find lower levels of conflict-related distress for Serbs and Croats in BiH as compared to Bosniaks. Moreover, rates of conflict-related forced migration could be different for the three ethnicities, as displacement and "ethnic cleansing" affected different municipalities unevenly. As Eder (2014, p. 6) explains, 'During the war, Bosniaks and Croats in the Serb territory were at risk of being killed, what became to be known as "ethnic cleansing". A main goal of Serb forces was to create an ethnically homogeneous territory within Bosnia and Herzegovina.' A related study by Kukic (2019) reports that areas with more self-declared Yugoslavs experienced a lower intensity of conflict during the conflict in Bosnia. Whatever the cause, this is evidence of differences in conflict intensity across different areas and ethnic lines.

municipalities are included in the model (robustness check). Descriptive statistics of the variables used in our models are in Table 3.

[Table 3 around here]

The long-run association between migration status and socioeconomic outcomes aligns with the findings of the descriptive statistics presented earlier. External migration is positively associated with both education and income in the long run. Internal migration is not. These differences are consistent whether we control for individual and municipal exposure to the conflict or not.

[Table 4 around here]

Our findings indicate that, 20 years later, former external migrants from municipalities with greater conflict exposure had systematically better (over 30%) educational performance than non-migrants living in less-exposed areas. This outcome likely reflects multiple mechanisms, starting with the fact that exposure to conflict is measured at the municipality level, not at the individual level. It is unlikely, however, that this result fully reflects lower access to schooling, as external migrants who relocated to heavily conflict-affected localities after the conflict report better educational outcomes than internal or non-migrants in less-affected areas. Simply put, external migration, whether economic or forced in nature, was beneficial for migrants' long-run educational achievements.

While external migration may have benefited the average external migrant, the gains are significantly attenuated for those individuals who were directly affected by, and forced to move because of, the conflict (i.e., former refugees). To explain the differences between

different combinations of migrants and individual levels of conflict exposure, we calculate combined effects, which are adjusted for comparisons using the Bonferroni method (STATA 2011). This methodology gives us a statistically valid picture of the effects of the interaction of these variables and accounts for a variety of direct and indirect influences (Efendic 2016).

[Table 5 around here]

Interaction effects suggest that former external migrants who were forced to move during the conflict had the best educational performance, approximately 30% better than the non-migrant population. External migrants who were *not* forced to move during the conflict (i.e., refugees) perform 13% better than those who did not move. The difference between the educational performance of refugees and that of external migrants, approximately 17 percentage points, suggests that forced movement during the conflict had a profoundly negative effect on educational achievement, even for those individuals who moved outside the country; however, the educational performance for this group is still better than that of the non-migrant population. We find that the educational performance of internal migrants does not differ from non-movers. Overall, those who were forced to move outside the country saw some of the benefits of stronger educational opportunities abroad.

Personal income remains, on average, a bit lower (around 2.5%) for those who live in more conflict-exposed areas. This could be understood, at least partially, as the long-run cost of the loss of human capital. External migrants report an average 43% higher personal income than the non-migrant population. As with educational performance, these differences are smaller for the group who moved externally due to the conflict (i.e. refugees). This finding is consistent with the educational loss mechanism posited by Ichino and Winter-Ebmer (2004) illustrating the effect of conflict-related migration in Europe in World War II.

Our findings are also in line with Eder (2014), who reports a strong negative relationship between conflict-induced displacement and parents' educational spending on their children in the immediate post-conflict period. Our dataset captures a long-run negative association between conflict-related displacement and education. This consistency between reduced short-term investment in education and lower long-run output merits further investigation. Our results are also consistent with Swee (2009), who finds that cohorts with higher levels of exposure to conflict were less likely to complete secondary school. We capture the same effect two decades later and extend it to account for tertiary education.

As we have already discussed, there might be characteristic of the socio-economic environment that affect both educational and economic performance of individuals. If these are omitted from the model, their influence could be wrongly attributed to the war exposure and migration, causing a biased estimate. The results obtained for our control variables suggest that a municipality's initial economic conditions do not have a statistically significant effect on its inhabitants' later educational and economic performance, suggesting no differences related to this effect. Next, we find that the urban and suburban variables have positive, high, and statistically significant effects on both educational achievement and economic performance for individuals in these areas, in comparison to those living in rural areas. The effects of entities in BiH are not statistically significant. In looking at individual characteristics of respondents, we find that the effect of age is important in all models: older respondents have a slightly higher income, while younger respondents have a higher level of education. Gender also plays an important role; male respondents report both higher income and better educational performance (consistent with Rizvanovic and Efendic 2021). Finally, ethnicity shows mainly statistically significant effects on education and income, with the dominant ethnicities in BiH performing at a higher rate in both categories.

As a final step, we check the robustness of our results in two ways. First, given that our dependent variables are categorical variables, we estimate non-linear ordered probit (OP) models[9] to check for consistency with the ordinary least square (OLS) estimates. We find that the same variables are statistically significant and that they move in the same direction as in the reported regressions, which is an important confirmation of consistency between different estimation methodologies (OLS and OP).

Second, in addition to entity and regional dummies, we include now all (138) municipalities (dummies) into the model to control for the municipal fixed effects and our results remain fully consistent.

Finally, we acknowledge the main limitations of our research. First, municipality-level casualties are not directly correlated with the duration of conflict in a given location. Second, even if individuals moved during the conflict, we cannot measure to what extent they were personally exposed to it. Third, a similar issue applies to the refugee and IDP categories: we cannot distinguish those who were forced to move from those who decided to move for other reasons during the conflicts. Future research could try to disentangle these effects and test whether outcomes for individuals differ. However, our results are indicative and should stimulate further research in this area and the region.

[9] Not reported for space reasons but they are available at any request.

5. Conclusions and policy implications

We use data from Bosnia and Herzegovina to estimate the differences in economic inequalities across and within different migrant groups affected by the conflict of 1990s. Nearly two decades later, we find evidence that exposure to conflict and forced displacement have had strong negative effects on individuals' educational and economic outcomes.

Our results indicate that those who left the country and have since returned have significantly higher incomes and educational attainment. Those who were displaced by the conflict but remained within the country fared no differently than those who remained in place throughout the conflict. This finding suggests that while internal displacement did not significantly disadvantage individuals in the long run, those who moved abroad benefited from additional educational and work opportunities. However, when we separate voluntary migrants from those who were forced to move, we find that the latter have lower levels of income and educational achievement. It appears that the additional educational and labour market opportunities abroad could not fully make up for the disadvantages of forced displacement.

Our results have several policy implications. First, it is critical to target benefits on the basis of individual and family conflict exposure, rather than simply by geography. Although major national and international efforts have been directed at education recovery in war-affected regions, they have rarely taken into account the distributional effects of conflict processes on different groups (Justino 2015).

Second, policies supporting the return of both voluntary external migrants and former refugees could offset the long-term human capital loss caused by the conflict in Bosnia and Herzegovina. This is especially important when we take into account the high levels of emigration and unemployment that still persist across this country and most of the post-

conflict economies. This continued loss of the labour force has only exacerbated the initial damage caused by the conflict.

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Tables

Table 1. Definition of migrant categories used in empirical analysis – BiH

Categories of migrants	Definition
Non-migrants	Individuals who did not move from their home municipality in BiH
Internal migrants	Individuals who moved from their home municipality within BiH
Internaly displaced persons	Individuals who moved from their home municipality during the conflict
Former external migrants	Individuals who left BiH in the past to live abroad more than 3 months
Former refugees	Individuals who moved from their home during the conflict and left BiH

Note: "Internally displaced persons" are a subset of "Internal migrants", while "Former refugees" are a subset of "Former external migrants". These variables have been created by interacting "intmigrant" and "extmigrant" with the "warmove" variable, respectively (described in table 3). Note that all definitions and related survey questions for external migrants refer to the 3-month period, as this was typically the longest period that someone could stay abroad as a tourist.

Table 2. Outcome and war exposure variables by migrant categories – BiH

Variable	Description	Non-migrant	External migrants	Refugees	Internal migrants	IDPs
Education	1- primary to 4-MSc/PhD	2.8	3.0	3.0	2.8	2.9
Perincome	1-no income to 6-over 1500 Euro	2.3	2.7	2.6	2.5	2.5
Warespose	Conflict victims as % population	2.1	2.7	2.9	2.8	3.0
Warmove	Moved during conflict: Yes-1, 0-No	0.4	0.7	1.0	0.7	1.0

Note: These statistics summarize our country-wide representative survey for BiH. Our main dependent variables of interest are at the individual level. "Education" is completed level of education (primary education, secondary, university and post-graduate degree) and "P*erincome*" is net personal monthly income expressed as 1-6 income scale with local currency. "W*arexpose*" measures conflict victims at municipal level as a % of population from 1991. "W*armove*" is a binary variable measuring whether individuals moved during the conflict. "IDP" is an acronym for "internally displaced person."

Table 3. Summary statistics of the main variables

Variable	Definitions	Obs	Mean	Std. Dev.	Min	Max
education	1- primary to 4-MSc/PhD	5,993	2.82	0.77	1	4
perincome	1-no income to 6-1500 Euro	5,164	2.41	1.31	1	6
warexpose	Conflict victims as % population	5,065	2.37	2.37	0.15	19.75
warmove	Moved during the conflict (1 yes, 0 no)	5,902	0.49	0.50	0	1
extmigrant	External migrants (1 yes, 0 no)	5,954	0.09	0.29	0	1
intmigrant	Internal migrants (1 yes, 0 no)	5,954	0.26	0.44	0	1
nonmigrant	Non-migrants (1 yes, 0 no)	5,944	0.65	0.48	0	1
gdppc1991	GDPpc, municipal level, 1991, 000	5,194	28.70	28.71	5816	308.03
age	Age of respondents in years	6,021	47.16	14.89	16	65
male	Gender (1 male, 0 female)	6,021	0.45	0.50	0	1
fbih	Federation of BiH entity (1 yes, 0 other)	6,021	0.57	0.49	0	1
rsbih	Republika Srpska entity (1 yes, 0 other)	6,021	0.42	0.49	0	1
*dbbih**	District Brcko of BiH (1 yes, 0 other)	6,021	0.01	0.09	0	1
urban	Urban area of living (1 yes, 0 other)	6,021	0.28	0.45	0	1
suburban	Suburban area of living (1 yes, 0 other)	6,021	0.24	0.42	0	1
*rural**	Rural area of living (1 yes, 0 other)	6,021	0.48	0.50	0	1
ethnbosniak	Ethnicity (1 Bosniak, 0 other)	5,844	0.22	0.41	0	1
ethnserb	Ethnicity (1 Serb, 0 other)	5,844	0.33	0.47	0	1
ethncroat	Ethnicity (1 Croat, 0 other)	5,844	0.15	0.36	0	1
*ethnother**	Ethnicity (1 'Other', 0 other)	5,844	0.31	0.46	0	1

Note, summary statistics for 17 regions and 147 municipalities omitted for the reasons of space. * denotes base category in the models reported in Table 4. "ethnother" is 1 for those who do not declare themselves Bosniak, Serb, or Croat.

Table 4. The main findings

VARIABLES	(1) education	(2) perincome	(3) education	(4) perincome
extmigrant	0.206***	0.227***	0.305***	0.431**
	(0.0352)	(0.0822)	(0.0536)	(0.168)
intmigrant	0.0397*	0.0637	0.0557	-0.0542
	(0.0227)	(0.0469)	(0.0403)	(0.0902)
warexpose			-0.00958**	-0.0253**
			(0.00435)	(0.00988)
*warexpose*intmigrant*			-0.00830	0.0170
			(0.00633)	(0.0134)
*warexpose*intmigrant*			0.0242***	0.0162
			(0.00687)	(0.0218)
warmove			0.0935***	0.0869*
			(0.0290)	(0.0499)
*warmove*intmigrant*			-0.0364	0.0516
			(0.0502)	(0.0928)
*warmove*extmigrant*			-0.258***	-0.371**
			(0.0656)	(0.177)
gdppc1991	-0.0002	0.0006	-0.0003	0.0005
	(0.0005)	(0.0009)	(0.0004)	(0.0010)
age	-0.00878***	0.0184***	-0.0105***	0.0165***
	(0.000786)	(0.00133)	(0.000809)	(0.00142)
male	0.346***	0.623***	0.354***	0.625***
	(0.0229)	(0.0408)	(0.0229)	(0.0414)
fbih	0.0222	0.0133	0.0212	0.0275
	(0.0324)	(0.0810)	(0.0307)	(0.0829)
rsbih	0.0344	0.202**	0.0195	0.194*
	(0.0477)	(0.0973)	(0.0476)	(0.101)
urban	0.455***	0.539***	0.466***	0.551***
	(0.0305)	(0.0555)	(0.0305)	(0.0573)
suburban	0.212***	0.239***	0.217***	0.255***
	(0.0267)	(0.0473)	(0.0279)	(0.0491)
ethnbosniak	0.169***	0.118**	0.177***	0.137***
	(0.0300)	(0.0466)	(0.0295)	(0.0464)
ethnserb	0.139***	0.0647	0.149***	0.0939
	(0.0281)	(0.0649)	(0.0302)	(0.0676)
ethncroat	0.255***	0.353***	0.257***	0.355***
	(0.0395)	(0.0789)	(0.0389)	(0.0831)
Regional dummies (16)	Yes	Yes	Yes	Yes
Observations	4,972	4,318	4,770	4,141
R-squared	0.215	0.145	0.235	0.143

Note, these are outcomes from OLS estimates. We estimate cluster-robust standard errors to allow for arbitrary patterns of correlation at the level of 138 municipality. Robust standard errors are reported in parentheses. Statistical significance is denoted as: *** p<0.01, ** p<0.05, * p<0.1. Variables are explained in Table 3.

Table 5. Interaction terms for Table 4, Model 3

Variables and interactions	Contrasts	Delta methods standard error	t-statistics	p-values
warmove				
1 vs 0	0.062***	0.023	2.67	0.009
extmigrant				
1 vs 0	0.184***	0.042	4.30	0.000
intmigrant				
1 vs 0	0.038	0.032	1.20	0.232
*warmove*extmigrant*				
(1 0) vs (0 1)	-0.221***	0.056	-3.96	0.001
(1 1) vs (0 1)	-0.174**	0.061	-2.84	0.032
(1 1) vs (1 0)	0.047	0.053	0.87	1.000
(1 0) vs (0 0)	0.083***	0.024	3.40	0.006
(1 1) vs (0 0)	0.130*	0.052	2.50	0.082
(0 1) vs (0 0)	0.305***	0.053	5.69	0.000
*warmove*intmigrant*				
(1 1) vs (1 0)	0.019	0.041	0.47	1.000
(1 0) vs (0 1)	0.016	0.045	0.36	1.000
(1 1) vs (0 1)	0.035	0.042	0.84	1.000
(0 1) vs (0 0)	0.055	0.040	1.38	1.000
(1 0) vs (0 0)	0.071*	0.027	2.61	0.062
(1 1) vs (0 0)	0.091*	0.035	2.53	0.076

Note, these are pairwise comparisons of predictive margins for different combinations of migrants and individual level war exposure estimated for Model 3 in Table 4. We calculate combined effects which are Bonferroni adjusted for comparisons, delta method standard errors reported (for more information, please see STATA, 2011). Statistical significance is denoted as: *** p<0.01, ** p<0.05, * p<0.1. Variables are explained in Table 3.

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