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Research Paper

## The last Yugoslavs: Ethnic diversity and national identity

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## ABSTRACT

Nation-building is often proposed as a device for integration in ethnically divided societies. The determinants of national sentiment, however, remain imperfectly understood. This paper analyses the role of interethnic contact in the process of nation formation within multiethnic Yugoslavia, just before its disintegration in 1991. Using a variety of data sources and empirical strategies, I find that interethnic contact stimulated the formation of the Yugoslav nation. I argue that ethnic intermarriage is the key mechanism through which ethnic diversity influenced the adoption of a shared Yugoslav identity. These results illustrate the powerful effect that interethnic contact can have in reducing ethnic division even in a tense ethnic environment on the verge of conflict, like that of Yugoslavia.

## 1. Introduction

Religious and national identity have long been recognized as important dimensions of culture - one of the fundamental sources of comparative development patterns.<sup>1</sup> Economic historians have invested substantial effort into understanding the determinants of religious affiliation (Becker et al., 2020; Cantoni, 2012; Rubin, 2014; Saleh, 2018). They have invested comparatively little effort, however, into understanding the determinants of national identity (Kersting and Wolf, 2021). This paper analyses the role of interethnic contact in the process of nation formation within multiethnic Yugoslavia.

The relationship between ethnic diversity and national sentiment is ambiguous.<sup>2</sup> On the one hand, interethnic contact might lead to the breakdown of social bonds (Putnam, 2007). It might thus hinder the integration of national markets, like in Germany (Wolf, 2009), Austro-Hungary (Schulze and Wolf, 2009; 2012), and Yugoslavia (Chilosi and Nikolić, 2021; Nikolić, 2018). In the extreme case, interethnic contact might even breed hatred and conflict (Becker and Pascali, 2019; Ferrara and Fishback, 2020; Jedwab et al., 2019; Voigtländer and Voth, 2012). On the other hand, psychologists have long recognized that contact with members of another ethnic group can lead to a reduction of prejudice and negative sentiment (Allport, 1954). The effect of interethnic contact might also depend on the relative size of the different groups (Montalvo and Reynal-Querol, 2005), or on the physical proximity between them (Alesina and Zhuravskaya, 2011). Whether intergroup contact is conducive to national integration or to disintegration is therefore an empirical issue.

Yugoslavia emerges as an interesting case to study the relationship between ethnic diversity and national sentiment. The country was extremely heterogeneous. As such, the Yugoslavs frequently described their country as one with two alphabets, three religions, four languages, and five nations. Despite these differences, however, some people felt Yugoslav. Some individuals had a more en-

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<sup>1</sup> Moreover, ethnic and religious diversity might influence the quality of institutions, the incidence of conflict, and economic growth (Alesina and La Ferrara, 2005). For example, Ager and Brückner (2013) document how cultural diversity during the age of mass migration influenced economic growth in the US.

<sup>2</sup> I use the terms “ethnic diversity” and “interethnic contact” synonymously. I also use the terms “national identity”, “national sentiment” and “national integration” synonymously.

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compassing national identity, with a broader sense of “we”.<sup>3</sup> Some members of the previously separate ethnic groups, like Croats or Serbs, saw themselves as belonging to a shared group with a shared Yugoslav identity. Some people felt that way even in 1991, when ethnic nationalism escalated and the country was on the brink of collapse.

While the existing literature has devoted a great deal of effort into understanding how ethnic nationalism has torn Yugoslavia apart, it has devoted relatively little effort into understanding the factors that held the country together.<sup>4</sup> In particular, there is scant empirical research on the determinants of Yugoslav sentiment - the mirror image of ethnic nationalism. This paper fills an important gap in the historiography by documenting the effect that ethnic diversity had on Yugoslav sentiment.

I focus the analysis on the last population census of Yugoslavia, conducted in April 1991, before the start of the war in the autumn of that year. I analyze a sample of 434 Yugoslav municipalities, and measure Yugoslav sentiment by the fraction of people who answered “Yugoslav” to the open-ended nationality question of the census. I measure ethnic diversity by the ethnic fractionalization index, under which many small groups will result in a high value.

Maps in [Fig. 1](#) suggest that ethnically diverse municipalities were associated with a greater share of people that identified themselves as Yugoslav. Basic correlations confirm this. One way to interpret this is that interethnic contact stimulated Yugoslav sentiment. An alternative explanation is that Yugoslavs migrated to ethnically diverse areas that tend to be tolerant. There is no perfect strategy for estimating the causal effect of diversity on Yugoslav sentiment, and assessing which interpretation is correct. My approach is to use several different strategies. Reassuringly, the totality of evidence points in the same direction.

I begin by controlling for socioeconomic factors that influenced Yugoslav sentiment, including migration. I proceed by conducting the analysis at a lower level of data aggregation (settlement-level), obtaining more precise estimates. Finally, I use a plausible source of exogenous variation in ethnic diversity - the border changes between the various states that historically ruled and divided the lands of former Yugoslavia (e.g., Habsburgs and Ottomans).

The plausibility of the instrumental variable (IV) is based on the premise that border changes caused shocks to the ethnic composition of the areas that later formed Yugoslavia. To improve the plausibility of the IV approach, I measure border changes during the premodern and early-modern era (15th to 19th century). It is unlikely that border changes were endogenous to ethnic diversity during the premodern era, given that national identities are modern phenomena that emerged during the 19th century ([Anderson, 1983](#); [Gellner, 1983](#); [Hobsbawm, 1991](#); [Weber, 1976](#)).

After establishing that ethnic diversity positively influenced Yugoslav sentiment, I turn to the task of establishing a channel of causality. The key channel linking ethnic diversity and Yugoslav sentiment is ethnic intermarriage. Ethnic diversity influenced intermarriage, which stimulated Yugoslav sentiment. My interpretation is that Yugoslav identity provided an alternative to forcing a single ethnic category on intermarried individuals and their children.

This paper contributes to nascent literature in economics that analyses the causes of identity. In a seminal paper, [Akerlof and Kranton \(2000\)](#) incorporate identity, a sense of self, into economic analysis. The empirical literature that studies the determinants of national identity follows their lead. Exploiting variation within families, [Kersting and Wolf \(2021\)](#) demonstrate the effectiveness of nation-building policies in 19th-century Germany. Other studies demonstrate that national sentiment can be influenced by government media ([Blouin and Mukand, 2019](#)), education ([Cinnirella and Schueler, 2018](#); [Clots-Figueras and Masella, 2013](#)), language ([Fouka, 2020](#)), state repression ([Dehdari and Gehring, 2022](#)), and shared experiences ([Depetris-Chauvin et al., 2020](#)). This paper contributes by analyzing the role of interethnic contact in the process of nation formation within multiethnic Yugoslavia.

This is not to imply that there are no other papers that analyze the relationship between intergroup contact and national sentiment. [Cáceres-Delpiano et al. \(2021\)](#) and [Bagues and Roth](#) find that interregional contact through military service increased Spanish national sentiment. In particular, a closely related paper to the present one is that of [Bazzi et al. \(2019\)](#). They argue that, in Indonesia, ethnic diversity had a positive impact on national sentiment, which they proxy mainly by a common language. Shared language, however, does not necessarily imply a shared national identity. For example, the majority of Croats and Serbs did not perceive themselves as members of the same nation, despite the shared language (Serbo-Croatian) and similar Slavic origin.<sup>5</sup> Besides the fundamentally different historical context, this paper differs from [Bazzi et al. \(2019\)](#) by measuring national sentiment by self-declared nationality, which is a direct measure of it, unlike common language. The present paper can therefore directly analyze how diversity impacts national sentiment, which includes identifying the intermarriage mechanism.

This paper also contributes to the literature on the economic development and national integration of Yugoslavia ([Chilosi and Nikolić, 2021](#); [Miladinović, 2020](#); [Nikolić, 2018](#)). [Sekulić et al. \(1994\)](#) find that the self-declared Yugoslavs were the urban residents, the young, the better educated, ethnic minorities, and the Communist Party members. My analysis suggests that ethnic diversity is the dominant factor that underlined the formation of the Yugoslav nation. This does not mean that the other factors are irrelevant. They are rather of second-order importance in understanding the formation of Yugoslav sentiment.

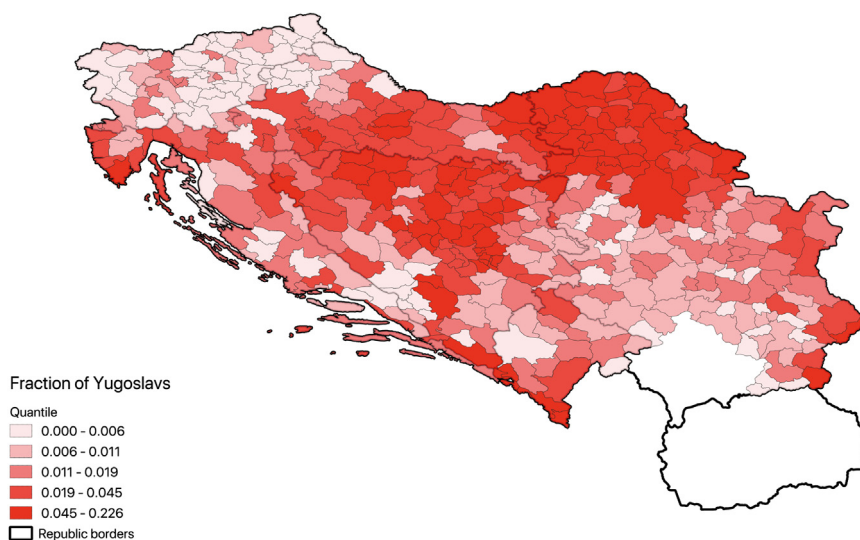
In the remainder of the paper, [Section 2](#) documents the historical background underpinning Yugoslav identity, as well as the used data. [Section 3](#) provides OLS estimates, alongside robustness checks. [Section 4](#) documents the IV estimates and discusses the

<sup>3</sup> Yugoslav identity was multicultural and pan-national, contrasting the mutually antagonistic identities of the ethnicities that formed the country ([Hodson et al., 1994](#); [Sekulić et al., 1994](#)). It provided a “broader” national identity category for those who rejected the “narrower” ethnic identity category ([Hodson et al., 1994](#); [Ramet, 1992](#); [Sekulić et al., 1994](#); [Wachtel, 1998](#)). The distinction between the Yugoslav and Slovene identities, for example, was comparatively similar to the current distinction between the British and English identities.

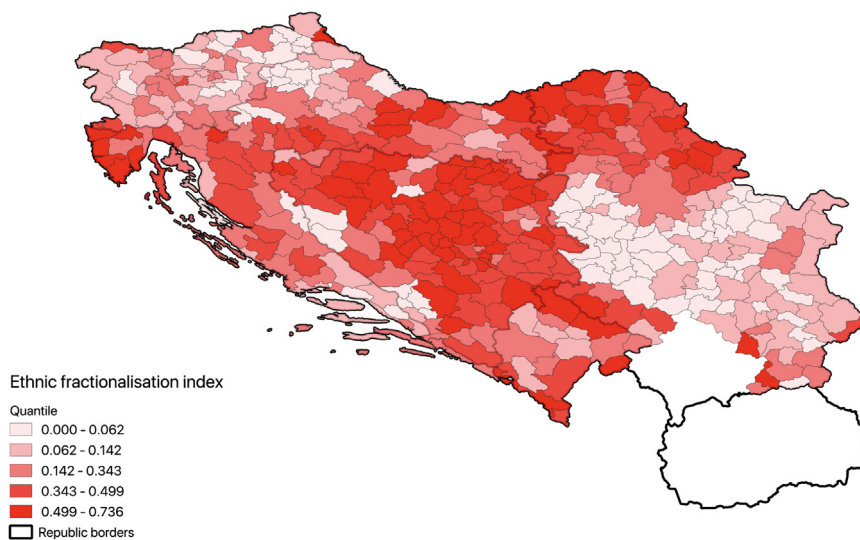
<sup>4</sup> See [Jović \(2009\)](#) for a literature survey.

<sup>5</sup> A similar parallel can be drawn to the United Kingdom where, despite the shared language, the Scots and the English, for example, do not necessarily perceive themselves as members of the same nation.

## (a) Population share of self-declared Yugoslavs



## (b) Ethnic fractionalization index



**Fig. 1.** Population share of self-declared Yugoslavs and ethnic fractionalization in Yugoslav municipalities, 1991. *Notes:* The correlation coefficient between the share of Yugoslavs and ethnic fractionalization is 0.56. I analyze a sample of 433 Yugoslav municipalities, which form 87 percent of the total amount of municipalities. I exclude Macedonia and Kosovo from the analysis due to data issues. Kosovar Albanians boycotted the 1991 population census due to Serbia's dissolution of Kosovo's autonomy, while the 1991 Macedonian census was uncompleted due to ethnic tensions between ethnic Macedonians and Albanians. The data and the data sources are explained later in the text.

plausibility of historical border changes as the instrument. Section 5 presents evidence that intermarriage is the key channel connecting ethnic diversity and Yugoslav identification, while the final Section 6 provides a wider discussion and conclusion.

## 2. Historical background, conceptual framework, and data

I begin the section by outlining the nation-building policies during the postwar period and the associated challenges. I proceed by outlining a conceptual framework for the relationship between ethnic diversity and national integration. I finish by outlining the data and the data issues.

### 2.1. Historical background: Yugoslav identity

The Yugoslav national idea emerged among the South Slavs under the Habsburg rule during the mid-19th century. It was based on the notion that the South Slavs constitute a single nation. The Yugoslav national idea emerged simultaneously with the rise of ethnic identities in South-East Europe - for example, Croatian or Serbian.

In the aftermath of WWI and the collapse of the Habsburg Empire, the South Slavs formed the Kingdom of Yugoslavia. The interwar attempts to force the creation of a Yugoslav nation were counterproductive - they were perceived by the non-Serbs as a cover for creating Greater Serbia (Banac, 1984). Following WWII, Tito and the communists seized power. By defeating the fascists, the communists gained widespread support in the population that otherwise had little interest in socialist ideology (Connor, 1984).

Given the negative experience of the interwar period and the fear of a backlash, the socialists did not suppress ethnic cultures, nor force Yugoslav identity. They instead allowed ethnic identities to exist, as long as they were connected by the pro-Yugoslav sentiment (Wachtel, 1998). This nation-building policy was expressed in the “brotherhood and unity” maxim.

The “brotherhood” of Yugoslavs consisted of reorganizing the country into a federation. Each federal republic (Bosnia, Croatia, Macedonia, Montenegro, Serbia, and Slovenia) approximated the areas inhabited by the major Slavic groups. The aim was to heal ethnic divisions stemming from WWII and the interwar period by granting autonomy and equal rights to the ethnic groups that composed the country (Banac, 1984).

The “unity” of Yugoslavs consisted of two themes that promoted national sentiment. The first theme was the antifascist struggle during WWII - “the founding myth” of socialist Yugoslavia (Wachtel, 1998). It took a central place in the study of history in schools, where trips to important sites of anti-fascist struggle were mandatory. Moreover, the state erected monuments dedicated to WWII battles and fallen anti-fascist fighters across the country, sometimes on an epic scale. The state also commissioned war movies about the Yugoslav partisans, which were hugely popular. Irrespective of the exact form of propaganda, the goal was to inculcate a sense of shared experience and history. By emphasizing the interethnic nature of the anti-fascist struggle, the socialists wanted to mitigate ethnic divisions and stimulate Yugoslav sentiment.

The concept of worker self-management, introduced in 1950, was the second theme that promoted national sentiment. Wachtel (1998) argues that self-management was presented as a sort of expulsion from paradise myth. It explained how the Yugoslavs would work, on their own, after the Tito-Stalin split in 1948. The communists believed that socialist features were the source of Yugoslav identity, rather than ethnic features (Jović, 2009). Between 1950 and the late 1970s, when Yugoslavia was rapidly converging towards Western income levels, the system of self-management was promoted as a source of national pride and international prestige (Calic, 2019).

Besides these themes, the communists were aware that ethnic diversity could stimulate Yugoslav sentiment. They formed Youth Labor Brigades, which were interethnic, and designed to increase intergroup exposure. They involved voluntary labor in implementing various projects, like the “Brotherhood and Unity” motorway that connected Zagreb and Belgrade. Upon the completion of such work, socialist propaganda emphasized the creation of a better future through joint effort (Nametak, 2014).

Intergroup exposure was also promoted through obligatory army service (Dimitrijević, 2001). Conscripts generally served in a region different from their residence. Besides instilling loyalty to the common state, the goal was to promote Yugoslav sentiment through interethnic contact.

Ethnic identities, however, proved far more attractive than Yugoslav identity. In Croatia, both economic and cultural issues fueled the resurgent ethnic sentiment during the 1960s (Jakovina, 2012). The Croatian national movement culminated in 1971, with calls for greater national autonomy.<sup>6</sup> Tito sacked the political leadership of Croatia, but *de facto* capitulated to their demands. With the 1974 constitutional changes, political power was decisively shifted in favor of regional capitals. A collective presidency was established along with the right of any republic to veto a decision by the presidency. The latter proved a major device in reducing the power of the federal government and its ability to resist centrifugal tendencies.

The constitutional changes had split the League of Communists of Yugoslavia (LCY) along regional lines, and the country became highly decentralized: educational policies, for example, became region-specific, while they were centralized before. Each region started teaching its history and culture in schools, which undermined the creation of a shared identity (Wachtel, 1998). Moreover, each region developed its broadcast television, under the control of the local political elite. This mitigated the interregional diffusion of information, decreasing a sense of shared community. Nation-building policies, therefore, became less potent and largely ineffectual (Wachtel, 1998).

<sup>6</sup> Appendix A.6 analyses Croatian nationalism further.

The communist elite hoped that economic development would create sufficient support for a shared community (Jović, 2009). Increased urbanization, reduced isolation of rural areas, higher educational attainment, and improved income, were expected to reduce the political strength of ethnic nationalism, stimulating Yugoslav sentiment.

Indeed, the share of the population that declared themselves as Yugoslavs increased over time in population censuses. In 1971, 2% of the population declared themselves as Yugoslavs.<sup>7</sup> By the 1981 census, the percentage of Yugoslavs increased to 5.4. These numbers are significant: the 1981 population share of Yugoslavs was higher than the share of Montenegrins (2.6%), and a bit lower than the share of Macedonians (6%).

The increase in Yugoslav sentiment became highly politicized. The republican leaderships perceived it as a deliberate attempt by the federal authorities, or other republics, to shift the popular loyalties of their citizens and erode their power base (Sekulić et al., 1994). Consequently, they opposed any official attempt to foster the emergence of a Yugoslav identity.

During the late 1980s, the foundations of Yugoslav identity started unraveling. The economic stagnation of the 1980s undermined self-management as a legitimating device of socialism. System failure, however, bred not only distrust towards existing institutions but also provided political opportunities for ambitious individuals to link the distress of the people with ethnic differences and historical resentment.

Namely, economic dissatisfaction fueled the rise to power of ethnic nationalists, which challenged the socialist narrative about WWII. Instead of interpreting it as a joint interethnic struggle against the common, fascist enemy, they perceived WWII as a conflict fought along ethnic lines, where each ethnic group attempted to annihilate the other one (Calić, 2019).

In the extreme, many ethnic nationalists began equating ethnic groups with WWII fascist movements (MacDonald, 2002). From this point onward, it took a small step to claim, for example, that Croats are intrinsically genocidal. By extension, Croatian independence from Yugoslavia would lead to the resurrection of the WWII *Ustaše* state, which would commit yet another genocide against the Serbs - propaganda actively promoted by the Serbian state TV and mass media, and supported by the regime of Slobodan Milošević (MacDonald, 2002).<sup>8</sup>

The narrative about WWII thus no longer served as a device for national integration, but rather as a device for national disintegration. In retrospect, it served to mobilize the ethnic groups for the coming war. Given the erosion of political power from the center to the regions, the federal government was unable to stop these tendencies.

Therefore, the stage for Yugoslavia's collapse was set by economic stagnation, growing ethnic nationalism, a weak central government, the political fragmentation of the LCY, and the eroded legitimacy and subversion of the building blocks of Yugoslav identity. In this context, the population share of Yugoslavs in the 1991 census decreased to about 3 percent. These were the last Yugoslavs that maintained the belief in a common nation.

## 2.2. Conceptual framework

There are several reasons why ethnic diversity could have positively influenced Yugoslav sentiment.<sup>9</sup> The first reason is that contact with members of another ethnic group can lead to a reduction of prejudice and negative sentiment. Allport (1954) provided the most influential exposition of the contact theory. He claimed that prejudice and hatred are a result of generalizations made about members of another group based on incomplete or mistaken information. Prejudice can thus decline as one learns more about others.

The second reason why ethnic diversity can influence national sentiment is that it can decrease the cost of identity switching. Caselli and Coleman (2013) argue that ethnic identities can be switched - they are endogenous. Changing an identity, however, entails a cost, like ostracism from an ethnic-based community. A higher ethnic diversity might decrease the cost of identity switching. It reduces the number of individuals that could punish an individual for "betraying" her ethnic roots, stimulating national sentiment.

Finally, ethnic diversity can influence national integration by stimulating ethnic intermarriage. Sociologists have long recognized that intermarriage is of central importance in interethnic relations. Intermarriage weakens the delineation of ethnic boundaries, and thereby decreases the salience of ethnic identities (Allport, 1954; Waters, 1990). Moreover, intermarried individuals, and especially their children, are less likely to identify with a single ethnicity (Waters, 1990). Both reasons suggest that identification with a broader nationality might provide an alternative to forcing a single ethnic choice on intermarried individuals and their children.

## 2.3. Data

The 1991 population census is the main data source I use. This census was the most comprehensive one, offering a wide range of socioeconomic indicators at a disaggregated level (Mrden, 2002). Moreover, it is of historical interest to examine some of the factors that held the country together before its imminent collapse. I exclude Macedonia and Kosovo from the analysis because of data issues. Kosovar Albanians boycotted the 1991 census due to Serbia's dissolution of Kosovo's autonomy, while the 1991 Macedonian census was uncompleted due to ethnic tensions between ethnic Macedonians and Albanians. Municipalities in these regions formed 10 percent

<sup>7</sup> The category Yugoslav first appeared in the 1961 census. However, it was a category primarily reserved for the Bosnian Muslims (Bosniaks) who were not recognized as a nationality at that time. The Bosniaks gained national recognition by 1971, and, despite the protest from ethnic nationalists, the Yugoslav category was maintained to allow the citizens of Yugoslavia to express a sense of Yugoslav identity (Mrden, 2002).

<sup>8</sup> Slobodan Milošević, the president of Serbia (1989–1997) and Federal Republic of Yugoslavia (1997–2000), died in jail (2006) while tried for war crimes by the International Criminal Tribunal for the former Yugoslavia.

<sup>9</sup> Appendix A.3 provides a formal model to describe which individuals might adopt a Yugoslav identity.

**Table 1**  
Descriptive statistics in socialist Yugoslavia, 1991 municipal data.

	Observations (1)	Mean (2)	Standard deviation (3)	Minimum (4)	Maximum (5)
<i>Main outcome variable</i>					
Fraction of Yugoslavs	434	0.027	0.034	0.000	0.226
<i>Main explanatory variables</i>					
Ethnic fractionalization (index)	434	0.276	0.210	0.004	0.736
Border changes, 1421–1816	434	1.592	0.920	0.000	5.000
<i>Main control variables</i>					
Output p.c.	434	8.611	5.527	0.908	58.905
Public goods exp. p.c.	434	1.458	4.891	0.055	98.389
Population density	434	125.997	340.657	6.359	5270.200
Avg. years of schooling	434	7.811	1.174	5.237	11.643
Social sector labor (population fraction)	434	0.596	0.220	0.064	1.000
Youth labor actions (population fraction)	434	0.050	0.084	0.000	0.725
WWII partisan veterans (population fraction)	434	0.006	0.005	0.001	0.056
Fascist terror (population fraction)	434	0.031	0.040	0.000	0.450
1980s' generation (population fraction)	434	0.225	0.026	0.126	0.299
Ethnic polarization (index)	434	0.455	0.315	0.008	0.985
Minorities (population fraction)	434	0.295	0.300	0.005	1.000
Muslims (population fraction)	434	0.125	0.228	0.000	0.975
Duration of Habsburg rule (years)	434	160.546	173.357	0.000	497.000
Agricultural (wheat) suitability	434	2684.629	229.498	1792.667	3022.143
Terrain roughness (index)	434	20.632	12.223	1.706	88.696
Longitude	434	18.109	2.356	13.625	22.823
Latitude	434	44.597	1.106	42.000	46.716

Notes: The monetary variables are expressed in Yugoslav Dinars (at current prices, in millions). The data and the data sources are described in detail in [Appendix A.1](#).

of the total number of Yugoslav municipalities.<sup>10</sup> [Table 1](#) provides descriptive statistics of the main data, while [Appendix A.1](#) describes all the data used in the paper in detail. The data and the replication files can be accessed online at [Kukić \(2022\)](#).

The main dependent variable of interest is the fraction of the population that answered “Yugoslav” to the open-ended nationality question of the census. The variable can be interpreted as capturing those individuals who felt primarily Yugoslav, or who felt more Yugoslav than, say, Serbian. The population share of Yugoslavs ranged from 0.62% in Slovenia to 5.54% in Bosnia. There was an even greater variation in the Yugoslav population share within each region (implied by [Fig. 1b](#)).

The main independent variable I use is ethnic diversity, measured by the ethnic fractionalization index,  $e$ :

$$e = 1 - \sum_{i=1}^M s_i^2 \quad (1)$$

where  $s$  is the percentage share of ethnicity in the population of municipality  $i$ . The index measures the probability that two randomly drawn individuals from a population belong to two different ethnic groups. I exclude the persons that declared themselves as Yugoslav from the index. Otherwise, the relationship between ethnic diversity and Yugoslav sentiment might be mechanical (self-declared Yugoslavs would appear in both the dependent and independent variable).

#### 2.4. Data issues

The idea of a Yugoslav nation, or “Yugoslavism”, sought to connect the ethnic cultures in a shared community. By that, it rejected the ethnic division and nationalism that characterized Yugoslavia in 1991. Saying “I am Yugoslav” was hence a strong statement given the tense environment, and probably a stronger statement than saying something like “I am French”. Nevertheless, several issues cast doubt on the proposition that Yugoslav self-identification is a good measure of national sentiment.

The first issue is whether the Yugoslav category in the population census was a residual category. The Yugoslav category might have been selected for reasons unrelated to national identity, including ignorance concerning its connotations, or lack of choice.

There are several reasons why this is highly unlikely. First, the Yugoslav population census was egalitarian and inclusive ([Mrđen, 2002](#)). The communists believed that a socialist state should not deny nations, like “bourgeoisie” states do ([Jović, 2009](#)). As such, the respondents could report any group identity they wanted, and the census takers were obliged to record the answers. Second, schooling is positively correlated with Yugoslav identification across some specifications, implying that self-declared Yugoslavs were

<sup>10</sup> When I analyze other periods, I also exclude Kosovo and Macedonia to make the results comparable to the baseline OLS and IV estimates derived from the 1991 population census.

informed of the connotations of Yugoslav identity. Finally, the census allowed the respondents to choose the “nationally undeclared” category. This category was explicitly designed for persons who did not fit into any national group, perhaps serving as a more obvious choice for individuals who wished to denote their mixed ethnic background, without choosing a specific identity category, alongside the associated connotations.

The second issue concerning the dependent variable is that the Yugoslav identity measure is a binary category. It is possible that an individual held several identities, which the census does not record. For example, it might be that an individual felt primarily Slovenian, but also partially Yugoslav. As such, there were certainly individuals who held some form of Yugoslav identity but did not self-identify as “Yugoslav” in the census, for whatever reason.

Such cases are problematic conceptually but are unlikely to be problematic empirically. A classical measurement error in the dependent variable will lead to a loss of precision, but will not bias the ethnic diversity estimate. Under binary variables, however, a one-sided measurement error is likely, which can bias the estimate towards zero (Card, 1996; Hyslop and Imbens, 2001). Namely, if there were individuals who held Yugoslav identity, but did not declare themselves as Yugoslav in the census (“undeclared Yugoslavs”), this implies that I am underestimating the extent of Yugoslav sentiment. By extension, I am also underestimating the impact of ethnic diversity on Yugoslav sentiment, as my estimation fails to record the increase in national sentiment caused by diversity among such individuals. The relationship between ethnic diversity and Yugoslav sentiment is thus stronger than what my estimations suggest, reinforcing the results.

I now provide quantitative evidence that Yugoslav self-identification is a good measure of national sentiment. I use individual-level data from a survey conducted in 1990 across the country. In columns 1–3 of Table 2, I include as dependent variables some of the answers to the survey question “What does the term Yugoslavism mean to you personally?”. The self-identified Yugoslavs in panel A were more likely to answer that it signified nation-formation to them (column 1), a supranational identity (column 2), and a rejection of ethnic division (column 3). Moreover, the self-identified Yugoslavs felt more attached to the Yugoslav community (column 5), and felt less attached to the local (column 3) and regional (column 4) communities in which they resided.

The attitudes of the ethnic majority and minority members in panels B and C are internally consistent with those of self-declared Yugoslavs. Both ethnic groups could not relate to Yugoslav identity. The relationships in columns 1–3 are negative, or if they are positive, they are insignificant. Instead, ethnic majority members felt attached to the region in which they resided (column 5), while the minority members felt attached to the sub-regional unit in which they lived (column 4).

The quantitative evidence thus firmly points to the conclusion that Yugoslav identification implied a sense of shared identity. It was not residual identification devoid of meaning. Moreover, the quantitative evidence suggests that the majority of individuals did not hold multiple allegiances at the beginning of 1990. Ethnic groups felt attached to the regional or the sub-regional community, but not the national one. Ultimately, holding multiple identities became increasingly incompatible as Yugoslavia was approaching its collapse, and only a small fraction of the population felt Yugoslav. Nevertheless, given the tense environment, those who felt Yugoslav probably felt that way strongly.

Table 3 examines the socioeconomic characteristics of the self-declared Yugoslavs. It uses data from a different survey, conducted by a cross-country consortium of social sciences institutes in the winter of 1989/90.<sup>11</sup> Column 1 implies that females coming from either ethnically mixed marriage or parentage were more likely to adopt a Yugoslav identity. There is also evidence that self-declared Yugoslavs were more likely to come from urban areas and to be less religious, although the associated coefficients on urban status and religiosity are typically insignificant. The other controls are also statistically insignificant, including age, education, white-collar occupation, and Communist Party membership. Therefore, besides gender, the individual-level data indicates that the most salient characteristic of the self-declared Yugoslavs is their ethnically-mixed family background.

### 3. OLS estimates

This section provides evidence about the relationship between ethnic diversity and national sentiment. I use OLS regressions and conduct robustness checks that lend some credibility to the uncovered correlations.

#### 3.1. Baseline OLS estimates

The linear regressions are of the following form:

$$y_i = \alpha + \beta e_i + \gamma X_i + \epsilon_i \quad (2)$$

where  $y_i$  is the fraction of Yugoslavs in the population of municipality  $i$ ,  $e_i$  is ethnic fractionalization,  $X_i$  is a set of controls, and  $\epsilon_i$  is a random error term. The coefficient of interest is  $\beta$ , the effect of ethnic diversity on Yugoslav identity.

Table 4 reports the OLS regressions of the fraction of Yugoslavs against ethnic fractionalization for a variety of specifications. Column 1 indicates that there is a strong positive correlation between ethnic fractionalization and Yugoslav sentiment. The coefficient is economically substantial. It implies that moving from zero ethnic diversity to the sample mean of 0.28 is associated with an increase in the fraction of Yugoslavs by 2.5 percentage points ( $0.09 \times 0.28$ ), relative to the mean of 0.027. The standard errors are robust and,

<sup>11</sup> This survey is much larger and more comprehensive than the previous survey used in Table 2. Appendix A.1 contains a map showing the geographical distribution of the 1989/90 survey respondents.

**Table 2**  
The meaning of Yugoslav identity, 1990 survey data, Yugoslavia.

	(1)	(2)	(3)	(4)	(5)	(6)
	The meaning of Yugoslavism			Sense of belonging (1–5 scale)		
	Nation-formation	Supra-national identity	Rejection of division	Sub-region	Region	Yugoslavia
<i>Panel A estimation</i>						
Self-identified Yugoslavs	0.6013*** (0.151)	0.5958*** (0.077)	0.4327** (0.180)	-0.7164*** (0.126)	-0.9082** (0.196)	0.4399** (0.160)
Gender	Yes	Yes	Yes	Yes	Yes	Yes
Age	Yes	Yes	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes	Yes	Yes
Occupation	Yes	Yes	Yes	Yes	Yes	Yes
Region effects	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R-squared	0.0680	0.0648	0.0206	0.0088	0.0130	0.0494
<i>Panel B estimation</i>						
Ethnic majority members	-0.5443 (0.213)	-0.4414*** -0.096	-0.2408 (0.199)	0.0997 (0.082)	0.4643** (0.075)	-0.2831 (0.192)
Gender	Yes	Yes	Yes	Yes	Yes	Yes
Age	Yes	Yes	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes	Yes	Yes
Occupation	Yes	Yes	Yes	Yes	Yes	Yes
Region effects	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R-squared	0.0709	0.0648	0.0100	0.0056	0.0114	0.0497
<i>Panel C estimation</i>						
Ethnic minority members	0.2829 (0.217)	0.1414 (0.197)	0.0687 (0.147)	0.1841** (0.089)	-0.1542 (0.093)	0.148 (0.256)
Gender	Yes	Yes	Yes	Yes	Yes	Yes
Age	Yes	Yes	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes	Yes	Yes
Occupation	Yes	Yes	Yes	Yes	Yes	Yes
Region effects	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R-squared	0.0654	0.0608	0.0184	0.0060	0.0078	0.0486
Observations	4,211	4,156	4,217	4,219	4,220	4,220

*Notes:* The unit of observation is an individual. The number of observations varies due to non-replies. Coefficients from the first three columns are derived from a logit estimation, while the coefficients from the last three columns are derived from an ordered logit estimation. The main independent variables of interest are self-declared Yugoslavs in panel A, region-specific ethnic majority members in panel B (for example, Croats in Croatia), and region-specific ethnic minority members in panel C (for example, Serbs in Croatia). Education includes five categories, and occupation includes nine categories. Columns 1–3 include a subset of answers to the question “What does the term Yugoslavism mean to you personally?”. Answer categories are: “Only citizenship”; “Formation of a new nation” (column 1); “Supra-national identity (higher form of nationality)” (column 2); “Rejection of ethnic division” (column 3); “A way to show similarity to other nationalities and ethnicities”; “Expression of patriotism, attachment to the system”; “Doesn’t hold meaning to me”; “I don’t know”. The respondents could choose only one answer to that question. Dependent variables in columns 4–6 are answers to the question “How important is your sense of belonging to these entities?”. Answer categories are: 1 = Unimportant; 2 = A little important; 3 = Average important; 4 = Quite important; 5 = Very important. Data comes from a 1990 survey on the attitudes of Yugoslav citizens toward the economic, social, and political developments in Yugoslavia published by Baćević (1991). Robust standard errors clustered at regional-level in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

throughout most of the paper, clustered at regional-level, which allows the error terms to be correlated within each region.<sup>12</sup> To correct for the small number of clusters (five regions), I use the wild bootstrap procedure suggested by Cameron et al. (2008).

Columns 2–14 add covariates that might have impacted Yugoslav identification. I add the covariates sequentially to assess the stability of the coefficient on ethnic diversity. If the coefficient on ethnic diversity is unstable under different specifications, this indicates the presence of multicollinearity and/or the omitted variable bias in an informal manner.<sup>13</sup>

Social scientists argue that the formation of nation-states is historically associated with modernization and economic development (Anderson, 1983; Gellner, 1983; Hobsbawm, 1991; Weber, 1976). For that matter, the communist elite hoped that economic development would create support for a shared Yugoslav community (Section 2.1). Column 2 adds output per capita, column 3 adds population density as a proxy for the urbanization rate, and column 4 adds average years of schooling.

<sup>12</sup> I typically cluster standard errors at municipal-level if I analyze a lower level of data aggregation (settlement or individual level) - see notes to each estimation table.

<sup>13</sup> Appendix A.7 explores more formally the possibility of multicollinearity.



**Table 3**

The socioeconomic characteristics of Yugoslavs, 1989/90 survey data, Yugoslavia, dependent variable: self-declared Yugoslav.

	(1)
Ethnically mixed parentage	0.7926*** (0.070)
Ethnically mixed marriage	0.8114*** (0.092)
Female respondent	0.0975** (0.050)
Age of respondent	-0.0010 (0.002)
Years of schooling of respondent	-0.0068 (0.012)
Migrant	-0.0272 (0.091)
Communist Party member	0.1310 (0.086)
White-collar occupation	-0.1309 (0.097)
<i>Settlement in which respondent lives, of which:</i>	
- Village (reference category)	
- Village centre	0.1796 (0.133)
- Large town	0.1885 (0.129)
- Regional centre	0.3468** (0.162)
- Supra-regional centre	0.3181* (0.169)
- Republic capital	0.1158 (0.239)
<i>"How religious are you?"</i>	
- Not religious, opposed (reference category)	
- Believer, all true	-0.4386 (0.311)
- Religious, not all true	-0.1429 (0.219)
- Not clear if all true	0.1945 (0.189)
- Indifferent	0.1177 (0.151)
- Not religious, unopposed	0.3015** (0.148)
Religion (5 categories)	Yes
Marital status (5 categories)	Yes
Municipal effects	Yes
Number of municipalities	27
Observations	9624
Pseudo R-squared	0.2902

*Notes:* The unit of observation is an individual. Coefficients are derived from a probit estimation. The individual-level data comes from a survey conducted by a consortium of social science institutes across the country in the winter of 1989/1990, taken from [Kunovich and Hodson \(2002\)](#). The survey data reports the residency of the respondent only at municipal-level. Robust standard errors are thus clustered at municipal-level, and reported in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Symbolic representations of a new state, rituals of history, and images of shared destiny are important elements of national identity ([Anderson, 1983](#); [Gellner, 1983](#); [Hobsbawm, 1991](#); [Weber, 1976](#)). One of the symbolic representations of socialist Yugoslavia was self-management. Column 5 includes the fraction of labor that was employed in labor-managed firms, or in the so-called "social sector".

Youth labor brigades were an important tool in the development of socialist identity. Two million Yugoslavs participated in these brigades in total, although mostly in the narrow time frame between the late 1940s and the early 1950s ([Nametak, 2014](#)). Column 6 includes the fraction of the population engaged in youth labor actions.

[Connor \(1984\)](#) argues that the anti-fascist struggle during WWII inspired a sense of belonging to Yugoslavia. Column 7 includes the population share of WWII partisan veterans to control for anti-fascism and the cultural transmission of its memory in the style

**Table 4**  
OLS estimates, 1991 municipal data, Yugoslavia, dependent variable: fraction of Yugoslavs.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Ethnic fractionalization	0.0913** (0.012)	0.0914** (0.012)	0.0892** (0.014)	0.0887** (0.013)	0.0884** (0.012)	0.0911** (0.012)	0.0908** (0.011)	0.0906** (0.013)	0.0920** (0.012)	0.0912** (0.012)	0.0956*** (0.011)	0.0939** (0.017)	0.0885** (0.013)	0.0964** (0.018)	0.0794** (0.013)
Output p.c.		0.0002 (0.001)													-0.0001 (0.000)
Population density			0.0000 (0.000)												0.0000 (0.000)
Avg. years of schooling				0.0037 (0.006)											0.0153** (0.003)
Social sector labor					0.0143 (0.018)										-0.0057 (0.008)
Youth labor actions						0.0097 (0.016)									-0.0195 (0.010)
WWII partisan veterans							0.5712 (0.491)								0.3418 (0.612)
Monuments to anti-fascism								0.0059 (0.004)							-0.0033 (0.003)
Fascist terror									0.0359 (0.067)						0.0518 (0.038)
Public goods exp. p.c.										0.0001 (0.000)					-0.0011 (0.000)
Federal aid											-0.0114 (0.006)				-0.0043 (0.002)
1980's generation												-0.0595 (0.149)			-0.1406 (0.140)
Army presence													0.0144* (0.006)		0.0069* (0.001)
Regions														Yes	Yes
Observations	434	434	434	434	434	434	434	434	434	434	434	434	434	434	434
R-squared	0.319	0.319	0.343	0.335	0.327	0.319	0.325	0.325	0.320	0.319	0.346	0.320	0.355	0.381	0.555

Notes: The unit of observation is a municipality. Robust standard errors clustered at regional-level in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

of [Bisin and Verdier \(2001\)](#). Additionally, column 8 controls for monuments to anti-fascism, which contains sites that were officially considered of high importance in defeating the fascists during WWII. Finally, column 9 includes the population share of individuals exposed to fascist terror during WWII (survivors of concentration camps, forced labor, jails, and war captivity).

The provision of public goods is a major legitimating tool of states, stimulating national unity ([Weber, 1976](#)). Column 10 adds expenditure on public goods per capita, which was locally funded and provided. Column 11 controls whether a municipality received federal aid.

[Ramet \(1992\)](#) argues that Yugoslav sentiment during the late 1970s and the 1980s was promoted by the emergence of a strong pan-Yugoslav rock scene oriented toward the youth. Column 12 includes the fraction of the population that was young during the early 1980s when the rock scene was vibrant.

[Burg and Berbaum \(1989\)](#) argue that Yugoslav identification signified regime support. The Yugoslav army, as the largest beneficiary of federal expenditure, had a vested interest in the survival of Yugoslavia. It strongly promoted loyalty to Yugoslavia during the obligatory army service ([Dimitrijević, 2001](#)). Column 13 controls for army presence - a dummy variable accounting for sites of battalions and army facilities.

[Appendix A.5](#) controls for the population fraction of the Communist Party members to test further the factor of regime support. I restrict the analysis to Croatia - I was not able to find the membership records of the other regions in the archives. Conditional on ethnic diversity, there is no evidence that the communists were more likely to feel Yugoslav.

Finally, column 14 includes region effects to control for region-specific unobservables. Such unobservables could include educational policies and mass media, both of which were region-specific since 1974.

Throughout the specifications, the coefficient of ethnic fractionalization remains highly stable. Column 15 includes jointly all the controls. Given the inclusion of region effects, column 15 specification exploits the within-regional variation in Yugoslav identification. The analysis is hence not hampered by regional institutional heterogeneity, which could otherwise make it difficult to disentangle the effect of ethnic diversity from institutions.<sup>14</sup>

The coefficient on ethnic fractionalization in column 15 (0.079) is similar to that in column 1 (0.092). This is reassuring, as it indicates, informally, that the omitted variable bias is not of serious concern. Nevertheless, I address formally the issue of confounders later in the text.

### 3.2. Ethnic polarization

I now experiment with a different measure of interethnic contact. The ethnic polarization index is frequently used in the development literature ([Alesina and La Ferrara, 2005](#)).<sup>15</sup> This index measures how far a population is from a bimodal distribution. The ethnic fractionalization and ethnic polarization indexes are closely related, but not perfectly ([Montalvo and Reynal-Querol, 2005](#)). Many small groups of similar size will result in a high value of the ethnic fractionalization index, while a few large groups will result in a high value of the ethnic polarization index.

These differences are subtle but important. [Montalvo and Reynal-Querol \(2005\)](#) argue that divisions along a few large groups (ethnic polarization) affect conflict, rather than divisions along many small groups (ethnic fractionalization). The corollary of this finding is that ethnically polarized communities should have a weaker belief in a shared multiethnic community than ethnically fractionalized communities.

[Table 5](#) demonstrates that this is indeed the case. In column 1, I first reprint the effect of ethnic diversity from [Table 4](#) for ease of comparison. In column 2, I replace ethnic fractionalization with the ethnic polarization index of [Montalvo and Reynal-Querol \(2005\)](#). The coefficient on ethnic polarization is much weaker than the coefficient on ethnic fractionalization. In column 3, I include jointly the ethnic fractionalization and polarization indexes. Now, the coefficient on ethnic polarization turns negative, while the coefficient on ethnic fractionalization remains positive, but its size increases by about two times.

These findings imply two things. First, conditional on ethnic fractionalization, ethnically polarized communities reinforced the salience of ethnic identities, decreasing Yugoslav sentiment. Second, if ethnic polarization is omitted, the size of the coefficient on ethnic fractionalization provides a lower bound estimate.

### 3.3. Omitted variable bias, measurement issues, and endogenous sorting

There are three reasons why the uncovered correlation between ethnic diversity and Yugoslav sentiment is not necessarily causal. First, although I control for a range of observable factors, there are unobservables correlated to both diversity and Yugoslav identification that positively bias the estimates. I use the approach of [Oster \(2019\)](#) in [Appendix A.10](#) to assess the extent of the omitted variable bias. I find that selection of unobservables would have to be 1.6 times greater than the selection of observables to overturn the results. It is thus highly unlikely that my results suffer from a serious form of an omitted variable bias.

Second, if the ethnic fractionalization index is noisy, and does not correspond well to the intensity of interethnic contact, then the OLS estimates are biased towards zero. Namely, the ethnic fractionalization index underestimates the impact of ethnic diversity if municipalities were segregated - for example, if ethnic minority members were sorted into specific villages, without contact with

<sup>14</sup> [Appendix A.9](#) analyses the effect of ethnic diversity for each region separately.

<sup>15</sup> [Appendix A.8](#) documents the relationship between religious diversity and national sentiment.

**Table 5**

OLS estimates with ethnic polarization, 1991 municipal data, Yugoslavia, dependent variable: fraction of Yugoslavs.

	(1)	(2)	(3)
Ethnic fractionalization	0.0794** (0.013)		0.1577* (0.030)
Ethnic polarization		0.0461** (0.011)	-0.0563** (0.026)
Municipality controls	Yes	Yes	Yes
Observations	434	434	434
R-squared	0.555	0.511	0.572

*Notes:* The unit of observation is a municipality. Municipal controls are output p.c., population density, average years of schooling, fraction of social sector employment, population fraction of youth labor actions, population fraction of WWII partisan veterans, sites containing monuments to anti-fascism, population fraction of individuals exposed to WWII fascist terror, expenditure on public goods p.c., federal aid, population percentage of the early 1980's generation, and sites containing army presence. These controls are identical to those in column 15 of [Table 4](#). The data and the data sources are described in detail in [Appendix A.1](#). Robust standard errors clustered at regional-level in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 6**

OLS estimates with settlement data (1991), Croatia, dependent variable: fraction of Yugoslavs.

	Municipal-level		Settlement-level	
	(1)	(2)	(3)	(4)
Ethnic fractionalization	0.0579*** (0.007)	0.0814*** (0.024)	0.1201*** (0.038)	0.1334** (0.054)
Municipal effects	No	No	No	Yes
Settlement controls	No	No	Yes	Yes
Number of municipalities	102	102	102	102
Observations	102	6,295	6,290	6,290
R-squared	0.503	0.027	0.048	0.091

*Notes:* The analysis is restricted to Croatia due to data availability issues. To control for economic development, I include average years of schooling, agricultural employment share, population density, and town effects. To control for potential noise in the data, I include the size of the population (many villages were extremely small). I also control for relevant geographical factors, like agricultural suitability of land, terrain roughness, distance to the nearest river, distance to the coast, latitude, longitude, and the interaction between latitude and longitude. All of these controls, including the geographical ones, are included only in the column 4 specification. The data and the data sources are described in detail in [Appendix A.1](#). Robust standard errors clustered at regional-level (column 1) and municipal-level (columns 2–4) in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

ethnic majority members living in the other villages of the same municipality. Settlements (villages and towns) correspond better to the daily environment of an individual, and thus to the interethnic contact that individual experiences.<sup>16</sup>

[Table 6](#) estimates the effect of ethnic diversity more precisely by using settlement-level data. Due to incomplete data, I restrict the analysis to Croatia - the population censuses of the other regions do not report the controls that I use for Croatia, including education and agricultural employment share. The coefficient on ethnic diversity is higher at a lower level of data aggregation, no matter the exact specification that I use (see columns 1–4). Municipal data thus underestimates the effect of interethnic contact.

Nevertheless, there is a third problem that afflicts my specifications. Instead of ethnic diversity stimulating Yugoslav sentiment, it might be that Yugoslavs migrated to diverse areas that tend to be multicultural, positively biasing the estimates. I confront the issue of endogenous sorting by controlling for migration in [Table 7](#). I use the 1989/90 survey that allows me to split migrants into different categories according to the reason an individual migrated, further alleviating the endogenous sorting issue. The coefficient on ethnic fractionalization, measured at municipal-level, decreases when controlling for migration. This is aligned with the notion that endogenous sorting is positively biasing the estimates. The coefficient on ethnic diversity, however, decreases only a little (less than 3%). Moreover, the majority of coefficients on migrants are statistically insignificant. These findings suggest that endogenous sorting cannot overturn the results.

Nevertheless, the possibility of reverse causality remains, irrespective of endogenous sorting. A plausible instrument for ethnic diversity is thus required. The instrument should be associated with the variation in ethnic diversity. It should have no direct impact on Yugoslav sentiment.

<sup>16</sup> In Yugoslavia, municipalities were composed of settlements - the lowest administrative unit (villages, towns, and city districts).

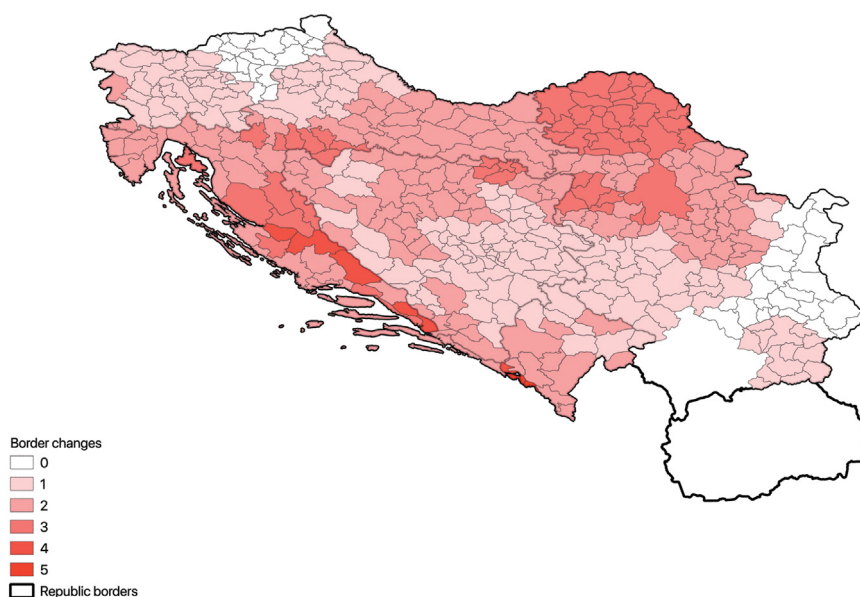
**Table 7**  
Individual-level estimates, 1989/90 survey, Yugoslavia, dependent variable: self-declared Yugoslav.

	(1)	(2)
Ethnic fractionalization	1.2526*** (0.281)	1.2261*** (0.276)
Member of Communist Party	0.3218*** (0.059)	0.3264*** (0.058)
Female respondent	0.1089** (0.049)	0.1018* (0.053)
Age of respondent	-0.0060** -0.003	-0.0055* -0.003
Average years of schooling	0.0345*** (0.012)	0.0334*** (0.012)
<i>Settlement in which respondent lives, of which:</i>		
Village centre	0.1405 (0.146)	0.1453 (0.144)
Large town	0.4280*** (0.097)	0.4382*** (0.101)
Regional centre	0.4173*** (0.068)	0.4300*** (0.065)
Supra-regional centre	0.4185*** (0.121)	0.4414*** (0.123)
Republic capital	0.3968*** (0.117)	0.4157*** (0.128)
<i>Migrant, reason for moving was:</i>		
Parents		0.0595 (0.084)
No work		-0.0393 (0.061)
Poor farm		-0.6977* (0.377)
Better earnings		-0.2099 (0.148)
Need for schooling		-0.2661*** (0.062)
Spouse		-0.0025 (0.117)
Personal environment		0.0825 (0.139)
Social environment		-0.0122 (0.095)
Other reason		0.0853 (0.107)
Occupation of respondent (18 categories)	Yes	Yes
Marital status (5 categories)	Yes	Yes
Municipal controls	Yes	Yes
Number of municipalities	62	62
Observations	10,700	10,700
Pseudo R-squared	0.1521	0.1558

*Notes:* The unit of observation is an individual. Coefficients are derived from a probit estimation. Ethnic fractionalization is measured at municipal-level. Each migrant category is a dummy variable. For settlement dummy variables, the excluded category is a village. Municipal controls are output p.c, population density, average years of schooling, fraction of social sector employment, population fraction of youth labor actions, population fraction of WWII partisan veterans, sites containing monuments to anti-fascism, population fraction of individuals exposed to WWII fascist terror, federal aid, population percentage of the early 1980's generation, and sites containing army presence. These controls are identical to those in column 15 of Table 4. The individual-level data comes from a 1989/90 survey, taken from Kunovich and Hodson (2002). The data and the data sources are described in detail in Appendix A.1. The survey data reports the residency of the respondent only at municipal-level. Robust standard errors are thus clustered at municipal-level, and reported in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

#### 4. IV estimates

I use historical border changes as an instrument for ethnic diversity. The underlying premise of the instrument is that border changes caused shocks to the ethnic composition of municipalities, mostly by influencing their historical ethnic migration patterns. While I recognize that it is difficult to find an instrument that fully satisfies the exclusion restriction, I try to limit the influence of potential violations of the exclusion restriction as far as possible. I, therefore, use additional controls, conduct a placebo test, and relax the exclusion restriction.



**Fig. 2.** The number of border changes in Yugoslav municipalities, 1421–1816. *Notes:* The instrument, border changes, is defined as the number of times a municipality was transferred between the various states that ruled and divided the lands of former Yugoslavia between 1421 and 1816. A border change equal to zero means that a municipality belonged to a single political entity during the sample-period. See [Appendix A.1](#) for details about the construction of the data.

#### 4.1. Background: border changes

There is a great deal of variation in historical border changes. Areas of former Yugoslavia were previously divided by the Bosnian, Hungarian, Habsburg, Italian, Napoleonic, Ottoman, Serbian and Venetian rule. Regional historians argue that border changes caused shocks to the ethnic composition of communities primarily because they affected ethnic migration patterns ([Dugački, 2009](#); [Valentić, 1990](#); [Žerjavić, 1993](#)).

Of course, ethnicities in the modern sense did not exist in the area of former Yugoslavia until the late 19th century ([Wachtel, 1998](#)). It is thus more historically appropriate to say that border changes implicitly influenced ethnic diversity by affecting the religious and linguistic diversity of communities, given that ethnic identities in Yugoslavia emerged along religious and linguistic lines ([Banac, 1984](#); [Wachtel, 1998](#)).

Consider some historical examples as evidence. Because of the Ottoman invasion of modern-day Croatia during the 16th century, a significant fraction of the local population fled to modern-day Austria and Italy ([Valentić, 1990](#)). The emigrants were Slavic Catholics that today consider themselves Croatian. The descendants of these emigrants are known as *Burgenland* Croats in Austria and *Molise* Croats in Italy.

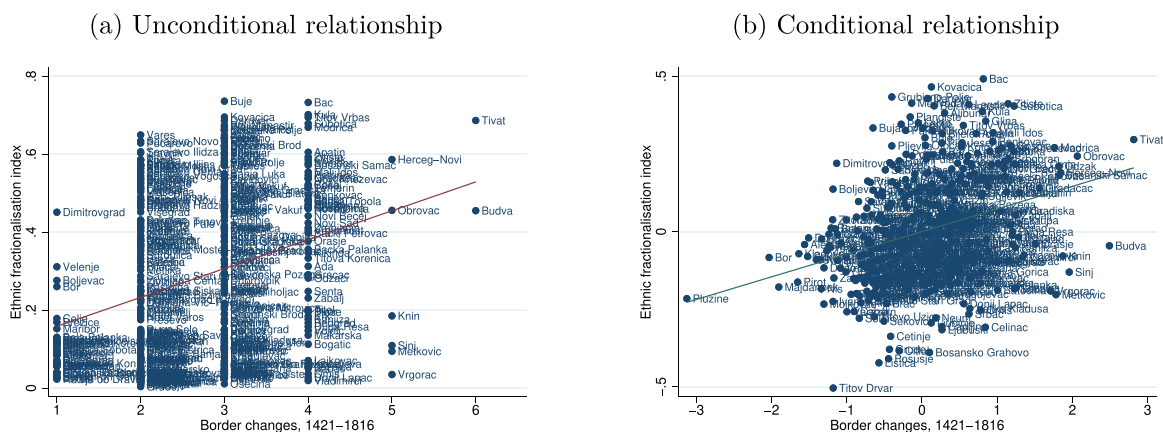
Following Habsburg's reconquest of eastern Croatia from the Ottoman Empire in the 17th century, the Habsburgs established a military border as a bulwark against the Ottoman Empire. They colonized the area with Orthodox Christians (now Serbs) from modern-day Bosnia and Serbia ([Rothenberg, 1966](#)). Furthermore, the landlords of the reconquered areas invited people from the various parts of the multiethnic Habsburg Empire to reinvigorate the depopulated areas ([Dugački, 2009](#)).

As another example, consider Bosnia. Before the Ottoman invasion, Slavic Catholics (now Croats) and Slavic Orthodox Christians (now Serbs) inhabited the country. The long Ottoman rule of Bosnia (15th–19th century) stimulated a large fraction of the local Slavs to convert to Islam ([Calic, 2019](#)). The converts eventually formed a distinct Bosniak identity, causing a change in the diversity of the region.

I recognize that the instrument might be endogenous to ethnic diversity. I thus measure border changes during 1421–1816 ([Fig. 2](#)).<sup>17</sup> It is unlikely that border changes were endogenous to ethnic diversity during the premodern and early-modern era, given that national identities are modern phenomena that emerged during the 19th century ([Anderson, 1983](#); [Gellner, 1983](#); [Hobsbawm, 1991](#)).

Nevertheless, although ethnic identities are a modern phenomenon, it might be that premodern and early-modern border changes were endogenous to some cultural factors, like religion or language, along which ethnic identities subsequently formed. History suggests that this is not the case. The three most important rulers driving the variation in border changes - the Habsburgs, Ottomans,

<sup>17</sup> The initial year of the instrument, 1421, precedes the Ottoman invasion of the West Balkans. The end year, 1816, includes the end of the Napoleonic presence in the region. The instrument excludes border changes that are related to the emergence of nationalism among the South Slavs at the end of the 19th century, like the Habsburg occupation of Bosnia, or the international recognition of the Principality of Serbia in 1878.



**Fig. 3.** Relationship between ethnic diversity and border changes (1421–1816), municipal-level, Yugoslavia. *Note:* The relationship between ethnic diversity and border changes in subfigure 3b is conditional on covariates included in column 15, Table 4, specification.

and the Venetians - presided over expansionist empires. Historians argue that these empires were conquering areas according to strategic and economic criteria, rather than linguistic and religious criteria.

Murphy (1996) argues that material factors shaped Ottoman conquests because the army was entitled to booty. Economic considerations drove the Venetian and the Habsburg military strategy as well. The Venetians targeted strategic coastal areas to protect their naval trade routes (Lane, 1973), while the Habsburgs wanted to secure their Austrian heartland against the Ottomans by expanding the frontier of its empire (Rothenberg, 1966).

Nevertheless, even if border changes were endogenous to religious and linguistic factors, this violation of the exclusion restriction cannot overturn the results. Appendix A.12 shows that, upon controlling for religious and linguistic diversity, the effect of ethnic diversity persists in the IV setting.

Of course, besides religious and linguistic diversity, border changes may be also correlated to factors that influenced the formation of national identity, like conflict, public goods provision, state capacity, and income (Anderson, 1983; Gellner, 1983; Weber, 1976). A strong correlation between border changes and these variables would suggest that the instrument is not credible. Appendix A.11, however, shows that there is no such correlation.

This makes intuitive sense: it is *ex-ante* unclear why the shocks induced by historical border changes, like to economic growth, would have persisted for centuries.<sup>18</sup> If border change effects did not persist for many outcomes, it is natural to wonder, however, why they would have persisted relative to ethnic diversity (implied by Fig. 3). They persisted because of the extremely low interregional population mobility. Besides the large interregional differences in culture, this was caused by the labor-managed firms that operated in socialist Yugoslavia. These firms maximized income per worker, which they achieved by restricting new labor entry into the existing firms, resulting in decreased interregional labor mobility (Kukić, 2020).

Nevertheless, as with any instrument, I still cannot rule out that my IV approach suffers from a violation of the exclusion restriction. What I can do, however, is to test whether a violation of the exclusion restriction would affect the results. In Appendix A.16, using the method of Conley et al. (2012), I find that the direct impact of the instrument on Yugoslav sentiment would have to be equivalent to 87% of the overall reduced-form effect to render the IV estimates insignificant. This indicates that my IV approach is robust - the instrument would have to deviate extremely far from the exclusion restriction to make the results insignificant. The placebo test in Appendix A.15 suggests that further.

#### 4.2. IV estimation results

Table 8 documents the two-stage least square (2SLS) estimates of Eq. (2). I treat ethnic fractionalization,  $e_i$ , as endogenous, and estimate the following equation:

$$e_i = \lambda + \zeta s_i + \eta X_i + v_i \quad (3)$$

where  $s_i$  is border changes during 1421–1816. The exclusion restriction is that  $s_i$  is uncorrelated to the error term of Eq. (2). In the IV analysis presented in Table 8, panel A documents the first stage estimate of  $\zeta$ , the coefficient on border changes in Eq. (3). It

<sup>18</sup> One reason why this did not occur is because of the super-charged development during the postwar period, when Yugoslavia registered one of the fastest labor productivity gains in the world (Lampe, 2000). Before, it was largely locked in pre-modern stagnation. Socialist development, which fundamentally altered the structure of society (Lampe, 2000), might have thus rendered insignificant any effects that border changes might have produced in the past.

**Table 8**  
IV estimates, Yugoslavia.

	Municipal data			Settlement data	Individual data
	1991 census	1981 census		1991 census	1989/90 survey
	(1)	(2)	(3)	(4)	(5)
Panel A: first stage outcome - ethnic fractionalization					
Border changes, 1421–1816	0.0729** (0.010)	0.0677** (0.012)	0.0608** (0.012)	0.0444*** (0.011)	0.0978*** (0.008)
Region effects	Yes	Yes	Yes	No	Yes
Intermunicipal community effects	No	No	Yes	No	No
Municipality controls	Yes	Yes	Yes	Yes	Yes
Settlement controls	No	No	No	Yes	No
Individual controls	No	No	No	No	Yes
<i>R</i> -squared	0.403	0.441	0.615	0.336	0.576
Panel B: second stage outcome - self-identified Yugoslavs					
Ethnic fractionalization	0.1353** (0.035)	0.1303* (0.062)	0.1684* (0.081)	0.1706** (0.067)	0.7119* (0.406)
Region effects	Yes	Yes	Yes	Yes	No
Intermunicipal community effects	No	No	Yes	No	No
Municipality controls	Yes	Yes	Yes	Yes	Yes
Settlement controls	No	No	No	Yes	No
Individual controls	No	No	No	No	Yes
Number of Municipalities	434	430	430	102	62
Observations	434	430	430	6290	10,700
Centered <i>R</i> -squared	0.476	0.547	0.577	0.041	–
First stage <i>F</i> -statistic	159.28	31.99	25.55	14.94	267.75

*Notes:* The unit of observation is a municipality in columns 1–3, settlement in column 4, and individual in column 5. I exclude Macedonia and Kosovo from the analysis because of data issues. Coefficients are derived from a 2SLS estimation in columns 1–4, and a probit estimation in column 5. The dependent variable in panel B is the population share of self-declared Yugoslavs in columns 1–4, and a dummy variable taking a value of 1 if an individual self-declared as Yugoslav in column 5 (zero otherwise). Border changes are estimated at municipal-level throughout columns 1–5. Ethnic fractionalization is measured at municipal-level in columns 1–3, and in column 5. Municipal controls are output p.c., population density, average years of schooling, fraction of social sector employment, population fraction of youth labor actions, population fraction of WWII partisan veterans, sites containing monuments to anti-fascism, population fraction of individuals exposed to WWII fascist terror, expenditure on public goods p.c., federal aid, population percentage of the early 1980's generation, and sites containing army presence. These controls are identical to those in column 15 of Table 4. Settlement-level analysis is restricted to Croatia due to data availability issues. Settlement controls are average years of schooling, agricultural employment share, town effects, population density, population, agricultural (wheat) suitability, terrain roughness, distance to the coast, distance to the nearest river, longitude, latitude, and the interaction between longitude and latitude. Individual controls are gender, age, communist party membership, years of schooling, type of settlement in which respondent resides (6 categories), migrant type (9 categories), occupation (18 categories), and marital status (5 categories). The data and the data sources are described in detail in Appendix A.1. Robust standard errors clustered at regional-level (columns 1–3) and municipal-level (columns 4–5) in parentheses (the survey data reports the residency of the respondent only at municipal-level). \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

implies that an additional border change increases ethnic fractionalization by 0.07 units (column 1), relative to the mean of 0.28.<sup>19</sup> The *F*-statistic, equal to 159, indicates a very strong first-stage relationship.

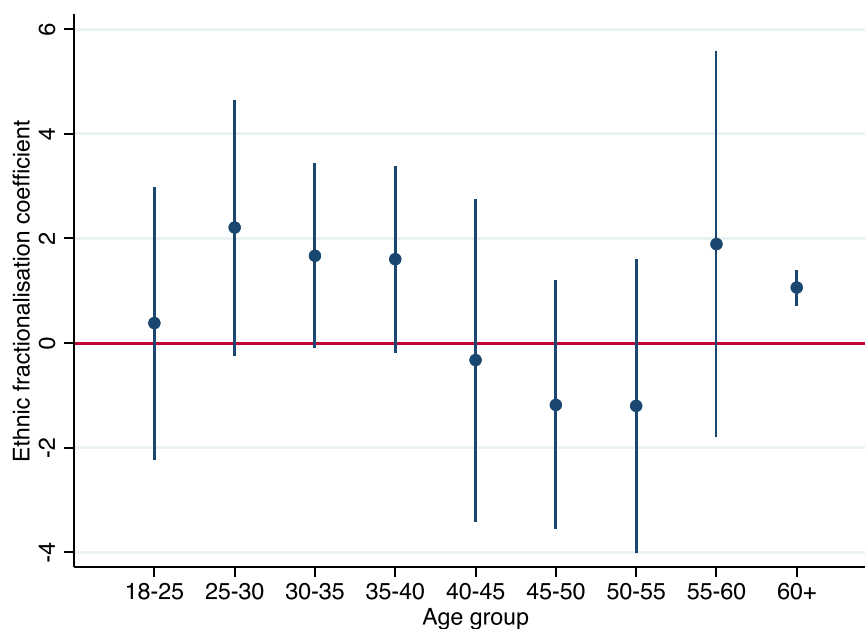
Panel B presents the second stage estimate, where the variation in ethnic fractionalization caused by border changes predicts the fraction of Yugoslavs. The coefficient is statistically significant and economically substantial. It implies that moving from zero ethnic diversity to the sample average increases the fraction of Yugoslavs by 3.6 percentage points, relative to the average of 0.027. The effect of ethnic diversity remains robust when applying the instrument to observations at the settlement-level (column 4) and the individual-level (column 5). The size of the coefficient on ethnic diversity, however, is larger at lower levels of data aggregation, mirroring the results of Section 3.3.

The second stage estimate under municipal-level or settlement-level data is higher than the corresponding OLS estimate in Tables 4 and 6, respectively. This suggests that the problem of measuring ethnic diversity dominates the issue of reverse causality and/or omitted factors. The OLS could also be a biased estimate of an average treatment effect that is different from the local average treatment effect estimated by the IV. The second stage estimate under individual-level data, however, is smaller than the corresponding OLS estimate in Table 7. This suggests that issues of reverse causality and omitted variable bias are more severe when using individual-level data.<sup>20</sup>

<sup>19</sup> An OLS model with count data might be problematic. Appendix A.18 experiments with a PPML model.

<sup>20</sup> Similar to the usage of municipal and settlement data, the OLS estimate with individual-level data could also be a biased estimate of an average treatment effect that is different from the local average treatment effect estimated by the IV.





**Fig. 4.** Ethnic diversity effect by age-group, 1989/90 survey data, Yugoslavia, dependent variable: self-declared Yugoslav. *Notes:* The unit of observation is an individual. The ethnic diversity coefficient is derived from a 2SLS estimation. Border changes and ethnic fractionalization are measured at municipal-level. The estimations include both municipal-level and individual-level controls. Municipal controls are output p.c., population density, average years of schooling, fraction of social sector employment, population fraction of youth labor actions, population fraction of WWII partisan veterans, sites containing monuments to anti-fascism, population fraction of individuals exposed to WWII fascist terror, expenditure on public goods p.c., federal aid, population percentage of the early 1980's generation, and sites containing army presence. Individual controls are gender, age, communist party membership, years of schooling, type of settlement in which respondent resides (6 categories), migrant type (9 categories), occupation (18 categories), and marital status (5 categories). I take individual-level data from [Kunovich and Hodson \(2002\)](#). The data and the data sources are described in detail in [Appendix A.1](#). The survey data reports the residency of the respondent only at the municipal-level. Robust standard errors are thus clustered at municipal-level.

#### 4.3. 1981 data

The problem with the estimations, so far, is that I derive them mostly from the 1991 census, which took place in a tense period. By the beginning of 1991, it became increasingly clear that Yugoslavia might collapse, and public sentiment homogenized along ethnic lines. It is possible that this somehow biases the estimation results. I use the 1981 population census as a robustness check. The 1981 census took place in a much calmer period, before the escalation of ethnic tensions at the beginning of the 1990s.

Column 2 in [Table 8](#) analyses the relationship between ethnic diversity and Yugoslav identity using the 1981 data. The relationship between diversity and Yugoslav sentiment remains highly stable. The 1981 census also allows me to control for more narrowly defined administrative subdivisions - the intermunicipal regional communities that existed until 1990. I can thus control for the characteristics common to all municipalities that formed the same regional subdivision. Column 3 controls for intermunicipal effects, and the coefficient on ethnic diversity remains significant.

#### 4.4. Age groups

The OLS and IV specifications include a host of variables to control for nation-building policies. Yet, these controls can only imperfectly capture the extent of “brotherhood and unity” policies. Given that nation-building policies were weakened since the 1970s ([Section 2.1](#)), the effect of ethnic diversity may vary by age.

[Wachtel \(1998\)](#) argues that Yugoslav sentiment was intense during the 1950s, in the generation that survived and fought in WWII. Some surveys during the 1980s, however, point to the younger generation as being more predisposed toward Yugoslav sentiment ([Hodson et al., 1994](#); [Sekulić et al., 1994](#)). [Ramet \(1992\)](#) argues that the emergence of the pan-Yugoslav rock scene during the 1980s created a common cultural sphere. This stimulated Yugoslav sentiment in the country's youth, offsetting the weak nation-building policies that characterized the period.

[Fig. 4](#) uses the 1989/90 survey and shows the effect of ethnic diversity when splitting the individual-data by age. The older (55+) and the younger (18–40) were more likely to feel Yugoslav, which is consistent with the arguments of [Wachtel \(1998\)](#) and [Ramet \(1992\)](#).<sup>21</sup> It is the middle-aged (40–55), born during WWII or in the immediate aftermath of it, that were less likely to feel

<sup>21</sup> The coefficient on the 18–25 age group, however, is close to zero, although statistically insignificant.

Yugoslav. Although this generation was exposed to strong nation-building policies during their education and formative years (the 1950s and the 1960s), they were also exposed to the rise of ethnic nationalism since the 1970s.<sup>22</sup>

The evidence presented in this subsection thus suggests the existence of a non-linear relationship between ethnic diversity and Yugoslav sentiment across the generations. The individual-level results, however, should be taken with caution - the majority of coefficients in Fig. 4 are statistically insignificant.

#### 4.5. Additional controls

The IV estimates are contingent on the assumption that border changes had no direct impact on Yugoslav identification. The Conley et al. (2012) method indicates that my IV approach is robust - the instrument needs to have an extremely large impact on Yugoslav identification to make the results insignificant (Section 4.1). I now provide complementary evidence in defense of the exclusion restriction by including additional controls. I assess whether the inclusion of the additional covariates affects the baseline results. If it does, this suggests that there are omitted variables correlated to both border changes and Yugoslav identification, making the exclusion restriction invalid (Table 9).

Although Section 2.1 suggests that this was not the case, it is possible that states conquered areas according to religious criteria. In turn, religion might have influenced Yugoslav sentiment. The initial supporters of Yugoslav unity were Christians, while Muslims did not seem attracted to Yugoslavia pre-WWI (Djokić, 2003). Given that this might have created path-dependency effects, column 2 controls for religion (fraction of Muslims).

Besides being correlated to border changes, historical affiliation to a political entity might have influenced Yugoslav sentiment in itself. Namely, historical Habsburg affiliation in central and eastern Europe affects cultural and political outcomes, improving current trust, and reducing corruption in courts and police (Becker et al., 2016). Column 3 adds the duration of the Habsburg rule.

Strategically and economically valuable areas - like areas with high agricultural suitability, that are close to coasts and rivers, and with a rough (or smooth) terrain - are attractive military targets. Such areas might also have an advantage in trade and income generation, perhaps exposing them to a greater degree of interethnic contact, and affecting Yugoslav identification. Column 4 controls for agricultural (wheat) suitability, column 5 controls for terrain roughness, column 6 controls for distance to the coast, and column 7 controls for distance to a river.

Given the spatial nature of the instrument, column 8 controls for latitude and longitude, and the interaction between the two. The model thus controls for the location of municipalities, as locations that are far from each other might be more different than locations that are close to each other.

The coefficient on ethnic diversity remains robust throughout specifications 1–8. Column 9 includes jointly all the additional controls. The coefficient on ethnic diversity (0.122) is similar to the baseline coefficient in Table 8 (0.135).<sup>23</sup>

### 5. Channel: intermarriage

There are many possible reasons why ethnic diversity influenced national sentiment. The empirical challenge is to establish the most important channel. This section focuses on establishing the role of ethnic intermarriage. As described in Section 2.2, sociologists perceive intermarriage as of central importance in ethnic relations (Waters, 1990). This suggests that identification with the Yugoslav identity might have provided an alternative to forcing a single ethnic choice on intermarried individuals and their children. The high coefficient on ethnically-mixed parentage and marriage in Table 3 suggests that further.

Interethnic contact could have influenced intermarriage for two reasons. First, ethnic diversity determines the potential number of interethnic matches (supply). Additionally, it might influence preferences toward intermarriage (demand). Irrespective of the exact channel, which I cannot identify, isolating the overall intermarriage mechanism is a challenging task because of endogeneity concerns.

To avoid endogeneity, I use the causal mediation analysis developed by Dippel et al. (2022). Within a 2SLS setting, they modify the standard mediation model by adding an instrument that causes the treatment. Their method allows me to establish causality, and unpack the mechanism that connects diversity and Yugoslav sentiment.

Table 10 uses the 1989/90 survey, and presents the mediation results. Column 1 uses ethnically-mixed marriage as the mediator.<sup>24</sup> The mediation analysis suggests that a unit increase in the ethnic fractionalization index increases Yugoslav sentiment by 0.079 units (the total effect). Of these 0.079 units, 0.052 units are due to ethnic diversity itself (the direct effect). The remaining 33% of units are due to the mixed marriage mechanism (the indirect effect).

The survey data also allows me to identify the children of intermarried couples. This is important, because individuals of mixed ethnic parentage tend to drive the diffusion of broader group identities (Waters, 1990). Column 2 uses ethnically-mixed parentage as the mediating factor. Mixed parentage explains 51% of the total effect of ethnic diversity on Yugoslav sentiment, which is much larger than what mixed marriage can explain in column 1 (33%). This suggests that children of intermarried couples were the main driver of Yugoslav sentiment. Implicitly, they were more likely to adopt Yugoslav identity than their parents.

<sup>22</sup> Using name choices for offspring as a proxy for ethnic nationalism, Jurajda and Kovač (2021) find that Croatian nationalism increased sharply during the 1970s.

<sup>23</sup> Appendix A.13 experiments with minority status. Appendix A.14 presents an additional analysis that includes the geographical controls in the individual-level, IV specification, as well as in the municipal-level, OLS specification. It also presents the mediation analysis that includes geographical controls.

<sup>24</sup> To avoid perfect collinearity, I deduct the ethnicity of a respondent through her parentage.

**Table 9**  
2SLS estimates with additional controls, 1991 municipal data, Yugoslavia.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: first stage outcome - ethnic fractionalization								
Border changes, 1421–1878	0.0779** (0.007)	0.0685** (0.018)	0.0729** (0.006)	0.0773** (0.015)	0.0684** (0.016)	0.0763** (0.010)	0.0751** (0.014)	0.0757** (0.016)
Muslims	0.2702 (0.085)							0.2548 (0.087)
Duration of Habsburg rule		0.0004 (0.000)						0.0002 (0.000)
Agricultural (wheat) suitability			0.0001 (0.000)					0.0000 (0.000)
Terrain roughness				−0.0036 (0.001)				−0.0017 (0.001)
Distance to coast					0.0007* (0.000)			0.0022 (0.001)
Distance to river						−0.0007 (0.000)		0.0005 (0.000)
Additional geographic controls	No	No	No	No	No	No	Yes	Yes
Municipal controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.440	0.426	0.407	0.437	0.448	0.419	0.446	0.51
Panel B: second stage outcome - fraction of Yugoslavs								
Ethnic fractionalization	0.1266** (0.031)	0.1296** (0.037)	0.1353** (0.035)	0.1279* (0.025)	0.1335** (0.041)	0.1383** (0.033)	0.1555* (0.047)	0.1217** (0.027)
Muslims	−0.0341*** (0.016)							−0.0309*** (0.013)
Duration of Habsburg rule		0.0000** (0.000)						0.0001** (0.000)
Agricultural (wheat) suitability			0.0000*** (0.000)					0.0000 (0.000)
Terrain roughness				0.0004** (0.000)				0.0007** (0.000)
Distance to coast					0.0000 (0.000)			−0.0000** (0.000)
Distance to river						0.0000* (0.000)		0.0000 (0.000)
Additional geographic controls	No	No	No	No	No	No	Yes	Yes
Municipal controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	434	434	434	434	434	434	434	434
Centered R-squared	0.521	0.499	0.478	0.514	0.482	0.470	0.413	0.586
First stage F-statistic	112.63	14.41	140.09	26.62	18.14	57.32	28.43	22.51

*Notes:* The unit of observation is a municipality. The variable Muslims is the ratio of Muslims to the population. Additional geographical controls are latitude, longitude, and an interaction between latitude and longitude. Municipal controls are output p.c., population density, average years of schooling, fraction of social sector employment, population fraction of youth labor actions, population fraction of WWII partisan veterans, sites containing monuments to anti-fascism, population fraction of individuals exposed to WWII fascist terror, expenditure on public goods p.c., federal aid, population percentage of the early 1980's generation, and sites containing army presence. Municipal controls are identical to those in column 15 of Table 4. The data and the data sources are described in detail in Appendix A.1. Robust standard errors clustered at regional-level in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

It is possible, however, that some combinations of mixed parentage were more important than others in stimulating Yugoslav identity. Table 11 reports the mediation results when using different combinations of mixed parentage, focusing on the four largest ethnic groups of Yugoslavia - Serbs, Croats, Bosnian Muslims (Bosniaks), and Slovenes. Panel B shows the estimated indirect effect of each combination of mixed parentage on Yugoslav sentiment. The coefficient on the Serb-Croat pair is the largest one. All the other coefficients are negative, with individuals from a Serb-Slovene parentage the least likely to feel Yugoslav.<sup>25</sup>

These results are consistent with Smit (2010). He finds that, among the major ethnic groups of Yugoslavia, the Croats and the Serbs were characterized by the lowest social distance, while the Serbs and the Slovenes were characterized by the highest. Therefore, it was presumably easier for an individual from a Croat-Serb parentage to feel Yugoslav. Such an individual had to bridge a smaller social gap when adopting Yugoslav identity.

Of course, besides intermarriage, other factors may have influenced the relationship between ethnic diversity and Yugoslav sentiment. One such mechanism could be religion. Ethnic identities in Yugoslavia are strongly associated with religion (Section 4.1) - Serbs tend to be associated with Orthodox Christianity, Croats with Catholicism, and Bosniaks with Islam. It could be that ethnic fractionalization decreased religious prejudice, and made religion less important in shaping individual behaviour. Given the tight

<sup>25</sup> Such individuals were thus less likely to feel Yugoslav compared to individuals from ethnically homogeneous parentage and compared to individuals from other combinations of ethnically-mixed parentage.

**Table 10**

Mediation analysis, 1989/90 survey data, Yugoslavia, dependent variable: Yugoslav self-identification.

	Mediator				
	Mixed marriage	Mixed parentage	Religiosity	Mixed marriage	Mixed parentage
	(1)	(2)	(3)	(4)	(5)
<i>Effect of ethnic fractionalization</i>					
Total effect	0.0789	0.1099	0.1099		
Direct effect	0.0520	0.0537	0.1148		
Indirect effect	0.0263	0.0562	-0.0041		
<i>Effect of interaction between ethnic fractionalization and religiosity</i>					
Total effect				0.1132	0.1300
Direct effect				0.0511	0.0617
Indirect effect				0.0620	0.0682
Region effects	Yes	Yes	Yes	Yes	Yes
Municipal controls	Yes	Yes	Yes	Yes	Yes
Individual controls	Yes	Yes	Yes	Yes	Yes
Number of municipalities	62	62	62	62	62
Observations	10,501	10,792	10,792	10,501	10,792

Notes: The unit of observation is an individual. The number of observations varies due to nonresponses. The mediation analysis is conducted following the framework of [Dippel et al. \(2022\)](#). The indirect effect of ethnic diversity operates through the channel of ethnically-mixed marriage in columns 1 and 4, ethnically-mixed parentage in columns 2 and 5, and religiosity in column 3. Religiosity is measured on a 1–6 scale, and is the answer to the question “How religious are you”, where a higher number indicates that a respondent is less religious. Each answer category is reported in [Table 3](#). The instrument is border changes during 1421–1816. Border changes and ethnic fractionalization are measured at municipal-level. Individual controls are identical as in [Table 7](#), while municipal controls are identical as in column 15 specification of [Table 4](#). The individual-level data comes from the 1989/1990 survey, which I take from [Kunovich and Hodson \(2002\)](#). The standard errors are unreported - they hold no conventional meaning in mediation analysis.

**Table 11**

Mediation analysis, differential effects across combinations of mixed parentage, 1989/90 survey data, Yugoslavia, dependent variable: Yugoslav self-identification.

	Croat	Muslim	Serb	Slovene
Panel A: Direct effect of ethnic fractionalization				
Croat	–			
Muslim	0.1196	–		
Serb	0.0877	0.1182	–	
Slovene	0.1261	0.1192	0.1531	–
Panel B: Indirect effect of ethnic fractionalization				
Croat	–			
Muslim	-0.0096	–		
Serb	0.0222	-0.0082	–	
Slovene	-0.0161	-0.0092	-0.0432	–

Notes: The unit of observation is an individual - 10,792 in each specification - spread over 62 municipalities. The mediation analysis is conducted following the framework of [Dippel et al. \(2022\)](#). The total effect of ethnic diversity is the same as in column 2 specification of [Table 10](#). The indirect effect of ethnic diversity operates through the various combinations of ethnically mixed parentage in panel B, where the ethnicity of one parent is shown in the row, while the ethnicity of the other parent is shown in the column. The instrument is border changes during 1421–1816. Border changes and ethnic fractionalization are measured at municipal-level. Every specification controls for regional effects, as well as individual-level and municipal-level controls. Individual controls are identical as in [Table 7](#), while municipal controls are identical as in column 15 specification of [Table 4](#). The individual-level data comes from the 1989/1990 survey, which I take from [Kunovich and Hodson \(2002\)](#). The standard errors are unreported - they hold no conventional meaning in mediation analysis.

association between religion and ethnicity, this reduction of religiosity (or increase in secularism) might have in turn decreased ethnic nationalism, stimulating Yugoslav sentiment. This interpretation is consistent with [Kunovich and Hodson \(2002\)](#), who find that religiosity has the single strongest effect on ethnic prejudice in Bosnia and Herzegovina.

I proxy religiosity by the survey question “How religious are you?”, measured on a 1–6 scale, with a higher number indicating that a respondent is *less* religious. [Table 3](#) earlier in the paper shows that religiosity is weakly correlated to Yugoslav sentiment - only one of the five dummy variables related to religiosity is statistically significant. This suggests that religiosity is unlikely to be the principal mechanism driving Yugoslav sentiment. Column 3 of [Table 10](#) examines explicitly the religiosity hypothesis. The mediation analysis implies that religiosity can explain only 3.7% of the total effect of ethnic diversity on Yugoslav sentiment. Moreover, the decrease in religiosity is associated with a decrease in Yugoslav sentiment, opposite of the expected (the sign of the religiosity coefficient is negative).

Rather than being a mechanism, religiosity may have instead interacted with ethnic diversity, influencing the probability of intermarriage. Namely, interethnic contact may have weakened religiosity among the ethnic groups, while secularism simultaneously

magnified the ethnic diversity effect. Decreasing the salience of group boundaries could have increased the likelihood of marrying into other groups, increasing Yugoslav sentiment.

Table 10 presents the mediation results when using the interaction between ethnic fractionalization and religiosity as the treatment variable. Ethnically-mixed marriage in column 4 can now explain 54% of the total effect of ethnic diversity, which is higher than in column 1 (33%). The coefficient on mixed parentage, however, is largely the same as before - it can now explain 53% of the total effect, compared to 51% in column 2. Therefore, there is some evidence that ethnic diversity and religiosity interacted in boosting Yugoslav sentiment. This interaction, however, promoted Yugoslav sentiment mostly through intermarried individuals, rather than through those of mixed parentage.<sup>26</sup>

## 6. Conclusion

This paper isolates the impact of ethnic diversity on shared national sentiment in multiethnic Yugoslavia. I find that ethnic diversity increased Yugoslav sentiment primarily because it stimulated ethnic intermarriage. I interpret this finding to mean that Yugoslav identity provided an alternative to forcing a single ethnic choice on persons with conflicting pressures on their identity.

Ethnic diversity matters. However, nation-building policies matter as well. Upon seizing power, Tito and his colleagues faced a daunting task. They had to unify a country devastated by WWII, composed of regions that differed wildly in terms of economic development, culture, and historical legacy. In this context, the policies pursued by the socialist elite seemed both expedient and prudent. By emphasizing economic development, self-management, and ethnic equality, the socialist elite thought that time was on their side. These forces would erode ethnic divisions, and stimulate Yugoslav sentiment.

Indeed, in some states, like France, national policies, industrialization, and mass institutions stimulated national identity. In other cases, the integrative consequences of these processes were slower to develop or remain incomplete, but are overall successful, like in Belgium and Spain. In Yugoslavia, what transpired was increased fragmentation of the society as the country began unraveling.

This raises the issue of why did the formation of national identity in Yugoslavia fail when in the remainder of Europe it generally succeeded. The literature frequently points to the high heterogeneity of the regions that composed Yugoslavia - there was little common ground to unite the diverse peoples, besides the similar language. But this alone cannot be the full answer. Many European states, including 19th-century Italy and Germany, managed to unify highly heterogeneous regions.

The added difficulty in the case of Yugoslavia was the presence of strong ethnic identities. The idea of a Yugoslav nation had to compete for the allegiance of the Yugoslavs with the other group identities, which were sometimes mutually antagonistic. In this context, promoting national sentiment would have been highly challenging in the best of times. During the 1990s, this turned out impossible. Nevertheless, interethnic contact did promote a sense of shared identity. Whether this factor would have been sufficient to sustain the country in the absence of war is impossible to know.

The federal authorities deliberately stimulated ethnic diversity, but they also committed mistakes in their nation-building quest. The labor-managed firms restricted new labor entry into existing firms, decreasing interregional labor mobility, and intergroup contact by extension. Reforming these firms would have not only boosted employment and efficiency, but also Yugoslav sentiment by increasing interregional mobility.

The decentralization of education and mass media also discouraged Yugoslav sentiment. These policy changes, however, did not occur in a social vacuum, but rather under the pressure from regional leaders. The federal authorities were operating under severe constraints, knowing full well that forcing Yugoslav sentiment could cause a backlash and risk the disintegration of the country, just like in the interwar period.

The socialist fear of disintegration was justified. The road to collapse and war was firmly established in the late 1980s when ethnic nationalists started equating ethnic groups with fascist movements - for example, Serb nationalists equating Croats with the fascist Ustaše regime. This served to mobilize the Serbs for the coming war, eerily rhyming with Putin's claims about the "Nazi" Ukrainian leadership and the Russo-Ukrainian War that began in 2022.

Nevertheless, it is empirically possible that Yugoslav identity was a mediating mechanism slowing the disintegration of Yugoslavia into warring ethnic camps and mitigating the intensity of the conflict. I plan to analyze this empirical possibility in future work. Moreover, more work is required to understand the role of intermarriage and related mechanisms in creating bridges between different groups in a society, whether in Yugoslavia or elsewhere.

It is natural to wonder whether the findings of this paper contain wider significance. The results illustrate the powerful effect that interethnic contact can have in reducing ethnic division even in a tense ethnic environment, like that of the early 1990s Yugoslavia. Moreover, nation-building policies in ethnically divided societies could be particularly effective in ethnically diverse areas, as such areas tend to be more susceptible to the idea of a common nation. Synonymously, future peace-building efforts, perhaps in Ukraine, could also be more effective in such areas. Finally, to mitigate the risk of ethnic tension and conflict, the empirical results of this

<sup>26</sup> Fertility could account for this differential effect. Namely, if less religious individuals had fewer children, then the increase in the incidence of intermarriage among the less religious caused a disproportionately small increase in the population share of ethnically-mixed children. By extension, the increase in Yugoslav sentiment caused by the interaction of diversity and religiosity is lower when operating through mixed parentage than when operating through mixed marriage. Indeed, Appendix A.17 shows that less religious individuals tend to have fewer children. They are also better educated, and more likely to live in an urban environment and hold a white-collar occupation.

paper imply a role for a specific policy. Such policy could be the promotion of intermarriage, as the surest path to a world without ethnic hatred and conflict is a world without ethnicities.

## Data Availability

The data is available at Open-ICPSR

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## Appendix A

### A1. Data

This section documents the construction of the variables that I use in this paper, alongside the data sources.

**Population and ethnicity** Population and ethnicity municipal-level data are taken from the 1991 population census books of the successor states of Yugoslavia. For Bosnia-Herzegovina: *Popis Stanovništva 1991: Nacionalni Sastav Stanovništva po Naseljenim Mjestima* (Federalni Zavod za Statistiku, 1998a). For Croatia: *Popis Stanovništva 1991: Stanovništvo Prema Narodnosti po Naseljima* (Državni Zavod za Statistiku, 1992a). For Montenegro and Serbia: *Popis Stanovništva 1991: Stanovništvo Prema Nacionalnoj Pripadnosti* (Savezni Zavod za Statistiku, 1993a). For Slovenia: *Popis Prebivalstva 1991: Prebivalstvo po Narodnosti Pripadnosti* (Statistični Urad Republike Slovenije, 1994b). The 1981 census data is taken from *Popis Stanovništva 1981: Opštine u SFR Jugoslaviji, Osnovni Podaci o Stanovništvu, Domaćinstvima i Stanovima* (Savezni Zavod za Statistiku, 1987).

**Border changes** The baseline instrument, border changes, is defined as the number of political entities a municipality belonged to between 1421 and 1816. For Bosnia-Herzegovina, Croatia, Slovenia, and most of Montenegro, I derive the instrument from a historical atlas that focuses on Croatia but also covers surrounding regions - *Povijesni Atlas Hrvatske* (Historical Atlas of Croatia, (Regan and Kaniški, 2003)). For Serbia, and partly for Montenegro, I derive the instrument from a set of additional historical atlases (Hötte, 2015; Novaković, 1965; Šehić and Tepić, 2002). I have included all border changes reported in these atlases. The baseline instrument, however, excludes reconquests of territories to minimize measurement issues. Reconquests are under-reported in historical atlases, particularly if a state controlled territory for a brief period of time in the presence of military offensives and counter-offensives (Regan and Kaniški, 2003).

**Religiosity and Muslims** Data on the religious structure of municipalities are taken from the 1991 population census books of the successor states of Yugoslavia. For Bosnia-Herzegovina: *Popis Stanovništva 1991: Etnička Obilježlja Stanovništva, Rezultati za Republiku i po Opštinama* (Federalni Zavod za Statistiku, 1993). For Croatia: *Popis Stanovništva 1991: Stanovništvo Prema Vjeroispovijesti i Materinskom Jeziku, po Naseljima* (Državni Zavod za Statistiku, 1992a). For Montenegro and Serbia: *Popis Stanovništva 1991: Stanovništvo Prema Veroispovesti* (Savezni Zavod za Statistiku, 1991a). For Slovenia: *Popis Prebivalstva 1991: Prebivalstvo po Verotzповedi* (Statistični Urad Republike Slovenije, 1994d).

**Language** Data on the self-reported mother tongue are taken from the 1991 population census books of the successor states of Yugoslavia. For Bosnia-Herzegovina: *Popis Stanovništva 1991: Etnička Obilježlja Stanovništva, Rezultati za Republiku i po Opštinama* (Federalni Zavod za Statistiku, 1993). For Croatia: *Popis Stanovništva 1991: Stanovništvo Prema Vjeroispovijesti i Materinskom Jeziku, po Naseljima* (Državni Zavod za Statistiku, 1992a). For Slovenia: *Popis Prebivalstva 1991: Prebivalstvo po Verotzповedi* (Statistični Urad Republike Slovenije, 1994d).

**Output p.c.** Municipality output data are taken from the 1991 Yugoslav Statistical Yearbook: *Statistički Godišnjak SFR Jugoslavije 1991* (Savezni Zavod za Statistiku, 1991b). Output data come from 1989. The successor states of Yugoslavia stopped estimating output at the municipal-level afterward. Thus, the final year for which output has been estimated is the year 1989. As in other socialist countries, Yugoslav statisticians excluded some services from the value of output - education, healthcare, and housing. Output is normalized by the 1991 population. 1981 municipal output data are taken from the 1982 Yugoslav Statistical Yearbook: *Statistički Godišnjak SFR Jugoslavije 1982* (Savezni Zavod za Statistiku, 1982b). 1981 output is normalized by the 1981 population.

**Population density** The population density of municipalities is constructed by dividing the population by the administrative area ( $\text{km}^2$ ). Data on administrative areas are taken from the *Statistički Godišnjak SFR Jugoslavije 1991* (Savezni Zavod za Statistiku, 1991b).

**Average years of schooling** Educational attainment for each municipality is estimated for the population aged 15 and above. Except for Montenegro and Serbia, the average years of schooling for the population of each municipality is constructed from the 1991 population census books of the successor states of Yugoslavia. For Bosnia-Herzegovina: *Popis Stanovništva 1991: Uporedni Podaci 1971, 1981, 1991* (Federalni Zavod za Statistiku, 1998c). For Croatia: *Popis Stanovništva 1991: Stanovništvo Prema Školskoj Spremi, Pismenosti i Spolu po Naseljima* (Državni Zavod za Statistiku, 1992b). For Slovenia: *Popis Prebivalstva 1991: Prebivalstvo, Staro 15*

*Let ali vec, po Spolu, Izobrazbi in Pismenosti* (Statistični Urad Republike Slovenije, 1994e). For Serbia and Montenegro, the 1991 population census does not record educational attainment at municipal-level. As such, I have interpolated educational attainment for each municipality from the population census from the two nearest population censuses that reported this information. For Montenegro, I have interpolated the 1991 values from *Popis Stanovništva 1971: Etnička, Prosvetna i Ekonomska Obilježlja Stanovništva i Domaćinstva Prema Broju Članova, Rezultati po Opštinama* (Savezni Zavod za Statistiku, 1974) and *Popis Stanovništva 2003: Školska Sprema i Pismenost, Rezultati po Opštinama* (Zavod za Statistiku, 2005). For Serbia, I have interpolated the 1991 values from *Popis Stanovništva 1971: Etnička, Prosvetna i Ekonomska Obilježlja Stanovništva i Domaćinstva Prema Broju Članova, Rezultati po Opštinama* (Savezni Zavod za Statistiku, 1974) and *Popis Stanovništva 2002: Školska Sprema i Pismenost, Prema Opštinama* (Republički Zavod za Statistiku, 2003). The 1981 census data is taken from *Popis Stanovništva 1981: Opštine u SFR Jugoslaviji, Osnovni Podaci o Stanovništvu, Domaćinstvima i Stanovima* (Savezni Zavod za Statistiku, 1987).

*Social sector labor* I take the municipality data for social sector employment as a fraction of total labor from the 1991 population census books of the successor states of Yugoslavia. For Bosnia-Herzegovina: *Popis Stanovništva 1991: Usporedni Podaci 1971, 1981, 1991* (Federalni Zavod za Statistiku, 1998c). For Croatia: *Popis Stanovništva 1991: Aktivno Stanovništvo u Zemlji koje Obavlja Zanimanje, Prema Području Djelatnosti, po Naseljima* (Državni Zavod za Statistiku, 1994a). For Montenegro and Serbia *Popis Stanovništva 1991: vol. 24* (Savezni Zavod za Statistiku, 1993b). For Slovenia: *Popis Prebivalstva 1991: Aktivno Prebivalstvo, ki Pravlja Poklic, po Dejavnosti (brez Oseb, ki Delajo v Tujini in Družinskih Članov, ki z Njimi Živijo v Tujini)* (Statistični Urad Republike Slovenije, 1994a). The 1981 census data is taken from *Popis Stanovništva 1981: Opštine u SFR Jugoslaviji, Osnovni Podaci o Stanovništvu, Domaćinstvima i Stanovima* (Savezni Zavod za Statistiku, 1987).

*Youth labor actions* Data on the number of individuals involved in youth labor actions are taken from *Statistički Bilten Broj 418.: Omladinske Radne Akcije 1964. i 1965* (Savezni Zavod za Statistiku, 1966a). The final year the Yugoslav statistical office published this data for is 1965. I thus use data on individuals involved in youth labor actions in 1965 and normalize it by 1965 population taken from *Statistički Godišnjak SFR Jugoslavije 1966* (Savezni Zavod za Statistiku, 1966c).

*WWII partisan veterans* Data on partisan veterans of WWII come from *Statistički Bilten Broj 1411: Borci, Vojni Invalidi i Porodice Palih Boraca - Korisnici Osnovnih Prava po Saveznim Propisima, 31.12.1981.* (Savezni Zavod za Statistiku, 1982a). This data is reported for 1981 and has not been reported again since. I thus use the 1981 data on partisan veterans resident in a municipality, and normalize it by the 1981 population taken from *Statistički Godišnjak SFR Jugoslavije 1991* (Savezni Zavod za Statistiku, 1991b).

*Monuments to anti-fascism* This is a dummy variable reporting whether a municipality contained a site or event that was considered officially to be of high importance to the anti-fascist, communist-led, struggle during WWII. These were often commemorated by a memorial complex, museum, or monument, whereby the largest memorial centers were visited by as many as 5 million people on an annual basis (Jokić, 1986). I take this data from a detailed tourist guide (446 pages) dedicated to such sites (Jokić, 1986).

*Fascist terror* This is official data on the number of individuals exposed to fascist terror during WWII at the current municipality of residence, and that survived. It is taken from the census that collected this data - *Žrtve Rata, 1941–1945 (Rezultati Popisa)* (Savezni Zavod za Statistiku, 1966d). The survivors include those that were in internment and deportation camps, jails, war captivity, and experienced forced labor. The census was conducted in 1964 but remained a top-secret publication used for internal use by top-ranking Communist Party members only until the dissolution of Yugoslavia, as census data on individuals killed by fascists did not conform to official public figures, which were magnified. As the data on individuals exposed to fascist terror is reported for 1964, I normalize it by the 1964 population taken from *Statistički Godišnjak SFR Jugoslavije 1965* (Savezni Zavod za Statistiku, 1966b).

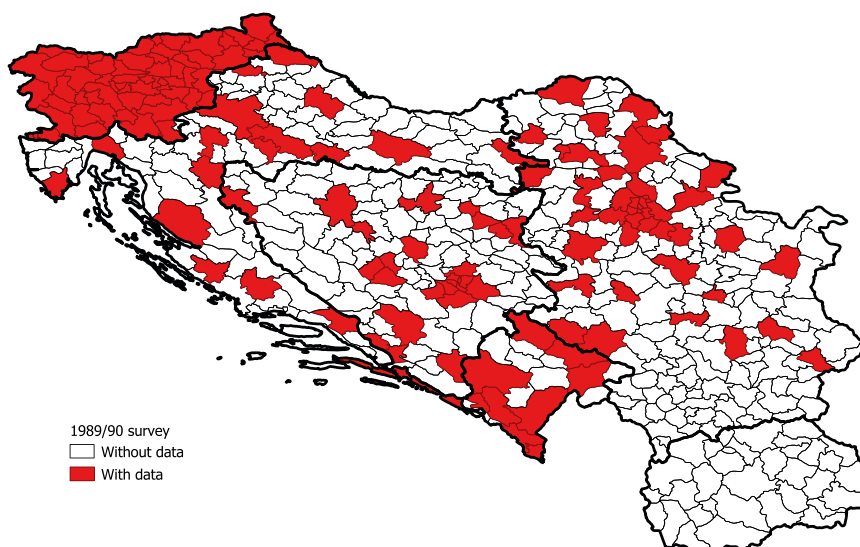
*Public goods exp. p.c.* Expenditure on public goods includes education, healthcare, and social care. Municipality data are taken from the *Statistički Godišnjak SFR Jugoslavije 1991* (Savezni Zavod za Statistiku, 1991b) for 1989 (the last reported year). Expenditure on public goods is normalized by the 1991 population. 1981 municipal public goods expenditure data are taken from the 1982 Yugoslav Statistical Yearbook: *Statistički Godišnjak SFR Jugoslavije 1982* (Savezni Zavod za Statistiku, 1982b). 1981 expenditure data is normalized by the 1981 population.

*Federal aid* This is a dummy variable capturing whether a municipality was a recipient of federal aid. I can determine whether a municipality was a recipient of aid only until 1963. Afterward, the statistical yearbooks, or other official publications, stopped reporting this information. The data on the 1963 recipients of federal aid are taken from the *Statistički Godišnjak SFR Jugoslavije 1964* (Savezni Zavod za Statistiku, 1964).

*1980's generation* I define the early 1980s youth as the fraction of the population in 1991 that was between 25 and 39 years. The data for municipalities are taken from the 1991 population census books of the successor states of Yugoslavia. For Bosnia-Herzegovina: *Popis Stanovništva 1991: Stanovništvo Prema Starosti i Spolu po Naseljenim Mjestima* (Federalni Zavod za Statistiku, 1998b). For Croatia: *Popis Stanovništva 1991: Stanovništvo Prema Spolu i Starosti, po Naseljima* (Državni Zavod za Statistiku, 1994b). For Slovenia: *Popis Prebivalstva 1991: Prebivalstvo po Starosti in Spolu* (Statistični Urad Republike Slovenije, 1994c). For the 1981 census year, I define the youth as those between 15 and 24 years. The 1981 census data are taken from *Popis Stanovništva 1981: Opštine u SFR Jugoslaviji, Osnovni Podaci o Stanovništvu, Domaćinstvima i Stanovima* (Savezni Zavod za Statistiku, 1987).

*Army presence* Yugoslav National Army presence in municipalities is measured for 1990. It is a dummy variable taking a value of one if the army had a permanent presence in a municipality. I measure army presence by the existence of battalions, divisions, army headquarters, naval bases, airports, academies, training centers, and research facilities in a municipality. Therefore, if the municipality contained any of these, the army presence variable takes a value of one. I take the data from [Dragoner \(2016\)](#).

*Communist party members* I have gathered data on Communist Party members per municipality from the internal documentation of the [Centralni Komitet Saveza Komunističara Hrvatske \(1962\)](#) (Central Committee of the League of Communists of Croatia). The documentation can be accessed in the Croatian State Archives. The data comes from the membership reports that municipal branches of the Party were sending to their headquarters in Zagreb. The population fraction of the Party members are reported for 1962. I have



**Fig. A1.** Spatial (municipal) distribution of the 1989/90 individual-level data. *Notes:* This map illustrates the municipalities that the 1989/90 survey data covers. The survey includes respondents from every Slovenian municipality. The 1989/90 survey data is taken from [Kunovich and Hodson \(2002\)](#). The survey is representative of each republic that composed Yugoslavia ([Sekulić et al., 1994](#)). I exclude Kosovo and Macedonia from the survey to make the results comparable to the baseline OLS and IV estimates derived from the 1991 population census. Kosovar Albanians boycotted the 1991 census due to Serbia's dissolution of Kosovo's autonomy, while the 1991 Macedonian census was uncompleted due to ethnic tensions between ethnic Macedonians and Albanians.

not been able to access or find data for any later year. Municipality membership reports have been removed from the documentation of the later years. The amount of Party members is normalized by the 1961 population. Data on the 1961 population at the level of municipalities are taken from the same internal documentation.

*Duration of Habsburg rule* Data on the duration of the historic affiliation of a municipality with the Habsburgs is derived from [Hötte \(2015\)](#); [Novaković \(1965\)](#); [Regan and Kaniški \(2003\)](#); [Šehić and Tepić \(2002\)](#).

*Agricultural (wheat) suitability* Data on the land suitability for wheat production are taken from the [Food and Agriculture Organization \(2016\)](#) (FAO) of the United Nations. FAO provides a set of raster data covering the agroecological environment at the global level. The data provide a sufficiently high resolution to examine the average quality of land in the municipalities of Yugoslavia.

*Terrain roughness* This variable is calculated as the mean difference between a central pixel and its surrounding cells. I used the European elevation (raster) data provided by [European Environment Agency \(2018\)](#) (EEA). The elevation data is of very high resolution (1 km × 1 km), allowing me to calculate terrain roughness across Yugoslavia ([Fig. A1](#)).

*Croatian Hive members* I take the membership records of the Croatian Hive (“Matica Hrvatska”) from a police report in 1972 ([Hrvatska, 2002](#)), which was based on the monitoring and spying of the Hive’s membership (the organization itself destroyed the membership records in 1972 for fear of persecution).

*Distance variables* I measure the distance to the coast and the nearest navigable river by a straight line from the centroid of a municipality. I take the coast and river (raster) data from the [European Environment Agency \(2018\)](#).

## A2. The meaning of Yugoslav identity

In this section, I briefly elaborate on the meaning and content of Yugoslav identity, already discussed in [Section 2.1](#) of the main text. I provide anecdotal evidence by focusing on the work and thoughts of the leading proponents of a supranational Yugoslav culture - the unifying glue of a Yugoslav nation.

[Wachtel \(1998\)](#) argues that attempts at Yugoslav nation-building can be divided into three basic categories concerning how a national culture or identity should be created, and on what content should it be based. First, according to the earliest Yugoslav view, the South Slavs should have adopted a modified form of the Serbian culture. This made intuitive sense to the extent that the Serbs were the largest ethnic group, and were the first in modern times to create an independent state. The proponents of the second view thought that Yugoslav identity should be synthetic. The ideal Yugoslav culture should adopt the best elements from the separate South Slavic cultures to create a synthetic Yugoslav culture. Both views, however, did not imply that separate South Slavic cultures should cease to exist. They would rather become less relevant with the emergence of a new Yugoslav nation. The third view that emerged in the post-war period was that the common socialist features, as well as the common WWII anti-fascist struggle, should connect the ethnic cultures in a supranational union.

[Wachtel \(1998\)](#) argues that, of the aforementioned views towards the construction of the Yugoslav identity, the second view of a synthetic culture was the prominent one during the 20th century. It exerted a strong influence over the communist leadership of Yugoslavia as well. To get a better sense of what synthetic culture meant, it is useful to concentrate on the work and thoughts of the



leading proponents of it. [Wachtel \(1998\)](#) argues that the two most publicly visible and famous proponents of a supranational synthetic Yugoslav culture were Ivan Meštrović, a sculptor, and Ivo Andrić, a Nobel prize-winning author, both of whom were of Croatian origin.

During the interwar period, Meštrović became a world-famous artist and the leading spokesman for a new Yugoslav culture. [Banac \(1984\)](#) reports that those who knew Meštrović's views referred to him as “the prophet of Yugo-Slavism”. Meštrović believed that sculpture offered an ideal form for expressing a new Yugoslav synthesis. The sculpture is more accessible to a general audience than high literature. Moreover, by sculpting figures of mostly Serb epic poetry, South Slavic identities could be melded. The sculpture was largely non-existent in the Serbian Orthodox-based culture, which prohibits three-dimensional figures of divinity. On the other hand, the sculpture was well-developed in the renaissance Dalmatian towns of Croatia.

Meštrović entered the Yugoslav public scene and became the best-known domestic artist with his controversial exhibition at the Rome Exposition of 1911. There, he created a sculpture of Serbian folk-legend hero Prince Marko. Meštrović described the statue of Prince Marko as symbolizing the Yugoslav people, “with its gigantic and noble heart” ([Banac, 1984](#)). At the Rome exhibition, Meštrović also created a model of the temple of Kosovo, which holds a central location in the Serbian national myth as the birthplace of the medieval Serbian Kingdom. His temple of Kosovo combined the Catholic (associated with Croats) and Orthodox Christian (associated with Serbs) architectural elements. The visual symbolism was obvious. The aim was to create an architectural synthesis of Yugoslav identity. The Temple of Kosovo would be something to Yugoslavs that, say, Louvre is to the French ([Wachtel, 1998](#)). In addition to his visual representations of the Yugoslav nation, Meštrović wrote poetry speaking of a “Yugoslav race” ([Banac, 1984](#)).

As additional anecdotal evidence, consider the work of Ivo Andrić. His work symbolized, perhaps, the postwar Yugoslav literary canon the most. During WWII he wrote his two most famous novels, *Na Drini Čuprija* (The Bridge on the Drina) and *Travnička Kronika* (Bosnian Chronicle). Upon their release in the aftermath of WWII, the works were almost instantly proclaimed classics of Yugoslav literature ([Wachtel, 1998](#)). His two great novels are set in multicultural and multiethnic Bosnia. They chronicle the difficult historical interaction of the ethnicities of Yugoslavia, while holding hope for a supranational union that might bind them together. For example, the bridge in *The Bridge on the Drina* is often interpreted, rightly or wrongly, as symbolizing Yugoslavia ([Wachtel, 1998](#)). Like the bridge, Yugoslavia was to be a mediator between Eastern and Western cultural traditions, connecting and blending both in a unique synthesis.

There were, of course, other artists that promoted Yugoslav identity. A prominent institution whose aim was to promote and develop Yugoslav identity was the literary magazine *Književni Jug* (Literary South). Its explicit aim was to lay the ground for future Yugoslav literature. Its duration was short-lived (1918–1919), but many of the authors that are considered today as some of the greatest authors of the successor states of Yugoslavia published there. These include the Slovenian Ivan Cankar, the Croatian Vladimir Nazor, Tin Ujević, and Ivo Vojnović, the Serbian Sima Pandurović, and the Bosnian Aleksa Šantic ([Milisavac, 1971](#)).

In terms of popular culture, Yugoslav rock music is a crucial foundation of supranational identity in late Yugoslavia, especially among the youth. [Ramet \(1992\)](#) argues that rock music in Yugoslavia was seen by many of its purveyors as pan-Yugoslav, a force that brought people together and created ties of mutual acceptance. It created a shared cultural space and common reference points, superseding ethnic boundaries ([Perković, 2011](#)). [Ramet \(1992\)](#) argues that, symptomatically, many of the leading figures of the Yugoslav rock scene emphasized that they were “Yugoslavs”, as opposed to say Serbs or Slovenes.

It was, however, not only rock music that served as a purveyor and constructor of Yugoslav feeling. Pop-folk, which reached extremely high levels of popularity during the 1980s (and remains equally popular today in Yugoslav successor states, if not more), also mattered. Consider the example of Fahreta Živojinović, better known as Lepa Brena. Since her pop-folk career began in the early 1980s, Lepa Brena became arguably the most popular singer in Yugoslavia. She still maintains strong popularity in Yugoslav successor states. In 1989, Lepa Brena released the controversial song *Jugoslavenka* (Yugoslavian (girl)), which is unashamedly pro-Yugoslav. It remains one of her most popular songs. While there were plenty of popular songs earlier celebrating Yugoslavia and its identity, many were implicitly or explicitly glorifying the socialist regime. As such, [Ramet \(1992\)](#) describes some of these “patriotic” songs as sycophantic. Yugoslavian by Lepa Brena, on the other hand, seems genuine. It was written at the time of rising ethnic nationalism. Pro-Yugoslav songs during the late 1980s were strongly damaging to a singer's career ([Perković, 2011](#)). In the song, Lepa Brena relates the features of a beautiful Yugoslav girl with the geographic and other features of Yugoslavia:

---

Where are you from, pretty girl  
 who gave birth to the blue eye  
 who gave you the golden hair  
 who made you so passionate  
 Chorus x2  
 My eyes are Adriatic sea  
 my hair is Panonian wheat  
 wistful is my Sloven soul  
 I'm Yugoslavian  
 Where are you from, pretty girl  
 where did you grow, spring flower  
 where free sun is warming you  
 when you dance so seductively  
 Chorus 2x  
 Where are you from, pretty stranger (girl)  
 where have you been stealing sun's shine  
 where were you drinking honey wine  
 when your kiss is so sweet  
 Chorus 2x

---

It is, perhaps, not surprising that Lepa Brena still explicitly identifies herself as “Yugoslav”, and feeling “Yugonostalgic”. In her own words in 2008: “If someone has a right to declare themselves as Croat or Serb, I too have a right to declare myself as Yugoslav. Yugoslavia was specific in many ways... Similar to [former] Yugoslavia lives united Europe [today], which is a civilized society. I admit, I am Yugonostalgic, and I think you shouldn’t close doors to other people. You have to respect the right of people with another color of skin, religion, and diversity...” (Index.hr, 2008) (author’s translation, squared brackets inserted by author).

### A3. Theoretical framework

This section provides a simple model to describe which individuals might adopt a Yugoslav identity, which guides the empirical analysis of the main text. The model is not exhaustive. Its aim is rather to build a basic intuition behind the relationship between ethnic diversity and national sentiment. I use individual theoretical analysis to generate hypotheses about the determinants of Yugoslav identification at the municipal level. My macro-level empirical framework is an aggregation of micro-level reasoning.

Assume that there are two types of national categories, Yugoslavs,  $Y$ , and non-Yugoslavs,  $N$ . A non-Yugoslav identity corresponds to the ethnic roots of an individual. The ideal non-Yugoslav has attributes  $a_n$ , while the ideal Yugoslav has attributes  $a_y$ . The identity pay-off a non-Yugoslav incurs depends on her self-image,  $I_n$ , and the extent to which her attributes,  $a$ , correspond to her category’s ideal attributes,  $t_n(a_n - a)$ . There might be a mismatch between who an individual is,  $a$ , and who that individual wants to be,  $a_n$ . If there is a mismatch between the two, an individual will incur a physic loss equivalent to  $t_n(a_n - a)$ .

Similar to Akerlof and Kranton (2002), the parameter  $t$  measures how difficult it is for individuals with different characteristics to fit into a national category. Akerlof and Kranton (2002) argue that the parameter  $t$  can be lowered through a policy of creating a sense of community. If so, a government could affect an individual’s sense of belonging to a nation through policies like education. The parameter  $t$  can likely be affected by a range of other socioeconomic factors as well.

The identity pay-off of a Yugoslav is completely synonymous with that of a non-Yugoslav. An individual can choose how Yugoslav they feel,  $y$ , which is treated as a continuous variable on a unit interval. By choosing to be a Yugoslav, an individual reduces the weight on the overall identity pay-off associated with her ethnic roots. An individual can thus have multiple identities. If an individual chooses Yugoslav identity, she will incur costs,  $\beta$ , that are relative to the costs of remaining loyal to the ethnic roots of an individual. The costs of becoming a Yugoslav can be perceived as costs of identity switching (Caselli and Coleman, 2013), or as costs of “betraying” one’s ethnic roots. They can take several forms. They can take the form of direct monetary (opportunity) costs, like lost access to jobs allocated by ethnic criteria. They can also take the form of physic costs, like ostracism from an ethnic-based community. Finally, they can take the form of prejudice, along the lines of (Allport, 1954).

An individual thus maximizes her identity pay-off by choosing how Yugoslav she feels:

$$V(y) = (1 - y)(I_n - t_n(a_n - a)) + y(I_y - t_y(a_y - a) - \beta y) \quad (4)$$

where the costs of becoming a Yugoslav are proportional to the intensity of Yugoslav feeling. If an individual does not feel like a Yugoslav at all, i.e. if  $y = 0$ , she will derive identity pay-off solely from her ethnic roots. Eq. (4) will collapse to:

$$V_n = I_n - t_n(a_n - a) \quad (5)$$

Such individuals can be interpreted as having no belief whatsoever in the Yugoslav nation. If so, they can be characterized as ethnic nationalists. Equivalently, if  $y = 1$ , an individual does not feel attached to her ethnic roots at all. Instead, she firmly identifies with the Yugoslav nation. Her identity pay-off will collapse to:

$$V_y = I_y - t_y(a_y - a) - \beta \quad (6)$$

Why would ethnic diversity matter? A higher ethnic diversity could decrease the cost of identity switching, and stimulate national feeling. There are three relevant channels. First, ethnic diversity decreases the number of resources an ethnic group can mobilize to punish its defecting member. Second, ethnic diversity decreases the amount of ethnic-specific connections a defecting individual would sever, which would otherwise involve a physic loss. Finally, according to Allport (1954), ethnic diversity decreases prejudice, decreasing the likelihood that an individual will be punished.

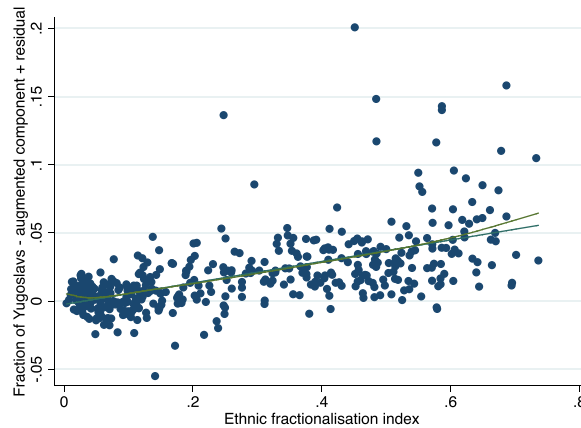
Formally, the cost of betraying one’s ethnic roots depends negatively on ethnic diversity,  $e$ , and a vector of variables,  $z$ :

$$\beta = \beta(e, z) \quad (7)$$

Ethnic diversity could also have an indirect effect on the overall identity pay-off by affecting the characteristics or ethnic markers of an individual. Such ethnic markers could, for instance, take the form of the ethnic background of the spouse or partner of an individual, or the ethnic background of the individual’s parents. To focus on the former case, suppose that an ideal member of an ethnicity should marry or be in a relationship with a member of the same ethnicity. For instance, an ideal Croat should marry another Croat, rather than say a Serb or a Slovene. In contrast, suppose that for an ideal Yugoslav the ethnicity of her spouse or partner is irrelevant.<sup>27</sup>

To formalize these ideas, define  $c = a_n - a$ , and  $d = a_y - a$ . Suppose that  $c$  is an increasing function of ethnic intermarriage,  $i$ , while  $d$  is independent of ethnic intermarriage. Suppose that intermarriage in turn depends on ethnic diversity, and a vector of variables,

<sup>27</sup> Yugoslav identity, as discussed in the previous section, was not based on ethnic markers. Of course, it was initially based on the idea of South Slav unity. However, it evolved over time to be even more inclusive than that (Djokić, 2003).



**Fig. A2.** The non-linear relationship between ethnic diversity and Yugoslav sentiment, 1991 municipal data, Yugoslavia. *Notes:* This figure examines whether the relationship between the fraction of Yugoslavs and ethnic fractionalization is non-linear by plotting the augmented partial residuals of column 15, Table 4, specification against ethnic diversity. The smoothed fitted line kinks upwards at the right end of the distribution, indicating some non-linearity.

x. Finally, assume further that both  $c$  and  $d$  depend, for simplicity, on an identical vector of other variables,  $f$ :

$$c(i, f) = c(i(e, x), f) \quad (8)$$

$$d = d(f) \quad (9)$$

Intuitively, intermarriage depends on the existence of possible matches between ethnically heterogeneous individuals, which is a supply-side issue. Intermarriage is impossible if there are no ethnically heterogeneous individuals in a society. All else given, an increase in ethnic diversity will increase the incidence of intermarriage. Even if an individual has a strong preference towards endogamy, in the extreme case of perfect ethnic heterogeneity, an individual will have to marry a member of another ethnicity unless that individual is willing to rather remain unmarried. Intermarriage will in turn increase the mismatch between the individual's attributes and the ideal attributes of a non-Yugoslav. An increase in ethnic diversity will thus increase the identity loss associated with a non-Yugoslav identity relative to a Yugoslav identity, stimulating Yugoslav sentiment.<sup>28</sup>

To derive what determines Yugoslav sentiment, substitute Eqs. (7)–(9) into Eq. (4), and maximize Eq. (4) with respect to  $y$ :

$$y = \frac{I_y - I_n + t_n c(i(e, x), f) - t_y d(f)}{2\beta(e, z)} \quad (10)$$

For the maximization problem to have a non-negative solution on a continuous unit interval, auxiliary assumptions require that the numerator is larger than zero, and that the denominator is equal to or larger than the numerator. Ethnic diversity has an impact on Yugoslav identification by affecting the cost of becoming a Yugoslav. An increase in ethnic diversity will reduce the cost of becoming a Yugoslav, and hence stimulate Yugoslav identification. Ethnic diversity has a further impact on Yugoslav feeling by impacting the incidence of intermarriage. Subject to cost, some individuals will reject an ethnic-centered identity because they do not fit in. Instead, they will gravitate toward an identity that is not based on ethnic markers. Such individuals will identify with the wider nation rather than with a specific ethnicity. While acknowledging that other factors have an impact on national identification as well, the aim of the empirical analysis in the main text is to investigate the impact of ethnic diversity on Yugoslav self-identification.

#### A4. Alternative estimators: GLM and PPML

OLS estimates might be inappropriate for two reasons. First, the relationship between ethnic fractionalization and Yugoslav self-identification is not necessarily monotonic. Fig. A2 tests the presence of non-linearity between Yugoslav sentiment and ethnic diversity by plotting the augmented partial residuals of the OLS specification against ethnic diversity. The smoothed regression line kinks upwards towards the right end of the distribution, implying some non-linearity. This might suggest that one of the reasons why Yugoslav identification was generally low was because ethnic diversity needed to be high before it substantially influenced Yugoslav sentiment. The second problem with the OLS estimates is that they predict negative values of the population share of Yugoslavs. Even though the analysis aims to describe, rather than to forecast, this still creates an odd problem.

Two estimators can be employed to assess the extent to which these two problems might bias the OLS estimates. First, Papke and Wooldridge (1996) propose a quasi-likelihood general linear model (GLM) for regression models with a fractional dependent variable.

<sup>28</sup> These implications will hold as long as Yugoslavs cared less about the ethnicity of their spouse or partner relative to non-Yugoslavs. Of course, it is also possible to imagine that Yugoslavs valued intermarriage as an attribute. The effect would then be even more pronounced.

**Table A1**  
GLM and PPML estimates, 1991 municipal data, Yugoslavia, dependent variable: fraction of Yugoslavs.

	(1) GLM	(2) PPML
Ethnic fractionalisation	2.7127** (0.190)	2.5970** (0.180)
Output p.c.	0.0007 (0.012)	0.0007 (0.012)
Population density	0.0000 (0.000)	-0.0000 (0.000)
Avg. years of schooling	0.4107** (0.064)	0.3870** (0.059)
Social sector labour	0.1811 (0.137)	0.1825 (0.123)
Youth labour actions	-0.6430 (0.307)	-0.6027 (0.298)
WWII partisan veterans	11.1942 (13.625)	10.7425 (12.902)
Monuments to anti-fascism	-0.1301 (0.108)	-0.1254 (0.103)
Fascist terror	2.8319** (0.881)	2.7390 (0.833)
Public goods exp. p.c.	-0.0060 (0.009)	-0.0052 (0.009)
Federal aid	-0.0557 (0.093)	-0.0467 (0.088)
1980's generation	-2.5976 (4.104)	-2.3216 (3.902)
Army presence	0.2616* (0.100)	0.2495* (0.096)
Region effects	Yes	Yes
Observations	434	434
R-squared	n.a.	0.639

Notes: Unit of observation is a municipality. Robust standard errors are clustered at regional-level in parentheses.

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

Their model is also flexible in dealing with alternative functional forms. Second, [Silva and Tenreiro \(2006\)](#) propose a Poisson pseudo-maximum-likelihood (PPML) estimator for regression models with a fractional dependent variable that are characterized by non-linearities.

This section reports the GLM and PPML estimators that replicate the [Table 4](#), column 15, model. The GLM coefficient on ethnic diversity in column 1 of [Table A1](#) implies that a unit increase in ethnic fractionalization is associated with an increase in the fraction of Yugoslavs by 0.0692 units. The PPML coefficient on ethnic diversity in column 2 of [Table A1](#) implies that a unit increase in ethnic fractionalization is associated with an increase in the fraction of Yugoslavs by 0.0702 units. The alternative estimators imply marginal coefficients on ethnic diversity that are very similar to the coefficient on ethnic diversity provided by the OLS estimator (0.079). As such, I prefer to use OLS estimates in the main text because the interpretation of OLS coefficients is easier.

#### A5. Additional control: communist party membership

[Burg and Berbaum \(1989\)](#) argue that Yugoslav identification signified political integration and regime support. In the main text of the paper, I have already included army presence to test their hypothesis. To test further the interpretation of Yugoslav identification as signifying regime support, I control for the population fraction of the Communist Party members in this section. However, I must restrict the analysis to Croatia due to data availability. I have not been able to find Communist Party membership records of the other regions in the archives.

[Table A2](#) documents the OLS estimates when controlling for the Communist Party membership. Column 1 begins by showing the effect of ethnic diversity on Yugoslav sentiment in the absence of controls. In column 2, I control the Communist Party membership. The coefficient on that variable is positive and statistically significant. Nevertheless, once I include the baseline controls in column 3, the coefficient on Communist Party membership loses significance. The coefficient on ethnic diversity remains positive and statistically significant throughout the specifications. There is hence no strong evidence that communists were more likely to feel Yugoslav when using the municipal data.

#### A6. Additional control: Croatian nationalism

This section analyses the relationship between ethnic nationalism and Yugoslav sentiment. Namely, it examines Croatian nationalism, which played a pivotal role in the disintegration of the country.

**Table A2**

OLS estimates with Communist Party membership, 1991 municipal data, Croatia, dependent variable: fraction of Yugoslavs.

	(1)	(2)	(3)
Ethnic fractionalization	0.0579*** (0.007)	0.0537*** (0.008)	0.0585*** (0.009)
Communist Party members		0.1630*** (0.058)	0.0654 (0.069)
Municipal controls	No	No	Yes
Observations	102	102	102
R-squared	0.503	0.529	0.640

*Notes:* The unit of observation is a municipality. The analysis is restricted to Croatia due to data availability issues. Municipal controls are output p.c., population density, average years of schooling, fraction of social sector employment, population fraction of youth labor actions, population fraction of WWII partisan veterans, sites containing monuments to anti-fascism, population fraction of individuals exposed to WWII fascist terror, expenditure on public goods p.c., federal aid, population percentage of the early 1980's generation, and sites containing army presence. These controls are identical to those in column 15 of [Table 4](#). Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table A3**

OLS estimates with Croatian Hive members, 1991 municipal data, Yugoslavia, dependent variable: fraction of Yugoslavs.

	(1)
Ethnic fractionalization	0.0796** (0.013)
Croatian Hive members	-0.2067 (0.075)
Region effects	Yes
Municipality controls	Yes
Observations	434
R-squared	0.556

*Notes:* The unit of observation is a municipality. Municipal controls are output p.c., population density, average years of schooling, fraction of social sector employment, population fraction of youth labor actions, population fraction of WWII partisan veterans, sites containing monuments to anti-fascism, population fraction of individuals exposed to WWII fascist terror, expenditure on public goods p.c., federal aid, population percentage of the early 1980's generation, and sites containing army presence. These controls are identical to those in column 15 of [Table 4](#). Robust standard errors clustered at regional-level in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Economic and cultural issues fueled the resurgent nationalist sentiment in Croatia during the 1960s ([Jakovina, 2012](#)). The critical moment was the publication of the “Declaration Concerning the Name and the Position of the Croatian Literary Language” in 1967, which demanded recognition of the Croatian language as an independent entity. The document was written and published under the auspices of the *Croatian Hive* (“Matica Hrvatska”), an institution dedicated to the aim of promoting Croatian national identity and culture.

The Croatian Hive (The Hive) played a critical role in the development of Croatian nationalism during the 1960s. It mobilized the ethnic nationalists providing infrastructure and institutional support for their calls for greater national autonomy. The Hive, *de facto*, became the main opposition party to the communists in Croatia. It reached massive membership during 1971, with about 50,000 individuals joining the organization that year ([Jakovina, 2012](#)).

The communist leadership, however, had little tolerance toward the opposition. They accused the Hive of anti-state and counter-revolutionary agitation. They also accused it of breaking the brotherhood and unity of Yugoslavia, and of contact with the fascist emigration of Croatia. The Hive was eventually banned in 1972, with its leadership jailed, and a significant number of its members persecuted. One of the persecuted members was Franjo Tudjman, who became the first president of independent Croatia in 1991.

[Table A3](#) examines the correlation between Croatian nationalism and Yugoslav sentiment. The independent variable is the population share of the Hive members, which serves as a proxy for the strength of Croatian nationalism. The coefficient on the population share of Hive members in column 1 is negative. This makes intuitive sense: people exposed to Croatian nationalism might have felt pressured to reject Yugoslav identity. Nevertheless, the size of the coefficient on Hive membership, which is insignificant, should be taken with some caution. I take the membership records of the Croatian Hive from a police report in 1972, which was based on the monitoring and spying of the Hive's membership (the organization itself destroyed the membership records in 1972 for fear of persecution). There might be a measurement error in the estimated membership, as it is derived from police work, which may or may not have been well done.

**Table A4**  
Correlation matrix of the independent controls, 1991 municipal data, Yugoslavia.

	Ethnic fractionalization	Output p.c.	Population density	Avg. years of schooling	Social sector labor	Youth labor actions	WWII partisan veterans	Monuments to anti-fascism	Fascist terror	Public goods exp. p.c.	Federal aid	1980's generation	Army presence	Croatia	Bosnia	Slovenia	Montenegro	Serbia	
Ethnic fractionalization	1																		
Output p.c.	-0.0352	1																	
Population density	0.0841	0.4075	1																
Avg. years of schooling	0.1253	0.6536	0.375	1															
Social sector labor	0.1921	0.6095	0.2045	0.7465	1														
Youth labor actions	0.0377	-0.0614	-0.0304	-0.066	-0.0086	1													
WWII partisan veterans	0.0343	0.1082	0.0281	0.1364	0.2055	-0.1067	1												
Monuments to anti-fascism	0.0576	0.1295	0.1849	0.2362	0.2726	-0.0087	0.2049	1											
Fascist terror	-0.1037	0.3273	0.0182	0.2279	0.1667	-0.0252	0.1512	0.0118	1										
Public goods exp. p.c.	0.0188	0.5709	0.7712	0.3254	0.2312	-0.0386	0.0869	0.1484	0.1185	1									
Federal aid	0.1596	-0.3022	-0.0552	-0.2729	-0.2016	0.009	0.0166	0.0219	-0.206	-0.0236	1								
1980's generation	0.3585	0.2385	0.2163	0.5639	0.4286	-0.0659	-0.1029	0.1212	-0.0248	0.1113	0.0249	1							
Army presence	0.0881	0.156	0.1207	0.3125	0.3097	0.0785	-0.008	0.2887	-0.0357	0.0474	-0.1312	0.187	1						
Croatia	-0.0474	0.0564	-0.0607	0.1617	0.2829	0.0297	0.1975	0.0103	-0.0085	-0.0216	-0.1854	-0.0326	0.0705	1					
Bosnia	0.4394	-0.3293	0.0745	-0.0544	-0.1062	-0.0129	-0.1705	0.0454	-0.2898	-0.0814	0.4092	0.4663	-0.0722	-0.321	1				
Slovenia	-0.2258	0.6177	0.1187	0.5665	0.285	-0.1857	-0.0334	-0.0021	0.3673	0.2461	-0.1662	0.2309	0.0274	-0.222	-0.232	1			
Montenegro	0.0723	-0.1146	-0.0417	0.0421	0.0533	-0.1312	0.2904	0.1286	-0.0108	-0.0082	0.092	0.0235	0.007	-0.1218	-0.1273	-0.088	1		
Serbia	-0.2291	-0.1495	-0.0825	-0.5305	-0.3903	0.18	-0.1259	-0.107	0.0102	-0.0825	-0.1293	-0.5809	-0.0202	-0.3886	-0.406	-0.2808	-0.1541	1	

Notes: The unit of observation is a municipality. The data and the data sources are described in detail in [Appendix A.1](#).

**Table A5**  
Variance inflation factor, 1991 municipal data, Yugoslavia.

	Variance inflation factor	1/(Variance inflation factor)
Bosnia	7.1	0.140913
Serbia	7.08	0.141283
Avg. years of schooling	5.82	0.17185
Croatia	4.49	0.222638
Output p.c.	4.44	0.225003
Public goods exp. p.c.	3.61	0.277261
Social sector labor	3.36	0.298035
Population density	3.24	0.30844
1980's generation	2.57	0.388581
Montenegro	2.28	0.438919
Ethnic fractionalization	1.51	0.663863
Federal aid	1.47	0.682187
WWII partisan veterans	1.34	0.74709
Army presence	1.31	0.766155
Fascist terror	1.28	0.779196
Monuments to anti-fascism	1.24	0.803533
Youth labor actions	1.12	0.894388

Notes: The unit of observation is a municipality. The data and the data sources are described in detail in [Appendix A.1](#).

**Table A6**  
OLS estimates with religious diversity, 1991 municipal data, Yugoslavia, dependent variable: fraction of Yugoslavs.

	(1)	(2)	(3)
Religious fractionalization	0.0787*** (0.003)	-0.0190 (0.041)	0.0005 (0.029)
Ethnic fractionalization		0.1087 (0.049)	0.0790* (0.034)
Region effects	No	No	Yes
Municipal controls	No	No	Yes
Observations	434	434	434
R-squared	0.242	0.321	0.555

Notes: The unit of observation is a municipality. Municipal controls are output p.c., population density, average years of schooling, fraction of social sector employment, population fraction of youth labor actions, population fraction of WWII partisan veterans, sites containing monuments to anti-fascism, population fraction of individuals exposed to WWII fascist terror, expenditure on public goods p.c., federal aid, population percentage of the early 1980's generation, and sites containing army presence. These controls are identical to those in column 15 of [Table 4](#). Robust standard errors clustered at regional-level in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

#### A7. Multicollinearity

Under multicollinearity, the regression model estimates suffer from inflated standard errors, and the coefficients are biased. The problem of multicollinearity is frequently reflected in the unstable coefficient on the independent variable of interest when the controls are added sequentially. The sequential addition of controls in [Table 4](#) of the main text shows that the coefficient on ethnic diversity is highly stable across the specifications, indicating informally that multicollinearity is not of serious concern. This section analyses a bit more formally whether the control variables suffer from multicollinearity.

[Table A4](#) shows the correlation matrix of the control variables, including the regions. Of all the controls, ethnic fractionalization is most correlated to Bosnia (0.44). The correlation coefficient between ethnic fractionalization and most of the other controls is typically low - below 0.1.

[Table A5](#) uses the variance inflation factor to examine further the issue of multicollinearity. The mean variance inflation factor is 3.13, while the maximum factor is 7.1 for Bosnia. These values are below the threshold value of 10, which is frequently taken as a cut-off value when multicollinearity is considered problematic. Therefore, multicollinearity does not seem of serious concern.

#### A8. Additional control: religious diversity

In this section, I explore the relationship between religious diversity and Yugoslav sentiment. Religious diversity is sometimes used as a proxy for ethnic diversity in the literature ([Alesina and La Ferrara, 2005](#)). Of course, religious diversity might also influence national sentiment independent of ethnic diversity.

[Table A6](#) documents the OLS estimates when using religious diversity. I begin the analysis in column 1 by replacing ethnic diversity with religious diversity, and by excluding the controls. The coefficient on religious diversity is statistically significant, and its size

**Table A7**  
OLS estimates, sub-samples of Yugoslavia, 1991 municipal data, dependent variable: fraction of Yugoslavs.

	(1) Croatia	(2) Bosnia	(3) Montenegro	(4) Serbia	(5) Slovenia
Ethnic fractionalization	0.0595*** (0.009)	0.0424*** (0.011)	0.0414 (0.075)	0.0771*** (0.020)	0.0162** (0.008)
Municipal controls	Yes	Yes	Yes	Yes	Yes
Observations	102	109	20	143	60
R-squared	0.638	0.728	0.834	0.576	0.775

Notes: Municipal controls are output p.c., population density, average years of schooling, fraction of social sector employment, population fraction of youth labor actions, population fraction of WWII partisan veterans, sites containing monuments to anti-fascism, population fraction of individuals exposed to WWII fascist terror, expenditure on public goods p.c., federal aid, population percentage of the early 1980's generation, and sites containing army presence. These controls are identical to those in column 15 of Table 4. Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

is similar to the coefficient on ethnic diversity in Table 4. This is unsurprising, given that the correlation coefficient between ethnic diversity and religious diversity is 0.91. Nevertheless, when I include both ethnic and religious diversity in column 2, the coefficient on religious diversity loses significance, while the coefficient on ethnic diversity remains significant. I find the same results when I include the baseline controls in column 3. Conditional on ethnic diversity, there is thus no evidence that religious diversity influenced Yugoslav identity.

#### A9. Sub-samples

This section analyses the effect of ethnic diversity on Yugoslav sentiment for a variety of sub-samples. Given the inclusion of regional effects in the analysis, the obvious choice is to analyze the data of each region that constituted Yugoslavia. Table A7 documents the results. The coefficient on ethnic diversity across the regions clusters in the range of 0.041–0.077. Slovenia, however, is characterized by a lower coefficient of 0.016. The findings are statistically significant across the regions, apart from Montenegro. The insignificant result for Montenegro is, perhaps, unsurprising. Montenegro was composed of only 20 municipalities, and there might be too much noise in the data, given the low amount of observations.

#### A10. Bias from unobservables

Despite using a rich set of controls, the estimates reported in Table 4 might be biased by unobservable factors correlated with selection into ethnically diverse areas. I assess the likelihood that the unobservables are biasing the estimates by using the method developed by Altonji et al. (2005), and adapted to the case where the dependent variable is continuous by Bellows and Miguel (2009).

Altonji et al. (2005) argue that the selection of observables can be used to assess the bias from the unobservables. They propose a ratio that compares how much the coefficient on the treatment variable (ethnic diversity) declines as the control variables are added.

I begin by running two regressions. The first regression runs a restricted model, where the coefficient on ethnic diversity is denoted by  $\beta^R$  (R stands for restricted). The second regression runs a fully specified model, where the coefficient on diversity is denoted by  $\beta^F$  (F stands for full). Then, the Altonji et al. (2005) ratio is calculated as  $\beta^F / (\beta^R - \beta^F)$ .

Intuitively, the stronger the numerator,  $\beta^F$ , the stronger the effect after controlling for observables, and unobservables would have to explain more to reduce the coefficient of interest to zero. Concerning the denominator, the smaller the difference between  $\beta^R$  and  $\beta^F$ , the estimate is affected less by the selection on observables, and the selection on unobservables would need to be stronger to reduce the coefficient on ethnic diversity to zero.

I use the controls of Table 4, column 15, specification, to estimate how much stronger the effect of omitted variables would have to be, relative to observables, to attribute the entire OLS estimate to selection effects. The underlying assumption is that the unobservable controls explain as much of the outcome as the observable controls. The results are presented in panel A of Table A8. The Altonji et al. (2005) ratio is 6.67. This means that selection on unobservables would have to be at least six times greater than selection on observables to reduce the coefficient on ethnic diversity to zero. The omitted variable bias would thus have to be extremely high to explain away the positive association between ethnic diversity and Yugoslav sentiment.

The extension of Oster (2019) stresses the importance of taking into account by how much the overall fit of the regression improves when the controls are added. She argues that it is not sufficient to look only at coefficient stability. It is important to scale it by a movement in the R-squared. In panel B, the R-squared increases from 0.319 to 0.555 when adding the controls. The controls thus account for a substantial share of the overall variation, lending some confidence to the use of the Altonji et al. (2005) method.

In Panel A, I use the bounding argument of Oster (2019) more formally. She considers a standard linear regression model  $Y = \beta X + W_1 + W_2 + \varepsilon$ , where  $X$  is the treatment variable,  $W_1$  is a vector of observable controls, and  $W_2$  is the vector of unobservables. She then defines the selection relationship as  $\delta \frac{\text{Cov}(W_1, X)}{\text{Var}(W_1)} \frac{\text{Cov}(W_2, X)}{\text{Var}(W_2)}$ , where  $\delta$  is the factor that would decrease the coefficient on the treatment variable to zero.



**Table A8**

Bias from un-observables, [Altonji et al. \(2005\)](#) and [Oster \(2019\)](#) method, 1991 municipal data, Yugoslavia, dependent variable: fraction of Yugoslavs.

Panel A: Selection on unobservables relative to observables		Panel B: Coefficient stability and $R$ -squared			
Method	Value	Controls	Coefficient	$R$ -squared	Controls
<a href="#">Altonji et al. (2005)</a>	6.67	Yes	0.09128	0.319	No
<a href="#">Oster (2019)</a>	1.66	Yes	0.07941	0.555	Yes

*Notes:* Following the methodology of [Altonji et al. \(2005\)](#) and [Oster \(2019\)](#), the table reports the strength of selection on unobservables, relative to observables, that is required to attribute the entire OLS estimate of the relationship between ethnic diversity and Yugoslav identification to omitted variables. Controls are output p.c., population density, average years of schooling, fraction of social sector employment, population fraction of youth labor actions, population fraction of WWII partisan veterans, sites containing monuments to anti-fascism, population fraction of individuals exposed to WWII fascist terror, expenditure on public goods p.c., federal aid, population percentage of the early 1980's generation, sites containing army presence, and region effects. These controls are identical to those in column 15 of [Table 4](#).

**Table A9**

Correlation between border changes and various outcomes, 1991 municipal data, Yugoslavia.

	Border changes, 1421–1816	Region effects	Municipal controls	Observations	$R$ -squared
1. Output p.c.	0.0455 (0.179)	Yes	Yes	434	0.775
1. Public goods exp. p.c.	0.1946 (0.119)	Yes	Yes	434	0.719
3. State capacity	0.0046 (0.005)	Yes	Yes	434	0.673
4. WWII deaths	0.0044 (0.004)	Yes	Yes	434	0.453

*Notes:* The unit of observation is a municipality. Outcomes are reported in rows 1–15. The independent variable is border changes, 1421–1816. Municipal controls are ethnic diversity, output p.c., population density, average years of schooling, fraction of social sector employment, population fraction of youth labor actions, population fraction of WWII partisan veterans, sites containing monuments to anti-fascism, population fraction of individuals exposed to WWII fascist terror, expenditure on public goods p.c., federal aid, population percentage of the early 1980's generation, and sites containing army presence. A variable is never included as a control if it is simultaneously treated as an outcome in rows 1–15. Robust standard errors clustered at regional-level in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

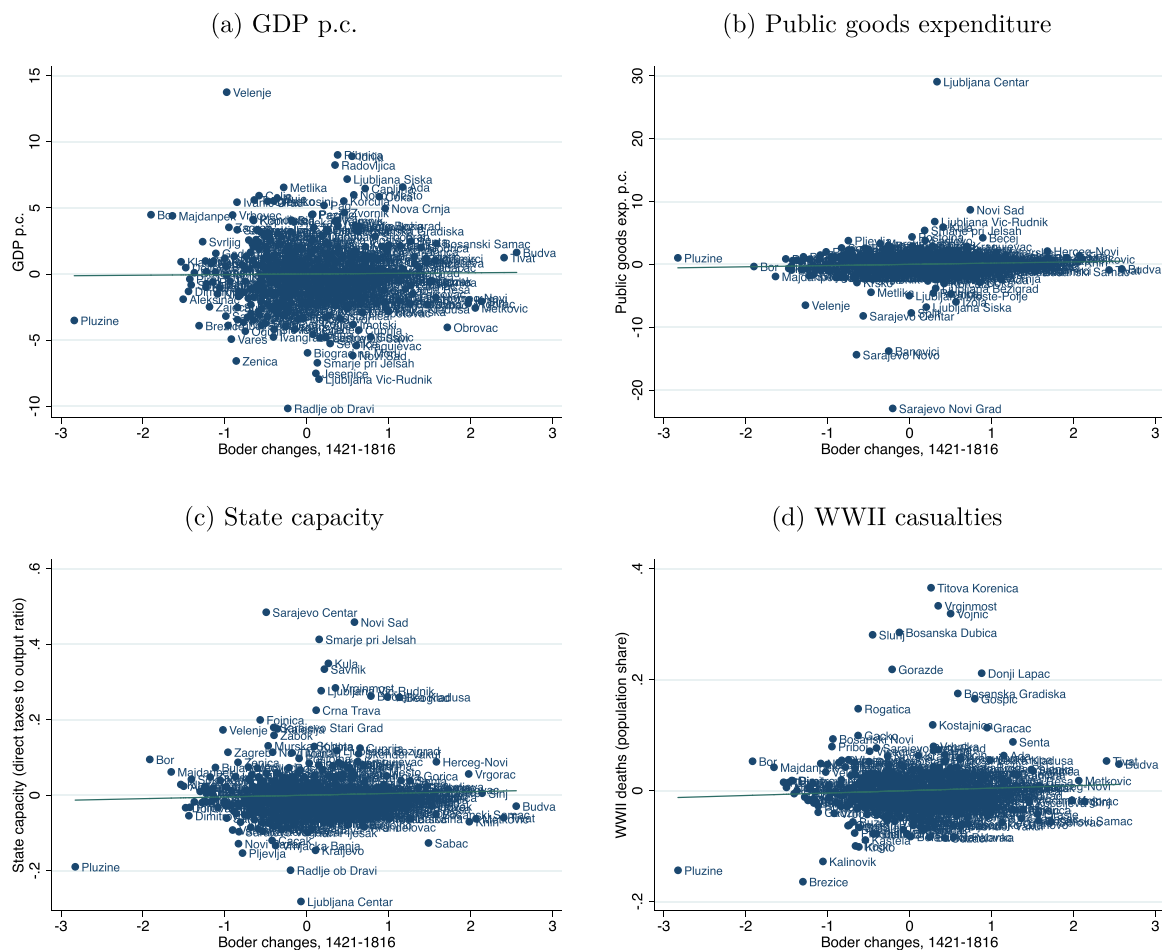
The crucial part of the exercise is to determine how much of the variation in Yugoslav sentiment,  $R_{\max}$ , can  $W_1$  and  $W_2$  explain. When using the [Altonji et al. \(2005\)](#) ratio, I assumed that the unobservable controls explain as much of the outcome as the observable controls. The [Oster \(2019\)](#) method is more flexible - it allows me to choose any value of  $R_{\max}$ . She proposes a standard based on the performance of her estimator in randomized data. She suggests that researchers should use  $R_{\max} = 1.3R_1$ , where  $R_1$  is the  $R$ -squared derived from the model which includes the controls (in this case, 0.555). Making this assumption in panel A of [Table A8](#) produces  $\delta = 1.66$ . This means that selection on unobservables would need to be at least 1.6 times greater than selection on observables to reduce the coefficient on ethnic diversity to zero. This value comfortably passes the  $\delta \geq 1$  threshold that [Oster \(2019\)](#) considers reasonable for the OLS estimate to be robust.

I now perform the final bounding analysis. I determine an explicit bound of  $R_{\max}$  which would yield  $\delta < 1$ , i.e. where the estimate would fail the  $\delta \geq 1$  robustness threshold. I find that  $R_{\max}$  would have to be equal to 0.94 to produce  $\delta = 0.99$ . This implies that  $R_{\max}$  would have to be extremely high to weaken the robustness of my results - there would be minimum space for the error term to influence the results, which is unrealistic. The [Oster \(2019\)](#) bounding analysis thus suggests that it is highly unlikely that confounders can overturn my results.

#### A11. Correlation between border changes and various outcomes

Border changes might be correlated to the factors that influenced the formation of national identity, like conflict, provision of public goods, state capacity, and income. A strong correlation between border changes and such factors would suggest that the instrument is not credible. [Fig. A3](#) shows that there is no systematic correlation between border changes and conflict (WWII), expenditure on public goods, state capacity, and income.

[Table A9](#) shows more precisely the association between border changes and each of the considered outcome variables (rows 1–4). The table shows that there is no significant relationship between border changes and these outcomes, just like the partial correlations of [Fig. A3](#) indicate.



**Fig. A3.** Relationship between border changes and socioeconomic and cultural factors, municipal-level, Yugoslavia. *Notes:* This figure plots the correlation between border changes and various socioeconomic and cultural variables. The relationship between ethnic diversity and border changes in each subfigure is conditional on covariates included in column 15, Table 4, specification. Appendix A.11 shows more precisely that the coefficient on border changes is insignificant across the outcomes. Appendix A.1 explains in detail the construction and data sources for each variable.

#### A12. IV estimates with religious and linguistic diversity

One possible threat to the identification strategy is if the premodern and early-modern border changes were endogenous to some cultural factors, like religion or language, along which ethnic identities subsequently formed. For that matter, there is a tight relationship between religion and national identity in Yugoslavia, with Orthodoxy being associated with Serbs, Islam with Bosniaks, and Catholicism with Croats and Slovenes. Therefore, there is potentially some path dependence in terms of diversity, and diversity in the past might have influenced the patterns of invasions, and hence, border changes. Historians, as argued in the main text, argue that this is not the case. The states driving the variation in border changes - Venice, and the Ottoman and Habsburg Empires - were all imperialistic and expansionist, conquering areas according to economic and strategic criteria, rather than cultural criteria.

Be that as it may, it is impossible to exclude the possibility that there might be some endogeneity between border changes and diversity. In particular, it might be the case that religious diversity is correlated with both Yugoslav sentiment and border changes, violating the exclusion restriction. If so, this might bring the validity of my IV approach into question. In Table A10, I include religious diversity as an additional control in column 1. Upon controlling for religious diversity, the effect of ethnic diversity persists.

Given that linguistic diversity might also be correlated to both border changes and Yugoslav sentiment, column 2 controls for linguistic diversity, while column 3 includes jointly the religious and linguistic diversity. Note that Montenegro is dropped from these specifications, given that the population census of that region does not report linguistic diversity at municipal-level. The effect of ethnic diversity, however, persists.

These results demonstrate that, even if border changes were endogenous to religious and linguistic factors along which ethnic identities in Yugoslavia eventually formed, this violation of the exclusion restriction cannot overturn the results. The effect of ethnic diversity is robust when including other measures of diversity, like religion and language.

**Table A10**

2SLS estimates with religious and linguistic diversity, 1991 municipal data, Yugoslavia (excluding Montenegro in columns 2 and 3).

	(1)	(2)	(3)
Panel A: first stage outcome - ethnic fractionalization			
Border changes, 1421–1878	0.0141** (0.006)	0.0299*** (0.006)	0.0116** (0.005)
Religious fractionalization	0.9078*** (0.231)		0.6602*** (0.076)
Linguistic fractionalization		0.7753*** (0.022)	0.2841*** (0.068)
Municipal controls	Yes	Yes	Yes
Region effects	Yes	Yes	Yes
<i>R</i> -squared	0.843	0.470	0.471
Panel B: second stage outcome - fraction of Yugoslavs			
Ethnic fractionalization	0.5349*** (0.176)	0.1995*** (0.058)	0.3368** (0.146)
Religious fractionalization	-0.4141** (0.164)		-0.1482 0.106
Linguistic fractionalization		-0.0958* (0.049)	-0.0919** (0.047)
Municipal controls	Yes	Yes	Yes
Region effects	Yes	Yes	Yes
Observations	434	413	413
Centered <i>R</i> -squared	0.633	0.392	0.168
First stage <i>F</i> -statistic	4.88	24.37	6.07

*Notes:* The unit of observation is a municipality. Columns 2 and 3 exclude Montenegro, due to the absence of data on linguistic diversity at municipal-level for that region. Municipal controls are output p.c., population density, average years of schooling, fraction of social sector employment, population fraction of youth labor actions, population fraction of WWII partisan veterans, sites containing monuments to anti-fascism, population fraction of individuals exposed to WWII fascist terror, expenditure on public goods p.c., federal aid, population percentage of the early 1980's generation, and sites containing army presence. These controls are identical to those in column 15 of Table 4. Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

However, in columns 1 and 3 which include religious fractionalization, the first stage *F*-statistic is weak and much lower than in the comparable IV specification of the main text which includes only ethnic fractionalization (Table 8). This is expected, given the extremely high correlation between religious and ethnic fractionalization in Yugoslavia (0.91), which reflects the formation of ethnic identities along religious lines. Religion and ethnicity in Yugoslavia are thus difficult to separate - they are essentially the same thing. Therefore, controlling for religious fractionalization is perhaps redundant, which is reflected in the low *F*-statistic - conditional on religious fractionalization, there is not much variation in ethnic diversity that the instrument can explain, given that religious and ethnic diversity are almost perfectly collinear.

### A13. IV estimates and minority status

Sekulić et al. (1994) argue that minorities used Yugoslav identification to uplift them from their minority status. I construct an index of ethnic division that is maximized when there is a large majority and a smaller minority. The rationale behind such an index is that there might be a non-linear relationship between the size of the minority and the strength of Yugoslav sentiment, which a minority share variable might not register. Namely, it might be the case that minority members were more likely to feel Yugoslav only in areas where there was a large ethnic majority. They might have, for example, felt more threatened in such areas, which in turn might have made them more likely to adopt Yugoslav identity as a more neutral and defensive posture.

To explore these effects, I construct an index of ethnic division, *ed*, and call it, for the brevity of exposition, the ethnic minority index:

$$ed = 1 - \left( \frac{\phi - m}{\phi} \right)^2 \quad (11)$$

where I measure the deviation of the minority share of population, *m*, from the maximum value,  $\phi$ . I take a square of the difference to give equal weights to positive and negative differences from  $\phi$ .

This index is similar to the ethnic polarization index that Montalvo and Reynal-Querol (2005) use. However, instead of being maximized when there are two groups of equal size ( $\phi = 0.5$ ), it is maximized when there is a large majority and a smaller minority ( $\phi < 0.5$ ). The problem with the ethnic minority index, however, lies in choosing the value of  $\phi$ . There is nothing in the theory which could guide the choice of  $\phi$  under which the minority members might have been particularly likely to adopt a Yugoslav identity. I am thus forced to experiment with various values of  $\phi$  in Table A11.

**Table A11**  
2SLS estimates with ethnic minority index, 1991 municipal data, Yugoslavia.

	(1)	(2)	(3)	(4)
Panel A: first stage outcome - ethnic fractionalization				
Border changes, 1421–1878	0.0729** (0.006)	0.0710** (0.017)	0.0686** (0.018)	0.0669** (0.018)
Ethnic minority index - 10% minority		-0.0003 (0.002)		
Ethnic minority index - 5% minority			-0.0002 (0.001)	
Ethnic minority index - 1% minority				-0.0000 (0.000)
Municipal controls	Yes	Yes	Yes	Yes
<i>R</i> -squared	0.403	0.404	0.407	0.410
Panel B: second stage outcome - fraction of Yugoslavs				
Ethnic fractionalization	0.1353** (0.035)	0.1275** (0.039)	0.1290** (0.045)	0.1302** (0.042)
Ethnic minority index - 10% minority		-0.0001 (0.000)		
Ethnic minority index - 5% minority			-0.0000 (0.000)	
Ethnic minority index - 1% minority				-0.0000 (0.000)
Municipal controls	Yes	Yes	Yes	Yes
Observations	434	434	434	434
Centered <i>R</i> -squared	0.476	0.499	0.494	0.491
First stage <i>F</i> -statistic	159.28	18.45	15.23	13.46

Notes: The unit of observation is a municipality. Municipal controls are output p.c., population density, average years of schooling, fraction of social sector employment, sites of WWII partisan military operations, sites of partisan war crimes, public goods expenditure p.c., federal aid, population percentage of the early 1980's generation, and sites of army presence. These controls are identical to those in column 13 of Table 4. Robust standard errors clustered at regional-level in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

In column 1 of Table A11, for ease of comparison, I first reprint the baseline IV estimate of the impact of ethnic diversity from the main text. In column 2, I construct an index of ethnic division which is maximized when there is a majority equal to 90%, and a minority equal to 10% ( $\phi = 0.1$ ). I thus assume that minorities were more likely to opt for Yugoslav identity when their size in the population was exactly equal to 10%. The coefficient on this ethnic minority index is close to zero and statistically insignificant. The effect of ethnic diversity, however, remains robust. In columns 3 and 4, I experiment with lower values of  $\phi$ , 0.05 and 0.01, respectively. The coefficient on ethnic diversity, however, remains significant. Conditional on ethnic diversity, there is thus no evidence that minority members were more likely to feel Yugoslav.

#### A14. Geographical controls

In the main text, I test the robustness of the IV estimates derived from the 1991 municipal data by controlling for geographical factors that may be correlated to both border changes and Yugoslav sentiment. In this section, I also include the geographical controls in the individual-level, IV, specification, as well as in the municipal-level, OLS, specification. Table A12 presents the results. The effect of ethnic diversity persists.

Table A13 shows additionally the mediation results when controlling for geographical factors. Ethnically mixed marriage or parentage now can explain a lower share of the total ethnic diversity effect. Ethnically mixed parentage, however, can still explain a substantial fraction of the overall ethnic diversity effect (about 30 percent).

#### A15. Placebo test of the IV strategy

To assess the validity of the IV estimates, I undertake this falsification test: I assess the relationship between border changes associated with the Yugoslav wars (1991–1995) and the strength of Yugoslav sentiment. As before, I measure Yugoslav sentiment by the nationality question of the 1991 population census, which took place before the outbreak of conflict and the dissolution of the country.

Table A14 reports the results. I begin by documenting in panel A the reduced-form relationship between border changes and Yugoslav sentiment. Column 1 depicts a strong positive reduced-form correlation between premodern border changes and Yugoslav sentiment. This correlation is consistent with the IV estimates I reprint for convenience in panels B and C. They demonstrate that historical border changes influenced ethnic diversity, which stimulated Yugoslav sentiment. In column 2, I conduct the falsification

**Table A12**

Individual-level IV estimates and municipal-level OLS estimates with geographical controls, Yugoslavia.

	(1) Individual-level data	(2) Municipal-level data
<b>Panel A: first stage outcome - ethnic fractionalization</b>		
Border changes, 1421–1816	0.0871*** (0.021)	
Agricultural (wheat) suitability	−0.0003*** (0.000)	
Terrain roughness	−0.0028 (0.002)	
Distance to coast	0.0005 (0.000)	
Distance to river	0.0006	
Additional geographic controls	Yes	
Individual controls	Yes	
Municipal controls	Yes	
Region effects	Yes	
<i>R</i> -squared	0.553	
<b>Panel B: second stage outcome - self-declared Yugoslav</b>		
Ethnic fractionalization	1.4668* (0.800)	
Agricultural (wheat) suitability	0.0003 (0.000)	
Terrain roughness	−0.0099 (0.007)	
Distance to coast	0.0011 (0.002)	
Distance to river	0.0009 (0.002)	
Additional geographic controls	Yes	
Individual controls	Yes	
Municipal controls	Yes	
Region effects	Yes	
Number of municipalities	62	
Observations	10,691	
First stage <i>F</i> -statistic	17.62	
<b>Panel C: OLS outcome - fraction of Yugoslavis</b>		
Ethnic fractionalization		0.0748** (0.018)
Agricultural (wheat) suitability		0.0000 (0.000)
Terrain roughness		0.0006 (0.000)
Distance to coast		0.0000 (0.000)
Distance to river		0.0000 (0.000)
Municipal Controls		Yes
Region effects	Yes	
Observations		434
<i>R</i> -squared		0.601

*Notes:* The unit of observation in column 1 is an individual, while in column 2 it is a municipality. Municipal data comes from 1991, while the individual-level data comes from the 1989/90 survey taken from [Kunovich and Hodson \(2002\)](#). Individual controls are gender, age, communist party membership, years of schooling, type of settlement in which respondent resides (6 categories), migrant type (9 categories), occupation (18 categories), and marital status (5 categories). Municipal controls are output p.c., population density, average years of schooling, fraction of social sector employment, population fraction of youth labor actions, population fraction of WWII partisan veterans, sites containing monuments to anti-fascism, population fraction of individuals exposed to WWII fascist terror, expenditure on public goods p.c., federal aid, population percentage of the early 1980's generation, and sites containing army presence. Other geographical controls are latitude, longitude, and the interaction of the two. The data and the data sources are described in detail in [Appendix A.1](#). Robust standard errors clustered at regional-level (column 2) and municipal-level (column 1) in parentheses (the survey data reports the residency of the respondent only at municipal-level). \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table A13**

Mediation analysis with geographical controls, 1989/90 survey data, Yugoslavia, dependent variable: fraction of Yugoslavs.

	(1)	(2)
	Mediator	
	Nationally-mixed parentage	Nationally-mixed marriage
Effect of ethnic fractionalization		
Total effect	0.0648	0.0652
Direct effect	0.0445	0.0463
Indirect effect	0.0203	0.0108
Region effects	Yes	Yes
Municipal controls	Yes	Yes
Geographical controls	Yes	Yes
Individual controls	Yes	Yes
Observations	10,792	10,492

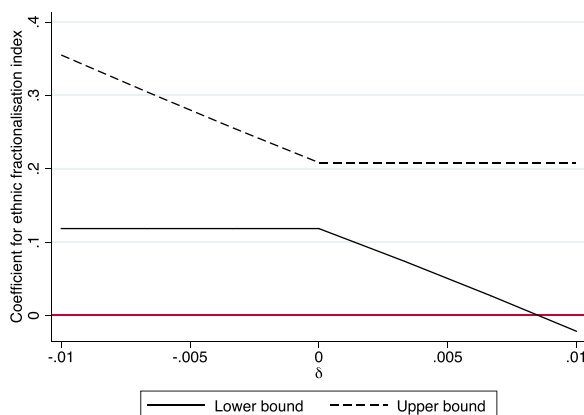
Notes: The unit of observation is an individual. The mediation analysis is conducted following the framework of [Dippel et al. \(2022\)](#). The indirect effect of ethnic diversity operates through the channel of nationally-mixed parentage in column 1, or nationally-mixed marriage in column 2. The instrument is border changes during 1421–1816. Individual controls are gender, age, years of schooling, type of settlement in which respondent resides (6 categories), migrant type (9 categories), occupation (18 categories), and marital status (5 categories) (only for nationally-mixed parentage). These controls are the same as those in [Table 7](#). Municipal controls are output p.c, population density, average years of schooling, fraction of social sector employment, population fraction of youth labor actions, population fraction of WWII partisan veterans, sites containing monuments to anti-fascism, population fraction of individuals exposed to WWII fascist terror, expenditure on public goods p.c., federal aid, population percentage of the early 1980's generation, and sites containing army presence. These controls are identical to those in column 15 of [Table 4](#). Geographical controls are terrain roughness, wheat suitability, distance to the nearest river and coast, latitude, longitude, and the interaction of latitude and longitude. The individual-level data comes from a large-scale survey conducted by a consortium of social science institutes across the country in the winter of 1989/1990, which I take from [Kunovich and Hodson \(2002\)](#). The standard errors are unreported - in mediation analysis, they hold no conventional meaning. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table A14**

Falsification tests, reduced-form relationships, and IV estimates, 1991 municipal data, Yugoslavia.

	(1)	(2)
Panel A: OLS, reduced-form results		
Border changes, 1421–1816	0.0099* (0.003)	
Border changes, 1991–1995		0.0007 (0.010)
Region effects	Yes	Yes
Municipal controls	Yes	Yes
<i>R</i> -squared	0.442	0.395
Panel B: 2SLS, first stage - ethnic fractionalization		
Border changes, 1421–1816	0.0729** (0.006)	
Border changes, 1991–1995		0.0240 (0.082)
Region effects	Yes	Yes
Municipal controls	Yes	Yes
<i>R</i> -squared	0.403	0.337
Panel C: 2SLS, second stage - fraction of Yugoslavs		
Ethnic fractionalization	0.1353** (0.035)	0.0301 (0.298)
Region effects	Yes	Yes
Municipal controls	Yes	Yes
Observations	434	434
Centered <i>R</i> -squared	0.476	0.493
First stage <i>F</i> -statistic	159.28	0.09

Notes: The unit of observation is a municipality. Panel A reports the reduced-form relationship between border changes and Yugoslav self-identification. Municipal controls are output p.c, population density, average years of schooling, fraction of social sector employment, population fraction of youth labor actions, population fraction of WWII partisan veterans, sites containing monuments to anti-fascism, population fraction of individuals exposed to WWII fascist terror, expenditure on public goods p.c., federal aid, population percentage of the early 1980's generation, and sites containing army presence. Robust standard errors clustered at regional-level in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .



**Fig. A4.** Confidence interval on ethnic diversity with relaxed exclusion restriction, Conley et al. (2012) method, 1991 municipal data, Yugoslavia. *Note:* The figure shows the upper and lower bound of the 90% confidence interval of the second-stage coefficient on ethnic diversity, using Table 8, column 1, model. It follows the union of confidence intervals approach in Conley et al. (2012), which allows for a direct effect of border changes on Yugoslav identification, assuming this is uniformly distributed in the interval  $[-\delta, \delta]$ .

test. Border changes during the 1990s show no systematic relationship to the Yugoslav sentiment in 1991. The reduced-form estimates are close to zero and insignificant. This unsystematic relationship is consistent with the IV estimates, which are insignificant as well.

#### A16. Relaxing the exclusion restriction of the IV

The requirement of perfect exogeneity is a strict requirement. I recognize that my instrument is unlikely to satisfy the exclusion restriction perfectly, and I thus follow the approach of Conley et al. (2012) to relax it. They propose a method that allows the instrument to have a direct impact on the outcome variable - in this case, independent of ethnic diversity effects. Following their method, I assume that the potential impact of border changes on Yugoslav identification,  $\gamma$ , is uniformly distributed in the interval  $[-\delta, \delta]$ . With this method, by varying  $\delta$ , I can identify the threshold at which the coefficient on ethnic diversity in the second-stage becomes statistically insignificant at the 10 percent level.

I experiment with both a positive and negative interval of  $\delta$ , as the potential direction of the impact of the instrument on the dependent variable is ambiguous. For example, a historical memory of belonging to many empires might have weakened the strength of local identities, stimulating Yugoslav sentiment. On the other hand, it is also possible that historical memory of belonging to many empires antagonized the local population, strengthened their local identities, and thus negatively impacted Yugoslav sentiment.

Fig. A4 relaxes the exclusion restriction, and identifies the threshold of  $\delta = 0.0086$  at which the coefficient on ethnic diversity in the second-stage becomes statistically insignificant at the 10 percent level. Put alternatively, as long as the direct effect of border changes on Yugoslav identification is smaller than 0.0086, the coefficient on ethnic diversity remains significant at the 10 percent level. For that matter, if  $\delta < 0$ , the confidence interval on the coefficient on ethnic diversity moves further from zero, relative to the baseline IV estimate in Table 8. In other words, if border changes had a negative impact on Yugoslav identification, then the IV coefficient underestimates the true effect of ethnic diversity on Yugoslav sentiment.

To gauge the magnitude of the threshold at which the coefficient on ethnic diversity in the second-stage becomes statistically insignificant, I estimate the reduced-form effect of border changes on Yugoslav sentiment in the above Section A.15, which is 0.0099. The impact of the instrument on Yugoslav identification ( $\delta = 0.0086$ ) would thus have to be equivalent to 87 percent of the overall reduced-form effect to render the validity of the 2SLS results insignificant. The analysis reveals that the instrument would have to deviate very far from the exclusion restriction to make my results insignificant.

#### A17. Correlation between religiosity and socioeconomic characteristics

Table A15 uses the 1989/90 survey, and shows that less religious individuals tend to have fewer children (columns 1 and 2). Such individuals also tend to be better educated (columns 3 and 4), are more likely to live in urban settlements (columns 5 and 6), and hold white-collar occupations (columns 7 and 8). To the extent that white-collar occupation is a good proxy for income, the uncovered relationship between religiosity and occupation also suggests that less religious individuals tend to have higher incomes.

#### A18. The OLS and PPML relationship between border changes and ethnic diversity

Border changes are count data. There are two problems with applying an OLS model to such data. First, distributions of count data tend to be positively skewed. In this case, many observations of border changes have a value of 0, which prevents the transformation of a possibly skewed distribution into a normal one. Second, it is quite likely that the OLS model produces negative predicted values, which are theoretically impossible.

**Table A15**  
Correlation between religiosity and socioeconomic characteristics, 1989/90 survey, Yugoslavia.

	Number of children		Years of schooling		Urban status		White-collar occupation	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Religiosity, 1–6 scale	−0.0922*** (0.010)	−0.0473*** (0.012)	0.2544*** (0.017)	0.0898*** (0.011)	0.1783*** (0.024)	0.0708*** (0.015)	0.2485*** (0.017)	0.0509*** (0.016)
Individual controls	No	Yes	No	Yes	No	Yes	No	Yes
Municipal effects	No	Yes	No	Yes	No	Yes	No	Yes
Number of municipalities	62	62	62	62	62	62	62	62
Observations	10,792	10,792	10,792	10,792	10,792	10,792	10,792	10,792
Pseudo R-Squared	0.006	0.249	0.0297	0.2109	0.0191	0.2079	0.0614	0.4378

*Notes:* The unit of observation is an individual. Coefficients are derived from an ordered probit estimation. Religiosity is measured on a 1–6 scale, and is the answer to the question “How religious are you”, where a higher number indicates that a respondent is less religious. Each answer category is reported in Table 3. Urban status is measured on a 1–6 scale, with a higher number indicating a larger settlement. White-collar occupations are composed of administrative workers, managers, professionals, artists, and protective service workers. Individual controls are gender, age, communist party membership, years of schooling, type of settlement in which respondent resides (6 categories), migrant type (9 categories), occupation (18 categories), and marital status (5 categories). The control is dropped if it is used as a dependent variable - e.g., years of schooling in column 4. The individual-level data comes from the 1989/1990 survey, which I take from Kunovich and Hodson (2002). The survey data reports the residency of the respondent only at municipal-level. Robust standard errors are thus clustered at municipal-level, and reported in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table A16**

The OLS and PPML relationship between border changes and ethnic diversity, 1991 municipal data, Yugoslavia, dependent variable: fraction of Yugoslavs.

	OLS (1)	PPML (2)
Border changes, 1421–1816	0.0728** (0.006)	0.0765** (0.011)
Municipal controls	Yes	Yes
Region effects	Yes	Yes
Observations	434	434
R-squared	0.4035	0.372

*Notes:* The unit of observation is a municipality. Column 2 shows the imputed marginal coefficient on border changes when using PPML. Municipal controls are output p.c, population density, average years of schooling, fraction of social sector employment, population fraction of youth labor actions, population fraction of WWII partisan veterans, sites containing monuments to anti-fascism, population fraction of individuals exposed to WWII fascist terror, expenditure on public goods p.c., federal aid, population percentage of the early 1980’s generation, and sites containing army presence. These controls are identical to those in column 15 of Table 4. Robust standard errors clustered at regional-level in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Table A16 experiments with the PPML model, which is frequently employed by studies that use count data, given the flexible nature of the PPML estimator (Silva and Tenreiro, 2006). Column 2 shows that the imputed marginal coefficient on border changes derived from the PPML model is 0.0765, which is similar to the coefficient on border changes when using the OLS model in column 1 (0.0728). Given the similar size of coefficients, I prefer to use the OLS model because it is much easier to interpret.

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