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Forced Displacement, Exposure to Conflict and Long-run Education and Income Inequality

Evidence from Croatia and Bosnia and Herzegovina

Dejan Kovac
Adnan Efendic
Jacob N. Shapiro

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Abstract

This paper investigates the long-term relationship between conflict-related migration and individual socioeconomic inequality. Looking at the post-conflict environments of Bosnia and Herzegovina (BiH) and Croatia, the two former Yugoslav states 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, refugees, and those who did not move two decades after the conflicts. For BiH, the analysis leverages a municipality-representative survey (n = 6, 021) that captured self-reported education and income outcomes as well as migration histories. For Croatia, outcomes are measured using an anonymized education registry that captured outcomes for over half a million individuals over time. This allows an assessment of convergence between different categories of migrants. In both countries, individuals with greater exposure to conflict had systematically worse educational performance. 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. In Croatia, those who moved during the conflict have worse educational outcomes, but there is a steady convergence between refugees and non-migrants. This research suggests that policies intended to address migration-related discrepancies should be targeted on the basis of individual and family experiences caused by conflict.

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Forced Displacement, Exposure to Conflict and Long-run Education and Income Inequality: Evidence from Croatia and Bosnia and Herzegovina *

Dejan Kovac† Adnan Efendic‡ & Jacob N. Shapiro§

Key words: forced migration, education, conflict, inequality

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†IWH, Germany and ESOC, Princeton University

‡University of Sarajevo, School of Economics and Business

§Princeton University

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 more sparse.

Our study uses unique data from the former Yugoslav republics to provide evidence on the mechanisms driving these differences and which policies could help reduce them. Specifically, we use rich administrative and survey data from Bosnia and Herzegovina (BiH) and Croatia to study (1) how exposure to the conflicts of 1991-1995 correlates with modern-day social inequalities between conflict-related migrants and host populations and (2) the long-run effects and dynamics of these differences. During the conflicts, over 50% of BiH's population and over 20% of Croatia's moved internally or externally. This caused a tectonic shift in the social and economic landscape of these societies (e.g., Kadusic and Suljic, 2018; UNHCR, 2011).

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), refugees (those forced to move by the conflict who crossed international borders), and those who did not move (the host or non-migrant population).

Other papers in this World Bank series address related issues. Balcells and Tellez investigate the long-term effects of displacement on social conflict, tenure security, and peace-building preferences in Colombia. Vargas-Silva and Ruiz focus on social cohesion among those returning to Burundi in terms of trust in and local-level support for the government, incidence of violence, and war reconciliation efforts. Murard investigates social cohesion among refugees after the Greco-Turkish conflict of 1919-1922, including differences in education, voting behaviour, trust, and political and civic engagement.

Elsner et al. use evidence from Germany to research whether forced migration and refugee inflows affect social cohesion in the host country. Finally, and most similarly, Meneses and Blanco test whether forced migrants in Chile, although initially appearing well integrated, show higher high school dropout rates, lower rates of financial aid application, and lower higher education enrollment and graduation rates than both native students and other types of migrants.

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. In BiH, 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).

For Croatia, we track refugees coming from BiH ten to fifteen years after the conflict and compare their educational outcomes with those of internally displaced individuals, post-conflict voluntary migrants, and those who remained in Croatia. We find that those who moved from BiH or moved internally during the conflict have a significantly lower average GPA than those who did not have to move. They also have a lower average GPA than those who moved after the conflict. We find similar differences for behavioural outcomes, measured by justified absences, unjustified absences, and school behavior marks. These differences provide suggestive evidence of the adverse effects of forced migrations during the conflict. In addition, we examine differential trends in educational outcomes between migrants and hosts in Croatia. We find evidence of convergence over time, but it is slow, taking up to a decade for GPA.

To better understand the sources of these economic and educational differences, we compare the outcomes of siblings within the same families, but across different types of migrants. This allows us to control implicitly for conflict exposure, socioeconomic status, and parents' human capital. The oldest siblings within each family, for all migration statuses, experienced the longest exposure to conflict and forced displacement. We found that among those who were externally displaced, the older siblings had lower GPAs, more absences, and worse behaviour than their younger siblings. Whether a result of the trauma of a wartime move, a shorter time in the post-move educational environment, secular improvements to Croatia's educational system over time, or some combination of the three, these results suggest that moving due to the conflict led to long-term harm.

Our research has several policy implications. First, it is important to target policies on the

basis of individual and family conflict-related experiences. While there is evidence of convergence in educational outcomes in Croatia over time, it is quite slow, and more long-term support should be dedicated to helping those displaced by conflict catch up with their peers. Second, enacting policies that support the return of external migrants—both voluntary and involuntary—could offset the long-term losses of human capital caused by the conflict. Third, there is tremendous value in combining educational records with household survey data. We suggest that UNHCR and the World Bank leverage the fact that they fund both educational programming and recovery efforts to encourage linking these two sources of data.

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 for BiH and Croatia. Section 5 discusses policy implications.

2 Context

The first subsection below explores the historical setting of the conflicts of the 1990s in former Yugoslavia. The second and third subsections describe the context of forced displacement in BiH and Croatia.

2.1 The Historical Setting of the Conflicts in Former Yugoslavia

The conflicts in the former Socialist Federal Republic of Yugoslavia (SFRY) from 1991 to 2001 were a series of separate but related conflicts. A socialist state created in the aftermath of World War II, SFRY united six republics and several different ethnic groups under a single comunist regime. In 1991, tensions between the groups erupted with a series of wars of independence, insurgency, and ethnic conflict across the region. These events have been described as Europe's bloodiest conflicts since the Second World War.

The armed conflict in Croatia began when it declared independence from SFRY in 1991 and it lasted until 1995. Similarly, the Bosnian War began with its declaration of independence from SFRY in 1992 and lasted until the end of 1995. It was the most violent conflict in this region. Both conflicts were characterized by a high rate of forced displacement (Harvey, 2006). Once the conflicts had come to an end, the two countries faced much different pictures of economic devastation.

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

The economic damage to Croatia, while substantial, was not as devastating as that of BiH. Approximately 21–25% of Croatia's economy lay in ruins at the conflict's end, with an estimated US$37 billion in damaged infrastructure, lost output, and refugee-related costs (World of Information, 2003). Croatia became a full member of the European Union in 2013.

The International Center for Transitional Justice estimates that the these conflicts resulted in the deaths of 140,000 people (Tokaca, 2012). Exact data for displaced populations do not exist, but the available estimates suggest that the conflict displaced more than 2.0 million individuals across BiH and 0.8-0.95 million people across Croatia (UNHCR, 2011).

2.2 BiH and Forced Displacement

The conflict in Bosnia and Herzegovina caused losses of life and industry on a devastating scale. 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).[5]

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 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

[5]According to the Norwegian Refugee Council, about 1.3 million were forced to leave the country; 500,000 fled to neighbouring countries and 700,000 to the Western European Countries (including 350,000 to Germany) (cited in Kadusic and Suljic, 2018).

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 conflict 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[6]; there was also a shift from ethnic diversity to ethnic homogeneity across most areas (Efendic and Pugh, 2018).[7] 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).

2.3 Croatia and Forced Displacement

In addition to suffering from the violence and upheaval of conflict itself, in the early 1990s Croatia found itself in the difficult situation of being many migrants' destination country. According to some sources, in 1992 Croatia hosted nearly 750,000 refugees or internally displaced people; this represents almost 16% of its population of 4.7 million inhabitants. These numbers included somewhere from 420,000 to 450,000 Bosnian refugees, 35,000 refugees from Serbia (mostly from Vojvodina and Kosovo), and 265,000 internally displaced people. In today's terms, this would be the equivalent of Germany hosting 10 million displaced people, or France 8 million.[8]

In 1992, Croatia registered 316,000 refugees—a ratio of 15:1 relative to its total population. This led UNHCR to rank the country 7th on its list of the 50 most refugee-burdened countries. The following year, official UNHCR data indicate that Croatia hosted 287,000 refugees and 344,000 internally displaced people—a ratio of 64.7 refugees per 1000 inhabitants. This means that at the height of the conflict, in 1992, Croatia hosted at least 648,000 displaced people (UNHCR 1993, 2002).

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.,

[6]Bosnia and Herzegovina had 4.1 million people in 1991 (before the conflict), but only 3.5 million people in 2013 (the first post-conflict census). Many estimates suggest that currently, due to the large and ongoing emigrations over the last decade, it could have less than three million citizens (ASBiH, 2020).

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

[8]UNHCR (2002)

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.

However, literature from the region tends to focus on the effects of conflict exposure and displacement on individuals' socioeconomic performance in BiH (e.g., Kondylis, 2010; Shemyakina and Plagnol, 2013; Eder, 2014; Swee, 2015; Efendic et al., 2018; Oruc et al., 2018; Oruc et al., 2019). In this context, Croatia remains an under-researched country.

We identify several papers from the region particularly relevant to our work. Looking at data from five years after the conflict, Eder (2014) investigates the effect of forced displacement in BiH 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. 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 enrollment 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.

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 (Murard, 2021). 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. In another paper in this World Bank series, Murard analyses social cohesion among the Greek population forced to move during the Greco-Turkish conflict of 1919-1922. The author finds a higher level of intergenerational educational mobility in comparison to natives—particularly for younger generations, who had similar or better educational achievements in comparison to host populations.

4 Research Studies

This section contains an overview of the separate research studies we performed for BiH and Croatia. We address the following research questions:

1. What are the key differences, in terms of educational outcomes, between different types of migrants in the post-conflict environments of BiH and Croatia?

2. Are educational outcomes of forced migrants and host populations in Croatia converging or diverging, and if so, at what rates?

3. What are the effects of migration and conflict exposure on individuals' educational and economic outcomes in BiH?

For each country, we first describe the data sources, main outcome variables, and how we constructed the explanatory variables of conflict exposure and migration. We then discuss our identification strategy and main findings. Econometric specifications for both studies are given in Appendix A.

4.1 Bosnia and Herzegovina

4.1.1 Sample

Our main data source for BiH is a representative survey of the general population (n=6,021) implemented by a professional research agency in 2015.[9] 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).

4.1.2 Outcomes and Treatment

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 (Agency for Statistics BiH, 2020).

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

[9]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.

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%).[10] 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 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: non-migrants (no movement), internal migrants (internal movement), former external migrants (migrated abroad but returned to BiH by the time of the survey), former refugees (moved outside of BiH due to the conflict), and IDPs (moved inside of BiH due to the conflict).

Table 1. 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, we include the gross domestic product per capita at the municipal level from 1991; this enables us to control for the effect of municipalities' initial economic conditions on their inhabitants' later socioeconomic performance (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, 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,

[10] 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.

ethnserb, ethncroat). The importance of ethnicity in our model is a factor specific to BiH, which we discuss further in the next section.

4.1.3 Estimation Strategy

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. This estimation includes several steps: (1) We test the association between these variables and our measures for outcoms—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).[11] (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).

Table 2. 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

[11] 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).

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.[12] 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 municipalities are included in the model (robustness check).

Details on the methods and specifications used to estimate our models are in Appendix A. Descriptive statistics of the variables used in our models are in Table 3.

Table 3. Here

4.1.4 Results for BiH

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. 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

[12] 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.

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 (StataCorp, 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).

Interaction effects (Appendix B) suggest that former external migrants who were *not* forced to move during the conflict had the best educational performance, approximately 30% better than the non-migrant population. External migrants who were 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.

Next, we examine the possible other factors at play. 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 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.

4.2 Croatia

4.2.1 Sample

Our sample for Croatia includes all 544,320 students in the Croatian education system from elementary through high school over the period 2007–2012; this represents children born from 1998 onward.[13] The anonymized data include birthplace, year of birth, educational outcomes for every school year, school

[13] Figure 1 provides a probability density function for the entire sample. The median year of birth is 1996. The sample includes 49% females and 51% males.

attended, and residence information. The data identify siblings as well, enabling us to compare the performance of children who are within the same family but have experienced different levels of conflict exposure and forced displacement.[14]

4.2.2 Outcomes and Treatment

The main outcomes of interest for Croatia are at the individual level for each school year: average GPA, absences, and behaviour grades. The Croatian school system measures GPAs on a scale of 1 (fail) to 5 (excellent). Absences are split into justified and unjustified absences and measured in terms of hours of school missed. Behaviour grades are measured on a scale of 1 (bad) to 3 (exemplary).

For Croatia, we assign migrant status based on year, place of birth, and location of schooling, as outlined in Table 5. Hosts are individuals who attend school in the same location they were born. Refugees are those born in BiH before or during the conflict (we assume that they were forced to move to Croatia). Internally displaced individuals are those born before or during the conflict (1991-1996) in occupied areas in Croatia who now live in a different location. Voluntary migrants are those who arrived after the conflict from BiH or other parts of Croatia.

Table 5. Here

As with our BiH analysis, we measure municipality-level exposure to conflict in the number of combat deaths per capita. In this case, though, we use the death rate number from the student's place of birth, which is a rough proxy for their personal conflict exposure. The data for Croatia are based on the Ministry of Veterans' official registry of the deaths of war veterans. The average municipality saw 0.6% of its population killed—a conflict exposure rate four times lower than that of BiH.

4.2.3 Estimation Strategy

Our empirical strategy is inspired by the econometric approach of Couttnier et al. (2019), who study the propensity for violent crime by nationality cohorts in Switzerland. Similar to Couttnier et al. (2019), we extended the analysis by considering how cohorts differ based on (a) the intensity of violence in their birth communities and (b) location-specific factors that might contribute to the convergence or divergence between different groups (e.g., at the individual or city level).

When considering conflict exposure, we use the same strategy as with BiH, measuring exposure to conflict in two ways: (1) number of deaths at the municipality level, which is proxy for the intensity of conflict in a given location, as in studies by Kondylis (2010), Shemyakina and Plagnol (2013),

[14] We are able to connect 386,681 individuals in our sample into families to analyse within-family effects.

Swee (2015), and Silwal (2016); and (2) external/internal forced displacement at the individual level, which measures whether an individual was forcefully moved from his household during the conflict, as in Justino et al. (2014). We match conflict intensity to birth location and current residence at the individual level; this gives us both temporal and spatial variation to conflict exposure and allows us to classify individuals into migrant/host groups.[15] We know that the war induced a substantial increase in migration, and observe that the distance between place of birth and current residence in the education registry is dramatically larger for those born during the conflict for both (a) all children in the registry (BiH and Croatia), as shown in Figure C1; and (b) only those born inside Croatia, as shown in Figure C2 (Appendix C). The data also depict different external and internal migration patterns for refugees and internally displaced individuals as a result of the location of the fighting. Thus, we can measure the timing of displacement at the individual level in an approximate manner.

For cohorts born during the conflict, we look at whether they were born in Croatia or BiH, as well as their place of residence in 2006 (the first year of the Croatian education registry data). Individuals born in BiH during the conflict are classified as refugees, while individuals born in occupied areas of Croatia and observed outside their birth municipality in 2006 are classified as internally displaced individuals. Cohorts born after 1995 (i.e., after the conflict) are categorized as migrants.[16] Individuals who attend school in the municipality of birth are assigned to the host category. As we observe only the birthplace conflict proxy, we have a measure of the intensity of fighting at one point in time for every individual, but not the exact duration of their exposure to conflict. However, we do observe family-level information across different siblings.

If a family has younger siblings born in BiH during the conflict, we can assume that the older siblings were exposed to conflict for longer, whereas those with younger siblings born in Croatia during or after the conflict likely had a shorter exposure. For families with siblings, we can place a lower bound on the number of years of conflict exposure for older siblings with younger siblings born in BiH during the conflict, and an upper bound on conflict exposure for older siblings born in BiH with younger siblings born in Croatia during or after the conflict. Same approach we use for internally displaced in Croatia who were born in occupied areas. This allows us to compare different migration status and conflict exposure within families. To do so we use family-level fixed effects to partial out family-specific effects, enabling us to estimate differences in both accomplishments and convergence/divergence over time.

An important research objective of this study is to explore the differences for forced versus

[15] Figure 2 provides visual interpretation of the conflict exposure.

[16] This empirical strategy does not allow for those born in BiH during the conflict to be voluntary migrants. By default, we consider any individual born in BiH during the conflict and observed in Croatia's education registry in 2006 a refugee.

voluntary migrations. Comparing the difference in outcomes between those who migrated voluntarily with those who were forced to do so (a group that includes both those who had the resources to move voluntarily and those who lacked such resources but were forced to move regardless) may allow us to assess the extent to which refugees, internally displaced individuals, and migrants differ in the long-run.

Details on the specifications used to estimate our results are found in Appendix A.

4.2.4 Results for Croatia

We interpret our results by comparing average GPAs by cohort. Figure 3 depicts a significant drop for those born during the conflict; externally displaced individuals have the largest drop, followed by internally displaced individuals.[17]

Table 6. Here

Our main finding is that externally displaced and internally displaced individuals have a significantly lower average GPA than hosts (Table 7), while voluntary migrants have a significantly higher GPA than hosts. In terms of the magnitude of the effect, there is no statistical difference between the externally and internally displaced individuals (0.37 and 0.45, respectively), but we do find both the difference in sign and a much lower magnitude (0.05) for post-conflict migrants. The difference provides suggestive evidence of the adverse effect of forced migrations during the conflict, similar to our results in the BiH data.

The three variables used to serve as behavioural proxies in schools—justified absences, unjustified absences, and behaviour—tell a similar story (Table 7). When compared to the host category, externally and internally displaced individuals have more justified and unjustified hours absent from school and worse school behaviour grades, with no statistical differences between groups. Post-conflict migrants have lower absent hours, both justified and unjustified, and better school behaviour grades.[18]

Table 7. Here

We find no systematic difference in the relationship of migrant status to outcomes in Croatia when looking at different levels of municipality conflict exposure, as illustrated in Table 8. The conflict was much less intense on average in Croatia than in BiH, which may explain this phenomenon, as could the fact that Croatia did not suffer civilian casualties on the same scale. If the mechanism at play in Bosnia is related to the physical consequences of conflict, it should not be come as a surprise that there is no similar impact on Croatia.

[17] The migrant category is excluded, because we analysed the period only before and during the conflict.
[18] Table C1 shows results with the use of family level FE; they are mainly unchanged.

Table 8. Here

Next, we look for evidence of convergence by examining different trends in time since displacement across migrant status. Since we do not know the exact year of migration for every individual, we proxy by using number of years since the family was last observed in their previous location, given by the date of birth of the last child born away from the current location. This represents the maximum possible number of years since the family migrated.[19] By interacting this variable with migrant status, we are able to assess whether the outcomes converge or diverge over time (Table 9).[20]

Table 9. Here

We first note that the externally and internally displaced have a lower average GPA than hosts or voluntary migrants (i.e., those born elsewhere with younger siblings born outside the country after the conflict), but miss less school and have higher behaviour grades. Voluntary migrants have better GPAs and worse behavioural outcomes than hosts. Despite these differences, there is strong evidence of convergence for three out of the four observed outcomes. We find a strong secular trend with age across all outcomes. For hosts, GPAs drop by an average of 0.1 points per year, justified absences increase by an average of 5 hours per year, unjustified absences increase by an average of 1 hour per year, and behaviour grades drop by about 0.04 per year (this represents a 0.07 standard deviation decrease each year). For the externally and internally displaced, GPAs drop more slowly over time; for voluntary migrants, they drop more quickly, leading to a convergence between the observed categories. The same is true for unjustified absences, as well as behaviour grades; both of these rise more quickly for the externally displaced and more slowly for voluntary migrants.

It appears that the older cohorts of refugees/internally displaced are more affected by the conflict and forced displacement—i.e., they have lower initial levels of human capital, but converge to the host level after some time in the same school environment. In order to further investigate this puzzle and control for war exposure and human capital accumulation over time, we now turn to the comparison of sibling outcomes within the same families.

Thus far, our analysis of the effects of conflict exposure and forced displacement has been confined to municipal-level effects (i.e., we have been unable to disentangle the individual-level effects). Comparing siblings' educational outcomes of siblings within the same families but across different types of migrants allows us to implicitly control for conflict exposure, socioeconomic status, and human capital accumulation over time. The underlying assumption here is that anything unobserved at the family

[19] Note that this variable simply captures the linear effect of age for those last-born children.

[20] In Table 9, we use sibling pairs to remedy one limitation of the empirical strategy for Croatia, the inability to observe the duration of conflict exposure. Those migrants without siblings are still included in the analysis, but the coefficient is marked N/A. For sibling pairs, the coefficient is their age difference.

level would be controlled for. A drop in family wealth or a change in parents' employment status due to forced displacement, for instance, would not have a differential effect on siblings in the long run, so any effect we pick up is due to the individual-level mechanism of forced displacement and any latent factors such as conflict exposure.[21] Obviously, the oldest siblings within each category of migration status experienced longer exposure to conflict and spent more time in a forced displacement environment. Accordingly, the data shows that older siblings who are externally displaced have worse GPAs, more absences, and worse behaviour than their younger siblings, as we see in Table 10.

Table 10. Here

We find that for the most part, younger siblings have better outcomes, suggesting that the main result is not a pure maturation effect. Within the refugee group, younger siblings have better average GPAs and lower levels of justified absences than older siblings. Within the internally displaced group, younger siblings have lower levels of justified and unjustified absences. These results suggest that given time, families can adapt to their new circumstances and enable children to succeed.

5 Conclusions and Policy Implications

We use data from Bosnia and Herzegovina and Croatia to estimate the differences in economic inequalities across and within different migrant groups affected by the conflicts 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.

In BiH, we find 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.

For Croatia, we found that school-aged children displaced by the conflict suffered significantly in terms of multiple measures of educational performance, while voluntary migrants performed better in terms of grade point average, attendance, and behaviour. These differences became smaller over time,

[21] We focus on families with less than four siblings.

however, suggesting that families are eventually able to overcome some of the challenges of forced migration.

Importantly, younger children in displaced families performed significantly better in school than their older siblings, although they were not able to fully close the achievement gap with those who did not move. This suggests that forced migrants suffer disadvantages stemming from a combination of short-run trauma and long-term changes due to human capital losses suffered during the move.

Our results have several important policy and program 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). Our evidence suggests that there would be substantial benefits from: targeted educational support programs; educational assistance for refugees, IDPs and others in need; and tailored scholarships for study abroad by youth who may return to the conflict affected regions.

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. These policies should include: funding for housing; financial support to nascent entrepreneurs and those who partially or fully move their business to the former conflict regions; and supporting the business links and networking between the home and host countries for external migrants. Efforts should be made to promote encouraging examples of returnees with positive socio-economic achievements in post-conflict societies, both within the region and internationally. This is especially important when we take into account the high levels of emigration and unemployment that still persist across most of the post-conflict economies. This continued loss of the labour force has only exacerbated the initial damage caused by the conflict.

Third, there could be tremendous value in combining educational records with household survey data. In BiH, surveys allow us to understand why individuals moved, but we lack the objective measures of children's outcomes at different ages. In Croatia, educational data enables us to quantify the differences between households and siblings, but we lack precise data on migrants' duration of conflict exposure, which could inform our understanding of educational performance. UNHCR and the World Bank could leverage the fact that they fund both educational programming and recovery efforts to encourage linking these two sources of data.

Finally, we wish to acknowledge the main limitations of our studies and the variables we focus on in this paper. 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.

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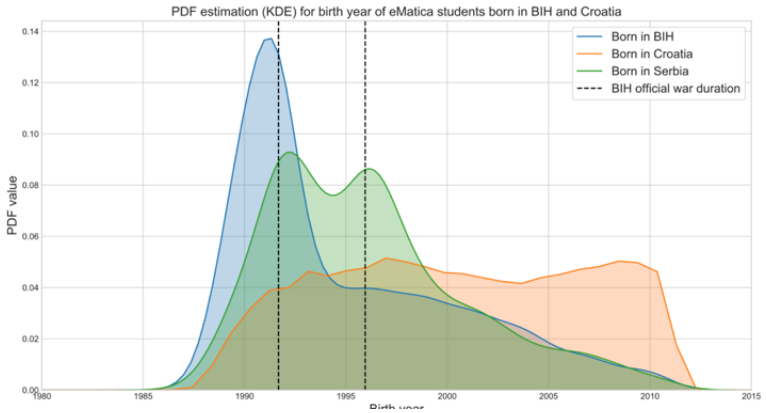
Figures

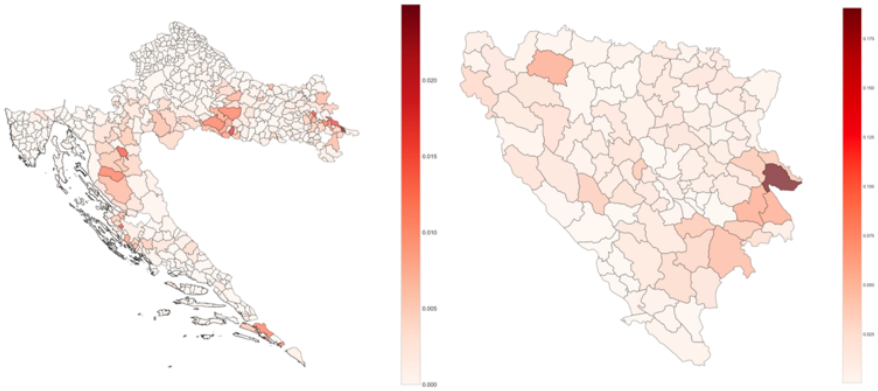
Figure 1: PDF of all individuals by country and place of birth



The horizontal axis is an individual's birth year. The vertical axis provides a unique PDF (probability density function) value for every birth cohort. Vertical lines depict the start and end dates of the conflict in Croatia. Data used for this graph include the place and year of birth of 544,320 individuals in the education registry of Croatia.

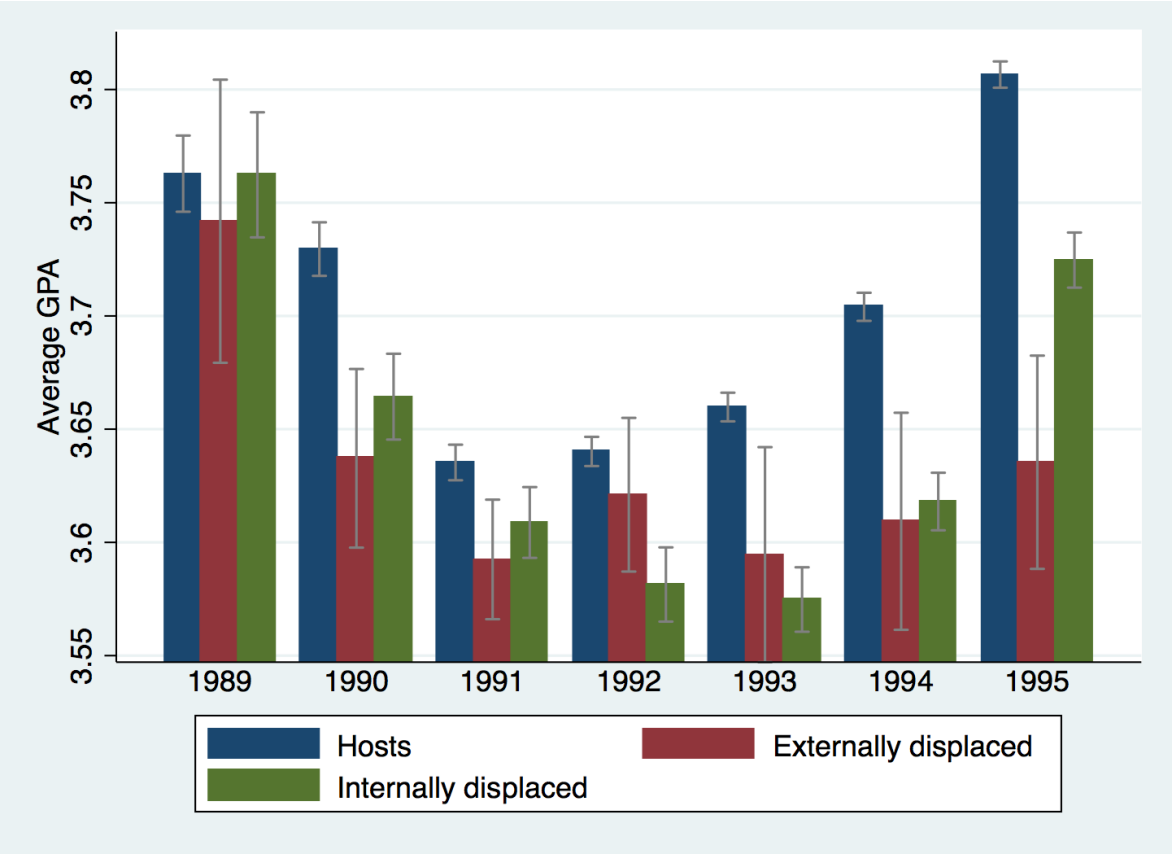
Figure 2: The Yugoslav Wars 1991 - 1995

Figure 3: Conflict-related deaths at the municipality level in Croatia and Bosnia and Herzegovina



Our unified proxy for conflict exposure in BiH and Croatia is the number of combat deaths per capita, scaled to percentages at the municipality level. The heat scale goes from white, 0 deaths, to dark red, the country's maximum percentage of deaths.

Figure 4: Average GPA by migrant type and cohorts of birth for Croatia



School grades range from 1-fail to 5-excellent. The average GPA is calculated at the yearly level for every individual in the Croatian education registry. "Externally displaced are refugees" are from BiH, "internally displaced" are those forcefully displaced within Croatia's border, and "hosts" are those who did not move during the conflict. There are no economic migrants on this graph, because we are mapping only the period during the conflict.

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
Internally 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 mig.	Refugees	Internal mig.	IDP
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
warexpose	Conflict victims as % population	2.1	2.7	2.9	2.8	3.0
warmove	Moved during the conflict	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 "perincome" is net personal monthly income expressed as 1-6 income scale with local currency. "warexpose" measures conflict victims at municipal level as a % of population from 1991. "warmove" is a binary variable measuring whether individuals moved during the conflict. "IDP" is an acronym for "internally displaced person."

Table 3: Summary statistics - BiH

Variable	Description	Obs.	Mean	Std. Dev.	Min	Max
education	1- primary to 4-MSc/PhD	5993	2.82	0.77	1	4
perincome	1-no income to 6-1500 Euro	5164	2.41	1.31	1	6
warexpose	Conflict victims as % population	5065	2.37	2.37	0.15	19.75
warmove	Moved during the conflict (1 yes, 0 no)	5902	0.49	0.50	0	1
extmigrant	External migrants (1 yes, 0 no)	5954	0.09	0.29	0	1
intmigrant	Internal migrants (1 yes, 0 no)	5954	0.26	0.44	0	1
monmigrant	Non-migrants (1 yes, 0 no)	5954	0.65	0.48	0	1
gdppc1991	GDPpc, municipal level, 1991, 000	5194	28.70	28.71	5816	308.03
age	Age of respondents in years	6021	47.16	14.89	16	65
male	Gender (1 male, 0 female)	6021	0.45	0.50	0	1
fbih	Federation of BiH entity (1 yes, 0 other)	6021	0.57	0.49	0	1
rsbih	Republika Srpska entity (1 yes, 0 other)	6021	0.42	0.49	0	1
dbbih*	District Brcko of BiH (1 yes, 0 other)	6021	0.01	0.09	0	1
urban	Urban area of living (1 yes, 0 other)	6021	0.28	0.45	0	1
suburban	Suburban area of living (1 yes, 0 other)	6021	0.24	0.42	0	1
rural*	Rural area of living (1 yes, 0 other)	6021	0.48	0.50	0	1
ethnbosniak	Ethnicity (1 Bosniak, 0 other)	5844	0.22	0.41	0	1
ethnserb	Ethnicity (1 Serb, 0 other)	5844	0.33	0.47	0	1
ethncroat	Ethnicity (1 Croat, 0 other)	5844	0.15	0.36	0	1
ethnother*	Ethnicity (1 'Other', 0 other)	5844	0.31	0.46	0	1

Note: Summary statistics for 16 regions and 143 municipalities have been 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: Main findings - BiH

Variable	education	perincome	education	perincome
	(1)	(2)	(3)	(4)
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*extmigrant			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***
	(0.0008)	(0.0013)	(0.0008)	(0.001)
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	4972	4318	4770	4141
R-squared	0.215	0.145	0.235	0.143

Note: Variables and omitted categories are explained in Table 3. OLS robust standard errors with municipalities as clusters reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Definition of migrant categories used in empirical analysis for Croatia

Categories of migrants	**Definition**
Hosts	Individuals born in the same municipality they are living in
Refugees	Individuals born in BiH before or during the conflict
Internally displaced people	Individuals born in occupied areas before or during the conflict now living elsewhere
Migrants	Individuals born after the conflict and living in a different municipality

Note: We assign individuals to categories by observing their place of birth and their educational path during elementary and high school. The first date we can observe individuals is at the age of 6, and the last is at the age of 19, throughout the entire educational registry. We observe migrants coming from other countries besides BiH, but they are excluded from the analysis.

Table 6: Summary statistics - Croatia

Variable	Description	Obs.	Mean	Std. Dev.	Min	Max
female	Gender (1-female, 0-male)	544320	.489	.499	0	1
age	Age of a child in years	544199	13.029	3.796	0	21
year of birth	Year of birth	544317	1996.229	4.214	1977	2011
birth order	Order within a family (1=1st)	386681	1.391	.905	1	14
war exposure	War victims as % population	544301	.006	.031	0	.44
average gpa	GPA(1-fail, 5-excellent)	529194	4.020	1.025	0	11
justified abs.	Just. absence(school hours)	508887	53.643	55.176	0	1431
unjustified abs.	Unjust. absence(school hours)	457666	4.662	18.054	0	995
behavior	Behavior(1-bad, 3-excellent)	306603	2.666	.622	1	3
ext_disp	(1-Externally displaced, 0-other)	521899	.016	.126	0	1
int_displ	(1-Internally displaced, 0-other)	521899	.091	.287	0	1
volu_mig	(1-voluntary migrant, 0-other)	521899	.005	.073	0	1
host	(1-host, 0-other)	521899	.887	.316	0	1

Our main dependent variables of interest are at the individual level: average GPA per school year, justified and unjustified absence as measured in hours absent, and school behaviour grades. GPA grades are measured on a scale of 1-fail to 5-excellent, while school behaviour grades are measured on a scale of 1-bad to 3-excellent. The highest number of observations for a variable is 544,320. The lower number of observations for other variables are due to missing data in the registry. Birth order variable contains 386,681 observations because that is the number of individuals we can connect into sibling pairs out of the total of 544,320. Mean values in column 3 are taken as averages if observed for multiple years. Average GPAs of higher than 5 denote individuals going through a special program due to disabilities or other factors and are thus excluded from the analysis. There are 9,089 such individuals in the registry, encompassing 1.7% of the total. The same principle applies for the high number in the "max" column for justified or unjustified absences or very old cohorts of individuals (older than 1987) in the "min" column. These are the same individuals.

Table 7: Education outcomes by migrant type

	(1)	(2)	(3)	(4)
	average GPA	justified absence	unjustified absence	behavior
ext_disp	-0.377***	18.909***	6.226***	-0.146***
	(0.020)	(0.885)	(0.298)	(0.011)
int_displ	-0.452***	23.264***	5.884***	-0.188***
	(0.017)	(1.043)	(0.318)	(0.015)
volu_mig	0.052*	-9.973***	-2.416***	0.075***
	(0.021)	(0.883)	(0.218)	(0.012)
female	0.161***	0.925***	-1.278***	0.183***
	(0.008)	(0.221)	(0.061)	(0.006)
year=2008	0.448***	3.448***	0.699***	-0.019*
	(0.024)	(0.544)	(0.123)	(0.010)
year=2009	0.428***	6.774***	0.848***	-0.001
	(0.023)	(0.705)	(0.163)	(0.014)
year=2010	0.255***	12.436***	1.053***	0.144***
	(0.023)	(0.598)	(0.139)	(0.013)
year=2011	0.170***	14.585***	1.369***	0.148***
	(0.023)	(0.638)	(0.157)	(0.013)
Constant	3.704***	41.902***	2.950***	2.505***
	(0.020)	(0.544)	(0.134)	(0.012)
Observations	1581236	1520720	1364062	865388
R^2	0.175	0.059	0.062	0.142

Note: The description of variables is provided in Table 6. Baseline group is host category. SE are clustered at the school level with 510 clusters. For time fixed effects, the omitted year is 2007.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 8: Education by migrant type and conflict exposure

	(1)	(2)	(3)	(4)
	average GPA	justified absence	unjustified absence	behavior
ext_disp	-0.388***	17.216***	5.495***	-0.141***
	(0.022)	(1.284)	(0.358)	(0.018)
int_displ	-0.459***	23.080***	5.890***	-0.194***
	(0.018)	(1.063)	(0.346)	(0.017)
volu_mig	0.025	-10.930***	-2.568***	0.083***
	(0.031)	(1.211)	(0.248)	(0.017)
ext_WE	0.961	125.623	51.483*	-0.156
	(1.302)	(65.141)	(21.207)	(0.896)
int_WE	1.573	52.035	3.667	1.209
	(1.196)	(68.138)	(16.452)	(1.138)
volu_WE	2.746	94.753	14.135	-0.575
	(1.890)	(83.687)	(13.991)	(1.153)
host_WE	-0.169	9.135	4.697***	-0.205***
	(0.150)	(4.931)	(1.225)	(0.058)
year=2008	0.447***	3.448***	0.703***	-0.020*
	(0.024)	(0.544)	(0.123)	(0.010)
year=2009	0.427***	6.768***	0.860***	-0.004
	(0.023)	(0.705)	(0.163)	(0.014)
year=2010	0.255***	12.439***	1.060***	0.143***
	(0.023)	(0.597)	(0.138)	(0.013)
year=2011	0.169***	14.589***	1.376***	0.147***
	(0.023)	(0.638)	(0.156)	(0.013)
Constant	3.785***	42.305***	2.293***	2.598***
	(0.020)	(0.539)	(0.135)	(0.012)
Observations	1581236	1520720	1364062	865388
R^2	0.170	0.059	0.060	0.124

Note: The description of variables is provided in Table 6. Baseline group is host category. SE are clustered at the school level with 510 clusters. For time fixed effects, the omitted year is 2007.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 9: Education by migrant type and time dynamics

	(1)	(2)	(3)	(4)
	average GPA	justified absence	unjustified absence	behavior
ext_disp	-1.173***	-9.662	-4.832***	0.296***
	(0.190)	(5.672)	(1.406)	(0.082)
int_displ	-0.972***	-10.663*	-5.453***	0.175**
	(0.105)	(4.742)	(1.069)	(0.055)
volu_mig	0.157*	8.092**	4.184***	-0.094*
	(0.067)	(2.928)	(0.760)	(0.042)
tau_ext_disp	-0.014	5.431***	1.488***	-0.062***
	(0.013)	(0.390)	(0.103)	(0.005)
tau_int_displ	-0.027***	5.835***	1.533***	-0.055***
	(0.008)	(0.387)	(0.090)	(0.004)
tau_volu_mig	-0.123***	3.914***	0.524***	-0.027***
	(0.008)	(0.359)	(0.083)	(0.005)
tau_hosts	-0.094***	5.125***	1.084***	-0.040***
	(0.002)	(0.111)	(0.045)	(0.002)
female	0.160***	0.963***	-1.264***	0.182***
	(0.008)	(0.209)	(0.060)	(0.006)
year=2008	0.420***	6.553***	1.455***	-0.061***
	(0.024)	(0.499)	(0.105)	(0.010)
year=2009	0.270***	17.086***	3.068***	-0.127***
	(0.022)	(0.551)	(0.156)	(0.013)
year=2010	0.101***	22.722***	3.356***	-0.094***
	(0.022)	(0.611)	(0.159)	(0.012)
year=2011	-0.019	26.883***	4.160***	-0.109***
	(0.022)	(0.666)	(0.192)	(0.013)
Constant	4.791***	-19.227***	-10.319***	3.154***
	(0.031)	(1.526)	(0.580)	(0.024)
Observations	1581236	1520720	1364062	865388
R^2	0.254	0.143	0.133	0.175

Note: The description of variables is provided in Table 6. Baseline group is host category. "Tau" is an interaction term with all categories of migrants measuring the age difference between each sibling pair. SE are clustered at the family level, with 207,275 clusters. For time fixed effects, the omitted year is 2007.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 10: Education by migrant type and birth order

	(1)	(2)	(3)	(4)
	average GPA	justified absence	unjustified absence	behavior
ext_disp	-0.372***	14.147***	4.731***	-0.112***
	(0.033)	(1.990)	(0.651)	(0.028)
int_displ	-0.336***	17.679***	4.421***	-0.117***
	(0.024)	(1.406)	(0.411)	(0.019)
volu_mig	0.184***	-13.335***	-4.281***	0.141***
	(0.042)	(1.779)	(0.343)	(0.028)
ext_rank	0.064**	-3.410*	-0.349	0.016
	(0.023)	(1.367)	(0.450)	(0.020)
int_rank	-0.009	-3.634***	-0.664***	-0.003
	(0.010)	(0.668)	(0.156)	(0.009)
volu_rank	-0.020	-3.146**	0.127	-0.003
	(0.022)	(1.008)	(0.161)	(0.016)
host_rank	0.078***	-6.400***	-1.437***	0.049***
	(0.005)	(0.205)	(0.075)	(0.004)
female	0.152***	0.416	-1.154***	0.177***
	(0.009)	(0.219)	(0.060)	(0.006)
year=2008	0.448***	3.468***	0.692***	-0.011
	(0.024)	(0.482)	(0.113)	(0.011)
year=2009	0.443***	5.472***	0.614***	0.015
	(0.024)	(0.660)	(0.149)	(0.015)
year=2010	0.241***	12.438***	1.101***	0.149***
	(0.023)	(0.544)	(0.132)	(0.015)
year=2011	0.150***	14.608***	1.444***	0.151***
	(0.023)	(0.584)	(0.150)	(0.015)
Constant	3.634***	48.742***	4.466***	2.453***
	(0.022)	(0.501)	(0.137)	(0.016)
Observations	1110334	1066991	950795	588904
R^2	0.185	0.063	0.065	0.141

Note: The description of variables is provided in Table 6. Baseline group is host category. "Rank" variable is an interaction term with all categories of migrants measuring the birth order within each family. SE are clustered at the family level with 207,275 clusters. For time fixed effects, the omitted year is 2007.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Appendix A - Econometric Specification

Estimated equations

Our estimating equations for Bosnia and Herzegovina will be:

$$Outcomes_i = \alpha + \beta_1 MigrantType_i + Controls_i + \varepsilon_i, \tag{1}$$

where $Outcomes_i$ 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.

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.

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.

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:

$$Outcomes_i = \alpha + \beta_1 MigType_i + \beta_2 War_i + \beta_3 War_{m,i} + \beta_4 MigType_i \times War_i + \beta_5 MigType_i \times War_{m,i} + Controls_i + \varepsilon_i, \tag{2}$$

All variables that we use in our empirical investigation, together with their descriptive statistics, are elaborated in Table 2 and Table 3.

Our primary estimating equations for Croatia will be:

$$EducationOutcomes_{its} = \alpha + \beta * MigrantType_{its} + X_i + \delta_s + \eta_t + \varepsilon_{its}, \tag{3}$$

where $EducationOutcomes_{its}$ are education outcomes (yearly average grades, school behaviour, and school absence) for individual i, in time t at school s; $MigrantType_{its}$ is set of dummies whether individual i is externally displaced, internally displaced, a voluntary migrant, or a host; X_i account for individual-level factors (age, gender, etc.); δ_s are school fixed effects; η_t are time fixed effects; and ε_{its} is the error term.

War exposure specification:

$$EducationOutcomes_{its} = \alpha + \beta_1 MigrantType_i + \beta_2 E_i + \beta_3 MigrantType_i \times E_i + X_i + \delta_s + \eta_t + \varepsilon_{its}, \tag{4}$$

where E_{its} is a measure of conflict intensity in the place of birth measured in terms of combat deaths. This assesses whether those who moved from areas with intense fighting (and thus were more likely to be fleeing from immediate danger) have different long-term outcomes. Standard errors will be clustered at the municipality level.

In addition to estimating the average difference between different groups over time, we will also estimate the change in those differences through:

$$EducationOutcomes_{its} = \alpha + \beta * MigrantType_{its} + \gamma * MigrantType_{its} * \tau_{it} + X_i + \delta_s + \eta_t + \varepsilon_{its}, \tag{5}$$

where τ_{it} is the maximum number of years since the family of individual i was observed in their last location (i.e., the date of birth of the child). The γ coefficients measures the rate of convergence (divergence) for each migrant type. Standard errors will be clustered at the municipality level.

Birth order specification:

$$EducationOutcomes_{its} = \alpha + \gamma * MigrantType_i * Rank_i + X_i + \delta_f + \eta_t + \varepsilon_{its}, \tag{6}$$

where E_{its} are education outcomes (yearly average grades, school behavior and school absence) for individual i, in time t at school s; $MigrantType_{its}$ are a set of dummies whether individual i is external migrant, internal migrant or host; $Rank_{it}$ is a birth order indicator for every individual within a family; X_i Controls are a set of controls at the individual and school/city level: age, gender, etc.; δ_f are family fixed effects; η_t time fixed effects; and ε_{its} is the error term. Standard errors will be clustered at the municipality level.

Family-level specification:

$$EducationOutcomes_{its} = \alpha + \gamma * MigrantType_i * War_i + X_i + \delta_f + \eta_t + \varepsilon_{its}, \tag{7}$$

where E_{its} are education outcomes (yearly average grades, school behavior and school absence) for individual i, in time t at school s; $MigrantType_{its}$ are a set of dummies whether individual i is external migrant, internal migrant or host; War_{it} is a conflict exposure indicator for the family measured based on the older sibling's location of birth (measured through distance to front-line and number of conflict-related fatalities); X_i Controls are a set of controls at the individual and school/city level: age, gender, etc.; δ_f are family fixed effects; η_t time fixed effects; and ε_{its} is the error term. Standard errors will be clustered at the municipality level.

Appendix B - BiH

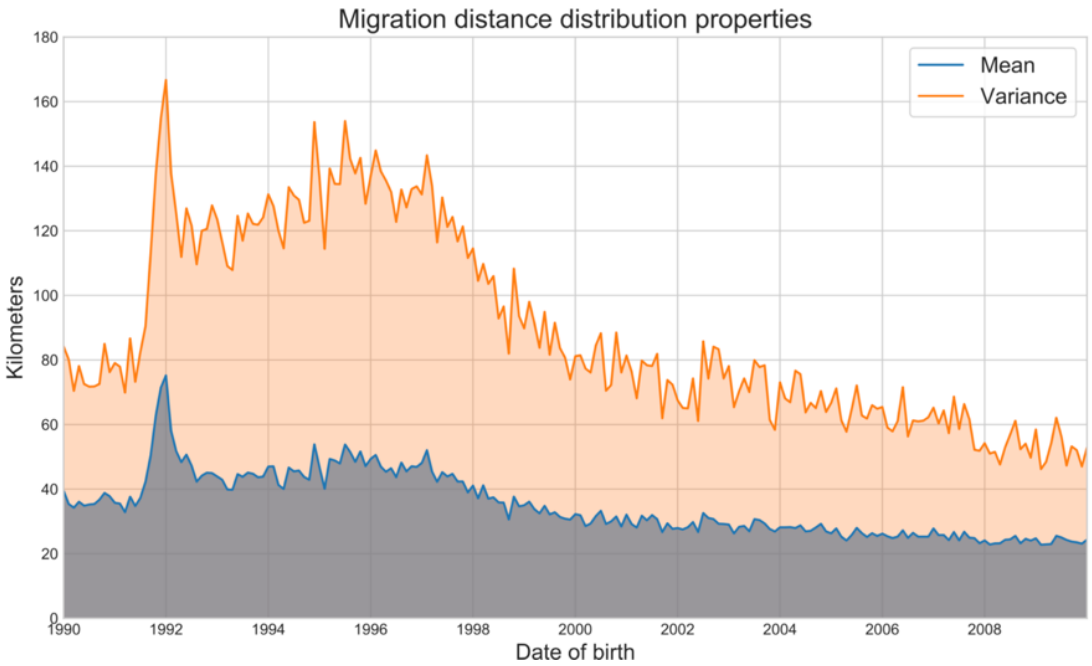
Table B1: Interaction terms for Table 4, Model 3

	Contrast	Delta method Std. Err	t	p-value
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: Pairwise comparisons of predictive margins, delta-method, Bonferroni adjusted.

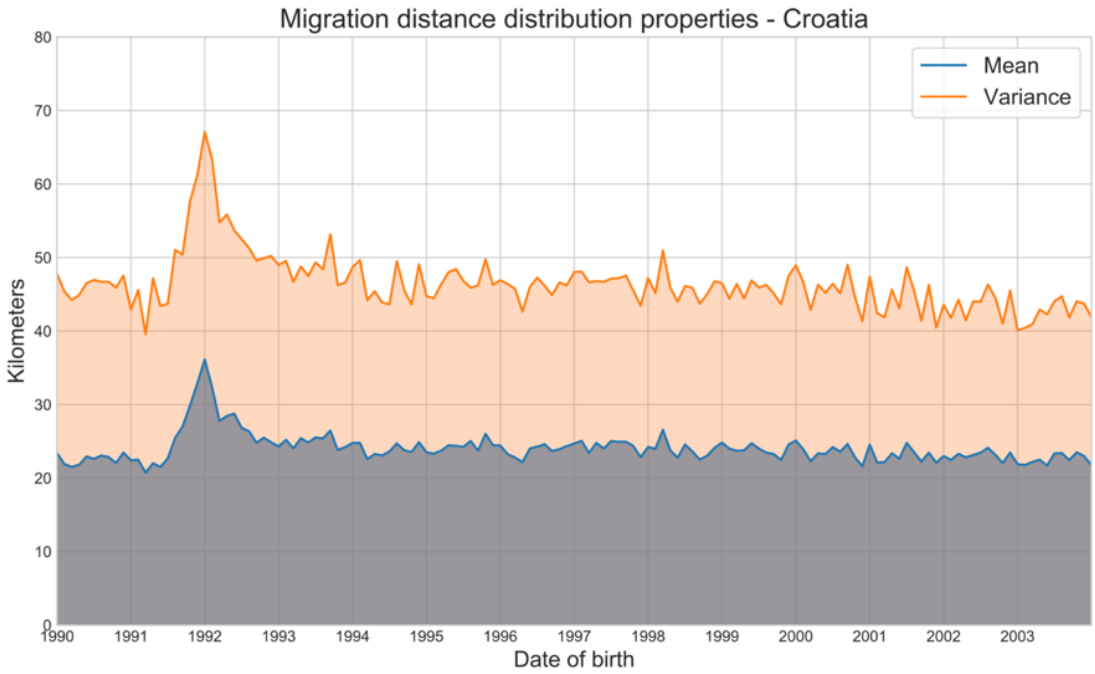
Appendix C - Croatia

Figure C1: Distance between place of birth and residence for all individuals in the registry



Note: Besides individuals born in Croatia, we only included individuals born in BiH to proxy the average distances for refugees and migrant status.

Figure C2: Distance between place of birth and residence for individuals born in Croatia



Note: We included only individuals born in Croatia to depict internal migrations.

Table C1: Education outcomes by migrant type with family level FE

	(1)	(2)	(3)	(4)
	average GPA	justified absence	unjustified absence	behavior
ext_disp	-0.310***	15.832***	4.943***	-0.177***
	(0.021)	(1.246)	(0.329)	(0.018)
int_displ	-0.344***	17.673***	4.913***	-0.184***
	(0.008)	(0.450)	(0.148)	(0.007)
volu_mig	0.034	-3.237	-1.173*	0.040
	(0.038)	(2.190)	(0.531)	(0.032)
female	0.274***	0.683***	-2.011***	0.226***
	(0.003)	(0.190)	(0.075)	(0.003)
year=2008	0.442***	4.932***	1.161***	-0.036***
	(0.005)	(0.145)	(0.055)	(0.005)
year=2009	0.335***	12.459***	2.010***	-0.068***
	(0.005)	(0.182)	(0.071)	(0.006)
year=2010	0.165***	18.580***	2.615***	-0.030***
	(0.005)	(0.160)	(0.060)	(0.006)
year=2011	0.067***	21.481***	3.249***	-0.038***
	(0.005)	(0.168)	(0.063)	(0.006)
Constant	3.731***	34.996***	2.119***	2.652***
	(0.004)	(0.164)	(0.063)	(0.006)
Observations	1177590	1131554	1008041	629991
R^2	0.485	0.477	0.469	0.573

Note: The description of variables is provided in Table 6. Baseline group is host category. SE are clustered at the family level with 207 300 clusters. For time fixed effects, the omitted year is 2007.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$