Identity and Institutional Change: Evidence from First Names in Germany, 1700–1850

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Abstract

How does culture change in response to major institutional shifts? What is the role of culture in selecting and stabilizing new institutional equilibria in critical junctures? We study the collapse of the Holy Roman Empire (1789–1815), when half of the Central European population changed rulers. Our annual data on 44 million geolocated birth records between 1700 and 1850 provide a real-time measure of identity choices. In cities that changed rulers, the name distribution changed, becoming more dispersed and polarized. Using detailed records on diplomatic negotiations, we construct comparable control groups to isolate these effects, which emerged immediately and persisted over time. Examining mechanisms, we provide evidence suggesting that the transition increased uncertainty and eroded the supply of loyalist identity, creating an identity vacuum that competing stakeholders — religious and nationalist groups — actively filled. These cultural shifts became institutionalized, fostering tensions with the new regimes. Our findings underscore the dual challenge of cultural and administrative integration in state-building after regime transitions.

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1 Introduction

Institutions impact culture. A rich literature examines both the long-run persistence of cultural traits shaped by institutional shifts (Voigtländer and Voth, 2012; Guiso et al., 2016; Becker et al., 2016) and the coevolution of institutions with complementary cultural features (Lowes et al., 2017; Giuliano and Nunn, 2021; Bisin and Verdier, 2024). These effects are often measured in the long-run, after uncertainty about institutional trajectories has been resolved, or when a reinforcing feedback loop between institutions and culture has occurred. In contrast, critical junctures — such as major institutional transitions (Acemoglu and Robinson, 2012) — are characterized by openness to multiple possible trajectories. How does culture respond and adapt in the immediate aftermath of such institutional shocks? How does identity accompany and potentially guide the selection a new institutional equilibrium? And how do cultural traits interact with and sustain subsequent institution-building efforts?

As institutions undergo dramatic shifts, the study of critical junctures offers the potential to understand cultural response and adaptation following shocks, and in turn to shed light on the role of culture in resolving institutional uncertainty. However, the lack of highly frequent, spatially disaggregated markers of cultural traits that allow for consistent comparisons over time is often a limiting factor (Callen et al., 2024). In this paper, we study the collapse of the Holy Roman Empire following the French Revolution and the Napoleonic Wars (1789–1815). As a marker of cultural traits, we observe first name choices for millions of individuals born in hundreds of German towns and villages in the period between 1700 and 1850. Our findings shed light on different dimensions of cultural response to major shocks, and on how these cultural shifts shift shaped new institutions that reinforced and sustained these changes over time, impacting state building.

Specifically, we show that individuals in cities exposed to institutional change were more likely to adopt new identities as expressed in first names, and that this shift towards new identities persisted over time. Areas that changed rulers due to the dissolution of the Holy Roman Empire were more likely to adopt nationalist and religious identity and less likely to maintain an identity aligned with the established social and political order. We argue that this shift can be explained by a state vacuum in the immediate aftermath of the transition. The absence of political authority allowed alternative cultural identities to take root, facilitated the emergence of new institutions, and enabled the persistent diffusion of these identities across the population.

Our analysis proceeds in three steps. We first document how, in the immediate aftermath of the end of the *Ancien Regime* and the collapse of centuries-old dynasties, the distribution of names shifted immediately and persistently: name choices became more dispersed and increasingly polarized across identity groups. These changes are particularly strong in locations that changed their rulers between 1789 and 1815. We interpret these findings as the consequence of a state vacuum (Marchais et al., 2024) that generated ideological uncertainty.

We next study how this vacuum opened the door for alternative suppliers of identity. We find that treated cities see an increase in nationalist and religious names, and a decrease in loyalist names, i.e. names linked to traditional territorial rulers of the Holy Roman Empire. This can be seen as the outcome of the entrenchment of alternative identity providers — primarily religious and nationalist movements.

Finally, we investigate the persistence of cultural shifts in the long-run, beyond 1815. Treated cities were more likely to found national associations and to celebrate national festivals, promoting a pan-German identity. In addition, they were more likely to be the birthplace of national revolutionaries during the German Revolution of 1848 as well as of delegates of the first German parliament that resulted from this. We argue that this institutionalization explains why the transitory dynamics in the period after the dissolution of the Holy Roman Empire resulted in a persistent cultural shock.

Our setting presents a series of features that make it particularly suitable to study cultural evolution in the context of critical junctures. The collapse of the Holy Roman Empire between 1789 and 1815 marked a drastic and regionally varied political reordering. At its peak, the Empire was the largest political entity in Central and Western Europe. By 1815, more than half of the thirty million inhabitants of its constituent states had come under new rulers, creating large variation in how different cities experienced the transition — some changed rulers, while others did not.

This regime change was sudden, unexpected, and top-down, dictated by external powers rather than local populations or local rulers. The end of the Empire must be sought "in the sphere of high politics" (Wilson, 2006, p. 712). Contemporaries already noted the profound psychological and social effects of these disruptions; they described the "tripled and quadrupled speed of life" (Schopenhauer, 2000 [1839], p. 30) in letters and diaries.[1]

[1] In neighboring France, Émile Durkheim reflected on the consequences of this instability, arguing that "so grave and rapid an alteration as this must be morbid; for a society cannot change its structure so suddenly"

We combine information about the extent of institutional changes for 2,390 cities of the Holy Roman Empire with a novel dataset of 44 million geolocated birth records spanning from 1700 to 1850, allowing us to track changes in naming practices over time. Employing a difference-in-differences approach, we compare cities that experienced ruler changes with carefully constructed control groups. To strengthen identification, we leverage exogenous variation in the diplomatic negotiations of the Congress of Vienna, specifically the role of family ties to decision-makers in determining which territories survived and which were absorbed into new states.

Our paper contributes to several strands of research. First, we add to the growing literature that uses first names as a tool to measure cultural traits, including nationalism (Jurajda and Kovač, 2021; Assouad, 2021), religiosity (Andersen and Bentzen, 2022), individualism (Bazzi et al., 2020; Beck Knudsen, 2021), ethnicity (Fryer and Levitt, 2004), and immigrant assimilation (Abramitzky et al., 2020; Fouka, 2020; Algan et al., 2022). This literature is part of a broader effort in the social sciences to understand how cultural imprints are reflected in naming practices (Lieberson and Bell, 1992; Bloothooft and Onland, 2011; Gerhards, 2010).

Second, we contribute to the literature on the origins and persistence of cultural traits (Alesina and Giuliano, 2015; Giuliano and Nunn, 2021; Nunn, 2022; Voigtländer and Voth, 2012), with a specific focus on the interplay between institutions and culture (Grosjean, 2011; Lowes et al., 2017; Grosfeld et al., 2013). While much of this literature documents the long-run persistence of cultural traits, our study highlights how institutional change can induce an immediate and rapid cultural shift in a panel setting.

Finally, our paper speaks to the literature on the formation and intergenerational transmission of identity (Bisin and Verdier, 2001; 2011), particularly in the context of 19th-century Central Europe (Kersting and Wolf, 2021; Dehdari and Gehring, 2022; Falck et al., 2012). Unlike previous studies, which focus on specific dimensions of identity, we provide a comprehensive view of different identity spheres, tracing their evolution through naming practices, political movements, and institutional development.

These findings underscore that state-building is not only an administrative process but also a cultural one. Newly integrated populations do not automatically adopt the identity promoted by their new rulers. In our case, the weakening of old territorial affiliations created the space for a nascent German nationalism, which ultimately contributed to the

(Durkheim, 1952 [1897], p. 369).

German Revolution of 1848, a political movement that sought to unify the German states under a single national framework.

The remainder of this paper is structured as follows. Section 2 provides a historical background on the Holy Roman Empire and its collapse. Section 3 describes the data and construction of treatment and control groups. Section 4 outlines our empirical strategy and main results. Section 5 explores the mechanisms behind cultural shifts, focusing on state vacuum and institutionalization. Section 6 concludes and discusses broader implications for state-building and nationalism.

2 Historical Background

2.1 The Holy Roman Empire and Identity Spheres

The Holy Roman Empire, a loose confederation of hundreds of quasi-sovereign states in Central Europe, existed from the 9th century for nearly 1,000 years. This stability was mirrored at the level of its constituent states: in 1789, a city had on average remained under the same ruling family for 280 years.

In this institutional context, there existed three primary sources of identity. First, loyalty to rulers was a cornerstone of political legitimacy. Territorial rulers actively fostered this identity through administration, military service, and public rituals that reinforced allegiance. Second, religion played a central role in shaping identity. Third, a pan-German identity began to take shape, structured primarily around a shared language and cultural traditions (Wehler, 2016; Echternkamp, 2021). Unlike loyalist identity, which was tied to specific territories and their rulers, this broader German identity transcended regional boundaries

By the late 18th century, these sources of identity had settled into a relatively stable arrangement. The Church and territorial rulers maintained a mutually reinforcing relationship, in which religious institutions supported political authority, and rulers safeguarded religious unity within their domains.[2] Similarly, national sentiment largely coexisted with territorial loyalism rather than opposing it. Early national consciousness was often framed as complementary to existing political structures, with individuals seeing themselves as both subjects of their rulers and members of a broader German cultural

[2]Church services, for example, routinely included intercessory prayers for ruling authorities, legitimizing authority (Planert, 2007); on ruler birthdays, a selection of bible texts had to be read (Burgdorf, 2009, p. 216).

sphere.[3]

2.2 The Collapse: Political Sphere

Then, the Holy Roman Empire collapsed. In just twenty-five years, a thousand-year-old political arrangement unraveled: the Emperor abdicated, 476 territories were dissolved and consolidated into 41, and six million people found themselves under new rulers. The catalyst for these developments was the European wars following the French Revolution. In 1794, French troops occupied regions west of the Rhine, and by 1804, they had extended their control east of the river. This occupation set off a series of territorial reorganizations. In 1806, the last Emperor formally abdicated, and the dissolution of the Holy Roman Empire was confirmed by the Congress of Vienna in 1814–15.

The new territorial arrangements were shaped by diplomatic decisions. The fate of the constituent states of the Holy Roman Empire was determined by the Great Powers — Austria, Britain, Prussia, and Russia — who prioritized geopolitical stability and broader strategic interests over historical and cultural continuity.[4] Smaller territories sought to influence the consolidation outcome, often through ruling families leveraging dynastic ties to the major powers. Those with stronger connections to influential ruling families had better chances of preserving their territories, yet the vast majority were absorbed into larger political entities (Peterson, 1945).

Even cities within surviving states were not immune to territorial restructuring. Many areas were reassigned to different rulers, with a key objective being the reduction of the fragmented feudal rule. The goal was to create more geographically cohesive states — a process known as 'rounding off' — to ensure administrative efficiency. To facilitate these territorial exchanges, a special *Statistical Commission* was established to provide population and geographical data on different regions, forming the basis for negotiations.

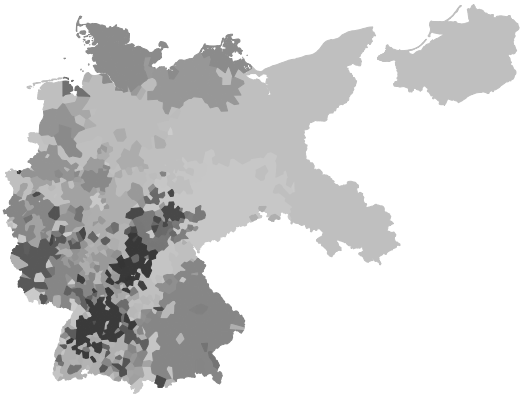
After years of war and political instability, the Congress of Vienna in 1815 established a new European order. Figure 1 illustrates this transformation, comparing the territorial configuration of 1789 (Panel A) to that of 1815 (Panel B). Panel C shows the cities that experienced a change in ruler between 1789 and 1815.

[3]Hardtwig (1994) speaks of a 'pre-political' nationalism, Schmidt (2001) of 'complementary states'. This coexistence is captured in a pamphlet of 1795, stating that "the German has two fatherlands to love: the whole large body of the state (...); and then also the smaller German country which he inhabits" (cited in Kluckhohn et al., 1934, p. 9).

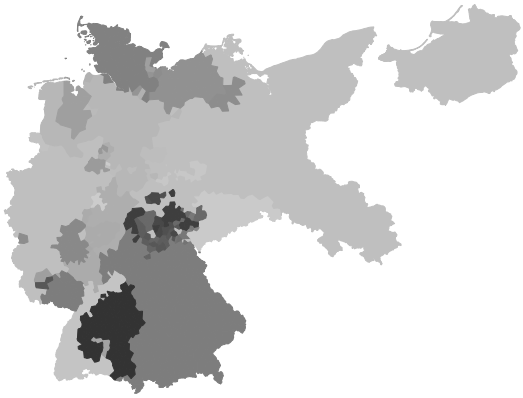
[4]France is sometimes considered a fifth Great Power at the negotiations. However, France's interests

Figure 1: Territories and Ruler Change

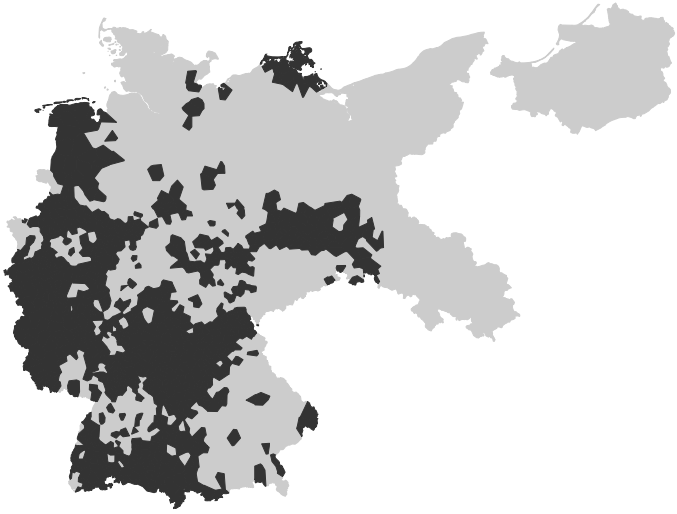
A: Territories 1789



B: Territories 1815



C: Cities Changing Ruler



Note The maps show the territories extant in our region of analysis in 1789 (Panel A) and 1815 (Panel B). Panel C shows cities that had a different ruler in 1789 than in 1815. Details on the data underlying the maps are given in Section 3.

2.3 After the Collapse

This period of state vacuum — local populations had experienced an abrupt withdrawal of the previously established rule — was followed by efforts at administrative restoration. In the interim, however, religious and nationalist actors capitalized on the uncertainty. Nationalists, particularly in French-administered areas, founded new institutions to promote their ideas. A key moment in the development of national consciousness in Germany was the wave of spontaneous regional festivals held in 1814–1815 to celebrate Napoleon's defeat. These gatherings gradually evolved into more organized and lasting forms of civic life. For example, local gymnastics clubs (*Turnvereine*), originally formed to prepare German youth for resistance against French occupation, remained central to nationalist efforts after the Congress of Vienna, acting as 'social multipliers' that signaled and disseminated a shared national identity. States responded with repression — censorship, imprisonment, and executions — but failed to suppress alternative identities. Lacking a compelling loyalist narrative, territorial rulers struggled to counter nationalist momentum. These tensions culminated in the German Revolution of 1848/9, with the Frankfurt National Assembly convening to unify the fragmented German states.[5]

3 Data

Our unit of analysis are the cities (including the surrounding countryside) of the Holy Roman Empire, as depicted in the *Deutsches Städtebuch* (Keyser et al., 1939-2003).[6] We observe detailed information on territorial change, cultural change measured in naming patterns, and institutional outcomes for these cities. Where relevant, we precisely geolocate smaller settlements and match them to the closest city in our data. Our main sample comprises the 740 cities for which we observe all outcomes, yearly between 1700 and 1850.[7]

largely receded from the negotiations after its defeat in 1813.

[5]Section 5 explores these dynamics in a framework of the supply and demand of identity.

[6]This source covers all settlements in the 1937 German borders that ever obtained city status.

[7]Where possible, we use information on all 2,390 cities. Results based on this full sample are qualitatively unaffected when subsetting to the main sample.

3.1 Treatment: Changing Ruler

We use local territory data to construct an indicator whether a city found itself under a different ruler in 1815 compared to 1789 (for a map see Panel C of Figure 1).[8] This constitutes our main treatment variable. Our data also records the precise year in which the pre-1789 rule over the city was dissolved. Below, we describe how we supplement this information with a detailed depiction of the diplomatic process that reconfigured the Central European map. Our aim is to identify comparable control groups, that is, cities with a similar ex ante propensity to change ruler.

Extensive margin. First, we aim to capture the extensive margin of rule transition: some territorial units vanished entirely.[9] For each territory, we record its rule type in 1789, distinguishing city states, ecclesiastical territories, smaller secular states, and Great Powers. Each group faced different likelihoods of vanishing. Among smaller secular states, we additionally measure marriage ties as a factor influencing diplomatic success: We match a complete dynastic network of noble families to our territories, allowing us to calculate the dynastic proximity of territories.

Intensive margin. A second group of data examines the intensive margin propensity of rule transition: within a pre-1789 territory, which cities were more likely to change rulers? Here, we offer a variety of approaches to capture this propensity. First, we measure a vast array of city characteristics that would have made a city more interesting to negotiators: agricultural suitability (Fischer et al., 2002), terrain ruggedness, distances to the coast as well as the nearest navigable river, location on a trade route, and the number of markets (Cantoni et al., 2020).[10] Second, we record whether cities were listed as negotiation mass by the *Statistical Commission* of the Congress of Vienna; not all of these 47 cities ultimately changed rulers, but together they represent the set of locations 'at risk.'[11] Third, we construct 'border samples': considering all territories that were partitioned as a result of the Congress, we identify 27 cities on either side of the resulting border.Fourth,

[8] This data and the associated documentation has been published in Cantoni et al. (2019).

[9] Given that a substantial number of states did not share this fate, and that even in the extensive margin, there was within-territory variation in the resulting post-1815 ruler, our main analysis is at the city level. In our robustness analyses, we extensively account for potential treatment clusters.

[10] Appendix Table A.1 lists all covariates and data sources.

[11] This data is available for a regional subset of our study area: the areas that could have become or could have ceased to be part of Prussia.

for each treated city we measure two key characteristics of the nature of the treatment: First, an indicator whether French troops or administrators were present during the transition period 1789–1815.[12] Second, we measure a city's religious denomination as well as the denomination of its ruler before and after the change. Based on this, we construct an indicator whether the transition resulted in a new tension between the dominant local and territorial religion.

3.2 Naming Measures

We relate this treatment data to cultural outcomes as measured through naming practices. Our base are 44 million first names from birth and baptism records in 13,000 German settlements between 1700 and 1850, digitized by FamilySearch. Appendix Section B describes the origin, processing, and geolocation of the data. We map settlements to the closest city.

For our analysis, we measure key aspects of the naming distribution: year-to-year change, dispersion, and polarization. In addition, we assign names to identity groups to derive proxies for the strength of the three predominant ideological currents of the time: nationalism, religiosity, and loyalism.

Distribution. We derive three measures that address fundamental questions about the underlying local culture. We operationalize each question by relying on a well-known functional form, and demonstrate the robustness to alternative choices of functional form in Section 4.

(1) Change. Do naming practices change within cities over time? Our first objective is to compare the distribution of first names in a city i between any two time periods $t = 1$ and $t = 2$. We rely on the information theory-based Theil (1967) index.[13] Intuitively, the name distribution is stable if we cannot infer which time period a randomly drawn name originates from. Define the frequency of a name in a given time period as f_{nt}, where n indexes names, and t indexes time points. Call N the total number of names (the magnitude of the set of names chosen) and $T = 2$ the total number of time periods. The total amount of births across both periods is $f = \sum_{n=1}^{N} \sum_{t=1}^{T} f_{nt}$. The probability of a birth with name n in period t is $p_{nt} = f_{nt}/f$, the marginal probabilities of names are $p_{n\bullet} = \sum_{t=1}^{T} f_{nt}/f$,

[12] This data is constructed from Keyser et al. (1939-2003).

[13] See also Shorrocks (1980), Mora and Ruiz-Castillo (2011), and Elbers (2023).

and the marginal probabilities of a period are $p_{\bullet t} = \sum_{n=1}^{N} f_{nt}/f$. The mutual information index is thus defined as:

$$M = \sum_{n=1}^{N} \sum_{t=1}^{T} p_{nt} \log \frac{p_{nt}}{p_{n\bullet} p_{\bullet t}}.$$

Normalizing this index so that it lies between 0 and 1 gives the Theil index, $\mathcal{T}$:

$$\mathcal{T} = \frac{M}{-\sum_{t=1}^{T} p_{\bullet t} \log p_{\bullet t}}$$

$\mathcal{T}$ equals zero if the naming distribution is exactly the same in $t = 1$ and $t = 2$. In that case, the information contained in the marginal probabilities $p_{n\bullet}$ and $p_{\bullet t}$ is fully sufficient to characterize the distribution in each group, $p_{nt} = p_{n\bullet} p_{\bullet t}$. In contrast, if the naming distribution is maximally different across the two groups (for example, because the set of names used in $t = 1$ is fully disjoint from the set of names used in $t = 2$), then marginal probabilities are not informative to learn about the distributions in each group, and $\mathcal{T} = 1$. We construct the period-by-period name change $\mathcal{T}_{it}$ for each city i and time period t.

(2) Dispersion. Do naming practices become more or less dispersed? Our second objective is to measure changes in the concentration of names. To capture this, we measure the unique name count as a fraction of all names in a given city and period,

$$\mathcal{D}_{it} = \frac{N_{it}}{\sum_{n=1}^{N} f_{nt}}.$$

This measure is equal to 1 if all children are given a different name, and decreases when fewer names are used.

(3) Polarization. Do naming practices becoming more polarized across identity groups? We first measure the nationalist, religious, or loyalist content of a name. (The process is described in detail below.) Then, we binarize this continuous measure to classify a name as belonging to one of the three groups. Based on this, we calculate s_{it}^{g}: the share of births in a city i and period t that have a nationalist, religious, or loyalist name, respectively. To calculate polarization, we follow Esteban and Ray (1994) and Bazzi and Gudgeon (2021)

and measure

$$\mathcal{P}_{it} = \sum_{g=1}^{G} \sum_{g'=1}^{G} s_{it}^{g} s_{it}^{g'}$$

where $G = 3$.[14]

Identity. We measure the identities underlying these distributional changes in naming practices. Rather than relying on external "dictionaries" to define the alignment of names with ideological currents, we follow Fryer and Levitt (2004) and infer the ideological content from revealed choices of individuals in certain social groups.[15] Specifically, we measure the distinctiveness of a name for an identity group as:

$$\mathcal{I}^{\text{name, g}} = \frac{\Pr(\text{name} \mid \text{g})}{\sum_{j=1}^{G} \Pr(\text{name} \mid \text{j})},$$

where *name* is a particular first name and $j \in$ nationalist, religious, loyalist. The index ranges from 0 to 1. If $g =$ nationalist, and a name is exclusively given to children of nationalists, then $\mathcal{I}^{\text{name, g}} = 1$. In contrast, if a name is only given to children of religious figures or loyalists, $\mathcal{I}^{\text{name, g}} = 0$. Note the measure $\mathcal{I}^{\text{name, g}}$ is defined for each first name and for each of the three identities (nationalist, religious, loyalist); the method does not assign each name uniquely to one identity. In the study of polarization described above, we therefore discretize this measure by assigning each name to the ideological current with the highest score $\mathcal{I}^{\text{name, g}}$.

Constructing this measure requires a set of reference births for each identity group to construct the conditional probabilities. We access the most comprehensive lists of available biographies of individuals that were part of one of the three groups, and record the names of their children. For loyalism, we construct a dataset of all children born to the 43 German rulers that ruled one of the territories that would form the *German Union* between 1780–1815 from Marek (2018). For religiosity, we rely on a list of 458 German theologians in the 19th century with at least one known child. For nationalism, we consider all 1,746 individuals who either were part of the first nationalist fraternities (*Burschenschaften*) or

[14] We assume the distance between groups g and g' to be 1.

[15] Appendix Section C.1 demonstrates the robustness of our results to dictionary-based measures

the national assembly of 1848 and who had at least one child.[16][17]

For each city and time period, we can then construct the average distinctiveness of birth events for each group, $\mathcal{I}_{it}^{g} = \frac{1}{N}\sum_{n=1}^{N} f_{it}\mathcal{I}_{it}^{\text{name, g}}$. Appendix Table A.2 shows the five most distinctive names by gender and identity group. Throughout our analysis, we standardize all distribution and identity measures for ease of interpretation.

3.3 Institutional outcomes

We measure changes the institutional landscape during the transition period and in the emerging post-1815 order. First, we observe granular information on the identity of notable individuals from the *Deutsche Biographie* (Hockerts and Lanzinner, 2022). This source contains records of 730,000 persons from German-speaking areas, including birth and death dates, activities, and places of residence throughout their lives. We limit our data to all individuals who were born in our analysis period, 1700–1850. We link individuals to the city nearest to their birthplace. We manually identify (liberal) nationalists, religious figures, and loyalists based on titles and biographical entries. This results in a database of 11,290 individuals. We then construct a count variable $\mathcal{B}_{g,it}$ that counts the number of notables from city i that were alive in a given year t, separately for each category g. We collect this information in a city-year panel.

Second, measure the ascent of liberal nationalism in three cross-sections. First, we measure the incidence of nationalist festivals in 1814–1815. Hoffmann (1815) includes a short description of each of the 572 festivals. For each city, we construct an indicator if such a festival took place close by. From regional histories, we construct a list of 69 nationalist gymnastics associations formed between 1811 and 1819. We also record the place of birth for each of the 809 members of the Frankfurt National Assembly of 1848, and 2,645 notable fraternity members.

[16]For nationalism, we use entries linked in the following Wikipedia categories: Liste der Mitglieder der Frankfurter Nationalversammlung, Mitglied der Urburschenschaft, Burschenschafter (19. Jahrhundert). For religiosity, we use the following categories: Lutherischer Theologe (19. Jahrhundert), Römisch-katholischer Theologe (19. Jahrhundert), Evangelischer Theologe (19. Jahrhundert), Baptistischer Theologe (19. Jahrhundert), Evangelikaler Theologe (19. Jahrhundert), Mennonitischer Theologe (19. Jahrhundert), Methodistischer Theologe (19. Jahrhundert), Reformierter Theologe (19. Jahrhundert).

[17]In a robustness check, we instead rely on dictionary-based measures of identity. For this, we identify ruler names in Marek (2018), a list of Germanic names from Abel (1889), and a list of religious names based on saint and biblical names.[18] We prefer the probabilistic approach because it gives us a relative ranking of each name in case of overlap.

4 Main Results

4.1 Empirical Strategy

Did the institutional transition between 1789 and 1815 affect cultural change? Figure 2 motivates this question with two time series. Panel A shows the fraction of cities in our sample that changed ruler in a given decade. While from 1700 until 1790 less than 5 percent of cities would change ruler in a given decade, from 1790 until 1810 around 40 percent of cities changed ruler in a decade. Panel B shows the name change measure $\mathcal{T}_{it}$ averaged across cities for the same time frame. Before the 1790s, the naming distribution changed at a constant, low rate each decade. Starting in the 1790s, this measure of change rose dramatically by nearly 40% of a standard deviation, remaining high over the next decades. Panel C demonstrates that this aggregate increase was driven by cities that changed ruler in the time period 1789–1815.

In the following, we explore the relationship between rule change and this sharp and persistent increase in naming change in a panel at the city-year level. A potential concern is selection into treatment: localities on a different cultural trajectory might have also been more likely to change ruler, for example because they toppled their ruler. The historical evidence from Section 2 suggests that the scope for these concerns is limited: the collapse of the Holy Roman Empire was sudden, top-down, and externally driven; territorial change was driven by considerations outside of the scope of culture. Nevertheless, our empirical strategy takes a number of steps to account for concerns about selection.

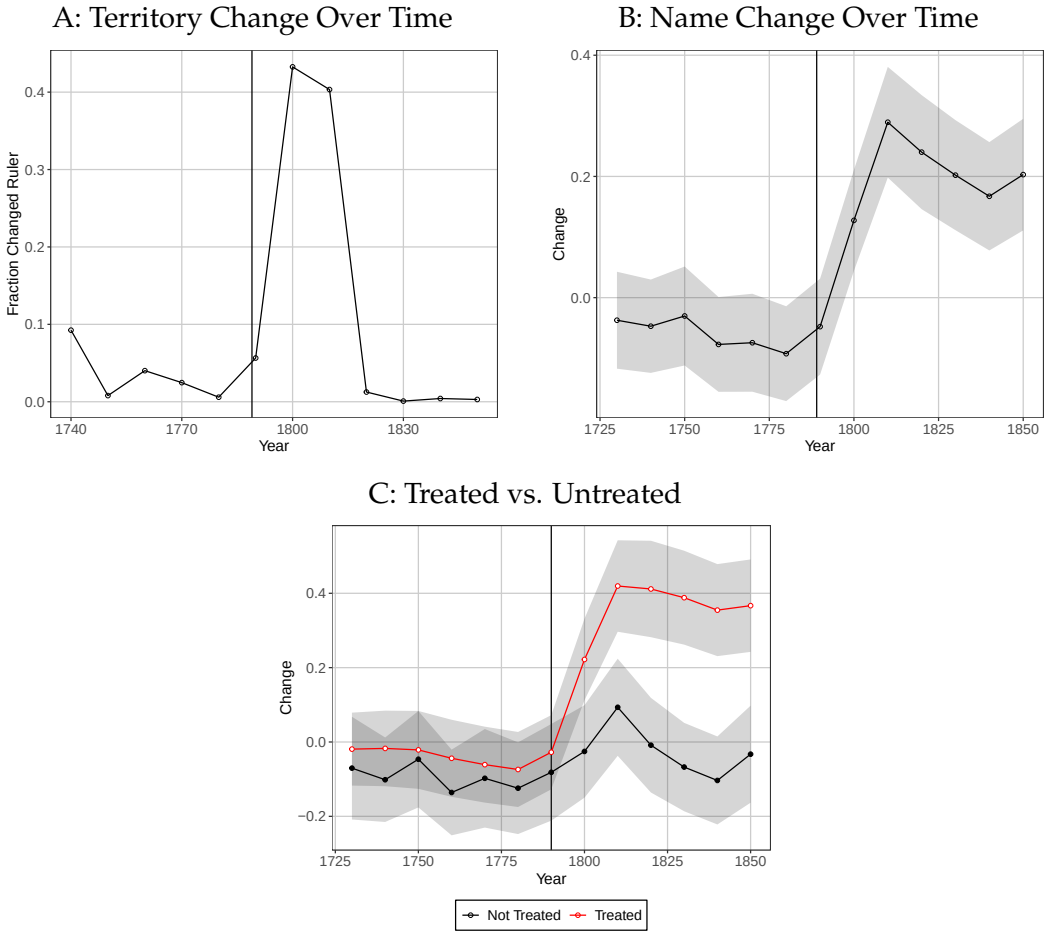
Our baseline specification is of the type

$$NamingMeasure_{it} = \beta Treated_i \times Post1789_t + \alpha_i + \alpha_t + \varepsilon_{it}, \tag{1}$$

where $NamingMeasure_{it}$ represents one of the three naming distribution metrics $\mathcal{T}_{it}$ (*Change*), $\mathcal{D}_{it}$ (*Dispersion*), and $\mathcal{P}_{it}$ (*Polarization*) introduced in Section 3.2, measured for city i and year t. $Treated_i$ indicates whether a city changed rulers between 1789 and 1815, while $Post1789_t$ is a dummy for the time period after 1789. α_i and α_t are town and year fixed effects, respectively.[19] This accounts for all time-invariant aspects of culture at the level of cities and general changes in naming patterns that occur across all cities.

[19] For ease of exposition, we opt to anchor all change events in the year 1789. Our results are qualitatively unchanged if we instead consider the staggered timing of the first territory change event for each town in Appendix Section C.2.

Figure 2: Ruler and Name Change



Note Panel A shows the fraction of cities in our sample that change ruler in a given decade. Panel B shows the name change measure T_{it} averaged across cities for each decade. Panel C shows the same measure separately for cities that changed ruler between 1789 and 1815 and those that did not. The vertical line is at $t = 1789$.

To inspect the relationship over time — both before and after treatment — we estimate event study analogues of equation (1):

$$\begin{aligned} NamingMeasure_{it} &= \sum_{\tau=1730}^{1850} \beta_\tau Treated_i \times Decade_{\tau(t)} \\ &\quad + \alpha_i + \alpha_t + \varepsilon_{it} \end{aligned} \tag{2}$$

with all variables as defined above, and $Decade_t$ denoting a dummy for individual decades (where the first and last decade pool all time periods outside the event study window).

We furthermore conduct an extensive set of robustness checks to account for alternative outcome and treatment measures, and to address potential alternative, mechanical explanations like spatial correlation, differential record-keeping, or finite sample bias. Finally, we use our detailed data on the diplomatic process of ruler change to construct comparable control groups.

4.2 Baseline Results

Table 1 shows results of estimating equation (1). Column 1 shows a relative increase in the year-to-year Theil index in treated cities at around 0.31 standard deviations, compared to untreated cities. Column 2 shows that dispersion of names increased by 0.27 standard deviations in treated city-years. Finally, column 3 shows that identity polarization increased by 0.25 standard deviations in treated city-years relative to the control group. All three coefficients are significant at the one percent level.

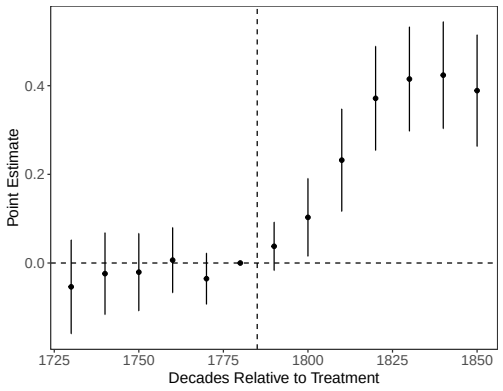
Figure 3 shows the event study counterparts of these results, estimating equation 2. The increases in all four outcomes are immediate after 1790 and not led by pre-trends over the preceding periods (Panels A–C). The patterns change gradually at first and more rapidly starting in the 1800s. This is in line with the pattern of territorial change, which saw the majority of ruler turnover during that later time period (see Panel A of Figure 2). Across all three outcomes, estimated coefficients remain large and statistically significant beyond 1815. We devote Section 5 to explore this persistence.

4.3 Robustness and Identification

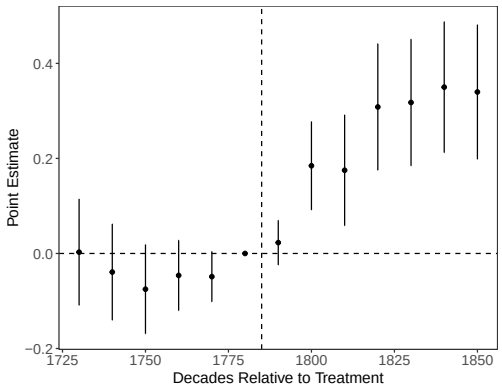
We conduct a comprehensive set of robustness checks to validate our findings. We first show that our results are robust to looking at samples with more comparable treatment

Figure 3: Territory Change and Naming Practices (Event Studies)

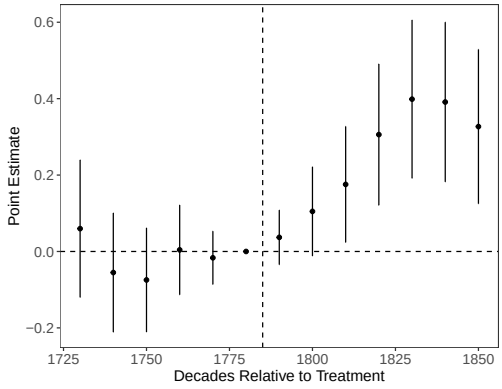
A: Naming Change



B: Dispersion



C: Polarization



Note The plot shows results of estimating the event study regression in equation (2), with 95 percent confidence intervals. Observations are at the city-year level. The sample comprises 151 years. The dependent variables are standardized values of (1) name change $\mathcal{T}_{it}$, (2) dispersion $\mathcal{D}_{it}$, and (3) polarization $\mathcal{P}_{it}$, as described in Section 3.2. Standard errors are clustered at the city level.

Table 1: Territory Change and Naming Practices

	Change (1)	Dispersion (2)	Identity Polarization (3)
Treated	0.3073***	0.2686***	0.2479***
	(0.0463)	(0.0581)	(0.0721)
Observations	63,892	63,892	63,892
R^2	0.72	0.78	0.46
Number of Units	740	740	740
City FEs	✓	✓	✓
Time FEs	✓	✓	✓
Cluster	City	City	City

Note Table presents results of estimating equation (1). Observations are at the city-year level, with the number of cities indicated in the table. The sample comprises 151 years. The dependent variables are standardized values of (1) name change $\mathcal{T}_{it}$, (2) dispersion $\mathcal{D}_{it}$, and (3) polarization $\mathcal{P}_{it}$, as described in Section 3.2. Standard errors are clustered at the city level. *, **, and *** denote significance on the 10 percent, 5 percent, and 1 percent level, respectively.

and control groups, and then we estimate an instrumental variable regression that uses random variation in the dynastic closeness to the Great Powers.

Table 2 addresses potential selection into treatment by constructing comparable control groups. We examine five increasingly restrictive subsets of the data, re-estimating equation (1) on each subset.

The first subset in Panel A of Table 2 focuses on the role of territorial negotiations in a holistic matching strategy, pairing each treated city with an untreated counterpart based on a rich set of geographic, economic, and cultural characteristics.[20]

Second, in Panel B, we rely on the fact that negotiations prioritized the 'rounding off' of borders. For each treated city, we identify an untreated city with similar strategic value in shaping compact post-1815 territories. Specifically, we simulate territorial borders designed to maximize compactness while preserving the distribution of territory sizes in 1815. Using these simulations, we compute the ex ante likelihood of ruler change by calculating the fraction of simulations in which each city falls within a new territory across 1,000 draws.[21] We then match treated cities to its untreated 'roundedness' counterpart

[20]See Appendix Table A.1 for an overview over the propensity-score based nearest neighbor matching variables are and their respective data sources.

[21]This approach follows the logic of Borusyak and Hull (2023) and randomization inference. Each simulation centers territories on their pre-period centroids and randomizes the order in which territories are 'queued' for compactness. The first territory faces no constraints, while subsequent territories maximize

using a nearest-neighbor algorithm.

Third, in Panel C we restrict the sample to the set of extensive margin compliers, by which we mean cities in territories that could potentially have vanished. We exclude cities that lay in territories that always vanished, i.e. cities in ecclesiastical territories, and cities that lay in a territory for which it was clear ex-ante that it would not vanish, because it was one of the Great Powers (i.e. cities in Prussia).

Fourth, Panel D focuses on the intensive margin: the *Statistical Commission* collected disaggregated information on areas that could potentially be moved to different territories. In our data, we know the *Statistical Commission* report for Prussia, and hence we can restrict our analysis to cities that were considered to be moved into and out of Prussia, but not all of which ultimately were treated.

Finally, in Panel E, we construct a border sample, limiting the data to cities located along internal boundaries of territories that were split as a result of post-1789 diplomatic negotiations.

Panels A–E show that the results remain qualitatively robust and largely statistically significant, even under these increasingly restrictive specifications.

Furthermore, we construct an instrumental variable that influenced which territories ceased to exist after 1815 and thus which cities in our dataset are treated. Territories with closer kinship ties to one of the Great Powers (Austria, Britain, Prussia, and Russia) at the Congress of Vienna had a higher probability of surviving, because they had a more direct diplomatic access to the decision makers.[22] For our analysis, we measure the marriage network of a territory in 1789.[23] Dynastic closeness, of course, also reflects the underlying financial and administrative ability of territories. We thus rely on a plausibly exogenous shift in the diplomatic success of a territory: the elimination of the French ruling dynasty in 1793 and the conversion to a Republic, which meant that dynastic ties to France were not helpful during the negotiations at the Congress of Vienna. From the perspective of 1789, this was not forseeable. We hence calculate the average dynastic proximity of a territory to the Great Powers *including* and *excluding* France. Our identifying assumption is

compactness conditional on prior assignments.

[22]For example, Katharina Pavlovna, the widowed Duchess of Oldenburg, and Maria Pavlova, the wife of the Hereditary Prince of Saxe-Weimar-Eisenach who were both related to the Habsburg dynasty were invited to live at the Hofburg (the principal imperial revidence of the Austrian dynasty) during the Congress of Vienna. Both territories survived the Congress, Saxe-Weimar-Eisenach even with territorial gains (Schneider et al., 2015, p. 34).

[23]This restricts our data to secular territories, since city states and ecclesiastical territories did not form dynastic ties.

Table 2: Territory Change and Naming Practices (Subsets)

	Change	Dispersion	Polarization
Panel A: Nearest Neighbor Matching			
Treated	0.2817***	0.2411***	0.2179***
	(0.053)	(0.065)	(0.076)
R^2	0.69	0.76	0.45
Observations	51432	51432	51432
Number of Units	604	604	604
Panel B: Rounding Off Matching			
Treated	0.2861***	0.2500***	0.2170***
	(0.052)	(0.064)	(0.077)
R^2	0.72	0.78	0.45
Observations	52196	52196	52196
Number of Units	604	604	604
Panel C: Complier Territories			
Treated	0.2597***	0.2081***	0.2896***
	(0.058)	(0.058)	(0.089)
R^2	0.72	0.81	0.47
Observations	37136	37136	37136
Number of Units	413	413	413
Panel D: Statistical Commission Cities			
Treated	0.2767**	0.5922**	0.5872
	(0.105)	(0.233)	(0.866)
R^2	0.65	0.82	0.46
Observations	3551	3551	3551
Number of Units	47	47	47
Panel E: Border Cities			
Treated	0.5583***	0.5585***	0.1888
	(0.176)	(0.198)	(0.198)
R^2	0.71	0.85	0.50
Observations	2994	2994	2994
Number of Units	27	27	27
Unit FEs	✓	✓	✓
Time FEs	✓	✓	✓
Cluster	City	City	City

Note Table presents results of estimating equation (1) in subsets of the data as described in the respective panel header. Observations are at the city-year level, with the number of cities indicated each panel the table. The sample comprises 151 years. The dependent variables are standardized values of (1) name change $\mathcal{T}_{it}$, (2) dispersion $\mathcal{D}_{it}$, and (3) polarization $\mathcal{P}_{it}$, as described in Section 3.2. Standard errors are clustered at the city level. *, **, and *** denote significance on the 10 percent, 5 percent, and 1 percent level, respectively.

that rulers of secular territories in the Holy Roman Empire would have been indifferent between being dynastically closer to France as compared to another Great Power as of 1789. When controlling for the former, the difference between these measures describes the shift in diplomatic connectedness owing to the French Revolution. Our thought experiment thus compares two territories with the same diplomatic connectedness in 1789. The territory with a more French-biased marriage portfolio found itself in a more difficult position in negotiations.

In Panel A of Table 3, we first show that our baseline regression results hold up when just considering observations for which we can calculate this marriage network subset. Panel B then shows the main results of the IV approach for the same sample: Our results are qualitatively unchanged compared to Table 1, and all coefficients remain highly significant (1 percent level for change and dispersion, 5 percent level for polarization).

Table 3: Territory Change and Naming Practices (IV)

	Change	Dispersion	Polarization
Panel A: OLS (Marriage Network Subset)			
Treated	0.3105***	0.2588***	0.2733***
	(0.054)	(0.068)	(0.077)
R^2	0.74	0.78	0.47
Panel B: Instrumental Variable			
Treated	0.5419***	0.7758***	0.5931**
	(0.131)	(0.212)	(0.234)
R^2	0.74	0.77	0.46
Number of Observations	42990	42990	42990
Number of Units	504	504	504
Unit FEs	✓	✓	✓
Time FEs	✓	✓	✓
Cluster	City	City	City
First-Stage Coefficient: 8.13 (0.91)			
First-Stage F-Statistic: 80.1			

Note Table presents results of estimating equation (1). Panel A shows OLS results in the sample of cities belonging to a secular territory. Panel B uses an instrumental variable based on the dynastic marriage network in the same sample. Observations are at the city-year level, with the number of cities indicated in the table. The sample comprises 151 years. The dependent variables are standardized values of (1) name change $\mathcal{T}_{it}$, (2) dispersion $\mathcal{D}_{it}$, and (3) polarization $\mathcal{P}_{it}$, as described in Section 3.2. Standard errors are clustered at the city level. *, **, and *** denote significance on the 10 percent, 5 percent, and 1 percent level, respectively.

We conduct a set of further robustness checks to complement these results. Appendix

Section C.1 tests the sensitivity of results to alternative outcome measures, while Appendix Section C.2 explores a staggered treatment definition. Appendix Section C.3 addresses concerns related to spatial correlation.

5 Mechanisms

We now examine how territorial change led to both immediate and persistent cultural shifts. Specifically, we consider two potential channels that may have jointly shaped equilibrium outcomes: external identity supply (transmitted through trade and information flows), and local shifts — in preferences (identity demand) or in institutions (identity supply from within the community). Naturally, a change in political rulers constitutes a bundled treatment, making it difficult to isolate the precise contribution of each channel. To address this, we draw on both historical context and empirical patterns to suggestively compare their relative importance. This is particularly relevant in assessing the role of local preferences. Given the historical distance of the episode, we treat preferences and local institutions jointly in the empirical analysis, using historical sources to examine their respective influence.

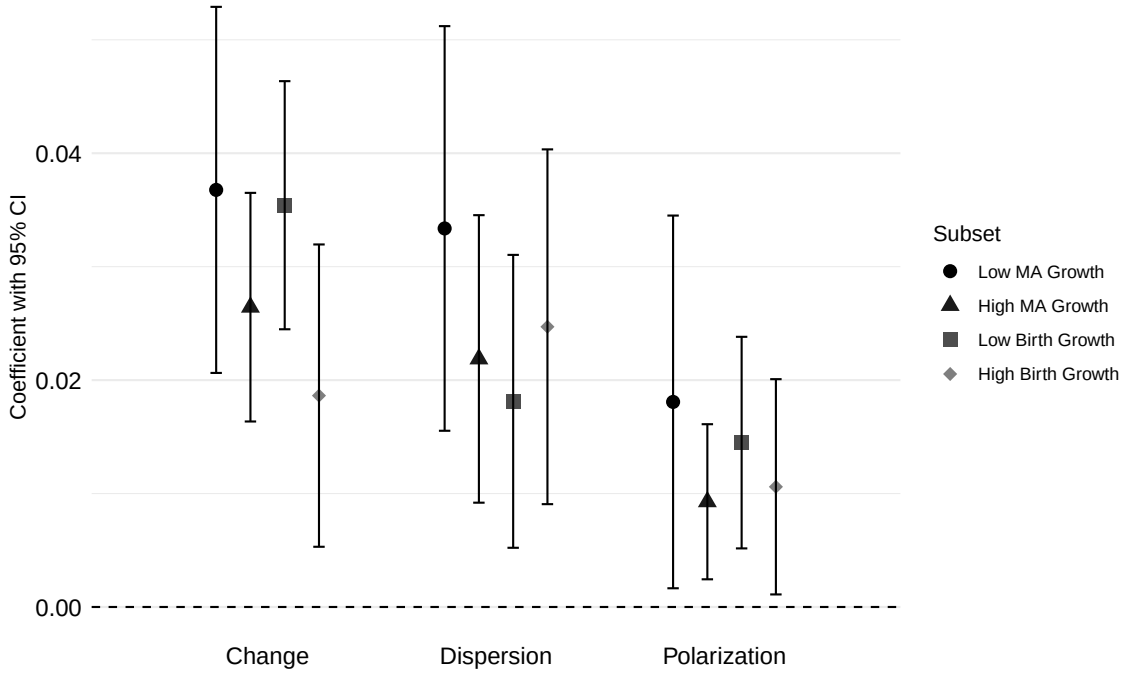
5.1 External Supply

First, we consider variation in external identity supply — the access to new ideas — along two dimensions: trade integration and migration. An increase in trade and/or migration as a result of our treatment likely meant that it was easier for new ideas to arrive and spread in these cities. First, we measure trade integration using city-level market access within territorial borders. The political restructuring between 1789 and 1815 altered the relative location and potential market size of cities in territories. Following Donaldson and Hornbeck (2016), we calculate market access to other cities within the same territory, once in 1789 and 1815.[24] We then classify cities by whether they experienced above- or below-median growth in market access due to these territorial changes. Second, to proxy for migration, we divide our sample by whether cities experienced an above- or below-median growth in birth rates between the 1790s and the 1820s.

[24]Lacking systematic and disaggregated population data for this time period, we use the stock of known buildings from Cantoni (2020) as a proxy for population. We assume travel costs are linear in straight-line distance between cities.

We estimate equation (1) within each partition and present the results in Figure 4. Coefficients remain broadly similar across all splits; if anything, estimates are slightly larger in cities with below-median changes in market access and birth rate growth. However, these differences are not statistically significant at conventional levels. This is consistent with historical and aggregate evidence that locates large-scale economic integration and migratory movements only in later decades of the German 19th century (Born, 1963). These results thus do not provide evidence suggesting that access to new ideas explains novel naming patterns.

Figure 4: Subsets



Note This figure shows coefficients and 95% confidence intervals of estimating equation (1) in split samples.

5.2 Local Demand and Supply: 1789–1815 as a State Vacuum

Next, we turn to the role of preferences and local institutions. Given the limitations of historical data, we combine quantitative evidence with expanded historical case studies, building on the overview from Section 2.3.

The sudden disappearance of rulers in treated cities created a *state vacuum*, marked by the abrupt withdrawal of state authority. Local officials lost their superiors, tax collection ceased, and territorial laws were no longer enforced.[25] This political void extended beyond governance into the realm of identity: prayers for the ruler in church services — a practice maintained for centuries — were discontinued, state symbols were removed from public squares, and crests were painted over. Across the Empire, this vacuum of identity was deeply felt.[26]

This identity vacuum created space for alternative suppliers of identity. A primary institutional beneficiary of this shift was the Church, as uncertainty heightened the demand for religious expression.[27] Freed from serving as a legitimizing link between "the divinely ordained connection between the people and their ancestral ruler" (Groote, 1955, p. 51), local clerics had greater latitude to act as independent suppliers of religiosity. Secondly, the experience of change set off a search for national identity. Before the collapse, the Empire had served as a projection of common 'German'-ness; with its dissolution, the absence of a 'German Nation' was immediate (*Politisches Journal,* 1806).[28] This absence was felt most acutely in regions that came under French rule, where the contrast with another language created a "collective emotional experience" (Burgdorf, 2009) and heightened the salience of German identity. Local writers and associations amplified this tension through pamphlets and publications.[29]

Finally, the state vacuum weakened loyalist identity. On the side of preferences, the withdrawal of the state led to a loss of secular legitimacy.[30] The state found itself at odds with the growing influence of local religious and nationalist stakeholders. Churches re-

[25]The legal infrastructure of the Empire, on which many local subjects had relied, dissolved overnight. Judges and lawyers of the High Court found themselves out of work (Mader, 2005), and the postal system came to a halt in territories without rulers (Burgdorf, 2009).

[26]Letters from the time convey the intensely experienced "fluctuating and uncertain nature of the near future" (Christian von Dohm, 1806) (as cited in , p. 182). In the Imperial city of Augsburg, prayers for the now non-existent ruler continued for months, while travel accounts from Thuringia in late fall 1806 describe how farmers refused to accept the end of the Empire (Burgdorf, 2012).

[27]In a letter from Heidelberg dated September 15, 1806, the theologian Friedrich Schleiermacher described how his local church was crowded in response to recent events (Burgdorf, 2009, p. 183), reflecting a broader "intensification of personal piety" (Carl, 2004).

[28]As early as 1710, the Holy Roman Empire had been referred to as a 'nation' (Krebs, 1710), and Moser (1765) speaks of a 'national spirit'.

[29]The most prominent example of this are the works of Ernst Moritz Arndt, such as 'Another Word About the French and About Us' (1814).

[30]Caroline Schelling, writing in 1806, observed that "it is no pity for any of the rulers who are now going under" (cited in Burgdorf 2009, p. 198).

fused to uphold the legitimacy of the new rulers.[31] Nationalists, disillusioned by the weakness of the small German states, likewise rejected the new rulers' authority.[32,33]

These historical patterns align with broader economic theories of state collapse, which predict increased uncertainty and the emergence of new social actors (Marchais et al., 2024). Based on our case studies, which suggest that the treatment impacted both individual preferences and the local supply of identity, we derive the following empirically testable hypotheses:

1. *Treated cities should show a relative decline in loyalist identity, accompanied by an increase in religious and nationalist identities.*

2. *In treated cities, the direct presence of French authorities should promote nationalism.*

3. *In treated cities, tension between local and territorial religious denomination should promote religiosity.*

5.3 Empirical Evidence

To test Hypothesis 1, we modify regression equation (1) to use our three identity measures — $\mathcal{I}_{it}^{\text{nationalist}}$, $\mathcal{I}_{it}^{\text{religious}}$, and $\mathcal{I}_{it}^{\text{loyalist}}$ as outcome variables. Table 4, Panel A, presents the results. Treated cities experienced a statistically significant increase in nationalist and religious naming practices and a decline in loyalist names relative to untreated cities.

Next, we assess Hypotheses 2 and 3, which posit that the experience of French occupation or religious tension would have shaped identity outcomes. In Panel B of Table 4, we decompose the treatment indicator into cities that directly interacted with French rule (via occupation or administration) and those that did not. The comparison group in each case are cities that did not change territory. We find that nationalism increased more in

[31] In the mediatized imperial city of Ellwangen, priests declined to announce sovereign decrees from the pulpit, and at the church assembly on New Year's Day, the assembly refused to venerate the royal family of the new rulers. On the grounds of Zwiefalten Monastery, congregations instead gathered secretly for nightly services (Burgdorf, 2009, p. 214).

[32] In an 1806 letter, Johann Gottfried Seume lamented that "our princes did not want to learn their lesson (…) the Germans are not becoming wise, since they are not even capable of thinking of themselves as Germans" (cited in Burgdorf, 2009, p. 194).

[33] In addition, areas that were occupied by the French experienced an additional increase in national sentiment among their population. For example, in Heidelberg this led to the establishment of national fraternities, whose members aimed to "realize the image of German nationality in themselves" and started to wear national costumes (see discussion in Echternkamp, 2021, p. 360).

Table 4: Territory Change and Identities

	Nationalist	Religious	Loyalist
Panel A: Treated			
Treated	0.4341***	0.1310**	-0.3996***
	(0.058)	(0.053)	(0.063)
R^2	0.72	0.71	0.76
Panel B: French Occupation Split			
Treated × French Occupation	0.6110***	0.0716	-0.4844***
	(0.069)	(0.058)	(0.072)
Treated × Not Occupied	0.2830***	0.1816***	-0.3273***
	(0.059)	(0.060)	(0.065)
R^2	0.72	0.71	0.76
Panel C: Religious Tension Split			
Treated × Religious Tension	0.5080***	0.1464***	-0.4630***
	(0.061)	(0.056)	(0.065)
Treated × No Tension	0.3134***	0.1057	-0.2963***
	(0.070)	(0.065)	(0.073)
R^2	0.72	0.71	0.76
Number of Observations	63892	63892	63892
Number of Units	740	740	740
Unit FEs	✓	✓	✓
Time FEs	✓	✓	✓
Cluster	City	City	City

Note Table presents results of estimating equation (1) without modification (Panel A), interacting treatment with indicators whether the treated city had any French occupation between 1789–1815 (Panel B), or interacting with an indicator whether the resulting rule arrangement of 1815 resulted in a tension between the dominant local and territorial denomination (Panel C). Observations are at the city-year level, with the number of cities indicated in the table. The sample comprises 151 years. The dependent variables are standardized values of (1) $\mathcal{I}_{it}^{\text{nationalist}}$, (2) $\mathcal{I}_{it}^{\text{religious}}$, and (3) $\mathcal{I}_{it}^{\text{loyalist}}$, as described in Section 3.2. Standard errors are clustered at the city level. *, **, and *** denote significance on the 10 percent, 5 percent, and 1 percent level, respectively.

treated cities with French presence, while the shift toward religious identity was stronger in treated cities that were not occupied by the French.

In Panel C of Table 4, we decompose the treatment indicator into cities that experienced religious tension as a result of changing ruler and those that did not, i.e. Catholic cities that became part of Protestant territories or vice versa. While both subsets of treated cities turned to nationalism, the shift toward religious identity took place more in treated cities with religious tension. Notably, both subgroups strongly rejected loyalist identity. These results are in line with Hypotheses 2 and 3.

5.4 Emergence of Institutions

Finally, we examine the persistence of identity shifts beyond 1815. Historical evidence suggests that local institutions played a crucial role in reinforcing the move away from loyalism. For nationalism, the first large-scale spontaneous expression of the movement came in 1814, with regional festivals celebrating Napoleon's defeat in the preceding fall. Initially informal, these associations stabilized and became more structured over time.[34] The festivals were thus soon followed by calls for the formation of 'patriotic associations,' including a prominent one issued by the writer Ernst Moritz Arndt.[35] Similarly, local clerics strengthened their influence over churchgoers, often in direct opposition to post-1815 rulers.[36]

By the 1830s, these alternative stakeholders had become embedded in society, fueling long-term tensions with the re-established state. Many later played a pivotal role in the revolutionary national assembly of 1848.[37] In contrast, the state relied on a purely administrative style of governance — so-called 'cabinet politics' — and failed to develop a model of identity that could contest with emerging democratic and nationalist ideas (Aretin, 1994).

This dynamic aligns with economic models of identity formation, where strategic complementarities ('multiplier effects') reinforce identity choices over time (Benabou and Tirole, 2011). If initial shifts in identity persisted through institutionalization, we should observe changing patterns in elite composition and institution formation.

To test this, we modify regression equation (1) to analyze the prevalence of national-

[34]The "festival lacked a central organization, even one at the regional level. It was organized locally, in a total of several hundred cities and towns" (Düding, 1987, p. 372).

[35]In Southwest Germany, the earliest nationalist associations emerged from friend groups and were clearly rooted in the region's political upheaval: their statutes mandated "a revival of a German spirit opposed to the French (...) to banish the insidious plague of French customs, language, and spirit" (Luys, 1992, p. 55). Over time, these institutions solidified and shaped new generations; those who had "experienced the Wars of Liberation as young adults, [and] now finally placed themselves in the front row" (Groote, 1955, p. 107). Nationalism became an "oppositional strategy for those critical of the established order" (Wilson, 2016).

[36]A notable example is Cologne, which had been part of an ecclesiastical territory in the Holy Roman Empire but came under Prussian rule after 1815. The resulting tensions culminated in the arrest of the acting bishop, Clemens August Droste zu Vischering. His imprisonment sparked widespread outrage and is seen by historians as an expression of entrenched religious identity in the Cologne region, with lasting influence after 1815 (Behr, 1983, p. 52f). Likewise, the *Lichtfreunde* (Friends of Light), a liberal Protestant movement, resisted state-aligned church hierarchies and promoted religious individualism. (Groschopp, 1997).

[37]Groote (1955) highlights the personnel overlap between nationalist association leaders and members of the revolutionary 1848 parliament. Additionally, two prominent leaders of the religious *Friends of Light* movement were actively involved in organizing the parliament (Groschopp, 1997).

ist, religious, and loyalist figures using our measure based on notable biographies. Table 5 shows that treated cities produced significantly more nationalist and religious figures (columns 1 and 2, significant at 5 and 1 percent level) but not loyalist figures (column 3, where the coefficient is negative and insignificant). Comparing sub-groups of treated cities, we find that treated cities that were occupied by the French saw an increase in nationalist and religious figures (significant at one percent level) and treated cities that were not occupied an increase in religious figures (significant at five percent level). In Panel C, we explore the influence of religious tension. We find that treated cities with and without religious tension experience an increase in nationalist figures compared to untreated cities (significant at ten percent level), and mirroring the results in the previous table, treated cities with religious tension see a sizeable increase in the number of notable religious individuals born in them (significant at one percent level).

Furthermore, we examine the relationship between the treatment and three cross-section outcomes:

$$Institution_i = \beta Treated_i + X_i\gamma + \alpha_{1789} + \alpha_{1815} + \varepsilon_i \tag{3}$$

where $Institution_i$ denotes whether a city i (1) hosted a nationalist festival in 1814-1815, (2) formed a nationalist gymnastics associations before 1820 or (3) was the birthplace of a member of the Frankfurt National Assembly of 1848 or a notable fraternity member. X_i is a set of geographical control variables, and α_{1789} and α_{1815} are fixed effects for the territory a city belonged to in 1789 and 1815, respectively.

Table 6 presents the results. Treated cities were significantly more likely to host nationalist festivals, associations, and revolutionaries. Taken together, our results thus suggest that initial cultural shifts persisted due to institutional shifts.

Table 5: Territory Change and Identities: Deutsche Biographie

	Nationalist	Religious	Loyalist
Panel A: Treated			
Treated	0.0471**	0.0665***	-0.0276
	(0.021)	(0.019)	(0.022)
R^2	0.34	0.32	0.16
Panel B: French Occupation Split			
Treated × French Occupation	0.1259***	0.1093***	-0.0106
	(0.036)	(0.032)	(0.030)
Treated × Not Occupied	0.0075	0.0450**	-0.0360
	(0.023)	(0.022)	(0.022)
R^2	0.34	0.32	0.16
Panel C: Religious Tension Split			
Treated × Religious Tension	0.0476*	0.1166***	-0.0074
	(0.028)	(0.028)	(0.030)
Treated × No Tension	0.0467*	0.0280	-0.0431**
	(0.027)	(0.023)	(0.021)
R^2	0.34	0.32	0.16
Number of Observations	50190	50190	50190
Number of Units	2390	2390	2390
Unit FEs	✓	✓	✓
Time FEs	✓	✓	✓
Cluster	City	City	City

Note Table presents results of estimating equation (1) without modification (Panel A), interacting treatment with indicators whether the treated city had any French occupation between 1789–1815 (Panel B), or interacting with an indicator whether the resulting rule arrangement of 1815 resulted in a tension between the dominant local and territorial denomination (Panel C). Observations are at the city-decade level, with the number of cities indicated in the table. The sample comprises 21 decades. The dependent variables are standardized values of (1) $\mathcal{B}_{it}^{\text{nationalist}}$, (2) $\mathcal{B}_{it}^{\text{religious}}$, and (3) $\mathcal{B}_{it}^{\text{loyalist}}$, where $\mathcal{B}$ counts the number of notable individuals born in city i in year t for a given category. Standard errors are clustered at the city level. *, **, and *** denote significance on the 10 percent, 5 percent, and 1 percent level, respectively.

Table 6: Territory Change and Nationalist Institutions

	Festivals (1)	Associations (2)	Revolutionaries (3)
Treated	0.0931***	0.0204***	0.0853***
	(0.0251)	(0.0077)	(0.0165)
Observations	2,390	2,390	2,390
R^2	0.30	0.17	0.16
Outcome Mean	0.1314	0.0238	0.4184
Territory 1789 FEs	✓	✓	✓
Territory 1815 FEs	✓	✓	✓
Cluster	Territory (1789)	Territory (1789)	Territory (1789)

Note Table presents results of estimating equation (1). Observations are at the city level, with the number of cities indicated in the table. The dependent variables are (1) an indicator whether city *i* had a nationalist festival in 1814-15, (2) an indicator whether city *i* had a gymnastics association before 1848, and (3) an indicator whether city *i* was the birthplace of a member of the Frankfurt National Assembly of 1848 or a notable fraternity member. Standard errors are clustered at the territory (1789) level. *, **, and *** denote significance on the 10 percent, 5 percent, and 1 percent level, respectively.

6 Conclusion

This paper provides novel evidence on the long-run cultural consequences of institutional change. Drawing on the collapse of the Holy Roman Empire as a large-scale historical shock, we document persistent shifts in naming practices in German cities that experienced a change of ruler. Using a novel dataset of 44 million birth records, we show that naming practices changed more in these cities, and that their naming patterns became more dispersed and more polarized across three major identity groups: loyalist, national, and religious identities. Treated cities adopted more nationalist and religious names, at the cost of loyalist names. These shifts reflect a wider transformation in cultural identity, as the state vacuum created by the collapse of the Holy Roman Empire allowed religious and nationalist movements to fill this gap and reshape local culture.

These identity shifts did not remain confined to cultural expressions but translated into institutional developments. Nationalist identity, in particular, became embedded in new organizations, such as gymnastic associations and national festivals, which served as platforms for nationalist mobilization. We show that treated areas were more likely to establish such organizations and to produce revolutionaries during the German Revolution of 1848. We argue that this institution-building shaped these identity transformations in the long-run.

Our paper highlights the significance of 1789 as a critical juncture. The year 1848 marked another turning point: rulers — in response to revolutionary uprisings — reoriented their policies to cultivate a shared identity among their subjects. This was achieved by merging loyalist and nationalist elements. Whereas nationalism had previously been driven by civil society, it now became a project of the state, "a willed merger of nation and dynastic empires" (Anderson, 1983, p. 85). Nationalism was no longer framed in opposition to dynastic power but became intertwined with it (Winkler, 2000, p. 217). Religiosity, too, was absorbed into this new national identity, particularly through the ideology of a "Protestant German Empire" following unification in 1871. Liberal nationalists and religious dissenters were marginalized. This fusion of nationalism and state power helped shape the ideological currents that ultimately culminated in the catastrophes of the early 20th century.

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A Additional Tables and Figures

Table A.1: City Covariate Data Sources

Variable	Source
Agricultural suitability	Fischer et al. (2002)
Longitude	Bogucka et al. (2019a)
Latitude	Bogucka et al. (2019a)
City area	Bogucka et al. (2019a)
Ruggedness index	Bogucka et al. (2019a)
Distance to border	Bogucka et al. (2019a)
Distance to coast	Bogucka et al. (2019a)
Distance to river	Kunz (1991)
Total construction stock	Cantoni (2020)
Religious construction stock	Cantoni (2020)
Administrative construction stock	Cantoni (2020)
Infrastructure construction stock	Cantoni (2020)
Military construction stock	Cantoni (2020)
Growth in administrative construction	Cantoni (2020)
Growth in infrastructure construction	Cantoni (2020)
Growth in military construction	Cantoni (2020)
City mentioned in historical records	Cantoni et al. (2020a)
City features	Cantoni et al. (2020a)
Official city status	Cantoni et al. (2020a)
Presence of a market	Cantoni et al. (2020b)
Imperial city status	Cantoni et al. (2019)
Location in a Catholic territory (in 1789)	Cantoni et al. (2019)
Ecclesiastical territory indicator	Cantoni et al. (2019)
Catholic majority	Cantoni and Weigand (2024)

Note: The table shows individual sources for city-level covariates used in analysis.

B Name Data

B.1 Data Origin

The data is based on baptism records from Catholic and Protestant churches. In these records, local priests noted the date of birth or baptism (which, due to religious reasons, very closely coincided) as well as the full name of the child and the parents. The Church of Jesus Christ of Latter-Day Saints collected and digitized these individual baptism records for genealogical research purposes, and made them available on Familysearch.org. We access to the anonymized data (without information on last names and parents) through an agreement with Familysearch.

Table A.2: Top Names

Top Male Names	Top Female Names
Panel A: Nationalist Names	
Richard	Hedwig
Alfred	Eleonora
Fritz	Emma
Robert	Eva
Hugo	Franziska
Panel B: Religious Names	
Emanuel	Beate
David	Hannah
Jakob	Anni
Kaspar	Frieda
Gottfried	Pauline
Panel C: Loyalist Names	
Alois	Konstantine
Magnus	Leopoldine
Leopold	Isabel
Anton	Ludovica
Friedrich	Amalia

Note The table shows the top five names for each identity group g. The measures underlying these ranks is described in Section 3.2.

For a subset of births, we observe last names.

B.2 Name Processing

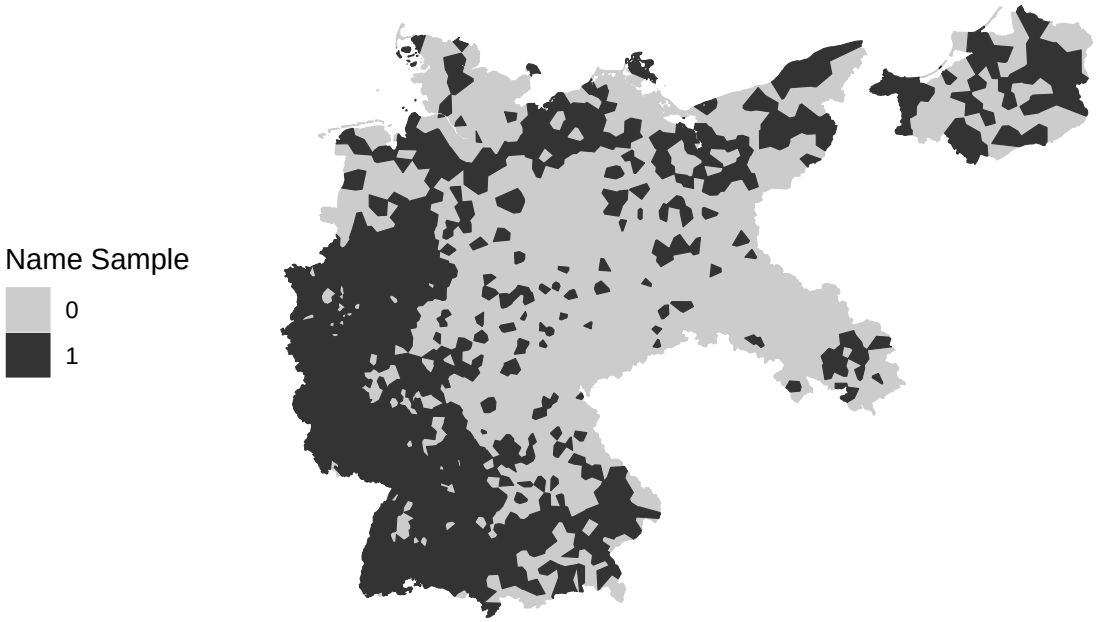
We clean and standardize names in our data to ensure comparability of naming practices across time and space in our panel. Specifically, we proceed as follows: we harmonize first name spellings, for example by changing Josef to Joseph.

B.3 Place Geolocation

The spatial coverage of data is driven by the availability of records, as they were found and collected by geneaologists. Coverage is consistent throughout time and space only for regions in the West of Germany, roughly corresponding to the present-day states of North Rhine-Westphalia, Hesse, Rhineland-Palatinate, and Baden-Württemberg. We therefore limit the analysis only to these states. We first geolocate all locations mentioned in the data; to better handle the large variety of villages, town, and hamlets, and to match places to their territorial history, we assign each location to its closest city (as defined by the set

of cities covered in the *Deutsches Städtebuch*). We rely on the border polygons in Bogucka et al. (2019b). Our data thus cover 746 cities in West Germany. The spatial distribution of covered cities is shown in Figure B.1. Covered places are concentrated in the Western parts of contemporary Germany.

Figure B.1: Name Sample



Note The plot shows cities included in the name sample.

C Robustness Checks

C.1 Outcome Definition Robustness

Table C.1: Territory Change and Naming Practices (Alternative Outcome Measures)

	Change (1)	Dispersion (2)	Identity Polarization (3)
Treated	0.2923***	0.1479**	0.2009***
	(0.0457)	(0.0602)	(0.0713)
Observations	63,892	63,892	63,892
R^2	0.68	0.70	0.26
Number of Units	740	740	740
City FEs	✓	✓	✓
Time FEs	✓	✓	✓
Cluster	City	City	City

Note Table presents results of estimating equation (1) using alternative outcome measures. Observations are at the city-year level, with the number of cities indicated each panel the table. The sample comprises 151 years. The dependent variables are standardized values of (1) name change $\mathcal{T}_{it}$ using instead the year-to-year dissimilarity index, (2) dispersion $\mathcal{D}_{it}$ using instead the Gini index multiplied by -1, and (3) polarization $\mathcal{P}_{it}$ using instead $\sum_{g=1}^{G}\sum_{g'=1}^{G}\left(s_{it}^{g}\right)^{2}s_{it}^{g'}$. Standard errors are clustered at the city level. *, **, and *** denote significance on the 10 percent, 5 percent, and 1 percent level, respectively.

Table C.2: Territory Change and Identities (Alternative Outcome Measures)

	Nationalist (1)	Religious (2)	Loyalist (3)
Treated	0.0964*	0.2586***	-0.3348***
	(0.0505)	(0.0642)	(0.0680)
Observations	63,892	63,892	63,892
R^2	0.66	0.73	0.64
Number of Units	740	740	740
City FEs	✓	✓	✓
Time FEs	✓	✓	✓
Cluster	City	City	City

Note Table presents results of estimating equation (1) using alternative outcome measures. Observations are at the city-year level, with the number of cities indicated in the table. The sample comprises 151 years. The dependent variables are standardized values of the fraction of names given in city i and year t that are (1) Germanic names, (2) religious names, and (3) ruler names. Standard errors are clustered at the city level. *, **, and *** denote significance on the 10 percent, 5 percent, and 1 percent level, respectively.

C.2 Staggered Treatment

Table C.3: Territory Change and Naming Practices (Staggered Adoption)

	Change (1)	Dispersion (2)	Identity Polarization (3)
Treated	0.3382***	0.2770***	0.2758***
	(0.0466)	(0.0576)	(0.0718)
Observations	63,892	63,892	63,892
R^2	0.72	0.78	0.46
Number of Units	740	740	740
City FEs	✓	✓	✓
Time FEs	✓	✓	✓
Cluster	City	City	City

Note Table presents results of estimating equation (1), using the first time a city changed ruler between 1789–1815 as staggered treatment timing. Observations are at the city-year level, with the number of cities indicated each panel the table. The sample comprises 151 years. The dependent variables are standardized values of (1) name change $\mathcal{T}_{it}$, (2) dispersion $\mathcal{D}_{it}$, and (3) polarization $\mathcal{P}_{it}$ as described in Section 3.2. Standard errors are clustered at the city level. *, **, and *** denote significance on the 10 percent, 5 percent, and 1 percent level, respectively.

C.3 Standard Errors

Table C.4: Territory Change and Name Change (Standard Errors)

	Change				
	(1)	(2)	(3)	(4)	(5)
Treated	0.3073***	0.3073***	0.3073***	0.3073***	0.3073***
	(0.0463)	(0.0737)	(0.0695)	(0.0703)	(0.0730)
Standard-Errors	City	Territory (1789)	50km	100km	200km
Observations	63,892	63,892	63,892	63,892	63,892
R^2	0.72	0.72	0.72	0.72	0.72
City FEs	✓	✓	✓	✓	✓
Time FEs	✓	✓	✓	✓	✓

Note Table presents results of estimating equation (1), using alternative standard errors. Observations are at the city-year level, with the number of cities indicated each panel the table. The sample comprises 151 years. The dependent variable is the standardized values of name change $\mathcal{T}_{it}$. *, **, and *** denote significance on the 10 percent, 5 percent, and 1 percent level, respectively.

Table C.5: Territory Change and Name Dispersion (Standard Errors)

	Dispersion				
	(1)	(2)	(3)	(4)	(5)
Treated	0.2686***	0.2686***	0.2686***	0.2686***	0.2686***
	(0.0581)	(0.0867)	(0.0673)	(0.0562)	(0.0461)
Standard-Errors	City	Territory (1789)	50km	100km	200km
Observations	63,892	63,892	63,892	63,892	63,892
R^2	0.78	0.78	0.78	0.78	0.78
City FEs	✓	✓	✓	✓	✓
Time FEs	✓	✓	✓	✓	✓

Note Table presents results of estimating equation (1), using alternative standard errors. Observations are at the city-year level, with the number of cities indicated each panel the table. The sample comprises 151 years. The dependent variable is the standardized values of dispersion $\mathcal{D}_{it}$. *, **, and *** denote significance on the 10 percent, 5 percent, and 1 percent level, respectively.

Table C.6: Territory Change and Identity Polarization (Standard Errors)

	Identity Polarization				
	(1)	(2)	(3)	(4)	(5)
Treated	0.2479***	0.2479*	0.2479**	0.2479***	0.2479**
	(0.0721)	(0.1421)	(0.1246)	(0.0487)	(0.1172)
Standard-Errors	City	Territory (1789)	50km	100km	200km
Observations	63,892	63,892	63,892	63,892	63,892
R^2	0.46	0.46	0.46	0.46	0.46
City FEs	✓	✓	✓	✓	✓
Time FEs	✓	✓	✓	✓	✓

Note Table presents results of estimating equation (1), using alternative standard errors. Observations are at the city-year level, with the number of cities indicated each panel the table. The sample comprises 151 years. The dependent variable is the standardized values of polarization $\mathcal{P}_{it}$. *, **, and *** denote significance on the 10 percent, 5 percent, and 1 percent level, respectively.

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