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Estimating causal relationships using historical data

from 20th-century wars

Komise pro obhajoby doktorských disertací v oboru
ekonomie

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1 Introduction

The statistical study of historical data provides a natural complement to traditional historical analysis based on qualitative research and on the descriptive use of (typically univariate) quantitative information. At their best, statistical models (adopted from the social sciences, i.e., econometrics, and applied to individual-level historical databases) can measure the causal effects of policies or of individual characteristics on outcomes. At a minimum, there is a broad scope for multivariate conditional comparisons to help illuminate and assess historical narratives.

The possibility of enriching existing knowledge by using statistical modelling is particularly relevant for the large body of literature studying 20th century wars. As will be illustrated by the analyses summarized below, there is frequently detailed individual-level data available on these conflicts, and there are multiple additional data sources and archives that can be marshalled to support a truly multivariate statistical analysis, and to identify quasi-experimental variation necessary for the estimation of causal relationships.

In this thesis, I present three such statistical applications based on research designs that are meant to contribute to economics, demography, and political science. These analyses also complement the historical literature on 20th century wars, and provide an illustration of methods applicable to a wide range of research questions in modern history. They are thus meant to support further multidisciplinary cooperation between empirical social scientists and historians, particularly so in the Czech Republic, where so far such collaborations are few and far between.[1]

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[1]It is perhaps useful to stress that while statistical tendencies uncovered in data-driven research can always be 'contradicted' by a historian with a specific counterexample, this, in fact, may not imply a contradiction. In much social science research based on individual-level data, regression-type analyses uncover significant regularities, typical relationships in the data without explaining all of the outcome variation. When we inquire into the impact of particular factors observed in the data on survival, we are aware that there were many independent processes essential for survival, about which the data offer no information. This can nevertheless still allow us to use data to perform the two roles outlined above.

2 Survival of the Holocaust

The need for applying statistical modelling is particularly acute for the large inter-disciplinary body of research examining the Holocaust, particularly the literature studying the experience of prisoners of deadly Nazi internment camps, because much of this work relies heavily on survivor testimonies. It is generally not possible to interpret testimony-based evidence as applicable to victim populations, but statistical methods can help deal with survival biases. Until recently, the use of quantitative (often perpetrator-generated) data in the Holocaust literature was typically limited to aggregate and univariate descriptions, while multivariate comparisons can be tailored to test historical narratives and to identify causal relationships. Our aim is to contribute to the strand of the Holocaust research investigating coping strategies of Holocaust victims. This work suggests that the internal operation of prisoner societies in Nazi ghettos and concentration camps can reflect pre-war social structures (e.g., Finkel, 2017; Suderland, 2013), and that the ability of prisoners to form small mutual-support groups can increase survival chances (e.g., Davidson, 1984; Schmolling, 1984).[2] Prisoners isolated in the social space of Nazi internment may find it difficult to form friendships (reciprocal relationships) that support survival. Econometric analysis can tverify that the conclusions based on fundamentally selective survivor testimonies are generally valid. It is possible that those who did not survive also formed mutual-support groups; therefore, statistical analysis based on all prisoners can provide an important complement of qualitative research.

This line of investigation is relevant beyond Holocaust research in that it asks general questions: Are social resources important for individual survival in groups exposed to extreme external survival pressure? Do humans cooperate when facing extremely low survival chances? Are social ties from normal social environments transferable to extreme life-and-death conditions? We answer these questions based on a well-defined research design allowing us to avoid survival biases and to exploit quasi-random variation in social resources. In the first paper presented

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[2]Survivor testimonies also point to the importance of social links for survival in deadly POW camps (McElroy, 1957) and Soviet Gulags (Applebaum, 2003). Costa and Kahn (2007) provide statistical evidence supporting the relevance of this mechanism in a deadly POW camp.

in this thesis,[3] we provide empirical evidence on the importance of social linkages (social networks, potential friends) for the Survival of the Holocaust for 30 thousand prisoners on transports from the Theresienstadt ghetto to the Auschwitz-Birkenau concentration camp.

Theresienstadt (Terezín) was a transit ghetto established by the SS during the Second World War in the garrison city of the same name in German-occupied Czechoslovakia. Our analysis is based on the near-complete database of individual persecution histories (including the ultimate Holocaust survival indicator) of the Theresienstadt prisoners. This database of Theresienstadt prisoners was compiled by the Terezín Initiative Institute (TII), a non-profit organisation founded by an international association of surviving prisoners of the ghetto. The database was created from records kept by the Nazi administration, primarily transport lists and lists of the deceased in the camp, as well as lists of those who survived in the ghetto. The TII extended these records by coding a Holocaust survival indicator and various other life history indicators for almost all the victims. The data covers the names, gender, age, academic titles, and 'prominent' status of prisoners. We have amended the TII database with several other archival data sources on multiple types of social linkages; for instance, we merged the complete list of prisoners of the low-security Nazi agricultural labour camp in Lípa located in the Czech Republic with the database of Theresienstadt prisoners.

We examine the importance of the availability of social networks (linkages, potential friends) for the Holocaust survival of Theresienstadt ghetto prisoners entering Auschwitz.[4] Our analysis builds on the historical research devoted to Theresienstadt (Hájková, 2020; Adler and Adler, 2017; Frankl, 2005; Lagus and Polák, 2006) and on the few statistical analyses of deadly internment camps and ghettos (Costa and Kahn, 2007; Suderland, 2013; Finkel, 2017); it is based on the near-complete database of a well-defined group of prisoners and thus avoids survival biases by incorporating information on those who did not survive the Holocaust. We

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[3]"Preexisting social ties among Auschwitz prisoners support Holocaust survival" (joint with T. Jelínek and M. Bělín) *Proceedings of the National Academy of Sciences* (PNAS) 2023 Vol. 120 No. 29.

[4]Most of the Jewish prisoners of the Theresienstadt ghetto were sent to extermination camps. We do not study prisoners deported to Treblinka and Maly Trostinec, the other two chief destinations of transports from Theresienstadt, as virtually none of these survived the Holocaust. Unlike Auschwitz, Treblinka and Maly Trostinec had no labor camp, they were solely extermination camps.

leverage quasi-random differences in the social-linkage composition of transports to Auschwitz in order to contrast survival chances across prisoners depending on whether they entered the camp alongside a group of socially-linked potential friends, or as socially isolated prisoners who may find it difficult to form friendships (reciprocal relationships) in the camp.[5] We then ask how pre-existing social linkages affect Holocaust survival, study several types of social ties that did not require strong social skills to be formed, and exploit variation in the availability of potential friends that was outside of a prisoner's control.

We find a survival advantage conferred by entering Auschwitz with several socially-linked fellow prisoners based on measures of family links, camaraderie among prisoners, as well as based on social linkage proxies corresponding to pre-deportation administrative and residential ties. Our results confirm the findings of qualitative work based on selective survival testimonies that being socially isolated was particularly costly during the Holocaust. Our findings from a situation of extremity also fit well into the literature highlighting the importance of social links in high-stakes (but not deadly) contexts (Battiston, 2018; Fisman et al., 2018; Kelly and Grada, 2000; Stuart and Taylor, 2021).

The evidence we provide extends the literature on the importance of social links in high-stakes contexts. While Costa and Kahn (2007) study the effect of social bonds formed among soldiers in battle for their survival in a deadly POW camp, we study a demographically diverse civilan prisoner population (including women, for whom we find particularly strong effects). Further, we study the effects of pre-war social ties as well as linkages formed within prisoner societies in underpinning survival in a deadly camp. Our findings imply that a variety of social ties outside of the close bonds of family or 'brothers in arms' support survival, and that life-supporting cooperation arises even when survival chances are extremely low.

Our evidence is also relevant to the literature studying parochial altruism—the notion that experience of violent conflict supports within-group cooperation among survivors (Trivers, 1971; Choi and Bowles, 2007). An alternative mechanism highlighted here is that those more

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[5]We thus avoid not only the selection bias of survival testimonies, but also potential omitted variable bias where prisoners who are more pro-social tend to have more friends and are more likely to survive.

prone to cooperation (having larger social networks) are more likely to survive violent conflicts. Finally, our analysis contributes to the large literature on the importance of social networks for health outcomes (e.g., House et al., 1988) by providing evidence on the transferability of social linkages generated in normal social environments to the truly extreme conditions of deadly internment camps.

Below we provide a description of our estimation strategy and main findings.

Social Linkages and Estimation Strategy

The literature on the coping strategies of concentration camp prisoners includes only a few statistical analyses that investigate what characteristics or strategies helped prisoners to survive. It is important that such analysis is multivariate—in order to compare otherwise comparable prisoners—and that it explores specific mechanisms that underpinned survival. Our focus on a mechanism based on social-linkage resources is motivated by the testimonies of survivors (e.g., Davidson, 1984), which also guide our focus on several dimensions of social linkages. Finding similar effects for multiple measures would be suggestive of systematic forces. Supporting Information provides details on the Theresienstadt data, sources of the archival data on social ties, and examples of relevant survivor testimonies.

A prime social-resource group is that of one's *family* and so it forms the basis of our first social-linkage measure. Second, prisoners from the same pre-deportation *place of residence* can form a natural mutual-support group. We define such groups based on pre-deportation street addresses of the Theresienstadt prisoners deported from Prague (there are 1,917 Prague street addresses available in the TII data and 14,791 prisoners with this information on transports to Auschwitz). For other prisoners, we do not have street address data, only the city from which their transport to Theresienstadt came. Third, we form a measure of *administrative ties* based on the self-organization of national Jewish communities, i.e., based on membership of the official pre-deportation Jewish self-administrations (Jüdische Kultusgemeinde in Prague, Israelitische Kultusgemeinde in Vienna, Berlin; henceforth referred to as JKG/IKG). We

obtained lists of the members of the three organizations in 1941 and merged them with the TII data. The majority of the 2,680 members of JKG Prague, 677 members of IKG Vienna, and 371 members of IKG Berlin who entered Theresienstadt ended up on transports to Auschwitz. The three types of social linkages described above were formed prior to internment.

Next, we consider social linkages formed during internment. A measure of social linkages corresponding to *camaraderie* is based on the case of young Czech Theresienstadt prisoners, who, according to post-war testimonies discussed in Supporting Information, had often formed strong friendships (based, e.g., on sharing food sent from home) during their earlier internment in a low-security all-male agricultural labor camp, which was located in Lípa in a rural area of today's Czech Republic. The Lípa camp is an example of the several thousand small labor camps, in which European Jews were interned before being deported to large ghettos and concentration camps (Megargee, 2009). We merged records of the Theresienstadt ghetto with lists of Lípa prisoners. A total of 1,351 Czech Jews were interned in the Lípa camp, of whom 961 entered Theresienstadt.

Our final social-linkage measures are based on *Theresienstadt networks*. First, we observe members of a chain-mail community (104 women and 126 men, most ended up in Auschwitz) formed within Theresienstadt to share a copy of an underground satiric weekly ('Shalom for Friday', henceforth referred to using the Czech abbreviation 'SNAP'). Second, we consider prisoners who came to Theresienstadt on the same in-transport to be potentially socially linked. In-transports often combined residents from a set of pre-deportation neighborhoods; further, within Theresienstadt, prisoners from the same in-transport often shared similar conditions and housing. Hence, it is possible that they formed relevant social ties.

To identify the effect of social-linkage resources on Holocaust survival in Auschwitz-Birkenau, we use information on the number of potential friends available to prisoners across transports out of Theresienstadt, taking the composition of these transports as a setting in which the social mix of prisoners varied quasi-randomly due to the demographic pressure of transport orders given by the SS. (In the next section, we provide evidence supporting this notion.) Consider

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the 601 former Lípa prisoners who ended up on 23 distinct transports from Theresienstadt to Auschwitz. To identify the effect of social-network resources on survival, we ask whether Lípa prisoners travelling to Auschwitz with a different number of fellow Lípa prisoners display different survival outcomes. We thus use variation in the number of Lípa prisoners across transports and ask whether arriving in Auschwitz with more potential friends improves survival prospects. Our analysis conditions on the average survival chances of all prisoners on a given transport to Auschwitz (by transport fixed effects), which is given by SS decisions in Auschwitz outside of prisoners' influence. The effects of social linkages thus correspond to the within-transport gaps in survival chances between a typical prisoner and a 'Lípa' prisoner, where this gap is contrasted across transports with a varying number of Lípa prisoners. We similarly condition on the number of potential friends on a transport to Auschwitz based on all of our measures of social linkages. (While the number of Lípa prisoners, JKG/IKG members, and SNAP prisoners travelling together varies only *across* transports to Auschwitz, there is *within*-transport variation in the size of an individual's social network based on family size, pre-deportation place of residence, and on groups of prisoners who came to Theresienstadt on the same in-transport.) We measure social resources by gender given that the camp was segregated by gender. The maximum size of the set of potential friends on a transport varies from 4 (for family networks for both genders) to 295 (for men who arrived in Theresienstadt on the same transport).

Survival after Entering Auschwitz

We model differences in surviving the Holocaust for prisoners entering Auschwitz. We do not observe place or date of Holocaust death for the Theresienstadt prisoners who perish after entering Auschwitz. It is possible that some of these prisoners left Auschwitz for other concentration camps or ended up in one of the death marches at the end of the war. Our estimates thus speak to the extreme experience of a typical prisoner entering Auschwitz, not only to imprisonment in Auschwitz-Birkenau.

Of the 27 transports from Theresienstadt to Auschwitz, seven had survival rates of under two percent. Three transports (transport Ds in 1943 and Ek and Em in 1944) had survival rates of about twenty percent, as survival rates in Auschwitz improved towards the end of the war. We condition on the transport-specific survival rates, which we consider externally given by the prevailing conditions in Auschwitz, and so we study differences in survival relative to the transport-wide average survival rate. We exploit within-transport as well as across-transport variation in multiple types of social linkages, which we view as quasi-random. The SS specified the demographic composition of transports out of Theresienstadt, but the selection of individual prisoners was under the influence of the ghetto's Jewish self-administration for most transports. In Supporting Information, we provide a description of the transport selection process in Theresienstadt, and show that there is no systematic relationship between transport survival rates and transport averages of social linkages. For eight transports, the selection of prisoners in Theresienstadt was controlled directly by the SS, not by the self-administration; these eight are omitted from our analysis since the selection process may have SS-specific goals (Supporting Information provides additional discussion). We thus study the Holocaust survival of the 14,546 male prisoners and 16,200 female prisoners of Czech, Austrian, and German origin on 19 transports.

There is no evidence in the historical literature suggesting that selection into transports would consider social linkages beyond family ties. Further, the ghetto's self-administration, which compiled out-transports of one to two thousand prisoners at a time under significant time pressure, did not have data available on many of the social ties we measure here, with the benefit of hindsight. Nevertheless, it is important to consider the possibility that Holocaust survival of prisoners entering Auschwitz was related to their unobservable pro-social traits reflected in the Theresienstadt out-transport selection. Below, we therefore assess the sensitivity of our baseline findings to unobservables by estimating sample selection models.

We test whether the improved ability to form close friendships by prisoners with access to pre-existing social linkages on their transport to Auschwitz improves chances of Holocaust survival

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(binary indicator S_{it}). For each prisoner i on transport t belonging to social networks of type j, we condition on the number of prisoners from his/her social network traveling on the same transport, denoted N_{ij} (e.g., for the number of Lípa prisoners—'N Lípa'). We also condition on transport indicators α_t capturing transport-wide survival levels. Finally, we condition on a set of prisoners' characteristics X_i consisting of prisoners' age, length of Theresienstadt imprisonment prior to out-transport to Auschwitz, a Prague-deportation indicator, nationality indicators, and indicators for being a member of the JKG/IKG organizations, having been in the Lípa camp, and for having family members on transport. We thus estimate the following OLS binary-outcome regression:

$$S_{it} = \alpha_t + \sum_j \beta_j N_{ij} + \mathbf{X}_i \boldsymbol{\gamma} + \varepsilon_{it} \tag{1}$$

and its Probit equivalent. We cluster standard errors by transports out of Theresienstadt. Wild bootstrap inference (Cameron and Miller, 2015) confirms traditional asymptotic inference.

We focus on average marginal effects (AMEs) from Probit and OLS models of Holocaust survival. For our measures of available social linkages, the AMEs represent the effects on survival chances of one additional linked fellow prisoner on a transport. (See Supporting Information for details on the calculation of the AMEs). We find that several types of available social linkages we observe imply that arriving in Auschwitz with a larger group of male potential friends supports survival in extreme circumstances. Our estimates suggest that having been imprisoned together earlier, having resided together, and arriving in Theresienstadt together (thus sharing a network in Theresienstadt) generates social ties that confer a survival advantage in a deadly concentration camp. One of the measures of pre-deportation administrative social ties is similarly helpful. The advantage grows with the size of the group of potential friends, as this increases the chances that prisoners with social links stay together. The estimates for women imply that *all* social linkage measures, including family ties and the SNAP linkages as well as administrative ties, are increasing survival chances. The estimated effect magnitude is consistently larger for women than for men.

We also find that medical doctors were more likely to survive, possibly thanks to their valuable skills, or thanks to doctors arriving at Auschwitz in better-than-average health. Other academic titles were not helpful. The effect of age on survival is non-linear: Conditional on transport-wide survival rates and other controls, prisoners in their mid-twenties were most likely to survive among both men and women. Survival chances then decline steeply with age, such that prisoners aged 45 were about 15 percentage points less likely to survive compared to those aged 25.

We perform a sample-selection-sensitivity analysis; our findings are consistent with selection on unobservables having little effect. We conclude that both in terms of the historical literature on Theresienstadt, and in terms of our estimated models, there is no evidence that would undermine our interpretation of differences in prisoners' social linkages across transports being quasi-random. Our baseline findings are also robust to adding transports bound for camps/ghettos in Riga and Raasika to the analysis (see Supporting Information for results based on 31 transports).

Overall, we interpret our estimates as implying that the availability of potential friends supports survival in the extreme conditions of a Nazi concentration camp and that groups of socially-linked prisoners generate valuable opportunities to form small mutually-supportive 'communes'. Survival testimonies (in Supporting Information) speak of mutual-support groups of typically two to three friends; the networks we measure correspond to the pool from which such close friends can be recruited. The larger the pool, the (linearly) higher the chances of finding a friend based on pre-existing social ties.

Which mechanisms could correspond to the survival effects we uncover? Survival testimonies do not imply that small 'communes' would *enforce* pro-social behavior within groups. Testimonies of Auschwitz survivors imply that it was crucial to get *advice* on the operations of the camp from more experienced prisoners. However, our measures of social ties capture linkages among prisoners who arrive in Auschwitz together and who are similarly inexperienced in the camp's operations. Importantly, we find survival effects for essentially *all* social networks

we measure, for men and women, and for youth and prime-aged adults, based on social networks corresponding to prisoner linkages and links based on pre-deportation ties. This pattern of our findings suggests that there is a *common* mechanism at play, one that is not based on a particular advantage such as physical strength, which would be more applicable to ties among young male Lípa prisoners than administrative or residential linkages among women. (Even though Table 1 implies that medical doctors were more likely to survive, in Supporting Information we do not find any survival advantage of having a medical doctor in one's social network, which is also consistent with the notion that particular advantages are not behind the pattern of our estimates.) Instead, our results are consistent with the widespread appearance of the 'muselmann' phenomenon in survivor testimonies, where prisoners who gave up hope and the *will to live* quickly perished in the extreme conditions of the camps. Survival testimonies (we list in Supporting Information) imply that small groups of friends were formed based on pre-existing social ties, where friends shared food and provided emotional support to each other in moments of despair, not only in moments of weakness and ill health, i.e., that such groups also helped to stimulate the will to continue fighting to survive.

3   Forced migration and political identity of Sudetenland

The second study in this thesis also investigates events related to WWII, but unlike the Holocaust survival study it focuses on its aftermath—the massive displacement (forced migration) or Germans.[6] Similar to the first WWII paper in this thesis, the analysis presented below employs identification strategies used widely in economics to measure causal relationships.

The global number of displaced people is at new record highs, with violent conflicts and wars at the root of most forced migration and ethnic cleansing.[7] Forced migration has immediate dramatic consequences for the displaced and for the communities that become

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[6]"Forced migration, staying minorities, and new societies: Evidence from post-war Czechoslovakia" (with J. Grossmann and F. Roesel) accepted in *American Journal of Political Science.*

[7]Of the 70 million displaced people worldwide today, over 20 million were forced to leave their country (UNHCR data as of March 2020).

their new homes. There are also long-term effects on the displaced and their descendants, documented by a large literature (for a survey, see Becker and Ferrara, 2019). However, it is often overlooked that ethnic cleansing is never complete: Some members of the displaced community manage to evade expulsion and become members of newly created societies (for examples, see Bell-Fialkoff, 1993).

Little is known about the 'stayers' who escape ethnic cleansing. In particular, there is hardly any evidence on whether they can affect political outcomes in communities in which they had become a minority. Can stayers of strong political convictions act as a 'small seed' and take an active role in politics of their re-settled communities, the way that migrants entering established societies sometimes do? Answering this question is important for understanding ethnic cleansing. It can also shed light on community identity formation, since stayers are more strongly rooted locally than the new incoming majority settlers.

We study the long-term footprint of the staying German minority that evaded Czechoslovakia's expulsions after World War Two. Three million ethnic Germans were forced to leave *Sudetenland*—a region in the Czech borderlands that was predominantly populated by ethnic Germans prior to the war. However, some 200,000 Germans avoided deportation, half anti-fascists (mainly Communists), half indispensable industrial workers. And 70 years later, Communist vote shares are significantly higher in Czech regions where anti-fascist Germans stayed in larger numbers, as we show in our analysis. Such correlations suggest a legacy of stayers beyond the fall of the Iron Curtain, but the presence of non-displaced anti-fascist Germans could be endogenous to local political preferences. For example, strong Czech Communist elites might have been able to protect their ethnic German party fellows. To avoid such concerns, we study a natural experiment generating exogenous variation in the number of anti-fascist German stayers in *Sudetenland*. This variation was the result of the US Army liberating parts of Czechoslovakia—a consequence of the unexpected military progress of the Western Allies in the spring of 1945. Western *Sudetenland* became the only region in post-war

Europe where forced migration was temporarily controlled by the US Army, as the line of contact of the US and the Red Army divided *Sudetenland* between May and December 1945.

The nearly straight line was designed to connect US troops in Germany and Austria, and it gave rise to different expulsion policies within *Sudetenland*. On one side of the demarcation line, the US Army prevented early ('wild') expulsions of ethnic Germans. On the other side of the line, Czech officials began to expel Germans immediately after liberation, supported by the Red Army (Brandes, 2001). The Red Army also recruited thousands of anti-fascist *Sudeten* Germans to help build the Communist party in the Soviet occupation zone in Germany. This opened a gap across the demarcation line in the share of deported Germans, and anti-fascist Germans in particular. When organized mass deportations started in 1946, together with organized re-settlement, anti-fascist Germans became entitled to stay in Czechoslovakia. At that time, the Red Army had already cleared its zone of a large number of anti-fascist Germans, who typically held far-left values. Thus, the 1945 demarcation line in *Sudetenland* led to variation in the local presence of left-leaning Germans staying in post-war Czechoslovakia. We contrast neighboring areas within *Sudetenland*, separated by the 1945 demarcation line between the US and the Red Army, using a spatial regression discontinuity (RD) approach. We ask whether different expulsion policies after WWII translate into differences in political attitudes, election outcomes, and ethnic identities today. We disentangle the impacts of expulsion policies from other effects including post-war resettlement, changes in industrial structure, selective mobility, and direct effects of liberation by the Red as opposed to the US Army.

Our findings imply a lasting footprint of stayers. Today's Communist party vote shares, density of local Communist party cells, Communist party membership rates, but not German ethnicity, are higher where the presence of US forces led to more anti-fascist Germans avoiding deportation. Geo-coded survey data corroborate our main findings and show stronger preferences for redistribution, planned economies, and authoritarianism in places with more anti-fascist stayers. We estimate that ten anti-fascist stayers after World War Two are related

to about four votes for the Communist party in Czech national elections today. This effect magnitude is consistent with the presence of spillover effects of stayer values on settlers, given the out-migration of German stayers during the Prague Spring of 1968 and the declining size of the stayer community due to low birth rates (Wilde, 2015). German surnames among regional Communist elites in the 1950s and among Communist party candidates in local elections today allow us to examine distinct transmission channels. The results suggest that early elites among German stayers go hand in hand with political persistence both within the Communist party and outside of party ranks.

Our causal evidence brings novel insights to the large literature on forced migration and 'demographic engineering' (Bauer, Braun, and Kvasnicka, 2013; Becker, Grosfeld, Grosjean, Voigtländer, and Zhuravskaya, 2020; Testa, 2020), which has not studied stayers thus far.[8] We add to the few studies that exploit local variation in the intensity of ethnic cleansing. To the best of our knowledge, we provide the first evidence implying that a small minority of stayers can affect political attitudes and values of societies after ethnic cleansing. Our evidence on the spatial persistence of far-left preferences complements that on far-right political values (Voigtländer and Voth, 2012; Cantoni, Hagemeister, and Westcott, 2020; Ochsner and Roesel, 2020; Jurajda and Kovač, 2021). Our ability to look *across* regime change and contrast intergenerational transmission of values with 'small seed' long-term effects of stayer elites extends previous work on political leaders *within* political systems (Ochsner and Roesel, 2020; Dippel and Heblich, 2021).

A large literature studies how immigrants integrate into an existing majority (e.g., Bisin, Patacchini, Verdier, and Zenou, 2016), while our setting offers a view of an ethnic group that does not re-locate, but becomes a minority in a newly created society. We can also jointly study political and ethnic identities. Post-war Czechoslovakia eliminated the use of German in public life and promoted far-left values. The findings suggest that stayer parents deciding on which of the two main identities (German or far-left) to inculcate in their children reflected

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[8]Related research investigates the effects of voluntary emigration on family members left behind (for a survey, see Antman, 2013).

an environment that supported one, but suppressed the other identity. This is consistent with Egan (2020), who shows that ethnic identity can be adjusted in response to political identity, and, more generally, with the growing literature suggesting that integration decisions by minorities respond to incentives (Fouka, 2019; Algan, Malgouyres, Mayer, and Thoenig, 2020; Atkin, Colson-Sihra, and Shayo, 2020). However, the expression of political identity by the offspring of stayers is not merely an opportunistic survival strategy within the Czechoslovak Communist regime, because the far-left political values we measure correspond to free and democratic elections in the modern Czech Republic up to 2018, long after the fall of the Iron Curtain.

Finally, our analysis also brings novel findings to the research exploring various effects of the line of contact between Red Army troops and US and British forces in 1945 Europe (e.g., Ochsner, 2017; Martinez, Jessen, and Xu, 2020). We are the first to investigate the demarcation line in Czechoslovakia and our findings are in line with anecdotal evidence that Red Army soldiers treated Slavic people and Germans differently (Glassheim, 2016, among others). This suggests that the fast progress of US and British forces in 1944/1945 may have reduced post-war violence and acts of revenge.

Below we discuss our research design and estimation methods in more detail.

Data and empirical strategy

We compile a new dataset of Czech municipalities covering the interwar period and the era after World War Two. It covers the last national election in the interwar period (1935) and all Czech elections from 1996 to 2017.[9] All data is translated to the territorial status of the present-day 6,244 Czech municipalities. As some of the municipality-level information is not available prior to World War Two, we additionally rely on information at the level of the 330 Czech counties as of 1930. We also use the 2010 and 2016 waves of the Life in Transition

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[9]We also collect data on democratic national elections in Czechoslovakia (1946, 1990, 1992) which, however, are not directly comparable to other elections: Germans were not eligible to vote and deportations and resettlement were still ongoing in May 1946. Municipalities were consolidated into large units during the Communist regime, affecting the 1990 and 1992 measurements.

Survey, for which we geo-code respondents' residence. The survey asks respondents about their political values. We combine all data with information on the location of the 1945 demarcation line, which we reconstruct based on Pecka (1995).

Our two main outcomes of interest are the extent of self-declared German ethnicity and the vote share of the Czech Communist party (KSČM since 1990). The latter is a natural choice of a political identity measure since many anti-fascist German stayers were closely aligned with the Communist party and generally likely to support left-wing values. The Communist party was the ruling party between 1948 and 1989 and its direct successor is the leading far-left party in the Czech Republic.

Our identification strategy is to exploit the quasi-experimental nature of the demarcation line and to compare areas close to the line, assuming that neighboring US and Red Army-liberated areas share similar trends and unobserved characteristics prior to the expulsion of Germans. Balancing tests based on geographic and pre-war demographic data, as well as on the extent of bombing during the war, allow us to conclude that adjacent areas under Red Army control provide a counterfactual for US-liberated regions where fewer anti-fascist Germans were displaced. We apply a spatial regression discontinuity (RD) design (Lee and Lemieux, 2010) to the most granular data available—municipalities. Our preferred specification corresponds to a local-linear RD strategy (Calonico, Cattaneo, Farrell, and Titiunik, 2017), but we use a parsimonious polynomial RD regression model as a starting point. This model is estimated with OLS; it allows for standard errors robust to spatial correlation (Conley, 2010) and for easy interpretation of the effects of control variables:

$$Communist_i = \alpha + \beta_1 US_i + \beta_2 Distance_i + \beta_3 Distance_i^2 +$$
$$\beta_3 Distance_i \times US_i + \beta_4 Distance_i^2 \times US_i + X_i'\gamma + \epsilon_i. \tag{2}$$

Here, $Communist_i$ denotes the vote share for the Communist party in a national election in Czech municipality i. The vector of β coefficients refers to a quadratic RD polynomial interacted with a dummy variable US_i taking on the value one if a municipality was liberated

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by US forces in 1945, and zero otherwise. $Distance_i$ measures the great circle distance of a municipality to the demarcation line in kilometers. Distances are positive on the Red Army side and negative on the US side. X_i is a vector of municipality-level geography controls (distance to the German border, to the nearest main road and the nearest railway line, mean altitude and the difference between maximum and minimum altitude) and population controls (logged pre-war population in 1930, logged present-day population, present-day population in % of 1930). We restrict this least-squares estimation to municipalities ±25 kilometers around the demarcation line. Most of our RD analysis is then based on flexible RD specifications corresponding to to the local-linear procedure with a data-driven optimal bandwidth proposed by Calonico, Cattaneo, Farrell, and Titiunik (2017). We report RD standard errors robust to optimal bandwidth choice. The optimal bandwidth ends up being close to that used in our polynomial specification.

Results and Mechanisms

Our results provide robust evidence of long-run effects of the presence of US forces in 1945 *Sudetenland* on the electoral success of the Czech Communist party. Applying a quadratic-interacted RD polynomial, we find the vote share of the Czech Communist party in the 2017 national election to be about 9 percentage points higher as one steps across the demarcation line from the most western Red Army-liberated *Sudetenland* municipalities to adjacent municipalities under US control. Our main point estimates do not change and RD effects become more precisely estimated when we control for local geography and for pre-war and present-day population, as well as for changes in population density. The OLS-based findings are confirmed in our preferred RD specification, where we allow for flexible local-linear polynomials and rely on an optimal data-driven bandwidth: we find a statistically significant effect of 8 percentage points in the Communist vote share at the demarcation line within *Sudetenland*. Since the local-linear RD specification is more flexible, we use it as a baseline in what follows. The baseline findings are fully robust to various sensitivity, placebo-effect, and sub-sample checks (all based on the local-linear RD approach).

Discontinuities in outcomes across the 1945 demarcation line can correspond to multiple treatment mechanisms. Our main hypothesis is that they are a result of different expulsion policies, and that they operate through anti-fascist German stayers. An immediate concern with this interpretation is that liberation by the US as opposed to the Red Army treated local populations to different levels of violence against civilians. To explore this mechanism, we rely on municipality population data from December 1945 based on food stamp records. High levels of 1945 depopulation indicate extensive 'wild expulsions' and are thus likely to correlate with Red Army (direct or tolerated) misdeeds. Such misdeeds may reduce the support for the Communist party, which was closely aligned with the Soviets. At the same time, the depopulation control (violence against all Germans) can absorb some of the variation in anti-fascist stayers. Our estimates show that—as expected—more depopulation, i.e., lower 1945 population relative to 1930 levels, comes with lower vote shares for the Communist party, suggesting that misdeeds and early violent expulsions translate into lower Communist support. However, the RD effect of the demarcation line is fully robust to controlling for our proxy for Red Army misdeeds, consistent with the anti-fascist stayer mechanism.

Within *Sudetenland*, the different expulsion policies in the US and Red Army zones led to a higher share of anti-fascist Germans on the US side of the demarcation line. In the Czech main lands, however, there were almost no Germans as of 1947 and thus no meaningful difference in the share of staying Germans across the demarcation line. If the presence of US forces affects present-day Communist vote shares via anti-fascist Germans, one would expect no effects within the Czech main lands. This is indeed born out in our findings. We test for demarcation-line discontinuities across all national elections since the Czech independence in 1993 and find similar effects. Again, we obtain no statistically significant or sizeable estimates within the Czech main lands.

Next, we ask about the effect of the line on the presence of local Communist party cells. We collect data on all local (municipal) elections in the Czech Republic between 1994 and 2018 and code whether the Communist party stands in a given municipality. We pool all local

elections to measure long-term Communist party structures. Municipalities on the US side of the demarcation line are about 12% more likely to host a local Communist party cell. Thus, we find not only more Communist voters but also more active Communist party structures where anti-fascist Germans stayed in larger numbers after 1945, thanks to the presence of the US Army.

To provide further evidence on the importance of the German-stayer channel, we ask about the presence of German surnames among Communist-party candidates running for municipality-council seats. Candidates do not disclose their ethnicity, so we rely on a unique feature of non-anonymized election data: family names of candidates. Germanic and Slavic languages (German and Czech in our case) are distinguishable in terms of family names. Further, in the Czech context, German surnames, which indicate German ancestry, were not dropped with German ethnic identity (Beneš, 1998). We study surnames and party affiliation of all 1.3 million candidates standing in Czech local elections between 1994 and 2018. We consult the family history research website *Forebears.io* to identify German names among candidates. Names most frequent to Germany and Austria are coded as German. Quality checks confirm that this simple algorithm correctly classifies 9 in 10 names, with no accuracy gap between Communist and other candidates.

Anti-fascist German stayers and their offspring were not disproportionately geographically mobile. If far-left values were transferred across generations within families, one would expect a higher share of German surnames on Communist-party election lists in the US-liberated municipalities. We therefore apply our local-linear RD procedure to test whether the frequency of German names differs across the demarcation line. The evidence is in line with our hypothesis as the share of German names among Communist party candidates is around 15 percentage points higher where US troops were located in 1945, compared to adjacent Red Army-liberated municipalities. Furthermore, this gap across the line is unique to the Communist party. And again, we find no effects of the demarcation line in the Czech main lands. We present results based on the most recent 2018 local elections,

but all results hold when we pool all elections between 1994 and 2018. We conclude that different expulsion policies across the demarcation line are a prime channel accounting for our main findings. While no data are available to provide direct evidence on inter-generational transmission of political values, our findings are strongly consistent with German anti-fascist stayers inculcating their political values in their offspring.

We explore (and reject) alternative mechanisms for our baseline findings, including ethnic legacy, selective re-settlement by Czechs, and different industrial structure.

Finally, we rely on German surnames to study the role of Communist German elites as a source of persistence. Previous studies suggest that local elites influence local political values for decades (Dippel and Heblich, 2021). To shed light on different channels of long-term persistence, we combine data on county Communist party leaders from the 1950s with municipal data on Communist candidates today. Party leaders from the 1950s are early elites, active shortly after the displacement of Germans. Candidates running for the Communist party today can be considered strong partisans.

We find that more Communist elites with German names in 1959 go hand in hand with more candidates with German names on Communist party lists today. We interpret this as suggestive of early-elites effects on the reproduction of far-left values among stayer dynasties. Next, we use both German Communist counts as dependent variables to explain Communist votes today. The results show that elites from both 1959 and 2018 explain Communist party vote shares today, separately as well as when used jointly in a regression. The latter suggests that German elite stayers had a lasting impact both via supporting the reproduction of extreme-left values in stayer dynasties and independently through spillover effects outside of party ranks. Both lines of persistence map into Communist election results today. The spillover effect of staying German Communist elites that does *not* operate through German-descendant Communist structures today explains around 10% of the variation in Communist votes today. Given that at least three generations bridge the seven decades between treatment and effect, including five decades of the Communist regime and over two decades of transition to

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democracy, we find the preservation of far-left values supportive of the notion that extremism has historical origins that begun with a 'small seed' of political development (Giuliano and Tabellini, 2020).

In summary, we provide first causal evidence on the political impacts of stayers exempted from ethnic cleansing. Three million *Sudeten* Germans were expelled from the Czech borderlands after World War Two, but some 200,000 were allowed to stay. We study the legacy of anti-fascist Germans in post-war Czechoslovakia using quasi-experimental variation and find a substantial and lasting political footprint of this left-leaning minority in today's Czech Republic. Communist vote shares, active Communist party cells, and far-left values, but not German ethnic identity, are more pronounced in *Sudetenland* today where more anti-fascist Germans stayed after the war. Our evidence on how far-left political values take hold in re-settled communities extends the literature documenting long-lasting Communist preferences (Fuchs-Schündeln and Schündeln, 2020).

The finding that stayers who evade expulsion can have effects on political values and voting behavior in re-settled populations complements the literature showing that immigrants' political values act similarly upon established societies (e.g., Giuliano and Tabellini, 2020). Even Germans in a Slavic country following World War Two's atrocities appear to have been able to express their political identity in newly formed societies. Our findings suggest that German elite stayers represented among local Communist elites in the 1950s, i.e., shortly after the war, drive persistence within the Communist party as well as outside of party ranks. The effects we measure go well beyond the Communist regime, where state ideology was aligned with anti-fascists values.

Our results shed new light on the inter-generational transmission of multi-dimensional identity. Evidence that ethnic-identity choices respond to incentives is well-established and Abdelgadir and Fouka (2020) study how integration policies affect the *joint* identity choice of immigrants across ethnic and religious dimensions. Our study of ethnic cleansing consequences suggests that among anti-fascist Germans, political identity may have supplanted their suppressed

ethnic identity, in line with theory predicting that well-connected representatives of a minority assimilate faster (Verdier and Zenou, 2017).

4   Inter-generational transmission of extreme patriotism

The third and final study in this thesis focuses on the most violent conflict in Europe since WWII until the invastion of Ukraine—on the Chroatian-Serbian war of independence lastin from 1991 to 1995.[10] Similar to the second study, we ask about the sources of political preferences; in this case, we focus on the willingness to die for one's country.

Nationalism has been a principal driver of wars and of political violence throughout modern history (Petersen, 2002; Biondich, 2011). Wars, in turn, have dramatic, long-lasting effects on a country's political, cultural, and ethnic identity, according to a recent body of work based in large part on voting behavior (Mayhew, 2004; Bellows and Miguel, 2009; Anderlini et al., 2010; Petersen, 2012; Fontana et al., 2016; Rozenas et al., 2017). Experiencing war also strengthens in-group cooperation and altruism towards members of one's group (Choi and Bowles, 2007; Voors et al., 2012), i.e., preferences supportive of nationalism. A key unanswered question in the literature is to what extent the persistence of the effects of wars on political values and in-group cooperative behavior is underpinned by intergenerational transmission of values within families. It has been suggested that intergenerational transmission of political values affects economic development, political outcomes, and inter-group and inter-national tensions (e.g., Guiso et al., 2006; Dal Bó et al., 2009; Montgomery, 2010; Voigtländer and Voth, 2015), but the study of the effects wars have on political attitudes across generations is curbed by lack of data. There are now surveys offering direct measures of political values and of attitudes across recent generations (Albanese et al., 2014; Dohmen et al., 2012; Jennings, et al., 2009; Ojedaa and Hatemi, 2015; Lupu and Peisakhin, 2017), but such advanced surveys are not available to study important historical events including wars, which is why research on the

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[10]"Names and Behavior in a War" (with D. Kovac) *Journal of Population Economics* 34(1): 1–33, 2021.

persistence of political and cultural values often relies on proxy measures (e.g., Voigtländer and Voth, 2013; Fouka and Voth, 2013).

Ideally, such indirect measures of values should predict observable politically motivated behavior, be consistent over time and space, and be linkable across data sources. In this paper we implement a novel empirical strategy for identifying and studying nationalism and its intergenerational transmission based on child name choices corresponding to war leaders. Such measurement approach is applicable in countries that feature a sharply divided ethnic mix and in settings where leaders' names are notoriously associated with their political beliefs. Given the availability of birth certificate records, the approach naturally lends itself to the study of intergenerational transmission and is available in many historical settings.

We study 20th-century Croatia, where our approach allows us to measure a strong form of nationalism—the willingness to fight and die in a war for national independence—that is in principle difficult to elicit in surveys. This trait is of substantive interest to nations dealing with free-riding in active war service (Humphreys and Weinstein, 2008; Campante and Yanagizawa-Drott, 2015; Shesterinina, 2016). Specifically, we explore the links between WWII in Croatia and the War of Independence (hereafter WoI) fought between Croatia and Serbia during 1991-1995, one of Europe's deadliest conflicts since World War II. We study volunteering for and dying in the WoI and the intergenerational transmission of values associated with this behavior.

As of the start of the WoI in 1991, Croatia had no regular army and so massive volunteering was critical to its defense, especially before the draft process began.[11] We show that men who share their first name with the notorious leader of the WWII Croatian state were significantly more likely to volunteer for war service in the Croatian army and that they were more likely to die during the full-scale armed conflict between Croats and Serbs. The analysis, based on the complete registry of almost half a million Croatian veterans of the WoI provides evidence on intergenerational transmission of political values within families as it implies that having a

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[11]At its peak, the volunteer force in active duty corresponded to about one sixth of the Croatian male population aged 25 to 54.

'nationalist' first name predicts costly patriotic behavior in war, presumably due to values transmitted from parents.

The use of the names corresponding to WWII leaders ebbed in Croatia after WWII, but these names gained in popularity starting in the 1970s. The rise in the popularity of nationalist names thus foreshadows the WoI. Using the universe of over 3 million Croatian male birth certificates from 1930 to 2000, we show that this rise is curbed around the locations of WWII concentration camps, i.e., places where atrocities were committed by the Croatian WWII state. We also show that the use of the name corresponding to the Croatian WWII leader—Ante—for newborns reaches WWII levels in locations that experienced high combat exposure during the Croatian-Serbian 1991-1995 war and spikes dramatically in locations affected by extended enemy siege or occupation after the siege (occupation) ended in 1995.

We thus demonstrate that first names corresponding to previous war leaders can contain an informative signal about one's nationalism, a signal that correlates with extreme war experiences and that predicts the willingness to serve in a war for national independence. Armed with our proxy measure, we next inquire about the nature of the intergenerational transmission of nationalism. We focus on name choices made during the WoI when the use of nationalist names peaked and explore the importance of war exposure for intergenerational transmission of nationalism. The evidence is consistent with both memories of WWII atrocities and direct experiences of WoI carnage among veterans dampening the transmission from nationalist fathers. It is also consistent with the presence of a purposeful trade-off between within-family and society-wide transmission channels of traits across generations, as suggested by Bisin and Verdier (2001).

A priori, it is not clear how strongly the values we measure mix nationalism (patriotism) with right-wing political values (Hedl, 2005). We uncover a significant link between the nationalist signal in names and right-wing voting patterns in the 2015 Croatian parliamentary elections, twenty years after the war. Municipalities with a higher share of Antes among newborns allocate a higher share of their votes to right-wing parties. Antes are over-represented among

candidates of right-wing parties and receive a disproportionately high share of preferential votes when they run on right-wing party slates in electoral districts directly affected by the WoI. These results are in line with the hypothesis that the effects of wars on political behavior are long-lived (e.g., Fontana et al., 2016). That name choices predict both war behavior and right-wing voting ties our main findings to recent evidence of within-family transmission of right-wing attitudes over generations (e.g., Ochsner and Roesel, 2016).

The signal contained in name choices allows us to simultaneously study war service, regional patterns of political values, their intergenerational transmission, and voting behavior. The measurement approach we implement resembles that of the research on socioeconomic mobility, which deals with the lack of historical data by utilizing the fact that names provide a signal about one's socioeconomic standing (Clark, 2014; Güell et al., 2015; Olivetti and Paserman, 2015). Our evidence on political values adds an important dimension to the literature exploring the information content of child name choices, which already recognizes that the choice of first names can be an expression of cultural, ethnic, or religious identity (Lieberson, 2000; Fryer and Levitt, 2004; Haan, 2005; Aura and Hess, 2010; Mateos, 2014; Rubinstein and Brenner, 2014; Cook et al., 2016; Abramitzky et al., 2016; Fouka, in press).[12]

Below we describe our research methods and findings in more detail.

Research design

Our first task is to classify the first (male) names appearing in the veteran register. We are chiefly concerned with studying names linked to the Croatian WWII leadership. But first, since we do not observe soldiers' nationality, we infer it from names, i.e., we measure the nationality content of first names in order to identify ethnic Croats among Croatian army soldiers (who are all citizens of Croatia). We do this in order to construct a useful benchmark for studying correlates of the Croatian nationalist names in the multi-national mix of the

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[12]The literature on name choices, our study included, is unable to decompose the behavioral concent of names into the part corresponding values inculcated by parents and the part corresponding to society's or one's own expectations about the identity of a person with a certain name, to the extent that such effects are plausible (Nelson and Simmons, 2007; Simonsohn, 2011).

Croatian army. Our first goal is thus to exclude Serbian and Muslim veterans from the analysis of nationalist names. We can do so because in the countries of former Yugoslavia, first names carry a strong nationality signal thanks to the close link between religion and nationality. As in most European countries, newborns' names are chosen from a list of first names corresponding to an annual calendar of name days (which are celebrated similarly to birthdays). Croats are predominantly Catholic so that parents rely on a Catholic-saint name calendar while Serbs are predominantly Orthodox and use an Orthodox name calendar. The appendix provides the details of this classification. We identify 74% percent of veterans as Croats, which is broadly in line with the fact that, based on the 1991 census, 78% of Croatia's inhabitants were ethnic Croats. In most of our analysis, we thus focus on the 354,773 Croatian army veterans who have Croatian first names. In this Croatian sub-population of veterans, the basic features of the veteran registry remain intact including the share of volunteers (at 35% in the Croatian sub-population, up from 33% in the universe of veterans) and the risks of KIA deaths (at 1.28%, up from 1.26%).

What names correspond to Croatian WWII leaders? During WWII Croatia was ruled by the Ustaše movement, which blended fascism and Croatian nationalism. The military wing of the movement became the army of the Croatian fascist state and its Ustaše government enacted race laws patterned after those of the Third Reich. It established concentration camps in Croatia and members of the movement murdered hundreds of thousands of primarily Serbs, Jews and Roma. The movement was founded and led (until its dissolution in 1945) by Ante Pavelić, who also acted as dictator during WWII.[13] Ante is a Croatian form of Anthony and there are distinct alternative versions of Anthony in use in Croatia (Antun, Anto). In addition, we code an indicator corresponding to the first names (other than Ante) of the politicians and generals who received the most important Nazi decoration during WWII—the Knighthood of the Independent State of Croatia. Our purpose is to form a sufficiently wide group of names related to the WWII Croatian state so as to support (or reject) the interpretation that

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[13]The name Ante also refers to Ante Starčević, the 19th century Croatian politician and writer who is considered to be one of the founders of Croatian nationalism.

we attach to the primary nationalist name Ante. But this approach leads us to include in the 'Other nationalist name' indicator also names that have strong non-Ustaše nationalist connotations.

Our first question is whether there are nationalist-name patterns in the volunteering behavior of Croat males in 1991 and 1992. The goal is to estimate such patterns without data on non-active reservists, i.e. without a direct sample of the population at risk of volunteering. As documented in Figure **??**, volunteering choices were largely made before the draft process started in earnest. Given that the draft was name-blind,[14] the draftees' names are not selectively picked from the reservist population after volunteering choices were made, so that our data on volunteers and draftees represent a choice-based sample. Because unobservables affecting the choice to volunteer directly affect the sampling probability, which is thus not independent of the dependent variable conditional on the explanatory variables, consistency requires that we weight the criterion function to be minimized by the inverse probability of selection (Wooldridge, 1999), which in our case corresponds to 1 for volunteers and to the cohort-specific draft rates for draftees.

Our regression analysis implies that Antes are about 6 percentage points more likely than other Croat males to volunteer for service in the WoI. The difference in volunteering likelihood is somewhat smaller for those with other nationalist names, but both differences are statistically significant. Next, we ask to what extent volunteering patterns may correspond to geographical differences in the prevalence of nationalist names correlated with the pattern of active military operations during the war. To this effect, we controls for a set of district fixed effects and also for an indicator of the place of a soldier's birth being under siege (a property defined in the previous section). We also perform a number of robustness checks.

Our estimates imply that the effect of being named Ante on volunteering is quantitatively comparable to the effect on volunteering generated by one's birth place being under enemy

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[14]We confirm that the draft was name-blind by combining the birth certificate data with the veteran data: being named Ante or having another nationalist name does not predict the cohort-specific draft rate; the effect is close to zero and precisely estimated.

siege and that the broader group of other nationalist names also has a significant, albeit smaller effect on volunteering. Finally, we ask whether the effects of being Ante and of having another nationalist name differs for soldiers coming from settlements that are under enemy siege. The interaction-coefficient estimates suggest that being named Ante predicts volunteering particularly strongly in areas that were most exposed to the war for independence. It may be that the nationalist implications of being raised as an Ante are particularly strongly activated under direct threat of war. In settlements under enemy siege, Antes are over 12 percentage points more likely to volunteer than other Croats. This is a large effect considering that the overall volunteering rate was about 12 percent.

Next, we estimate the probability of being killed in action (KIA) and obtain findings fully consistent with the volunteering analysis. Overall, the pattern of volunteering and KIA estimates is consistent with the hypothesis that nationalist names and Ante in particular provide a significant signal about one's nationalistic (patriotic) values as manifested by volunteering in a war of national independence and dying in the war, which suggests higher risk-taking in combat. Name choices made by parents presumably correspond to their political values. Hence, our evidence on volunteering and KIA outcomes can be interpteted as evidence on transmission of nationalistic values through the generations. Nationalistic (patriotic) values linked to WWII history and revealed in name choices made by parents of the soldiers of the WoI matter in the 1991-1995 war.[15]

In summary, we demonstrate that name choices corresponding to war leaders can predict offspring's adult-life behavior in a life-and-death situation—in a war for national independence. The effect of sharing one's first name with the leader of the WWII Croatian state on

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[15]Alternatively, behavior during the WoI may correspond to the war context activating political connotations of names that were assigned by parents independently of their political values. We cannot rule this possibility out even if we find it unlikely based on the literaure on implicit egotism (e.g., Simonsohn, 2011), since we do not observe quasi-random assignment of the name Ante. In response to a referee's suggestion we note that even parents whose sons are born on the feast of St. Anthony can avoid the use of Ante and name their sons Antun or Anto (the other Croatian versions of Anthony). Hence, there is potential selection on parental values into Ante even within children born on the feast of St. Anthony. We do not find Ante to have less of an effect on volunteering for Antes born on the feast of Anthony as opposed to other Antes. Importantly for our interpretation of the data, Antun/Anto have a precisely estimated zero effect on volunteering and on KIA deaths in our data.

volunteering for war service during the 1991-1995 war is comparable to that generated by one's birth place being under enemy siege or occupation. Having such a name also increases the risks of being killed in action by about 50% compared to the average risk level. While the literature on nationalism highlights the self-reinforcing relationship between nationalism and conflict, we document the positive welfare effect that nationalism can have within nations engaged in war towards the provision of the most costly contribution a group can ask for—one's life. Our novel evidence on the signal value that names chosen by parents (and, hence, presumably values inculcated by parents) have for offspring's behavior in a deadly conflict supports the notion that political identity matters in high-stakes decisions and is thus relevant for the literature on political and ethnic identity (Bursztyn et al., 2014; Rico and Jennings, 2016). Since first names can carry a signal about nationalism, they can be used to study national and ethnic conflicts (Rivera, 2008; Masella, 2013; Novta, 2016; Chiang, et al., 2019).

Next, our measurement strategy also allows us to provide novel evidence on the intergenerational transmission of values that are in principle difficult to elicit in surveys. During the War of Independence, most fathers' name choices appear to preserve the pre-war regional structure of nationalism irrespective of the regional exposure to the war. In contrast, fathers who have strong nationalist views according to our measure act in a fashion consistent with the nationalism-transmission trade-off between within-family and society-wide channels suggested by Bisin and Verdier (2001). This supports the notion of cultural purposeful transmission of political values. Our estimates also suggest that memories of WWII atrocities and possibly direct experiences of War of Independence carnage curb the intergenerational transmission of nationalism. This evidence is relevant for the research on parochial altruism, defined as increased altruism towards members of one's group in response to inter-group conflicts (Choi and Bowles, 2007). The literature considers the in-group- and out-group-behavioral response to personal war experiences, but it has yet to consider the transmission of in-group pro-social or out-group potentially hostile preferences across generations. The elevation of parochial altruism induced by direct war experiences (Voors et al., 2012; Bauer et al., 2016) or biases towards co-ethnics driven by conflicts (Shayo and Zussman, 2017) could be made persistent

through intergenerational transmission of values. Our strategy can be employed to test intergenerational versions of questions posed by the parochial altruism literature. For example, are name choices corresponding to war leaders associated with stronger contributions to nation building after the conflict or to persistent biases that sow the seeds of future conflicts? More generally, our evidence is related to the literature studying the choices made by parents on behalf of their children (Akerloff and Kranton, 2000, Algan et al., 2013).

We also find that name choices corresponding to previous war leaders predict not only patriotic behavior in a war for national independence, but also voting behavior in peacetime. Our evidence on the right-wing-voting content of nationalist names provides support for the growing literature (e.g., Fontana, et al., 2016) arguing that the effects of wars on political identity are long-lived and depend on the extent of direct war experience. It also relates our main set of findings to the recent evidence on intergenerational transmission of right-wing attitudes (Avdeenko and Siedler, 2017; Ochsner and Roesel, 2016).

Finally, we provide new evidence on the Croatian War of Independence. In the Croatian case names carried an informative signal, accumulated through history, geography, and ethnic identity, about their owners' political values. This allows us to use name choices as a group-level signal of political preferences. The use of names of Croatian WWII leaders, which was high during WWII but ebbed later, rebounds starting in the 1970s and peaks during the 1991-1995 War of Independence. In WWII concentration-camp locations, the popularity of these names never regains its WWII popularity, not even during the War of Independence. In contrast, the use of nationalist names reaches local WWII levels immediately after Croatian control is re-established in locations that were under extended Serbian siege or occupation during the independence war and in areas with high exposure to combat operations during the war. One view of the Yugoslav wars is that after years of peaceful coexistence, violence erupted unexpectedly (e.g., Bardhan, 2005, p. 169). Our evidence on the nationalistic content of the Ustaše-linked name Ante together with the continuous rise in the popularity of nationalist names during the 1970s and 1980s is perhaps better aligned with the alternative notion that

internal wars stem from accumulation of protracted sentiments and conflicts (Fearon and Laitin, 2003), and that the strength of nationalism in Croatia was increasing for over a decade before the war erupted.

Our measurement approach is applicable to periods of heightened nationalist tensions and to internal or external conflicts where leader's names are notoriously associated with their actions and political beliefs. Similar to our study, one can establish the political-identity content of first names and study the distribution of political values in historical settings by asking whether volunteering for major wars is predicted by first names corresponding to current or past leaders such as kings or emperors. One can use names to track the evolution of political values during post-conflict periods as well.[16] Our approach is widely applicable, feasible in many historical settings thanks to the existence of birth certificate records in most countries, it offers an important way around survey data limitations, and it lends itself naturally to the study of intergenerational transmission of political values, while the majority of the existing literature focuses on cultural and evolutionary transmission routes.

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[16]For instance, if one finds that the use of names corresponding to leaders of Nazi Germany is over-represented among supporters of right-wing parties in post-WWII Germany, one could use accessible name statistics to map the evolution of such values over populations not covered by survey data directly eliciting such values. One could explore the behavioral content and the prevalence of first-name choices corresponding to prominent generals of the US civil war or to differentiate Ukrainian and Russian versions of several first names in Ukraine during its conflict with Russia.

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