The Gloom over the Mind: Prussian Rule, Cultural Persistence, and Political Liberalism in Poland

Weihan Zhang[*]   Chaoyue Wang[†]

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Abstract

An emerging literature looks to historical legacies when trying to understand contemporary political divides, yet specific mechanisms remain empirically unsettled through which past institutions continuously shape political behavior over generations. Cultural or psychological persistence, which precipitates from unique, individual experiences of past generations, is often entangled with more structural mechanisms like social and economic path dependence of past institutions, making the two hard to distinguish. Exploiting Poland's Prussian partition in history and territory transfers after WWII, this study differentiates out the role of cultural persistence in perpetuating historical legacies by comparing areas within the historical Prussian territories. Under a spatial regression discontinuity design, our results indicate overall stronger reluctance toward political and national conservatism in former Prussian area, even after considering socioeconomic covariates. Furthermore, such liberal legacies of historical Prussian rule concentrate only on areas that didn't experienced substantial migration following WWII, cementing a cultural mechanism. Our findings thereby cast light upon the value of greater attention to cultural and psychological explanations when taking up a historical approach to political behavior.

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[*]Weihan Zhang, School of Government, Peking University; Email: weihanzhang2001@gmail.com

[†]Raphael Wang, Yuanpei College, Peking University; Email: chyrwang@gmail.com

1 Introduction

Political attitudes and behavior are unevenly distributed along racial, religion, and geographic lines in the real world. In service of trying to disentangle the causes underlying such divides, a growing spotlight of research attention has recently turned to the lasting influence of historical legacies (Acharya, Blackwell, and Sen 2016; Wasow 2020; Haffert 2022). Past institutions that profoundly structured social connections and economic organization at their time, like American slavery, slave trade in Africa, and forced labor system in colonies, were found to be significantly correlated with economic performance and political orientations of their localities even centuries later (Nunn and Wantchekon 2011; Acemoglu, García-Jimeno, and Robinson 2012; Dell 2010). Such promising potential of historical institutions in explaining out contemporary political divides encouraged a swelling amount of social science studies that specifically looks to history for descriptive insights (Ochsner and Roesel 2020; Bazzi, Fiszbein, and Gebresilasse 2020; Vogler 2019). On the other hand, the proven power of historical legacies in producing long-term, continuous influence also spurs researchers to be historically attentive so that some coincidentally neat contexts in history can be exploited to provide new data and new estimations for old, big questions (Charnysh 2019; Haffert 2022).

But how exactly do past experiences and events come to impact political beliefs and actions of the people who are separated from them over such a long time? Despite this productive emergence of historical persistence literature in recent years, specific mechanisms through which historical legacies are communicated over time remains empirically unsettled. On the one hand, past institutions could be subtly preserved through the path dependence of other social, political, and economic infrastructures that were closely connected to these institutions in history (Pierson 2000; Vogler 2019; Dell 2010). Even when the institutions of interest themselves vanished as time went by, the greater network of socioeconomic structures into which it was embedded can bring their presence well into today. On the other hand, historical persistence may also take root in profound experiences that were culturally or psychologically accumulated by people at the presence of past institutions (Acharya et al. 2016; Bazzi et al. 2020). These cultural and psychological exposures are so intensive and transformative that they were eventually transmitted across generations through family or community socialization. For instance, in U.S. counties that witnessed frequent occurrences of anti-Black lynchings before massive civil rights reform, African American voters today still have a substantial lower turnout than national average, largely due to inter-generational inheritance of the fear

of being lynched for daring to vote (Acharya et al. 2016).

These two theoretically distinct mechanism, however, are hard to differentiate in an observational setting. As in most places where intensive migrations were rare in history, contemporary residents who are impressionable to inter-generational transmission of cultural experiences are also intensely influenced by present socioeconomic institutions that reflect path dependence of historical legacies, thus rendering the two difficult to tell apart especially when past and present culture are tricky to measure. Though adding socioeconomic covariates may help to clarify the problem by shutting down path-dependence channels based on the measurable, it is still plausible that cultural experiences from past institutions have been mingling with path-dependent socioeconomic infrastructure to produce a persistence impact (Haffert 2022).

Ideally speaking, a quasi-experimental setting is needed to isolate cultural persistence from institutional path dependence of historical legacies, where socioeconomic systems of a locality are kept as the same while its indigenous residents were replaced with migrants that have no generational connections with its cultural experiences in history. Then later, political behavior of this locality can be compared with another sharing similar history. Since the "replaced" locality is largely cut off from across-generation transmission of cultural and psychological experiences while its social and economic systems were well preserved, the difference between the two could be interpreted as the role of cultural persistence in preserving historical legacies. As will be explained in the following, Poland's history of Prussian rule before WWI and territory transfer after WWII , where millions of eastern Poles fled their homes to newly gained western territories that were previously ruled by Prussia, provides an exceptionally excellent situation that is much similar to the aforementioned ideal framework.

2   Prussian Rule and Territory Change in Polish History

During the Partitions of Poland between 1815 and 1918, the western half of today's Poland was ruled under the Germany Empire in name and the Kingdom of Prussian in practice for over one hundred years. Though Polish self-organization at the grassroots level were largely tolerated by the Prussian state, administrative discrimination against Polish population were common practice. Especially after the introduction of *Kulturkampf* by Otto von Bismarck in 1870s, which deepened Prussian hostility against the Roman Catholicism, conditions of Poles greatly worsened due to its long tradition of prevalent Catholic faith and large share of Roman Catholics in its overall population. Besides, compared to similar anti-Catholic movements

in other European states, *Kulturkampf* stands out in entailing a uniquely anti-Polish component. Oppression against indigenous Polish population in the name of religious struggles were pervasive in this part of Polish history, where political and religious freedom of Poles were significantly repressed.

The rule of *Kulturkampf* in Prussia against Roman Catholics were found to be consequential in terms of its connection to Catholic political behavior centuries later. In the area of today's Germany, places with higher share of Catholic populations, which presumably experienced a higher level of political oppression during the practice of *Kulturkampf*, still present stronger reluctance to vote for right-wing parties possibily due to the persistence of historical disgust against political and religious intolerance (Haffert 2022). In our setting, given the status of Poles as the conquered foreigners and its deep Catholic tradition, it is quite intuitive that the experience of Prussian rule could points to lower support for conservative politics in former Prussian territories in today's Poland.

Again, as is mentioned in the introduction, Prussian rule in history could influence contemporary political behavior other than creating cultural experiences of religious oppression that communicate along generations. Socioeconomic infrastructures that covers educational, economic, and other dimensions of social life are also impressionable to the administration of Prussia in history. Institutional differences near historical Prussian boundary that were produced by such path-dependence can also enter into the formation of political preference in a locality. Since most people live under both the inter-generational persistence of oppressed experiences and the path-dependent result of past Prussian institutions, a simple observation of difference in political preference between former Prussian area and non-Prussian area can not clearly identify cultural persistence of historical experiences as the mechanism.

Fortunately, territories change of Poland following the ending of WWII provides a uniquely resourceful setting for testing the role of cultural persistence in preserving historical legacies. As is illustrated in the right plot in Figure 1, even though all territories western to the white border have a history of Prussian rule between 1815 and 1918, the darkened part are affirmed as Polish territories only after WWII as part of compensation for Polish loss from Germany. In the aftermath of this territory transfer, nearly eight million indigenous residents fled or were expelled from the transferred territories while a diverse group of migrants from eastern and cenral parts of Poland came to repopulate this area. At the mercy of arbitrary decisions of Soviet and Polish officials who lacked substantial knowledge of local socioeconomic characteristics, migrant population were randomly sent to and resettled through these former German territories at a rather swift pace. Before 1948, 81% percent of indigenous population in former German territories had

FIGURE 1: Prussian Occupation and Contemporary Voting Pattern in Poland

A. Historical Territory of Poland in 1918

B. Municipality-Level Vote Share of PiS in 2018
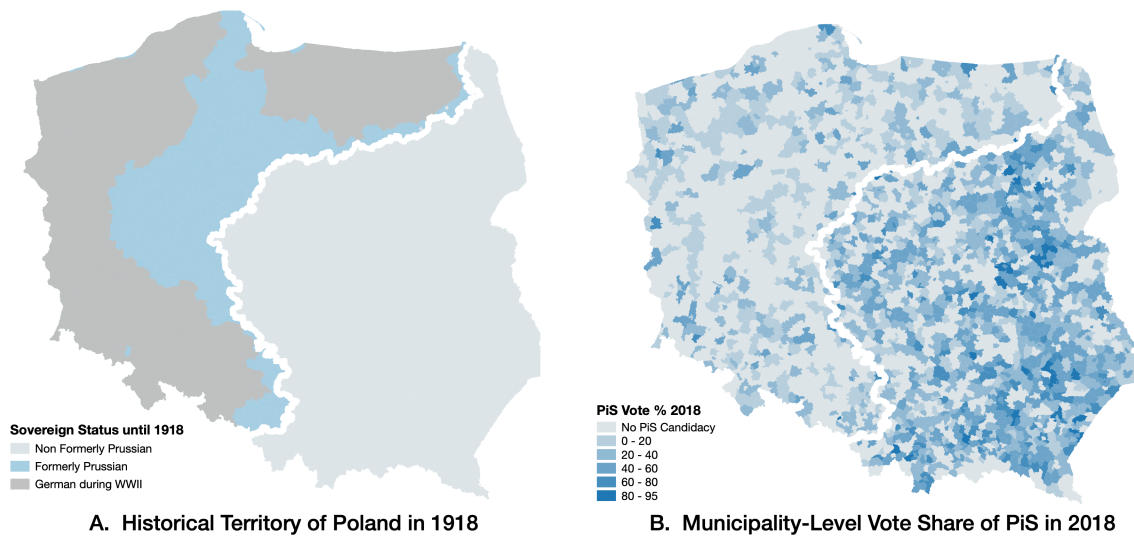
Note: Map on the right depicts Prussian and Non-Prussian territories upon today's Poland by the time of Prussia's termination. Map on the left shows the distribution of PiS Vote share across Polish mayoral elections in 2018, with bluer municipalities having stronger support for PiS.

already been replaced with migrants from the east. Despite the transformation it brought to local population landscape, the short span during which this in-and-out migration took place left much of former German physical and socioeconomic infrastructures intact, largely preserving the continuity of existing institutions at the moment (Charnysh 2019).

With a shared history of being ruled by Prussia for over one hundred years, original Polish territories and those former German territories gained after WWII differ only in the continuity of their local population, thereby creating a variation of cultural persistence upon the same historical institutions. While original Polish territories can be impacted by historical institutions through both institutional path-dependency and cultural persistence, the latter channel was closed for former German territories since the majority of their current population settled there only over half a century ago, and therefore have no generational connections with the history of Prussian rule.

Hence, by comparing the impact of Prussian historical rule between original Polish territories and former German ones, this study is allowed to differentiate out the role of cultural persistence in perpetuating historical legacies. If cultural persistence matters as a mechanism for historical legacies, we would find that original Polish territories present a larger political difference when compared to non-Prussian areas, and former Germans area a weaker one.

The following empirical analyses develop in five parts. First, we introduce sources of our data and our spatial RD design for identifying Prussian political legacies and the variation of such legacies by cultural persistence mechanism. Then, we report baseline results of the political discontinuity created by historical Prussian rule, finding a lower level of political conservatism in former Prussian area. Further, we show that this discontinuity in political behavior is still significant even when we shut down path-dependent channels by including contemporary socioeconomic covariates. In the fourth part, we look into the "difference in discontinuities" between original Polish territories and former German ones. We find the impact of Prussian rule in today's political behavior is strongest among original Polish territories, empowering the role of cultural persistence. Finally, we present the robustness of our estimation by manipulating the selection of bandwidth, donut hole span, and even the border itself. The study is ended with a discussion of our findings, contributions, and limits.

3   Empirical Framework

3.1   Data

We use municipality-level support for political conservatism as a proxy for political liberalism as the liberalist parties in Poland are too weak to measure their influence. *Law and Justice* (Polish: Prawo i Sprawiedliwość, PiS) is the biggest right-wing populist and national-conservative political party in Poland, and is also currently the ruling party of Poland. For PiS[1] vote share and election results, we use 2018 mayoral election data from official publications of the National Electoral Commission of Poland (Państwowa Komisja Wyborcza 2019). We define a PiS candidate as either his or her party membership, election committee or political endorsement is PiS.

Socioeconomic covariates at the municipality level come from the Central Statistical Office of Poland (Główny Urząd Statystyczny 2019). For the full description of the available covariates see Table 6 in the appendix and descriptive statistics are presented in Table 1. Since the descriptives are for the present period, they might reflect the effects of the Partitions of Poland, especially those regarding the socioeconomic infrastructures. The municipalities that were under Prussian rule are characterized by high levels of urbanization, cultural investment and low levels of unemployment, and a higher population number and density.

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[1]We will use PiS and conservatism interchangeably in the following sections.

TABLE 1: Descriptive statistics

Characteristics	Former Prussian		Not Former Prussian		Difference Test
	Mean	SD	Mean	SD	*p*-value
Urban or Rural Municipality	1.069	0.849	0.555	0.823	0.00
Total Expenditure per capita	5,121	1,104	4,955	1,702	0.07
Education Spending per capita	1,442	340.7	1,457	368.9	0.49
Culture Expenditure per capita	197.3	138.6	147.6	129.9	0.00
Environment Expenditure per capita	20.36	70.48	76.73	210.4	0.00
Property Expenditure per capita	1,009	601.9	1,014	856.7	0.92
Population	30,012	61,311	17,109	68,854	0.00
Population Density	445.5	687.8	232.6	470.5	0.00
Unemployment Rate (%)	2.879	1.619	3.289	1.618	0.00
Average Migration	-3.882	66.38	0.428	95.25	0.41

Note: Municipality-level means and standard deviations of socioeconomic characteristics by historical status as part of the Kingdom of Prussia. The last column reports the *p*-value of the across-group difference test of a given covariate, with bigger value indicating smaller significant difference.

3.2 Identification Strategy

We use mayoral election results to test whether historically ruled by the Prussian state maps into today's political liberalism by employing a spatial regression discontinuity (RD) approach. RD controls for unobservable heterogeneity across treated and non-treated units that are arbitrarily close to each other (Imbens and Lemieux 2008; Lee and Lemieux 2010). In the past, municipalities in the west of the historical border experienced more than 180 years of Prussian rule, whereas municipalities in the east were governed by the Russian empire and Austrian empire till the end of the Great War. However, the reunification of partitioned Poland after the Great War has triggered massive population flows of residents across the historical border. Thus, homogeneity in various aspects brought by the migration from both sides might conceal the differences of our theoretical interest if we only restrict the sample to the close-to-border areas. So, we employ the donut hole strategy that excludes municipalities near the historical border and still use distance to the historical border as a single-dimensional running function (Keele and Titiunik 2015):

As Gelman and Imbens (2019) argue that high-order polynomials might be misleading in the regression discontinuity design. In the baseline regression, we use a linear polynomial. The donut hole and bandwidth selection is based on the trade-off between the sample size and internal validity, and we will discuss it in detail later.

3.3 The Border under Investigation

The key assumption for the regression discontinuity design to provide the causal effect of the Prussian rule is that exogenous variables influencing voting behaviour are smooth along the border. And in our case, they vary smoothly just outside the donut hole. There is a consensus among historians that the borders of interest[2] were not drawn to reflect pre-existing socio-economic, historical, geographic or ethnic divisions (Wandycz 1975). Becker, Boeckh, Hainz, and Woessmann (2016) showed that there were no significant differences between these regions in terms of their pre-Partition characteristics. Backhaus (2019) using data from the 1810 census of the Duchy of Warsaw provided evidence that there was no difference in the size of population at the Prussian-Russian border, which was established in 1815. Moreover, we find evidence that modern socioeconomic characteristics are also largely the same (see Table 3). However, one may doubt that, if there were some exogenous shocks that exactly caused the regional differences after the Partitions of Poland. So, in channel analysis section, We exclude some parts of Silesia, Pomorania and Eastern Prussia from our analysis, which constitute around 20% of our full sample, because during the interwar period (1918–1945) they belonged to Germany and were a destination point for the massive post-WWII resettlement of Poles from the territories of modern Belarus, Lithuania, Ukraine and central Poland, namely they and their ancestors were never under the Prussian rule[3] (Charnysh 2019)[4], and the effects even become much more strong and significant. Thus, we ensure that the observed differences between the areas of interest are due to the Partitions of Poland, not some later historical event. Overall, our sample consists of areas which experienced a similar history before and after the Partitions, were ethnically homogeneous and are now within the territory of Poland.

4   Baseline Results

We inspect RD plots before turning to regression outputs. Figure 2 visualises the geography of conservatism electoral outcomes in Poland at the municipality level (maps on the right-hand side). RD graphs in Figure 2 illustrate the discontinuity of local PiS support around the historical Prussia-Poland border with the donut holes respectively being 0km and 40km. The plots also show the linear polynomial fit and the respective confidence bands of conservatism votes. All municipalities selected are between 40 and 140
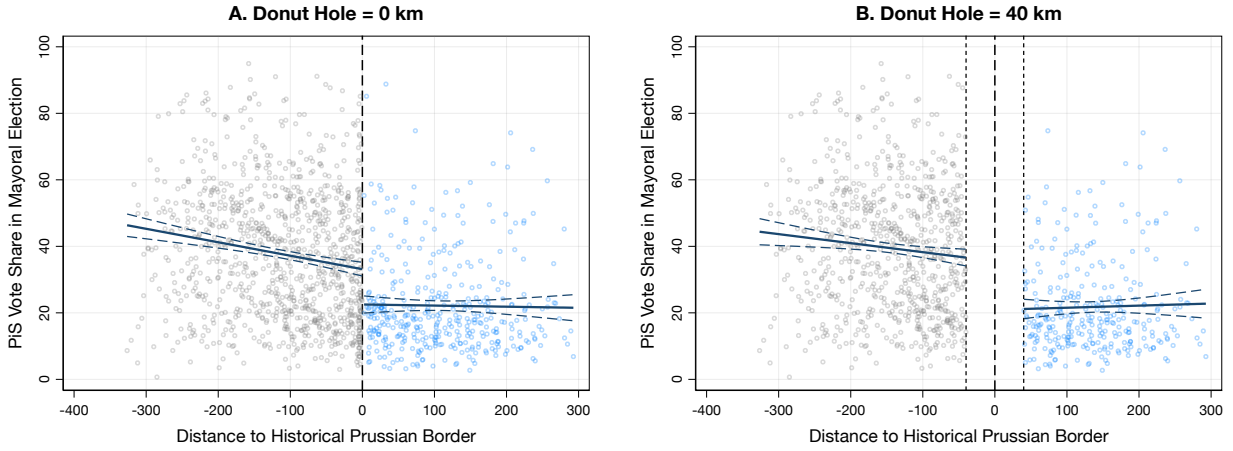
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[2]The borders of interest were established during the Congress of Vienna in 1815 and remained unchanged for almost 100 years.
[3]At the same time, almost the whole German population of these regions was expelled to Germany.
[4]See Appendix A.

FIGURE 2: Discontinuity of PiS Popularity around Historical Prussian Border

Note: Sub-graph A and B illustrate the discontinuity of local PiS support around the historical Prussia-Poland border with the donut holes respectively being 0km and 40km. A negative distance, accompanied by the blue filling color, is endowed to a municipality if it was never under the rule of the Kingdom of Prussia, and a positive distance and gray filling otherwise. Solid and dashed lines plot a fitted relationship between to-border distance and PiS support around the border.

kilometers from the border. A negative distance, accompanied by the blue filling color, is endowed to a municipality if it was never under the rule of the Kingdom of Prussia, and a positive distance and gray filling otherwise.

Next, we estimate regressions. Table 2 presents RD estimations based on a linear polynomial fit for the mayoral election in 2018. Columns (1) to (2) representing the full sample coincide with the two RD plots in Figure 2. Conservatism vote shares jump at the donut hole border. Switching from a municipality in the previous non-Prussian zone to its adjacent municipality on the other side decreases conservatism votes on average by 15.31 percentage points (column (1)) and 17.19 percentage points when considering potential vivodeship heterogeneity (column (2)). Worrying that heterogeneous treatment effects based on different municipality types may exist, we divide the full sample into an urban subsample, a half-rural subsample and a rural subsample. We find that urban municipalities have the strongest effect (column (3) - (4)) although its significance decreases due to much a smaller sample size while the rural subsample has the weakest effect (column (7) - (8)) by the insignificant treatment, and half-rural subsample lies in between (column (5) - (6)). This holds even stronger when excluding the interwar German territories mentioned before, suggesting that the political divide we observe should mainly be attributed to urban residents.

TABLE 2: **Baseline Estimation of the Political Impact of Prussian Rule**

DV: PiS Vote %	Full		Urban		Half-Rural		Rural	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Former Prussian	-15.31**	-17.19**	-21.43*	-37.28*	-16.37*	-20.17	-9.82	-9.09
	(4.77)	(6.50)	(10.17)	(14.78)	(8.19)	(11.10)	(7.60)	(11.23)
Constant	34.93***	37.74***	37.85***	53.21***	33.90***	37.56***	34.66***	34.94***
	(3.20)	(4.53)	(8.22)	(12.01)	(5.65)	(7.34)	(4.27)	(6.24)
Vivodeship FE		✓		✓		✓		✓
Observations	564	564	93	93	165	165	306	306
R-squared	0.133	0.161	0.115	0.178	0.173	0.233	0.093	0.128

Note: Baseline regressions of PiS Vote Share on the historical Prussian status of a municipality. Built upon the baseline model, specifications for each column vary in the selection of different municipality types and the inclusion of Vivodeship fixed effect. All municipalities selected are between 40 (span of donut hole) and 140 (bandwidth) kilometers from the historical Prussia-Poland border. Robust standard errors are in the parentheses. Statistical significance is indicated by $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

5 Channels of Persistence

In the following section we further look into potential mechanisms underlying this political discontinuity around historical Prussian border, one being socioeconomic path-dependence of past institutions and the other being cultural persistence.

5.1 Socioeconomic Path-Dependence

Socioeconomic covariates available at municipality level are potentially affected by past Prussian rule. In principle, former Prussian rule might have affected levels of income and wealth as well as education, urbanization, population density and cultural investment, so these variables might constitute channels through which the Prussian effect comes about. To empirically test it, we include proxies for all potential channels as additional controls in our baseline specification. This strategy provides two meaningful insights: on the one hand, we test whether a certain channel changes the treatment effect. On the other hand, the coefficient of the covariate itself indicates whether a potential channel comes with differences in conservatism vote shares.

As shown in Table 3 , although the additional socioeconomic covariates increase the variance, results on the effect of the Prussian rule are hardly affected. Additionally, almost none of these covariates are significant, if yes, their effects are rather small in magnitude. This suggests that property, education,

TABLE 3: Discontinuities of Socioeconomic Characteristics by Historical Prussian Border

Covarite as DV	Discontinuity		Covarite as DV	Discontinuity	
Municipality Type	0.42	(0.23)	Property Expenditure	-0.27	(0.20)
Total Expenditure	-0.07	(0.06)	Population	0.80**	(0.29)
Education Expenditure	0.07	(0.06)	Unemployment Rate	-0.35*	(0.17)
Cultural Expenditure	0.50**	(0.17)	Population Density	0.69	(0.43)
Environment Expenditure	-0.42	(0.61)	Average Migration	-0.90	(1.01)

Note: Regression estimates of the impact of former Prussian status using each of the listed covariates as the dependent variable. A significant estimates indicates a discontinuity of the covariate around the historical Prussia-Poland border. Robust standard errors are reported in the parentheses following the coefficients. All municipalities selected are between 40 and 140 kilometers from the border. Statistical significance is indicated by $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

TABLE 4: The Impact of Prussian Rule with Socioeconomic Channels Considered

	Full		Urban		Half-Rural		Rural	
DV: PiS Vote %	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Former Prussian	-15.31**	-14.57**	-21.43*	-18.71	-16.37*	-13.90	-9.82	-15.64
	(4.77)	(5.01)	(10.17)	(10.69)	(8.19)	(10.11)	(7.60)	(8.10)
Constant	34.93***	70.42*	37.85***	-109.74	33.90***	177.09	34.66***	54.54
	(3.20)	(34.65)	(8.22)	(104.40)	(5.65)	(94.19)	(4.27)	(53.50)
Covariates		✓		✓		✓		✓
Observations	564	564	93	93	165	165	306	306
R-squared	0.133	0.172	0.115	0.177	0.173	0.235	0.093	0.146

Note: Regressions of PiS Vote Share on the historical Prussian status of a municipality with considerations for potential channels. Built upon the baseline model, specifications for each column varies in the selection of different municipality types and the inclusion of socioeconomic covariates. All municipalities selected are between 40 and 140 kilometers from the historical Prussia-Poland border. Robust standard errors are in the parentheses. Statistical significance is indicated by $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

urbanisation and cultural investment are unlikely to be major channels of the Prussian effect.

5.2 Cultural Persistence

We now turn to test the role of cultural persistence in perpetuating the impact of historical Prussian rule. As is briefed in our introduction part, since indigenous population of former German territories within the past Prussian area had been largely uprooted and replaced by migrants from eastern and central Poland after WWII[5], we would expect a weaker effect of Prussian rule on contemporary political behavior if inter-generational transmission of cultural experiences is the underlying mechanism.

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[5]Charnysh (2019) finds that only lower than 10% of the migrants were from the former Prussian lands (see Appendix A).

FIGURE 3: Difference in Discontinuities between No Germany and Only Germany Samples
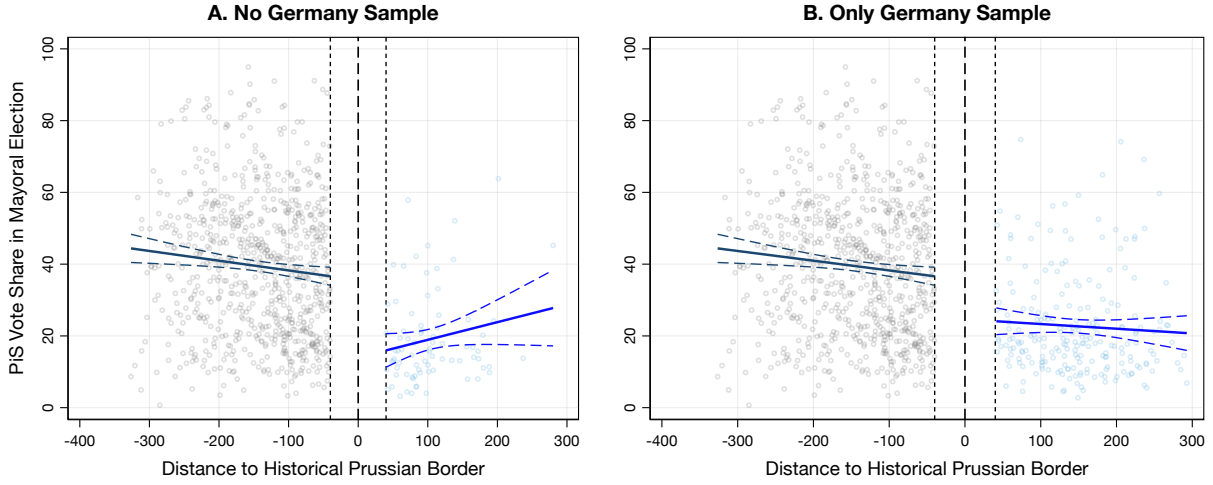
Note: Respectively based on the exclusion and inclusion of Germany-occupied area in former Prussian territories, sub-graph A and B illustrate the discontinuities of local PiS support around the historical Prussia-Poland border. A negative distance, accompanied by the blue filling color, is endowed to a municipality if it was never under the rule of the Kingdom of Prussia, and a positive distance and gray filling otherwise. Solid and dashed lines plot a fitted relationship between to-border distance and PiS support around the border.

To investigate whether there is significant difference in Prussian rule influence between original Polish territories and former German territories, we first re-plot the spatial discontinuity around historical Prussian border presented in Figure 2 , but this time with different sub-samples. Plot A in Figure 3 depicts the discontinuity with a sample that excludes former Germany territories where the cultural persistence is allegedly weak due population uprooting, and symmetrically, Plot B in Figure 3 shows the same discontinuity with former Polish territories ruled out.

As can be readily seen in Figure 3, discontinuity around past Prussian border is obviously larger in the No Germany sample. Especially in the immediate area around the border, the fitted value of PiS vote among the No Germany sample is distinctively lower than that of Only Germany sample, with their 95% CI barely overlapping with each other. This positive difference of original Polish territories over former German ones builds tentative confidence into the cultural-persistence explanation, since places (as No Germany sample) with consistent transmission of local generations see a larger contemporary impact of historical Prussian experiences.

We then further examine the variation of Prussian influence by looking at the regression estimations based on the aforementioned sample selections. Figure 4 presents our estimations of Prussian rule im-

pact after running the with-covariate specification in Table 3 using respectively the No Germany sample, full sample, and Only Germany sample. Estimations among different types of municipalities are divided by dashed black lines for the ease of grouping. For each municipality type, the discontinuity of political behavior around Prussian border is the strongest in the No Germany sample, and is less significant both substantially and statistically in the other two samples. Given that the No Germany sample include localities with most stable inter-generational communication of historical experiences, the pattern of estimations presented here further consolidates cultural persistence as an essential mechanism for historical legacies.

FIGURE 4: Cultural and Historical Persistence as a Channel for Prussian Rule Influence
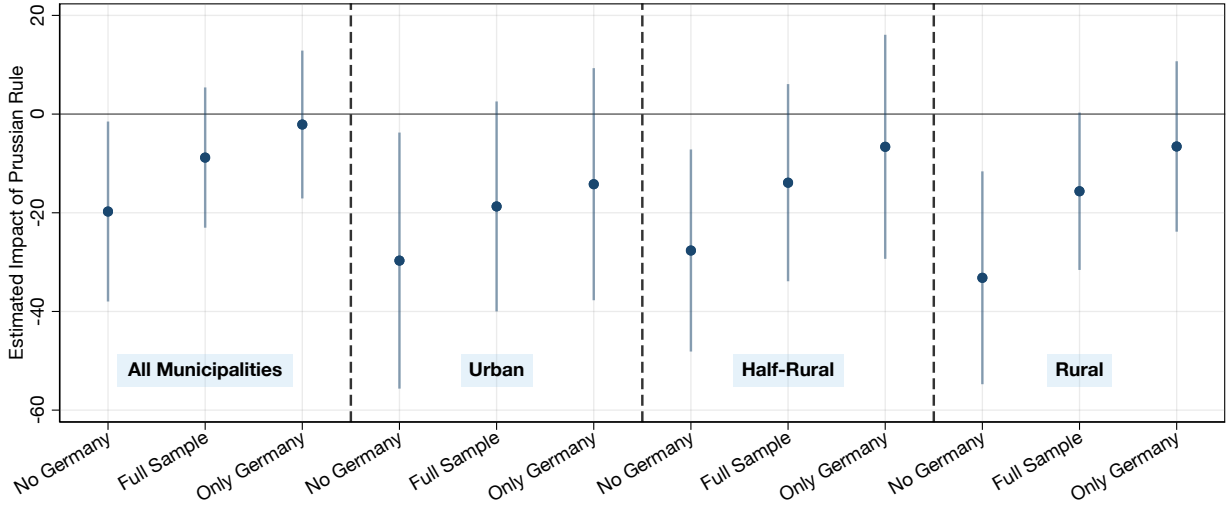

Note: The four sub-graphs present the point estimates and 95% CI of Prussian rule influence based on different selections of formerly Prussian territories. For each municipality type, No Germany estimation include historically non-Prussian territories and those who are formerly Prussian but remained Polish during WWII; Full estimation include all territories; Germany esimation include only historically non-Prussian territories and those who are formerly Prussian and occupied by Germany during WWII. The estimated effect is null if the corresponding blue area spans across the zero reference line.

6 Robustness Check

This Section provides analyses of whether the results so far can be interpreted as the genuine effects of the Prussian rule. We check whether the results are sensitive to donut hole and bandwidth selection; whether there are treatment effects when spuriously moving the Prussian border inwards or outwards.

FIGURE 5: Estimation Robustness upon Isolated Selections of Bandwidth and Adjacency
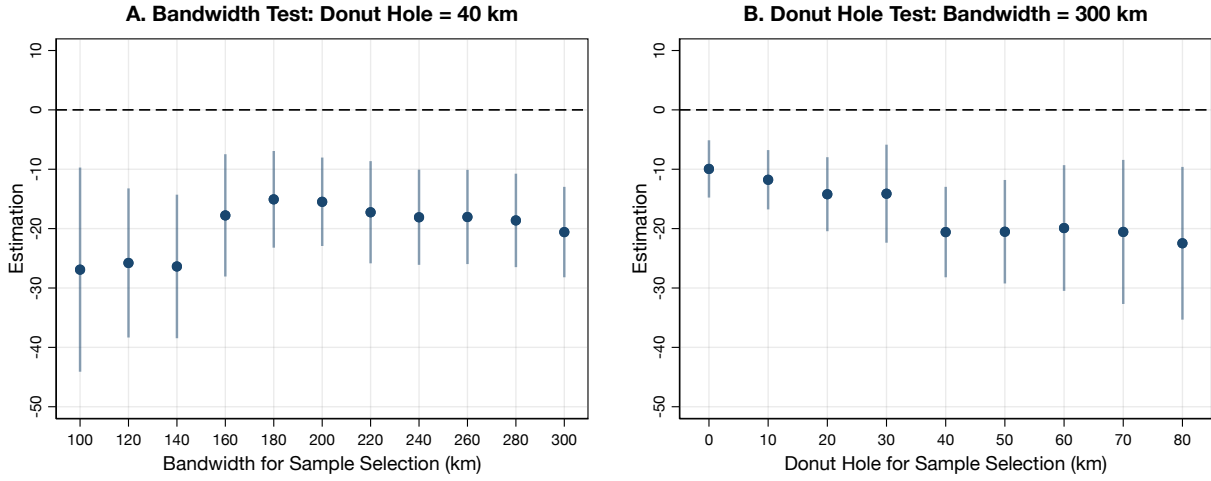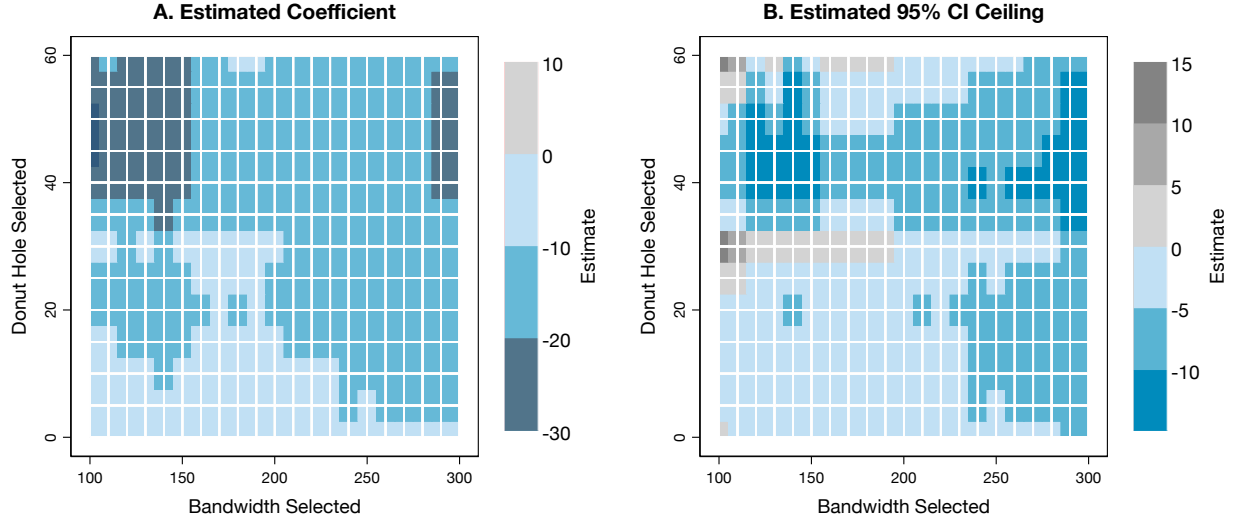

Note: Sub-graph (A) plots the estimates and 95% confidence intervals of the impact of former Prussian rule against different selections of the bandwidth, holding the donut hole at 40km. A larger bandwidth entails municipalities further from the border being included. Sub-graph (B) plots the estimates and 95% confidence intervals of the impact of former Prussian rule against different selections of the donut hole, holding the bandwidth at 300km. A smaller donut hole entails fewer municipalities adjacent to the border being excluded. In both sub-graphs, the estimated effect is null if the corresponding blue area spans across the zero reference line.

6.1 Sensitivity Test against Bandwidth and Donut Hole

In any identification from geographical discontinuities, choice of the width of the band around the border, and in our case, the width of the donut hole are subject to a trade-off between geographical proximity and sample size, in other words, a trade-off between unbiasedness and precision. In baseline regressions, we choose 40 kilometers as the exclusion criterion because it is roughly the distance between two medium-size settlements and 4-5 small settlements where we believe to have frequent population flows. And a 100 kilometers bandwidth is to ensure the proximity of our RD estimation.

Figure 5 and Figure 5 separately report results for estimation robustness upon isolated or combined selection of bandwidth and adjacency. When the bandwidth gets larger, there are more municipalities that far from the historical border falling into our sample, bringing in more endogenous problems, although it may help to reduce standard error. And we met the same problems when selecting donut holes. But fortunately, almost all these specifications corroborate our baseline results. The robustness of the results builds our confidence that it is the genuine effects of the Prussian rule other than just a coincidence.

FIGURE 6: Estimation Robustness upon Combined Selections of Bandwidth and Adjacency

Note: Sub-graph (A) plot the estimates of the impact of former Prussian rule as a function of the combinations of different donut holes and bandwidths. A bluer filling indicates the point estimate is further away from null effect. Sub-graph (B) plot the 95% confidence interval ceiling of the impact of former Prussian rule as a function of the combinations of different donut holes and bandwidths. A bluer filling indicates the estimate is further away from null effect while a grayish filling means the estimate is not significantly different from 0.

6.2   Placebo Test Using Pseudo Borders

Another potential concern with the findings so far is that, rather than capturing a genuine Prussian effect, they might only reflect continuous differences in the West-East dimension or in remoteness from Prussia. A first falsification test is therefore to check whether a similar 'effect' is found when spuriously moving the border inwards or outwards. There should not be an effect when comparing locations on either side of these meaningless borders.

'Treatment' is defined as being 'to the left' of a pseudo border that is moved 100 kilometers inwards or onwards relative to the true Prussia-Poland border. This exercise effectively restricts the analysis to two 100 kilometers bands around borders that are spuriously moved inwards and outwards and is thus directly comparable to the results of the 100 kilometers bandwidth sample just discussed.

Results show no statistically significant 'effect' of these pseudo borders whatsoever Table 5. In fact, half of estimates points in the 'wrong' direction, with higher vote share on the apparent 'Prussian' side of the analysis. These findings again support the interpretation that our results capture a genuine Prussian effect and not just a West-East difference.

Table 5: Pseudo Borders: Moving the Border Inwards and Outwards

DV: PiS Vote %	Full		Urban		Half-Rural		Rural	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pseudo Prussian	1.46	-3.70	38.36	48.76	-3.77	36.50	-5.55	-62.75
	(11.85)	(25.78)	(24.83)	(23.97)	(24.84)	(11.10)	(15.79)	(44.69)
Moving Direction	Inward	Outward	Inward	Outward	Inward	Outward	Inward	Outward
Observations	478	684	138	149	110	105	230	430

Note: Regressions of PiS Vote Share on the pseudo Prussian status of a municipality. Built upon the baseline model, specifications for each column vary in the selection of different municipality types. Treatment is defined as being 'to the left' of a pseudo border that is moved 100 kilometers inwards or outwards relative to the true Prussia-Poland border. All municipalities selected are between 40 (span of donut hole) and 140 (bandwidth) kilometers from the pseudo Prussia-Poland border. Robust standard errors are in the parentheses. Statistical significance is indicated by $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

7 Conclusion

An importance challenge in literature of historical persistence is the clarification between institutional and cultural mechanisms that are usually interwoven together into a complex network of social currents. Utilizing the territory transfer of Poland after WWII, where new Polish districts were refreshed with eastern and central migrants while maintaining its socioeconomic infrastructure, this study differentiates out the role of cultural persistence by taking up a "difference-in-discontinuity" framework. We expect that such places that were largely cut off from inter-generational transmission of its past can only be weakly influenced by Prussian experiences in their history.

Specifically speaking, we find that even though places rule by Prussia in history overall have weaker support for political conservatism, such discontinuity of political behavior around historical border is largely driven by territories that haven't experienced massive in-migration. The positive difference of these places over former German territories in discontinuity stresses out the mechanical function of cultural persistence in sustaining historical legacies, that is, how inter-generational transmission of cultural and psychological experiences can keep the past alive.

Our arguments could be more rigorous if we had access to the municipality-level Post-WWII migration data and contemporary Catholic population data, which may help to deepen the understanding of the cultural persistence mechanism. We also do not use the polynomial of latitude and longitude in the spatial RD design proposed by Dell (2010) due to technical issues. They can be addressed in our further research.

References

Acemoglu, Daron , Camilo García-Jimeno, and James A. Robinson (2012, November). Finding Eldorado: Slavery and long-run development in Colombia. *Journal of Comparative Economics 40*(4), 534–564.

Acharya, Avidit , Matthew Blackwell, and Maya Sen (2016, July). The Political Legacy of American Slavery. *The Journal of Politics 78*(3), 621–641.

Backhaus, Andreas (2019). Fading legacies: Human capital in the aftermath of the partitions of poland. EHES Working Paper 150, s.l.

Bazzi, Samuel , Martin Fiszbein, and Mesay Gebresilasse (2020). Frontier Culture: The Roots and Persistence of "Rugged Individualism" in the United States. *Econometrica 88*(6), 2329–2368.

Becker, Sascha O. , Katrin Boeckh, Christa Hainz, and Ludger Woessmann (2016). The empire is dead, long live the empire! long-run persistence of trust and corruption in the bureaucracy. *The Economic Journal 126*(590), 40–74.

Charnysh, Volha (2019, May). Diversity, Institutions, and Economic Outcomes: Post-WWII Displacement in Poland. *American Political Science Review 113*(2), 423–441.

Dell, Melissa (2010). The Persistent Effects of Peru's Mining *Mita. Econometrica 78*(6), 1863–1903.

Gelman, Andrew and Guido Imbens (2019). Why high-order polynomials should not be used in regression discontinuity designs. *Journal of Business & Economic Statistics 37*(3), 447–456.

Główny Urząd Statystyczny (2019). Bank danych lokalnych. https://bdl.stat.gov.pl/bdl/dane/podgrup/temat Accessed May, 2022.

Haffert, Lukas (2022, May). The Long-Term Effects of Oppression: Prussia, Political Catholicism, and the Alternative für Deutschland. *American Political Science Review 116*(2), 595–614.

Imbens, Guido W. and Thomas Lemieux (2008). Regression discontinuity designs: A guide to practice. *Journal of Econometrics 142*(2), 615–635. The regression discontinuity design: Theory and applications.

Keele, Luke J. and Rocío Titiunik (2015). Geographic boundaries as regression discontinuities. *Political Analysis 23*(1), 127–155.

Lee, David S. and Thomas Lemieux (2010, June). Regression discontinuity designs in economics. *Journal of Economic Literature 48*(2), 281–355.

Nunn, Nathan and Leonard Wantchekon (2011, December). The Slave Trade and the Origins of Mistrust in Africa. *American Economic Review 101*(7), 3221–3252.

Ochsner, Christian and Felix Roesel (2020, May). Migrating Extremists. *The Economic Journal 130*(628), 1135–1172.

Państwowa Komisja Wyborcza (2019). Wybory samorządowe 2018. https://wybory2018.pkw.gov.pl/ Accessed June, 2022.

Pierson, Paul (2000, June). Increasing Returns, Path Dependence, and the Study of Politics. *American Political Science Review 94*(2), 251–267.

Vogler, Jan P. (2019, October). Imperial Rule, the Imposition of Bureaucratic Institutions, and their Long-Term Legacies. *World Politics 71*(04), 806–863.

Wandycz, Piotr S (1975). *The lands of partitioned Poland, 1795-1918.* University of Washington Press.

Wasow, Omar (2020, August). Agenda Seeding: How 1960s Black Protests Moved Elites, Public Opinion and Voting. *American Political Science Review 114*(3), 638–659.

A Variable Description

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Table A.1: Variable Description

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Variables	Description	Time
Municipality Type	0 is rural; 1 is urban-rural; 2 is urban.	2018
Total Expenditure	Local government (municipality) total expenditure per capita.	2018
Education Expenditure	Local government (municipality) education expenditure per capita.	2018
Culture Expenditure	Local government (municipality) culture and national heritage expenditure per capita.	2018
Environment Expenditure	Local government (municipality) environment expenditure per capita.	2018
Property Expenditure	Local government (municipality) property expenditure per capita.	2018
Population	Total population.	2018
Population Density	Total population per km2.	2018
Unemployment Rate	Share of unemployed among the total population.	2018
Average Migration	Annual migration number for a decade	2009-2018

Note: All the variables come from the Central Statistical Office of Poland (Główny Urząd Statystyczny). The unemployment rate should be carculated as share of unemployed among the active populatio, but due to data scarcity, we use share of unemployed among the total population as a proxy.