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No. 126

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May 2024

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I4R DP No. 126

A Comment on “Kin Networks and Institutional Development”

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A comment on “Kin Networks and Institutional Development”

Jean Degroot, Paula E. Gobbi, Alejandra Ramos, Xinyu Wei¹

Abstract

Schulz (2022) shows how weak kin networks contributed to the rise of participatory institutions and how the medieval Catholic Church marriage regulations prohibitions contributed to the process by destroying European clan-based kin networks. Three pieces of evidence construct the argument. First, a cross-country level analysis shows that countries with cousin-term differentiation score between 2.83 and 7.66 units less in modern democracy than non-differentiating countries. The point estimates are statistically significant at the 5% level using Conley SEs either at the genetic distance or geographical distance level. Second, a historical analysis shows that one additional century of exposure to the Western Church increased the probability of a city being a commune by 12.2 and is statistically significant at the 1% level using Conley SEs with distance cutoffs of 500km or 2,500 km. Third, a 20th century analysis of voter turnover and kin network within European countries shows that doubling cousin marriage rate decreases the probability to vote by about 1.8 percentage points. Following an epidemiological approach that links the kin-network of migrant mothers country of origin to the second-generation migrant's political participation in Europe, Schulz (2022) shows that cousin-term differentiation in the country of origin of the second-generation migrant mother reduces the probability of voting.

The above results are all computationally reproducible. We only identify two minor coding errors: the SE in reported in Table 3 correspond to SE clustered at the city level rather than Conley SE, and the sample size in Table 5 is incorrect. None of the errors affects the point estimates or their statistical significance. We also provide the missing code for the two figures in the paper. For the historical analysis, we conduct a robustness check on alternative sample of cities. The magnitude of the coefficients exhibits a very small variation and statistical significance of the results remains unchanged.

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1. Introduction

Schulz (2022) tests whether strong kin networks are detrimental to participatory institutions such as democracy, and to what extent the historical exposure to the medieval catholic church and rise in marriage prohibitions contributed to the destruction of clan-based kin networks in Europe. The analysis is conducted in three parts. First, a correlational analysis kin networks and modern democracy. Second, a historical analysis studying the causal effect of the exposure to the Western Catholic church on commune formation. Third, a 20th century analysis of voter turnover and kin network within European countries.

For the *correlational analysis* on kin networks and modern democracy, Schulz (2022) proxies the strength of kin networks as cousin-marriage preference, cousin-term differentiation, and cousin marriage. We focus the replication exercise on cousin-term differentiation. Cousin term differentiation is based on the Ethnographic Atlas and denotes whether an ethnicity differentiate cousin terms. At the country level, this translates into the share of people speaking a language that differentiates cousin terms. Modern democracy is measured as the average Polity IV country democracy score between 1996 and 2015. A regression analysis of the two variables shows that “countries with differentiate cousin terms have on average roughly 7.6 units lower democracy score [SE 1.41] compared to non-differentiating countries” (p. 2591). The point estimates are statistically significant at the 1% level.

The historical analysis provides *causal evidence* of the effect of the exposure to the medieval church on commune formation. Schulz (2022) implements a difference-in-differences approach using the gradual extension of the Western Church across Europe among the 339 cities in Europe, the Middle East and North Africa that had more than ten thousand inhabitants at least once during the 800 and the 1500 CE period.² City-level exposure to Western Church is captured with geo-coded data on Western Church’s bishoprics between 0 and 1500 CE constructed by Schulz (2022). A city i ’s exposure to western church at century t is the sum of all instances that a city was within a 100 km

² City population data comes from the Bosker et al. (2013) adaptation of Bairoch et al. (1988).

radius of the closest bishopric up to century t . Commune formation is measured as a binary indicator of whether a city c at time t was a commune, i.e. it had constraints of the executive and was governed by people across different kin groups.³ Exploiting within city and within time-period variation, Schulz (2022) finds that “an additional century of Church exposure increases the probability of being a commune by about 12 percentage points [SE 0.007]” (p. 2598). The results are statistically significant at the 1% level.

The third key result of the paper looks at that *association* between current voter turnout and kin networks within Europe. In Table 5 documents that “regions within European countries that have had lower twentieth-century cousin-marriage rates have higher contemporary civicism as proxied by voter turnout” (p. 2581). Exploiting regional variation in Italy, Spain, France and Turkey and using data from waves 1 to 8 of the European Social Survey, Schulz (2022) finds that “doubling cousin marriage decreases the probability to vote by about 1.8 percentage points”. Yet, this exercise is not causal.

To achieve *causal identification* Schulz (2022) adopts an epidemiological approach and exploits the variation in the cultural background of second-generation migrants. The sample consists of the respondents of the waves 2-8 of European Social Survey who are citizens of the country, were born in the surveyed country and whose mother was born abroad. The outcome variable in this specification is dummy of whether the respondent voted in the last national election. All specifications include country of residency fixed effects, survey-wave fixed effects and basic individual level controls. Overall, Table 6 shows that “stronger kin networks are negatively associated with voting” (p. 2607). In particular, the second panel of Table 6, column 1, shows that cousin term differentiation in the country of ancestry reduces the probability of voting in a national election by 3.1 percentage points (SE 0.016) and is statistically significant at the 10% level.

The above three results combined “coherently support the hypothesis that weak kin networks foster participatory institutions and that the medieval Church dissolved strong kin networks among European populations” (p. 2581).

³ Commune data comes from Bosker et al. (2013).

In the present report prepared for the Institute for Replication (Brodeur et al., 2024), we investigate whether these three analytical results are computationally reproducible.

In terms of reproducibility, we would like to acknowledge that the data and codes of the original study were checked by the data editor's team at the *Economic Journal* for their ability to reproduce the results presented in the paper. We also successfully reproduced Schulz (2022)'s main tables (Tables 1 to 6) using the provided codes. We document that the SE reported in Table 3 are clustered at the city level rather than Conley SE as described in the notes (p. 2597). However, the statistical significance of the results remains unchanged once the correction is implemented. There is also a very small discrepancy in the number of observations in Table 5 due to missing values. The correct sample size in Table 5 should be 20,309 instead of 20,343. We also provided the codes for Figures 1 and 2 which were missing in the reproduction package. Finally, we checked all the control variables and fixed effects used in codes are consistent with the models.

For the historical causal analysis, we test the robustness of the results to alternative samples of cities. In particular, we vary the sample to include not only the 339 cities that have more than ten thousand habitants at least once during the 800 to 1500 CE period (in 100 years interval), but also the set the 437 cities that have more than five thousand habitants at least once during the period. We also show that the results are robust to the more restrictive sample of 48 cities that had more than 10 thousand inhabitants during the entire 800 to 1500 CE period. The points estimate remain stable varying from 11.5 to 14.7 percentage points. The statistical significance remains unchanged.

2. Reproducibility

We used the replication package provided by Schulz (2022) here: <https://doi.org/10.5281/zenodo.6373189>.

The cleaning codes nor the raw were provided in the replication package, thus we focus on the analysis data provided. Although The Institute for Replication could have reached

out to the author requesting raw data for church exposure, we had little contributions to make given the detailed description provided by the paper in the online appendix A3.

We successfully computationally reproduced all the main results (i.e., Tables 1 to 6) from the analysis data.

	Fully	Partial	No
Raw data provided			x
Cleaning code provided			x
Analysis data provided	x		
Analysis code provided		x	
Reproducible from raw data			x
Reproducible from analysis data	x		

We now describe the part of the code missing for Figures 1 and 2, the SE imprecision for Table 3, and the incorrect sample size in Table 5. First, we noticed that there were no codes for Figure 1 or Figure 2. For Figure 2, although the code for the event study specification in Table C7 was provided, the reproduction package did not include the corresponding code to produce the event study figure. We produced the corresponding code for each figure and reproduce Schulz (2022)’s results (see Figure 1 and Figure 2 in the present report).

Next, we notice that although the notes in Table 3 declares that “Conley SE (with 500km cutoff) are reported in parenthesis” (p. 2597), the SE in parenthesis in Table 3 corresponded to clustered SE at the city level. The Conley SE standard errors at the 500km cutoff and at a 2500km cutoff were reported in Table C2. In our updated version of the code, we reproduce Table 3 with Conley SE standard errors at the 500km cutoff. The statistical significance of the results remains virtually unchanged with the SE differing only slightly and corresponding to those in Table C2 of the paper.

Finally, we adjusted the sample size in Table 5 as it should be 20,309 rather than 20,343. The point estimates and SE remain unchanged.

3. Robustness Reproduction

We now turn our attention to our robustness reproduction, focusing on the causal historical analysis. We conduct a robustness reproduction of Table 3 by changing the sample of cities included in the difference-in-differences analysis. The decision to conduct this robustness check was taken after reading the paper and after observing the codes.

Our aim with this robustness check is to rule out that the results are driven time varying city characteristics that may simultaneously affect the city's proximity to the church and the city's commune status. In particular, we were concerned of potential unobserved terms that increase the population size of a city and with it the incentives for a bishopric to locate in the vicinity of the city.

To tackle this issue, we vary the sample in two ways. Rather than including the cities that had more than ten thousand inhabitants at least once between 800 and 1500 CE (in hundred-year interval), we restrict the sample to the cities that have ten thousand inhabitants during the entire 800 and 1500 CE period. Next, we vary the city definition to extend it to the sample to the cities that had more than five thousand inhabitants at least once between 800 and 1500 CE (in hundred-year interval), and the cities that have five thousand inhabitants during the entire period.

We adopt the very same difference-in-differences specification as Schulz (2022) and regress a dummy of whether a city c at time t was a commune on a battery of city fixed effects, time-period fixed effects and exposure to the medieval church. Exposure to the medieval church remains the same throughout all our specifications: the sum of all instances that a city was within a 100 km radius of the closest bishopric up to century t . We provide Conley standard errors with a 500km cutoff.

Our reference coefficient is the one in column 1, Panel A of Table 3, with updated Conley SE: 12.2 percentage points (SE 0.008). For this specification, Schulz (2022) estimates the above-described difference-in-differences in a sample of 339 cities that had at least 10 thousand inhabitants once during the 800-1500 CE period. When we restrict the sample to the 43 cities that had 10 thousand inhabitants during the entire 800-1500 CE period, the point estimate increases to 14.7 percentage points (SE 0.011).⁴

Next, we reproduce the analysis with an alternative population cutoff of five thousand inhabitants as suggested by Schulz (2022) (“robustness checks on a sub-sample shows that the results hold using a lower cutoff of five thousand inhabitants”) (p. 2594). For the sample of 437 cities that had at least 5 thousand inhabitants once during the 800-1500 CE period, an additional century of exposure to the catholic church increased the probability of the city of being a commune by 11.5 percentage points (SE 0.007). When we restrict the sample to the 48 cities that had more than five thousand inhabitants during the entire period, the effect of exposure to the medieval church increases to 13.8 percentage points (SE 0.011).

4. Conclusion

This replication report yields two key findings. First, it confirms the computational reproducibility of the main results of Schulz (2022). Despite minor coding issues, the point estimates and statistical significance of the results in Tables 1 to 6 remain unaffected. Secondly, our analysis demonstrates the robustness of the historical causal analysis on how exposure to the medieval church affects the likelihood of a city becoming a commune, to alternative samples of cities being considered. This suggests that the church's ability to disrupt kin networks and foster institutional development does not hinge on specific city characteristics. Notably, our findings indicate that prolonged exposure to the medieval church significantly increases the probability of city communes, with the effect even more pronounced in larger cities.

⁴ When we restrict the sample to the 119 cities that had 10 thousand inhabitants during at least half of the 800-1500 CE period, the point estimate increase to 14.2 percentage points (SE 0.010).

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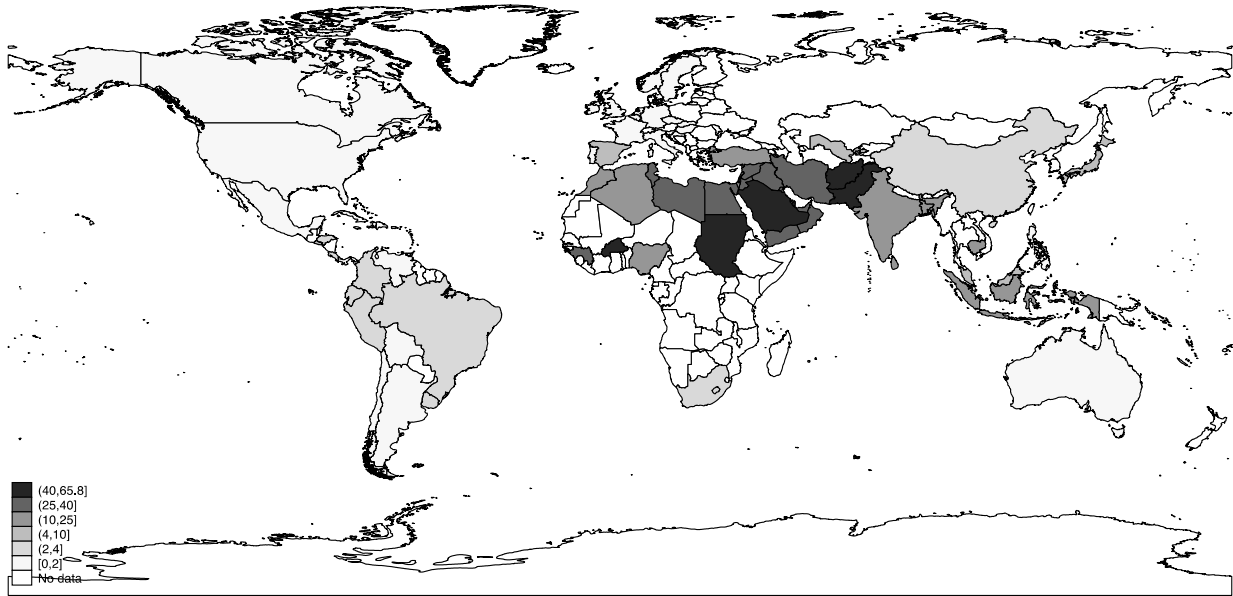
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Schulz, J. F. (2022). Kin networks and institutional development. *The Economic Journal*, 132(647), 2578-2613.

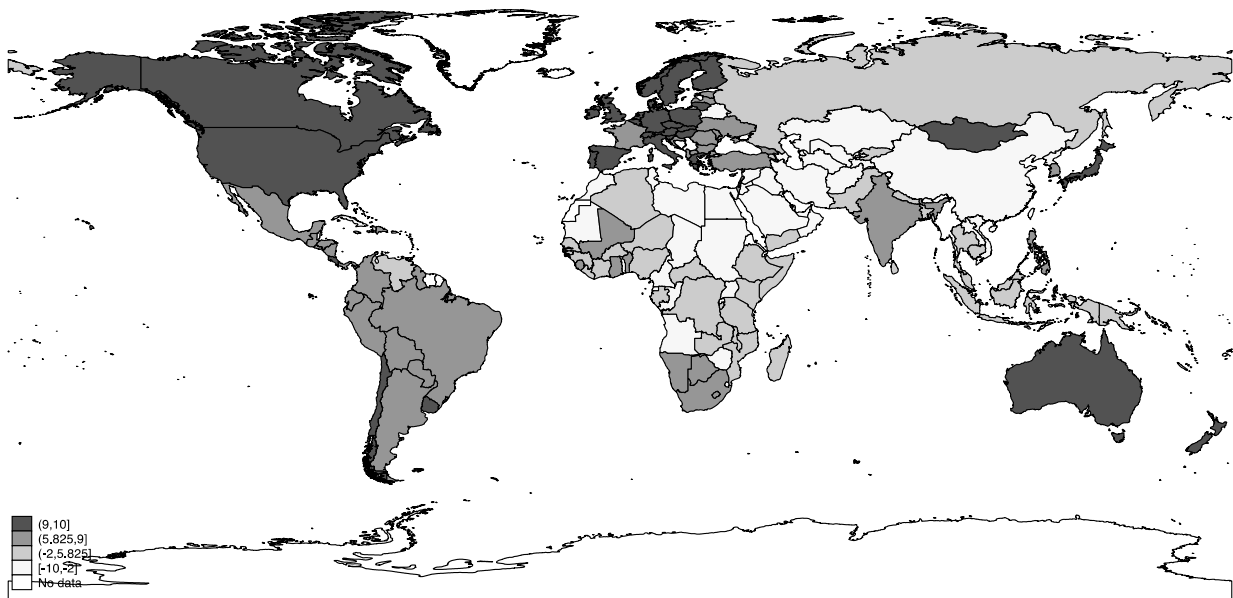
Figures

Figure 1

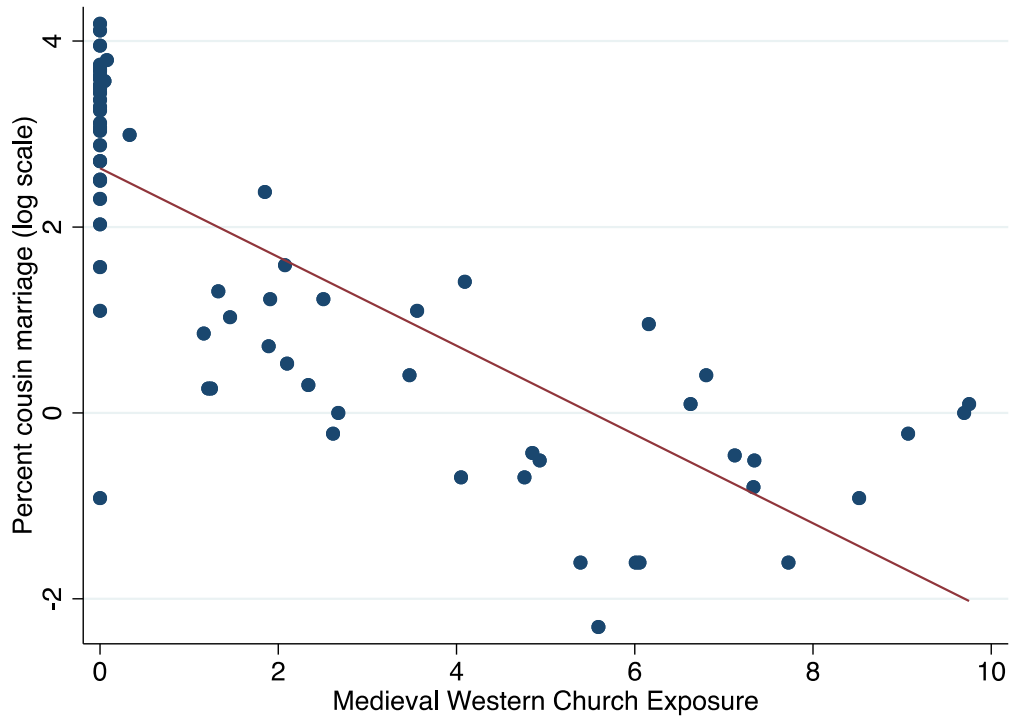
(a)



(b)



(c)



(d)

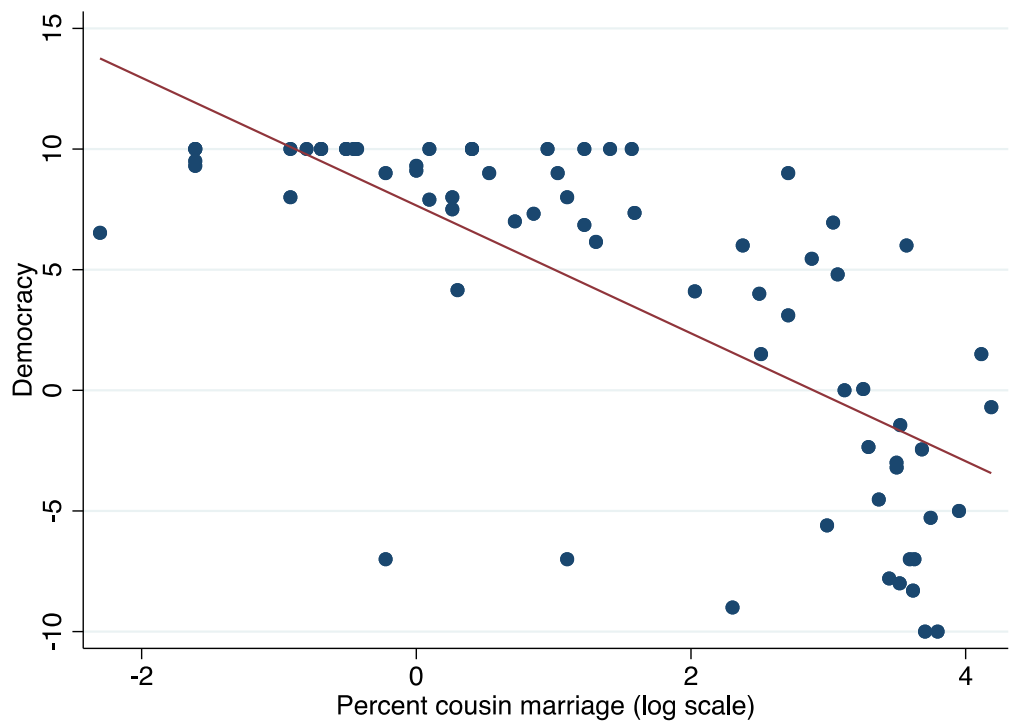
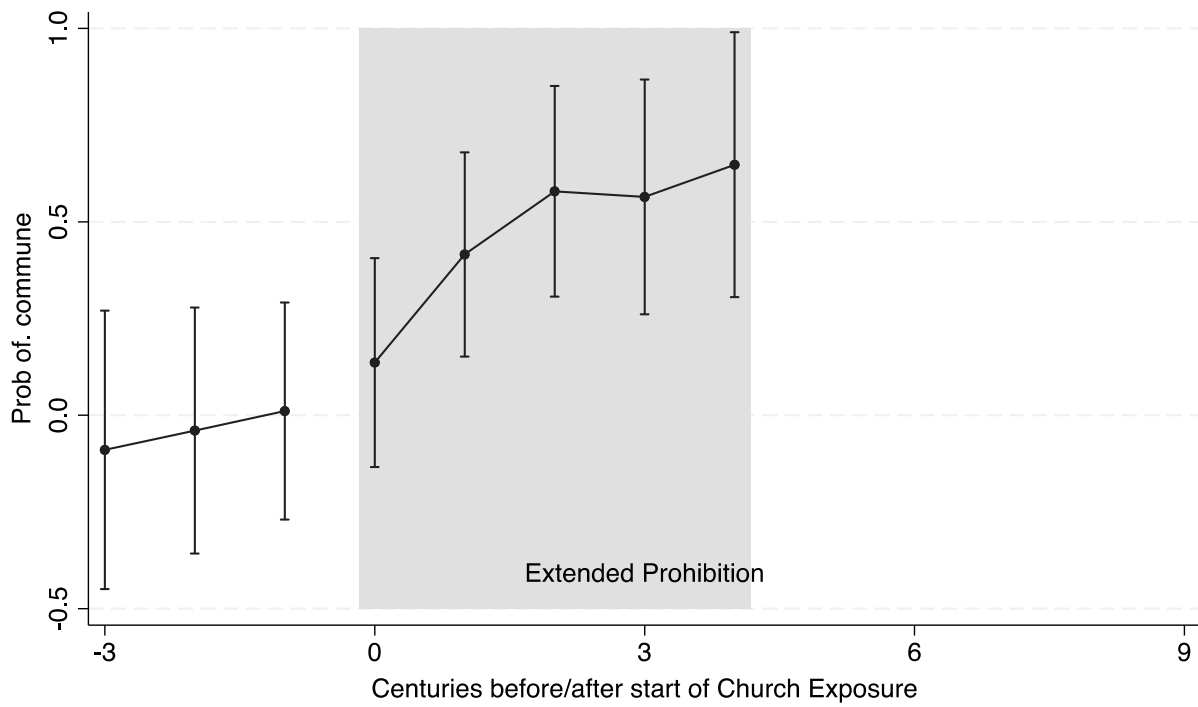
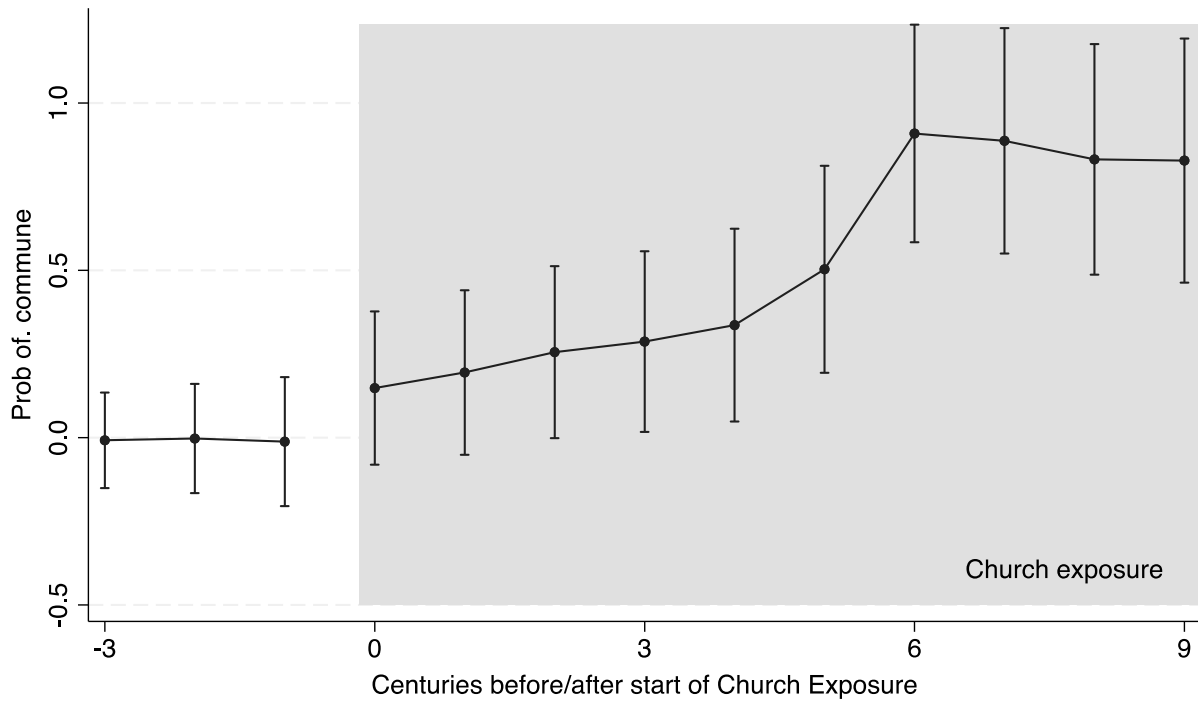


Figure 2



Tables

Table 3. Correct Conley SE

	Commune city							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Panel A: Specification 1</i>								
Western church exposure (in 100 yr)	0.122***	0.119***	0.105***	0.123***	0.097***	0.123***	0.133***	0.103***
	(0.008)	(0.008)	(0.009)	(0.008)	(0.011)	(0.008)	(0.010)	(0.011)
	[0.00000]	[0.00000]	[0.00000]	[0.00000]	[0.00000]	[0.00000]	[0.00000]	[0.00000]
<i>N</i>	2712	2712	2712	2712	2712	2712	2373	2373
<i>R</i> ²	0.190	0.201	0.217	0.223	0.218	0.229	0.181	0.279
<i>Panel B: Specification 2</i>								
Western church exposure (in 100 yr)	0.060***	0.058***	0.070***	0.061***	0.066***	0.066***	0.064**	0.075***
	(0.020)	(0.020)	(0.021)	(0.018)	(0.023)	(0.018)	(0.026)	(0.026)
	[0.00255]	[0.00296]	[0.00087]	[0.00083]	[0.00468]	[0.00037]	[0.01433]	[0.00435]
Extended Prohibitions (in 100 yr)	0.155***	0.153***	0.089*	0.154***	0.078	0.143***	0.156***	0.063
	(0.044)	(0.044)	(0.048)	(0.041)	(0.051)	(0.042)	(0.052)	(0.054)
	[0.00043]	[0.00044]	[0.06674]	[0.00018]	[0.12691]	[0.00061]	[0.00300]	[0.24242]
<i>N</i>	2712	2712	2712	2712	2712	2712	2373	2373
<i>R</i> ²	0.201	0.212	0.220	0.234	0.220	0.238	0.190	0.280
City & period FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Plundered	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Period FE × sea & river		Yes						Yes
Period FE × caloric suit			Yes					Yes
Period FE × Roman roads				Yes				Yes
Period FE × Europe					Yes			Yes
Period FE × ever bishopric						Yes		Yes
Bishopric						Yes		Yes
Population & pop. lagged							Yes	Yes
<p><i>Notes:</i> Linear probability regressions of commune on Western Church exposure (panel A), and on Church exposure and extended marriage prohibitions (panel B). Each column thus reports two regressions. An observation is a city in each century between 800 to 1500 CE. All regressions control for how often a city was plundered within a century, city and time-period fixed effects. Time-period fixed effects are interacted with access to the sea or navigable river (column (2)), pre-Columbian caloric suitability (column (3)), access to Roman roads (column (4)), located in Europe (column (5)) and whether the city was ever the see of bishopric (column (6)). In addition, column (6) controls for being the see of a bishopric in a given century, while column (7) controls for city population and population lagged. Column (9) controls for all covariates simultaneously. Conley SEs (with a 500 km cutoff) are reported in parentheses. P-values reported in square brackets. *$p \leq 0.1$, **$p \leq 0.05$, ***$p \leq 0.01$.</p>								

Table 5 – Correct Sample Size

	Commune city							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Western church exposure (in 100 yr)	-0.026***	-0.027***	-0.018*	-0.027***	-0.030***	-0.025**	-0.027***	-0.015*
	(0.009)	(0.010)	(0.010)	(0.009)	(0.009)	(0.010)	(0.010)	(0.009)
	[0.00462]	[0.00625]	[0.06825]	[0.00580]	[0.00162]	[0.01176]	[0.00708]	[0.09442]
<i>N</i>	20309	20309	20309	20309	20309	20309	20309	20309
Regions	68	68	68	68	68	68	68	68
<i>R</i> ²	0.0795	0.0799	0.0810	0.0799	0.0883	0.0891	0.0800	0.0989
Wave & country FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Basic individual cont.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geographic baseline		Yes	Yes	Yes	Yes	Yes		Yes
Further geographic cont.			Yes					Yes
Roman roads				Yes				Yes
Monastic presence religiousness/denom.					Yes			Yes
Educational attainment						Yes		Yes
City size/pop. Density 500 CE							Yes	Yes

Notes: Individual-level OLS regressions of whether people voted in the last national election on log percent first-cousin marriage. All regressions contain country fixed effects for the four countries included in this analysis (Spain, Italy, France, Turkey), survey-wave fixed effects and basic individual-level controls (gender, age, age2). Column (2) adds the regional geographic baseline (terrain ruggedness, distance to the coast, caloric suitability and absolute latitude); column (3) controls for further geographic variables (precipitation, temperature, elevation, river & lakes, caloric suitability for oats and caloric suitability for rye); column (4) for Roman roads; column (5) for monastic presence, individuals' religious denomination (Catholic, Protestant, Eastern Orthodox, other Christians, Jewish, Muslim, other non-Christian religions) and religiousness; column (6) for individuals' educational attainment (secondary education, tertiary education); and column (7) for population density estimates for the year 500 CE and (contemporary) city size. Column (8) controls for all variables simultaneously. Robust SEs clustered on the sixty-eight regions are reported in parentheses. P-values reported in square brackets. *p ≤ 0.1, **p ≤ 0.05, ***p ≤ 0.01.

Robustness Table 3 – Column 1, Alternative Sample by Definition of City

	Commune city							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Panel A: 10 thousand inhabitants threshold</i>								
Western church exposure (in 100 yr)	0.122***	0.133***	0.137***	0.143***	0.142***	0.145***	0.147***	0.147***
	(0.008)	(0.010)	(0.010)	(0.010)	(0.010)	(0.011)	(0.010)	(0.011)
	[0.00000]	[0.00000]	[0.00000]	[0.00000]	[0.00000]	[0.00000]	[0.00000]	[0.00000]
<i>N</i>	2712	1864	1608	1240	952	776	528	344
<i>R</i> ²	0.190	0.247	0.277	0.315	0.324	0.324	0.337	0.365
Cities	339	233	201	155	119	97	66	43
<i>Panel A: 5 thousand inhabitants' threshold</i>								
Western church exposure (in 100 yr)	0.115***	0.127***	0.134***	0.145***	0.144***	0.144***	0.145***	0.139***
	(0.007)	(0.009)	(0.010)	(0.009)	(0.010)	(0.010)	(0.010)	(0.010)
	[0.00000]	[0.00000]	[0.00000]	[0.00000]	[0.00000]	[0.00000]	[0.00000]	[0.00000]
<i>N</i>	3496	2568	1936	1344	1008	816	560	384
<i>R</i> ²	0.159	0.198	0.239	0.308	0.331	0.314	0.323	0.322
Cities	437	321	242	168	126	102	70	48
City & period Fes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Plundered	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<p><i>Notes:</i> Linear probability regressions of commune on Western Church exposure. Panel A uses the ten thousand inhabitants threshold. Panel A uses the five thousand inhabitants threshold. The column number indicates the number of times between the between 800 to 1500 CE period (in 100 years intervals) that a given city crossed the corresponding inhabitant threshold. Therefore, column (X) panel A reproduces Schulz (2022) specification among the sample of cities that crossed the ten thousand inhabitants at least X times during the 800 to 1500 CE. Column (X) panel B reproduces Schulz (2022) specification among the sample of cities that crossed the five thousand inhabitants at least X times during the 800 to 1500 CE. Panel A, Column (1) reproduces the results in Table3, column 1, Panel A in the present report. All regressions control for how often a city was plundered within a century, city and time-period fixed effects. Conley SEs (with a 500 km cutoff) are reported in parentheses. P-values reported in square brackets. *<i>p</i> ≤ 0.1, **<i>p</i> ≤ 0.05, ***<i>p</i> ≤ 0.01.</p>								