

Supplementary Appendix

Agricultural Risk and the Spread of Religious Communities

by

Philipp Ager and Antonio Ciccone

Table of Contents

- 1 Alternative Standard Errors – Results for Religious Communities**
pages 1-6
- 2 Placebo Tests – Results for Religious Communities**
pages 7-12
- 3 Alternative Standard Errors – Results for Value of Crops**
pages 13-14
- 4 Population Adjustments: Including Population Lags and Cutting Tail Observations**
pages 15-16
- 5 Religious Membership and Rainfall Risk in Older States**
page 17
- 6 Median, Tercile, and Quartile Splits by Counties' Agricultural Share**
page 18
- 7 The Effect of Rainfall Risk among Counties with Low versus High Predicted County-Level Income**
page 19
- 8 Reporting Controls for National Cultures**
pages 20-27
- 9 Maps**
pages 28-29
- 10 Binscatter Plots: Rainfall Risk and Religious Communities in 1890**
pages 30-31

1 Alternative Standard Errors – Results for Religious Communities

Table A1 – Rainfall Risk and Religious Community Membership 1890 using Conley standard errors

	Church members/population			Church seatings/population		
	Baseline	Agriculture above median	Agriculture below median	Baseline	Agriculture above median	Agriculture below median
	(1)	(2)	(3)	(4)	(5)	(6)
Rainfall risk	1.962** (0.860)	2.519* (1.397)	-0.917 (0.877)	1.888** (0.792)	5.431*** (1.367)	-1.331 (0.885)
ln RY	0.270 (0.172)	0.323 (0.340)	-0.092 (0.169)	0.799*** (0.248)	1.575*** (0.409)	0.186 (0.163)
Soil shares	Yes	Yes	Yes	Yes	Yes	Yes
Elevation shares	Yes	Yes	Yes	Yes	Yes	Yes
Average elevation	Yes	Yes	Yes	Yes	Yes	Yes
Average temperature	Yes	Yes	Yes	Yes	Yes	Yes
Longitude and latitude	Yes	Yes	Yes	Yes	Yes	Yes
Area	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.463	0.515	0.512	0.576	0.620	0.612
Number of counties	2,693	1,341	1,341	2,651	1,322	1,323

Notes: This table replicates Table 2 of the paper using Conley standard errors. Conley standard errors (in parentheses) are calculated with a spatial cutoff of 500 kilometers. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Table A2 – Rainfall Risk and Religious Community Membership 1870 and 1860 using Conley standard errors

	Church seatings/population 1870			Church seatings/population 1860		
	Baseline	Agriculture above median	Agriculture below median	Baseline	Agriculture above median	Agriculture below median
	(1)	(2)	(3)	(4)	(5)	(6)
Rainfall risk	2.310** (0.908)	8.011*** (2.834)	1.735* (0.894)	1.892 (1.209)	7.710** (3.687)	-0.496 (1.416)
ln RY	0.354 (0.253)	1.259*** (0.410)	0.220 (0.333)	-0.016 (0.402)	1.396** (0.627)	-0.331 (0.304)
Soil shares	Yes	Yes	Yes	Yes	Yes	Yes
Elevation shares	Yes	Yes	Yes	Yes	Yes	Yes
Average elevation	Yes	Yes	Yes	Yes	Yes	Yes
Average temperature	Yes	Yes	Yes	Yes	Yes	Yes
Longitude and latitude	Yes	Yes	Yes	Yes	Yes	Yes
Area	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.390	0.384	0.509	0.351	0.339	0.476
Number of counties	2,068	1,033	1,034	1,822	909	909

Notes: This table replicates Table 3 of the paper using Conley standard errors. Conley standard errors (in parentheses) are calculated with a spatial cutoff of 500 kilometers. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Table A3 – Seasonal Rainfall Risk and Religious Community Membership using Conley standard errors

	Church members/population	Church seatings/population		
	1890	1890	1870	1860
	(1)	(2)	(3)	(4)
Growing-season rainfall risk	1.134** (0.460)	1.273** (0.522)	1.318*** (0.462)	1.554** (0.658)
Nongrowing-season rainfall risk	0.199 (0.170)	0.156 (0.145)	-0.118 (0.381)	-0.547 (0.421)
RCov(Growing-season, Nongrowing-season rainfall)	-0.493 (1.171)	-1.336 (0.878)	5.026** (0.226)	1.026 (2.806)
In RY control	Yes	Yes	Yes	Yes
Soil shares	Yes	Yes	Yes	Yes
Elevation shares	Yes	Yes	Yes	Yes
Average elevation	Yes	Yes	Yes	Yes
Average temperature	Yes	Yes	Yes	Yes
Longitude and latitude	Yes	Yes	Yes	Yes
Area	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
R2	0.464	0.577	0.392	0.352
Number of counties	2,693	2,651	2,068	1,822

Notes: This table replicates Table 5 of the paper using Conley standard errors. Conley standard errors (in parentheses) are calculated with a spatial cutoff of 500 kilometers. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Table A4 – Rainfall Risk, National Cultures, and Church Membership in 1890 using Conley standard errors

	<u>FG/SG</u>	<u>+ Pop</u>	<u>+ Literacy</u>	<u>Agriculture above median</u>	<u>Agriculture below median</u>	<u>Growing/ nongrowing season</u>
	(1)	(2)	(3)	(4)	(5)	(6)
Rainfall risk	2.060** (0.828)	2.178*** (0.842)	2.134*** (0.794)	2.889** (1.218)	-0.264 (0.732)	
Growing-season rainfall risk						0.893* (0.480)
Nongrowing-season rainfall risk						0.320** (0.139)
RCov(Growing-season, Nongrowing-season rainfall)						0.363 (1.080)
In RY control	Yes	Yes	Yes	Yes	Yes	Yes
FG national cultures	Yes	Yes	Yes	Yes	Yes	Yes
SG national cultures	Yes	Yes	Yes	Yes	Yes	Yes
Soil shares	Yes	Yes	Yes	Yes	Yes	Yes
Elevation shares	Yes	Yes	Yes	Yes	Yes	Yes
Average elevation	Yes	Yes	Yes	Yes	Yes	Yes
Average temperature	Yes	Yes	Yes	Yes	Yes	Yes
Longitude and latitude	Yes	Yes	Yes	Yes	Yes	Yes
Area	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.495	0.514	0.515	0.603	0.568	0.516
Number of counties	2,520	2,520	2,482	1,239	1,239	2,482

Notes: This table replicates Table 6 of the paper using Conley standard errors (in parentheses) with a spatial cutoff of 500 kilometers. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Table A5 – Rainfall Risk, National Cultures, and Church Seating in 1890 using Conley standard errors

	<u>FG/SG</u>	<u>+ Pop</u>	<u>+ Literacy</u>	<u>Agriculture above median</u>	<u>Agriculture below median</u>	<u>Growing/ nongrowing season</u>
	(1)	(2)	(3)	(4)	(5)	(6)
Rainfall risk	2.394*** (0.678)	2.394*** (0.781)	2.000*** (0.661)	4.423*** (1.216)	0.269 (0.540)	
Growing-season rainfall risk						1.383*** (0.488)
Nongrowing-season rainfall risk						-0.0107 (0.122)
RCov(Growing-season, Nongrowing-season rainfall)						0.718 (0.875)
In RY control	Yes	Yes	Yes	Yes	Yes	Yes
FG national cultures	Yes	Yes	Yes	Yes	Yes	Yes
SG national cultures	Yes	Yes	Yes	Yes	Yes	Yes
Soil shares	Yes	Yes	Yes	Yes	Yes	Yes
Elevation shares	Yes	Yes	Yes	Yes	Yes	Yes
Average elevation	Yes	Yes	Yes	Yes	Yes	Yes
Average temperature	Yes	Yes	Yes	Yes	Yes	Yes
Longitude and latitude	Yes	Yes	Yes	Yes	Yes	Yes
Area	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.609	0.609	0.617	0.656	0.698	0.617
Number of counties	2,520	2,502	2,471	1,234	1,234	2,471

Notes: This table replicates Table 7 of the paper using Conley standard errors (in parentheses) with a spatial cutoff of 500 kilometers. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Table A6 – Rainfall Risk, National Cultures, Religious Cultures and Membership in Religious Communities 1890 using Conley standard errors

Panel A: Church Members/Population

	Baseline	Agriculture above median	Agriculture below median	Growing and nongrowing season
	(1)	(2)	(3)	(4)
Rainfall risk	2.201*** (0.716)	2.854*** (1.108)	0.411 (0.696)	
Growing-season rainfall risk				1.044** (0.456)
Nongrowing-season rainfall risk				0.276** (0.138)
RCov(Growing-season, Nongrowing-season rainfall)				0.238 (0.961)
Denomination shares	Yes	Yes	Yes	Yes
All Controls Table 6/7	Yes	Yes	Yes	Yes
R2	0.567	0.647	0.603	0.568
Number of counties	2,482	1,239	1,239	2,482

Panel B: Church Seatings/Population

	(1)	(2)	(3)	(4)
Rainfall risk	2.143*** (0.677)	4.206*** (1.118)	0.450 (0.587)	
Growing-season rainfall risk				1.358*** (0.473)
Nongrowing-season rainfall risk				0.0448 (0.124)
RCov(Growing-season, Nongrowing-season rainfall)				0.925 (0.800)
Denomination shares	Yes	Yes	Yes	Yes
All Controls Table 6/7	Yes	Yes	Yes	Yes
R2	0.633	0.672	0.712	0.633
Number of counties	2,471	1,234	1,234	2,471

Notes: This table replicates Table 8 of the paper using Conley standard errors (in parentheses) with a spatial cutoff of 500 kilometers. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

2 Placebo Tests – Results for Religious Communities

Table A7 – Rainfall Risk and Religious Community Membership 1890

	Church members/population			Church seatings/population		
	Baseline	Agriculture above median	Agriculture below median	Baseline	Agriculture above median	Agriculture below median
	(1)	(2)	(3)	(4)	(5)	(6)
Rainfall risk	-0.017 (0.286)	-0.024 (0.342)	-0.013 (0.502)	-0.011 (0.251)	-0.013 (0.332)	-0.01 (0.406)
Ln RY	Yes	Yes	Yes	Yes	Yes	Yes
Soil shares	Yes	Yes	Yes	Yes	Yes	Yes
Elevation shares	Yes	Yes	Yes	Yes	Yes	Yes
Average elevation	Yes	Yes	Yes	Yes	Yes	Yes
Average temperature	Yes	Yes	Yes	Yes	Yes	Yes
Longitude and latitude	Yes	Yes	Yes	Yes	Yes	Yes
Area	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Number of counties	2,693	1,341	1,341	2,651	1,322	1,323

Notes: Results are based on the estimating equation and estimation method of Table 2 of the paper. This equation is estimated 500 times with counties being randomly assigned each time a new observation for rainfall risk from the rainfall-risk distribution in their state. The estimate and standard errors (in parentheses) reported are averages across the 500 random draws. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Table A8 – Rainfall Risk and Religious Community Membership 1870 and 1860

	Church seatings/population 1870			Church seatings/population 1860		
	Baseline	Agriculture above median	Agriculture below median	Baseline	Agriculture above median	Agriculture below median
	(1)	(2)	(3)	(4)	(5)	(6)
Rainfall risk	0.020 (0.416)	0.017 (0.515)	0.034 (0.777)	-0.050 (0.484)	-0.060 (0.715)	-0.037 (0.924)
Ln RY	Yes	Yes	Yes	Yes	Yes	Yes
Soil shares	Yes	Yes	Yes	Yes	Yes	Yes
Elevation shares	Yes	Yes	Yes	Yes	Yes	Yes
Average elevation	Yes	Yes	Yes	Yes	Yes	Yes
Average temperature	Yes	Yes	Yes	Yes	Yes	Yes
Longitude and latitude	Yes	Yes	Yes	Yes	Yes	Yes
Area	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Number of counties	2,068	1,033	1,034	1,822	909	909

Notes: Results are based on the estimating equation and estimation method of Table 3 of the paper. This equation is estimated 500 times with counties being randomly assigned each time a new observation for rainfall risk from the rainfall-risk distribution in their state. The estimate and standard errors (in parentheses) reported are averages across the 500 random draws. ***, **, and * denote significance at the 1%, 5%, and 10% level respectively. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Table A9 – Seasonal Rainfall Risk and Religious Community Membership

	Church members/population	Church seatings/population		
	1890	1890	1870	1860
	(1)	(2)	(3)	(4)
Growing-season rainfall risk	0.011 (0.273)	0.006 (0.228)	0.019 (0.302)	-0.009 (0.354)
Nongrowing-season rainfall risk	-0.008 (0.066)	-0.004 (0.058)	0.007 (0.108)	0.008 (0.124)
RCov(Growing-season, Nongrowing-season rainfall)	0.013 (0.572)	-0.009 (0.513)	-0.027 (0.940)	-0.129 (1.120)
In RY control	Yes	Yes	Yes	Yes
Soil shares	Yes	Yes	Yes	Yes
Elevation shares	Yes	Yes	Yes	Yes
Average elevation	Yes	Yes	Yes	Yes
Average temperature	Yes	Yes	Yes	Yes
Longitude and latitude	Yes	Yes	Yes	Yes
Area	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Number of counties	2,693	2,651	2,068	1,822

Notes: Results are based on the estimating equation and estimation method of Table 5 of the paper. This equation is estimated 500 times with counties being randomly assigned each time a new observation for rainfall risk from the rainfall-risk distribution in their state. The estimate and standard errors (in parentheses) reported are averages across the 500 random draws. ***, **, and * denote significance at the 1%, 5%, and 10% level respectively. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Table A10 – Rainfall Risk, National Cultures, and Church Seating in 1890

	+ FG/SG + Pop + Literacy (1)	Agriculture above median (2)	Agriculture below median (3)	Growing and nongrowing season (4)
Rainfall risk	-0.009 (0.238)	-0.011 (0.293)	-0.007 (0.411)	
Growing-season rainfall risk				0.034 (0.210)
Nongrowing-season rainfall risk				-0.080 (0.057)
RCov(Growing-season, Nongrowing-season rainfall)				0.271 (0.416)
In RY control	Yes	Yes	Yes	Yes
FG national cultures	Yes	Yes	Yes	Yes
SG national cultures	Yes	Yes	Yes	Yes
Soil shares	Yes	Yes	Yes	Yes
Elevation shares	Yes	Yes	Yes	Yes
Average elevation	Yes	Yes	Yes	Yes
Average temperature	Yes	Yes	Yes	Yes
Longitude and latitude	Yes	Yes	Yes	Yes
Area	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Number of counties	2,520	2,520	2,482	1,239

Notes: Results are based on the estimating equation and estimation method of Table 6 of the paper. This equation is estimated 500 times with counties being randomly assigned each time a new observation for rainfall risk from the rainfall-risk distribution in their state. The estimate and standard errors (in parentheses) reported are averages across the 500 random draws. ***, **, and * denote significance at the 1%, 5%, and 10% level respectively. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Table A11 – Rainfall Risk, National Cultures, and Church Seating in 1890

	+ FG/SG + Pop + Literacy	Agriculture above median	Agriculture below median	Growing and nongrowing season
	(1)	(2)	(3)	(4)
Rainfall risk	-0.023 (0.225)	-0.042 (0.296)	-0.009 (0.331)	
Growing-season rainfall risk				-0.081 (0.182)
Nongrowing-season rainfall risk				-0.031 (0.063)
RCov(Growing-season, Nongrowing-season rainfall)				0.857 (0.0728)
In RY control	Yes	Yes	Yes	Yes
FG national cultures	Yes	Yes	Yes	Yes
SG national cultures	Yes	Yes	Yes	Yes
Soil shares	Yes	Yes	Yes	Yes
Elevation shares	Yes	Yes	Yes	Yes
Average elevation	Yes	Yes	Yes	Yes
Average temperature	Yes	Yes	Yes	Yes
Longitude and latitude	Yes	Yes	Yes	Yes
Area	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Number of counties	2,520	2,520	2,482	1,239

Notes: Results are based on the estimating equation and estimation method of Table 7 of the paper. This equation is estimated 500 times with counties being randomly assigned each time a new observation for rainfall risk from the rainfall-risk distribution in their state. The estimate and standard errors (in parentheses) reported are averages across the 500 random draws. ***, **, and * denote significance at the 1%, 5%, and 10% level respectively. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Table A12 – Rainfall Risk, National Cultures, Religious Cultures and Membership in Religious Communities 1890

Panel A: Church Members/Population

	Baseline	Agriculture above median	Agriculture below median	Growing and nongrowing season
	(1)	(2)	(3)	(4)
Rainfall risk	-0.005 (0.210)	-0.007 (0.238)	-0.008 (0.370)	
Growing-season rainfall risk				0.016 (0.197)
Nongrowing-season rainfall risk				-0.005 (0.0480)
RCov(Growing-season, Nongrowing-season rainfall)				-0.010 (0.443)
Denomination shares	Yes	Yes	Yes	Yes
All Controls Table 6/7	Yes	Yes	Yes	Yes
Number of counties	2,482	1,239	1,239	2,482

Panel B: Church Seatings/Population

	(1)	(2)	(3)	(4)
Rainfall risk	-0.025 (0.229)	-0.040 (0.294)	-0.013 (0.343)	
Growing-season rainfall risk				-0.005 (0.209)
Nongrowing-season rainfall risk				-0.003 (0.056)
RCov(Growing-season, Nongrowing-season rainfall)				-0.022 (0.495)
Denomination shares	Yes	Yes	Yes	Yes
All Controls Table 6/7	Yes	Yes	Yes	Yes
Number of counties	2,471	1,234	1,234	2,471

Notes: Results are based on the estimating equation and estimation method of Table 8 of the paper. This equation is estimated 500 times with counties being randomly assigned each time a new observation for rainfall risk from the rainfall-risk distribution in their state. The estimate and standard errors (in parentheses) reported are averages across the 500 random draws. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

3 Alternative Standard Errors – Results for Agricultural Productivity

Table A13 – Rainfall and Value of Crops Produced in 1909, 1919, and 1929

	(1)	(2)	(3)
Rainfall t	0.516*** (0.181)	0.516** (0.261)	0.516*** (0.141)
Rainfall t-1	0.178 (0.144)	0.178 (0.201)	0.178 (0.131)
Temperature t	0.0246 (0.0377)	0.0246 (0.0972)	0.0246 (0.062)
Temperature t-1	0.0212 (0.0438)	0.0212 (0.117)	0.0212 (0.0837)
County FE	Yes	Yes	Yes
Time effects	Yes	Yes	Yes
Farmland	Yes	Yes	Yes
Cluster Type	County	State-Year	Conley
Number of counties	8,787	8,787	8,787

Notes: This table replicates the estimates of column (3) of Table 1 – reported in column (1) for comparison – using alternative standard errors. The left-hand-side variable is the natural logarithm (ln) of the value of crops produced per acre at the county level in 1909, 1919, and 1929. The method of estimation is weighted least squares with weights equal to the farmland of counties. All specifications control for ln farmland, time effects, and county fixed effects; time effects are allowed to vary by state. Standard errors are displayed in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively. Column (2) reports standard errors clustered by state and year. Column (3) reports Conley standard errors allowing for serial correlation. Conley standard errors are calculated with a spatial cutoff of 500 kilometers and a serial correlation cutoff of 1 lag.

Table A14 – Seasonal Rainfall and Value of Crops Produced in 1909, 1919, and 1929

	(1)	(2)	(3)
Rainfall t			
-- Rainfall t, Growing season	0.325* (0.194)	0.325 (0.225)	0.325** (0.141)
-- Rainfall t, Nongrowing season	0.147*** (0.0382)	0.147*** (0.0538)	0.147*** (0.054)
Rainfall t-1			
-- Rainfall t-1, Growing season	0.314*** (0.0837)	0.314 (0.196)	0.314** (0.129)
-- Rainfall t-1, Nongrowing season	-0.0497 (0.0644)	-0.0497 (0.0615)	-0.0497 (0.059)
Temperature t			
-- Temperature t, Growing season	-0.0203 (0.0459)	-0.0203 (0.0467)	-0.0203 (0.068)
-- Temperature t, Nongrowing season	-0.00891 (0.0214)	-0.00891 (0.139)	-0.00891 (0.0314)
Temperature t-1			
-- Temperature t-1, Growing season	0.107** (0.0453)	0.107 (0.0918)	0.107 (0.080)
-- Temperature t-1, Nongrowing season	-0.0208 (0.017)	-0.0208 (0.0457)	-0.0208 (0.028)
County FE	Yes	Yes	Yes
Time effects	Yes	Yes	Yes
Farmland	Yes	Yes	Yes
Cluster	County	State-Year	Conley
Number of counties	8,787	8,787	8,787

Notes: This table replicates the estimates of column (4) of Table 4 – reported in column (1) for comparison – using alternative standard errors. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively. Column (2) reports standard errors clustered by state and year. Column (3) reports Conley standard errors allowing for serial correlation. Conley standard errors are calculated with a spatial cutoff of 500 kilometers and a serial correlation cutoff of 1 lag.

4 Population: Lagged Adjustment and Cutting Tail Observations

Table A15 – Lagged Adjustment to Population

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>ln Church members</i>			<i>ln Church seatings</i>		
Panel A						
Rainfall risk	0.0693 (0.186)	0.0775 (0.187)	-0.0374 (0.184)	0.844** (0.372)	0.637 (0.384)	0.530 (0.376)
ln RY	2.196*** (0.703)	2.204*** (0.638)	2.235*** (0.743)	1.893** (0.747)	2.093*** (0.777)	1.305** (0.532)
ln Population	1.139*** (0.0251)	1.013*** (0.0411)	0.949*** (0.0545)	0.970*** (0.0261)	0.797*** (0.0480)	0.698*** (0.0675)
ln Population 1880		0.112*** (0.0286)	0.133* (0.0668)		0.161*** (0.0356)	0.220*** (0.0698)
ln Population 1870			0.0593*** (0.0206)			0.0547** (0.0257)
Observations	2,693	2,529	2,263	2,651	2,510	2,260
R-squared	0.914	0.915	0.908	0.903	0.897	0.887
Panel B						
Rainfall risk	0.0448 (0.203)	-0.00115 (0.191)	-0.0374 (0.184)	0.630* (0.369)	0.564 (0.370)	0.530 (0.376)
ln RY	2.182*** (0.784)	2.135*** (0.707)	2.235*** (0.743)	1.284** (0.569)	1.210** (0.533)	1.305** (0.532)
ln Population	1.132*** (0.0184)	0.943*** (0.0564)	0.949*** (0.0545)	0.959*** (0.0275)	0.692*** (0.0698)	0.698*** (0.0675)
ln Population 1880		0.197*** (0.0576)	0.133* (0.0668)		0.279*** (0.0639)	0.220*** (0.0698)
ln Population 1870			0.0593*** (0.0206)			0.0547** (0.0257)
Observations	2,263	2,263	2,263	2,260	2,260	2,260
R-squared	0.905	0.907	0.908	0.882	0.886	0.887

Notes: In columns (1)-(3) the left-hand-side variable is the natural logarithm (ln) of total church members and church seatings in columns (4)-(6) at the county level in 1890. Panel A is an unbalanced sample while Panel B only includes counties that existed already in 1870. The estimating equation employed is (17) in the paper. Rainfall risk is defined in equation (14) and calculated using 1895-2000 rainfall data. The RY variable is defined just after equation (17) and is calculated using the same rainfall data and a value $\beta = 0.52$. See Section 4 and Section 5.1 for more details. Other controls (not reported) are ln land area of the county (area), the share of land of a given soil type using a 53-category soil classification system, the share of land at a given elevation using 11 elevation bins, average elevation, average temperature over the period 1895-2000, longitude and latitude, and state fixed effects. The method of estimation is least squares. Standard errors (in parentheses) account for arbitrary heteroskedasticity and are clustered at the state level. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Table A16 – Cut Tail Observations in Population Growth 1890 - 1880

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Church members/population</i>			<i>Church seatings/population</i>		
Rainfall risk	1.808** (0.688)	1.935*** (0.632)	1.827*** (0.640)	2.067** (0.800)	2.057** (0.897)	1.930** (0.734)
ln RY	0.306 (0.204)	0.395* (0.232)	0.361 (0.220)	0.615 (0.373)	0.653 (0.400)	0.667 (0.423)
Excluding Controls Table 2	1th/99th percentile Yes	2.5th/97.5th percentile Yes	5th/95th percentile Yes	1th/99th percentile Yes	2.5th/97.5th percentile Yes	5th/95th percentile Yes
Observations	2,479	2,403	2,282	2,464	2,391	2,275
R-squared	0.446	0.424	0.413	0.546	0.538	0.531

Notes: For columns (1)-(3) the left-hand-side variable is the natural logarithm (ln) of total church members over population at the county level in 1890. For columns (4)-(6) the left-hand-side variable is ln combined church seating capacity over population at the county level in 1890. The estimating equation employed is (17) in the paper. Rainfall risk is defined in equation (14) and calculated using 1895-2000 rainfall data. The RY variable is defined just after equation (17) and is calculated using the same rainfall data and a value $\beta = 0.52$. See Section 4 for more details on the specification and Section 5.1 for data sources. Other controls are ln land area of the county (area), the share of land of a given soil type using a 53-category soil classification system, the share of land at a given elevation using 11 elevation bins, average elevation, average temperature over the period 1895-2000, longitude and latitude, and state fixed effects. The method of estimation is least squares. Standard errors (in parentheses) account for arbitrary heteroskedasticity and are clustered at the state level. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

5 Membership in Older States

Table A17 – Membership in Older States (1860-1890)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	balanced panel				unbalanced panel			
	ln Church seatings/population							
Rainfall risk	7.959*	9.327***	1.886***	1.644***	7.999*	9.210***	1.726**	1.771***
	(3.788)	(2.760)	(0.684)	(0.514)	(4.065)	(2.814)	(0.758)	(0.514)
	[4.560]	[2.836]	[0.880]	[0.720]	[4.556]	[2.782]	[0.774]	[0.552]
ln RY	-0.476	0.348	0.344	0.273	-0.429	0.387	0.346	0.436*
	(0.404)	(0.461)	(0.293)	(0.240)	(0.404)	(0.455)	(0.303)	(0.244)
	[0.323]	[0.317]	[0.260]	[0.215]	[0.318]	[0.308]	[0.246]	[0.170]
Soil shares	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Elevation shares	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Average elevation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Average temperature	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Longitude and latitude	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Area	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,779	3,762	5,160	5,430	1,841	3,918	5,676	6,541
R-squared	0.278	0.328	0.383	0.380	0.275	0.320	0.386	0.394

Notes: The left-hand-side variable is the natural logarithm (ln) of total church members over population at the county level 1860 to 1890. Columns (1)-(4) report estimates for a balanced panel; the estimates of the unbalanced panel are reported in columns (5)-(8). Estimates for the 13 original states are reported in columns (1) and (5); for states that gained statehood until 1820 see columns (2) and (6); for states that gained statehood until 1850 see columns (3) and (7); for all states see columns (4) and (8). The estimating equation employed is (17) in the paper. Rainfall risk is defined in equation (14) and calculated using 1895-2000 rainfall data. The RY variable is defined just after equation (17) and is calculated using the same rainfall data and a value $\beta = 0.52$. See Section 4 for more details on the specification and Section 5.1 for data sources. Other controls are ln land area of the county (area), the share of land of a given soil type using a 53-category soil classification system, the share of land at a given elevation using 11 elevation bins, average elevation, average temperature over the period 1895-2000, longitude and latitude, state fixed effects, and year fixed effects. The method of estimation is least squares. Standard errors (in parentheses) account for arbitrary heteroskedasticity and are clustered at the state level. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively. Conley standard errors are calculated with a spatial cutoff of 500 kilometers and a serial correlation cutoff of 1 lag.

6 Median, Tercile, and Quartile Splits by Counties' Agricultural Share

Table A18 – Sample Splits Pooled Regressions 1860-1890

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	<i>Church seatings/population</i>									
	Whole Sample	M1	M2	T1	T2	T3	Q1	Q2	Q3	Q4
Rainfall risk	1.864*** (0.551)	4.889*** (1.238)	-0.00441 (0.727)	5.326*** (1.473)	2.658*** (0.754)	1.361* (0.773)	9.290*** (1.534)	3.654*** (1.099)	-1.174 (1.076)	1.095 (0.846)
ln RY	0.478* (0.251)	1.153*** (0.394)	0.0582 (0.138)	1.524*** (0.400)	0.645* (0.338)	0.0467 (0.167)	2.104*** (0.413)	0.948** (0.409)	-0.0499 (0.275)	0.212 (0.174)
Soil shares	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Elevation shares	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Average elevation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Average temperature	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Longitude and latitude	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Area	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,530	3,265	3,265	2,177	2,177	2,176	1,633	1,632	1,633	1,632
R-squared	0.401	0.397	0.465	0.387	0.476	0.497	0.416	0.456	0.532	0.496

Notes: The left-hand-side variable is the natural logarithm (ln) of total church seatings over population at the county level 1860 to 1890. Sample splits are based on the agricultural share. Column (1) reports the estimate for the whole sample; columns (2)-(3) for the median sample split (M1-M2); columns (4)-(6) for tertiles (T1-T3); columns (7)-(10) for quartiles (Q1-Q4). The estimating equation employed is (17) in the paper. Rainfall risk is defined in equation (14) and calculated using 1895-2000 rainfall data. The RY variable is defined just after equation (17) and is calculated using the same rainfall data and a value $\beta = 0.52$. See Section 4 in the paper for more details on the specification and Section 5.1 for data sources. Other controls are ln land area of the county (area), the share of land of a given soil type using a 53-category soil classification system, the share of land at a given elevation using 11 elevation bins, average elevation, average temperature over the period 1895-2000, longitude and latitude, state fixed effects, and year fixed effects. The method of estimation is least squares. Standard errors (in parentheses) account for arbitrary heteroskedasticity and are clustered at the state level. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

7 The Effect of Rainfall Risk among Counties with Low versus High Predicted County-Level Income

Table A19 – Sample Splits by Expected Output 1860-1890

	<i>In Church seatings/population</i>						
	<i>Whole Sample</i>	<i>Below median In RY</i>			<i>Above median In RY</i>		
		All	High agriculture	Low agriculture	All	High agriculture	Low agriculture
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Rainfall risk	1.864*** (0.551)	1.485** (0.675)	3.976** (1.580)	-0.168 (0.761)	0.616 (3.499)	3.014 (3.550)	-3.955 (5.500)
In RY	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Soil shares	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Elevation shares	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Average elevation	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Average temperature	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Longitude and latitude	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Area	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,530	3,265	1,439	1,826	3,265	1,826	1,439
R-squared	0.401	0.405	0.388	0.492	0.329	0.346	0.379

Notes: The left-hand-side variable is the natural logarithm (ln) of total church seatings over population at the county level 1860 to 1890. Sample splits are based on ln RY and the agricultural share. The estimating equation employed is (17) in the paper. Rainfall risk is defined in equation (14) and calculated using 1895-2000 rainfall data. The RY variable is defined just after equation (17) and is calculated using the same rainfall data and a value $\beta = 0.52$. See Section 4 for more details on the specification and Section 5.1 for data sources. Other controls are ln land area of the county (area), the share of land of a given soil type using a 53-category soil classification system, the share of land at a given elevation using 11 elevation bins, average elevation, average temperature over the period 1895-2000, longitude and latitude, state fixed effects, and year fixed effects. The method of estimation is least squares. Standard errors (in parentheses) account for arbitrary heteroskedasticity and are clustered at the state level. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

8 Reporting Controls for National Cultures

Table A20 – Showing Controls for National Cultures (see Paper Table 6)

	(1)	(2)	(3)	(4)	(5)	(6)
	Church members/population					
Rainfall risk	2.060*** (0.667)	2.178*** (0.767)	2.134*** (0.766)	2.889** (1.316)	-0.264 (0.741)	
Growing-season rainfall risk						0.893* (0.496)
Nongrowing-season rainfall risk						0.320** (0.143)
RCov(Growing-season, Nongrowing-season rainfall)						0.363 (1.477)
<i><u>Share of First Generation Born in:</u></i>						
Africa	-24.20 (55.31)	0.0205 (57.17)	1.933 (55.32)	31.43 (74.61)	74.64 (155.1)	1.033 (55.33)
Asia	-8.286** (3.669)	-8.693** (3.255)	-8.141** (3.218)	-9.834* (5.539)	-10.46** (5.003)	-8.083** (3.367)
Atlantic Island	-4.771 (10.13)	-2.597 (9.287)	-1.309 (8.576)	-109.6** (47.67)	6.220 (7.894)	-1.736 (8.341)
Australia	45.09 (60.19)	33.65 (67.73)	35.32 (66.19)	-145.4 (250.9)	146.9*** (45.37)	26.36 (66.25)
Austria	-2.087 (2.760)	-2.898 (2.718)	-0.761 (3.017)	-0.317 (2.320)	2.060 (5.137)	-0.571 (3.001)
Belgium	2.843 (10.13)	0.00184 (9.470)	1.212 (10.10)	-8.374 (12.32)	16.46 (11.48)	0.984 (10.29)
Bohemia	-0.0409 (1.414)	-0.0523 (1.507)	-0.340 (1.522)	3.339* (1.931)	-5.462 (3.298)	-0.287 (1.526)
Canada	-0.711 (0.854)	-0.742 (0.666)	-0.684 (0.853)	-1.891 (2.640)	-0.708 (0.835)	-0.683 (0.852)
Central America	-740.7* (433.0)	-1,431*** (488.6)	-1,493*** (453.6)	2,201*** (800.3)	-471.8 (337.9)	-1,494*** (461.4)
Cuba	-15.27 (12.25)	-12.30 (10.67)	-13.05 (10.19)	89.66* (47.85)	22.19* (11.93)	-13.20 (10.38)
Denmark	0.155 (1.830)	0.173 (1.676)	-0.349 (1.549)	2.470 (2.498)	-4.706 (4.240)	-0.376 (1.526)
Great Britain	0.0380 (1.570)	-0.245 (1.576)	-0.871 (1.861)	-2.645 (2.950)	-1.144 (1.357)	-0.850 (1.832)
Other European Countries	-3.271 (6.033)	-5.920 (5.655)	-5.673 (7.099)	0.845 (9.916)	-0.334 (10.87)	-4.940 (7.166)
France	9.215 (6.132)	10.07 (6.767)	-6.706 (6.475)	8.846 (16.39)	0.443 (8.259)	-7.026 (6.557)

Germany	-0.962 (0.660)	-1.140* (0.658)	-1.269* (0.679)	-2.754*** (0.933)	0.0300 (0.838)	-1.282* (0.684)
Greece	-82.18*** (14.67)	-59.66*** (14.54)	-60.86*** (15.33)	-73.35*** (19.28)	52.10 (74.39)	-60.63*** (17.06)
Netherlands	0.0502 (1.495)	-0.498 (1.572)	1.361 (3.376)	7.951** (3.092)	-5.452* (3.105)	1.752 (3.392)
Hungary	-2.103 (7.095)	-2.210 (6.781)	-1.012 (6.762)	31.77 (27.50)	-4.955 (9.064)	-0.935 (6.705)
India	-45.78 (121.8)	-61.75 (117.4)	12.91 (55.34)	37.53 (92.47)	172.7 (272.6)	16.97 (60.85)
Ireland	0.794 (1.362)	-1.519 (1.412)	-1.410 (1.984)	-0.526 (3.542)	-0.0421 (2.337)	-1.462 (1.954)
Italy	-4.530 (4.749)	-5.155 (4.270)	-5.174 (4.277)	-8.378 (8.995)	-6.683 (4.119)	-5.378 (4.385)
Luxembourg	24.83*** (6.513)	26.29*** (5.970)	28.73*** (5.285)	11.06** (5.422)	32.88 (19.83)	28.65*** (5.196)
Mexico	2.954** (1.239)	2.748** (1.155)	2.979** (1.218)	4.197*** (0.696)	4.041 (2.913)	2.942** (1.168)
Norway	2.060*** (0.725)	2.553*** (0.850)	0.0295 (1.134)	0.451 (1.237)	1.076 (0.996)	0.0152 (1.095)
Poland	2.024 (2.237)	0.728 (2.017)	0.772 (2.140)	0.457 (2.309)	2.238 (2.247)	0.704 (2.157)
Portugal	8.669 (7.699)	15.12* (8.084)	15.87* (8.540)	42.71 (47.36)	10.42 (8.545)	15.75* (8.556)
Russia	-1.209 (0.800)	-1.416* (0.726)	0.176 (2.128)	0.636 (1.920)	-0.962 (5.382)	0.270 (2.157)
Pacific Islands	240.9*** (52.93)	212.1*** (53.09)	207.4*** (48.60)	251.9 (209.6)	233.1*** (56.23)	218.0*** (50.26)
South America	-5.473 (63.27)	-21.06 (55.55)	-19.50 (52.06)	224.6* (121.6)	-43.28 (46.58)	-24.51 (49.81)
Spain	95.87 (66.38)	76.74 (56.69)	81.15 (53.48)	85.13*** (27.38)	-95.36 (66.81)	81.52 (54.05)
Sweden	-3.170** (1.460)	-3.146** (1.393)	-2.619** (1.083)	-1.329 (1.066)	-3.632*** (1.310)	-2.561** (1.091)
Switzerland	-7.132** (3.147)	-6.913** (2.802)	-8.026** (3.426)	-5.276 (3.670)	-19.03** (7.355)	-8.232** (3.467)
Turkey	-115.5 (199.0)	-81.70 (190.2)	-137.2 (191.0)		-133.2 (154.3)	-152.6 (183.5)

Share of Second Generation
Born in:

Austria	3.599 (3.834)	4.082 (3.799)	-1.618 (4.906)	-3.200 (3.571)	-2.005 (4.382)	-1.501 (4.802)
Belgium	1.105 (3.579)	1.749 (3.350)	1.050 (3.539)	13.70** (6.131)	-5.116 (4.117)	1.088 (3.611)
Bohemia	1.119 (1.028)	1.062 (1.070)	1.287 (1.016)	-0.727 (1.642)	4.036** (1.647)	1.259 (1.021)

Canada	0.740 (0.554)	0.803* (0.465)	0.885 (0.538)	1.004 (1.248)	0.767 (0.600)	0.895 (0.537)
China	0.706 (0.919)	0.939 (0.849)	0.679 (0.805)	0.0196 (2.708)	1.383 (0.907)	0.671 (0.830)
Cuba	11.84 (9.769)	9.599 (8.526)	10.08 (8.125)	-107.1* (53.32)	-17.65* (9.417)	10.21 (8.257)
Denmark	1.628 (1.154)	1.144 (1.083)	1.511 (1.013)	-0.548 (1.359)	3.998 (2.697)	1.561 (1.005)
Spain	-7.057 (25.40)	-3.556 (24.65)	-0.916 (24.50)	8.519 (29.58)	25.06* (14.43)	-0.664 (24.23)
Finland	-3.855 (3.648)	-2.057 (3.025)	-2.634 (3.039)	0.656 (14.71)	-5.121 (5.301)	-2.746 (3.168)
France	-2.511 (1.554)	-2.408 (1.442)	2.053 (1.312)	0.172 (2.303)	1.088 (2.589)	2.173 (1.310)
Germany	0.695*** (0.245)	0.563** (0.244)	0.547* (0.280)	1.271*** (0.293)	0.178 (0.385)	0.561* (0.292)
Greece	99.92*** (28.17)	93.50*** (23.28)	95.34*** (25.50)	64.03 (202.4)	61.00 (43.25)	91.96*** (27.14)
Netherlands	0.229 (0.901)	0.177 (0.930)	-0.790 (1.726)	-3.341** (1.465)	2.953 (1.927)	-1.024 (1.746)
Hungary	11.82 (8.478)	8.374 (9.065)	7.768 (9.541)	-19.78 (30.50)	-38.35* (21.93)	7.769 (9.588)
Ireland	0.865* (0.432)	1.035** (0.410)	1.026 (0.630)	1.465 (0.968)	1.251 (0.765)	1.047* (0.614)
Italy	4.440 (3.590)	4.732 (3.469)	5.258 (3.856)	10.28 (6.793)	4.876 (3.704)	5.444 (3.979)
Japan	461.7 (358.0)	590.6 (487.2)	659.9 (520.3)	47.21 (480.7)	-381.1 (442.0)	709.5 (536.8)
Lithuania	1,687 (2,145)	14.74 (4,003)	-523.3 (4,122)		2,932 (2,237)	-494.4 (4,163)
Mexico	-1.310** (0.639)	-1.177* (0.619)	-1.276* (0.691)	-1.748*** (0.414)	-1.912 (2.143)	-1.257* (0.633)
Norway	-0.626 (0.375)	-0.955** (0.465)	0.153 (0.548)	0.449 (0.539)	-0.331 (0.510)	0.146 (0.541)
Poland	0.907 (0.832)	1.383 (0.856)	1.735** (0.790)	0.457 (1.733)	0.644 (0.947)	1.736** (0.810)
Portugal	-4.942 (6.780)	-6.560 (6.493)	-7.055 (6.524)	-17.74 (22.09)	-4.446 (4.873)	-6.290 (6.419)
Romania	830.5* (433.2)	720.5 (473.9)	767.1 (507.0)	1,175** (520.2)	-98.02 (565.9)	724.1 (503.3)
Russia	1.276*** (0.324)	1.201*** (0.345)	0.424 (1.136)	0.326 (1.109)	0.212 (3.037)	0.323 (1.173)
Sweden	1.797** (0.829)	1.640** (0.812)	1.366** (0.649)	0.952 (0.781)	1.336 (0.960)	1.337** (0.648)
Switzerland	2.177 (1.381)	2.366* (1.308)	3.337* (1.778)	3.130 (2.080)	5.768** (2.511)	3.380* (1.784)
Great Britain	0.295 (0.653)	0.244 (0.679)	0.365 (0.747)	1.675* (0.923)	0.238 (0.787)	0.337 (0.739)

Yugoslavia	5.634 (23.21)	8.821 (18.32)	10.72 (17.23)	-95.14 (115.9)	11.02 (13.83)	9.259 (16.91)
Observations	2,520	2,520	2,482	1,239	1,239	2,482
R-squared	0.495	0.514	0.515	0.603	0.568	0.516

Table A21 – Showing Controls for National Cultures (see Paper Table 7)

	(1)	(2)	(3)	(4)	(5)	(6)
<i>In Church seatings/population</i>						
Rainfall risk	2.394*** (0.676)	2.394*** (0.677)	2.000*** (0.504)	4.423*** (1.217)	0.269 (0.540)	
Growing-season rainfall risk						1.383*** (0.458)
Nongrowing-season rainfall risk						-0.0107 (0.0975)
RCov(Growing-season, Nongrowing-season rainfall)						0.718 (0.753)
<u><i>Share of First Generation Born in:</i></u>						
Africa	-40.08 (44.12)	-40.01 (45.68)	-27.12 (42.11)	18.39 (35.83)	-114.4 (92.71)	-25.25 (41.86)
Asia	-1.022 (2.368)	-1.023 (2.361)	-1.024 (2.224)	-8.787* (4.509)	0.552 (4.104)	-1.068 (2.197)
Atlantic Island	2.963 (8.861)	2.969 (8.834)	2.830 (8.628)	-103.2*** (32.97)	13.12* (7.563)	3.064 (8.796)
Australia	-97.79 (60.89)	-97.88 (60.92)	-77.40 (60.75)	-248.7 (159.4)	18.64 (45.30)	-70.66 (62.83)
Austria	-4.265 (2.635)	-4.268 (2.609)	-2.190 (2.983)	-0.535 (4.632)	-4.788 (3.861)	-2.324 (2.996)
Belgium	-14.76 (9.570)	-14.76 (9.655)	-12.58 (10.73)	-31.33** (13.77)	11.04 (7.674)	-12.45 (10.59)
Bohemia	-3.607 (2.251)	-3.606 (2.254)	-3.225 (2.249)	-1.156 (2.679)	-0.859 (3.322)	-3.261 (2.242)
Canada	-2.443*** (0.631)	-2.443*** (0.631)	-2.362*** (0.623)	-3.052 (2.681)	-2.603*** (0.673)	-2.349*** (0.618)
Central America	39.69 (466.4)	37.73 (483.5)	-166.9 (435.6)	-1,325* (773.3)	792.7*** (256.6)	-156.8 (435.5)
Cuba	8.342 (8.872)	8.343 (8.884)	6.095 (8.063)	258.5 (160.4)	15.50 (9.477)	6.412 (8.010)
Denmark	-0.813 (1.876)	-0.813 (1.877)	-1.939 (1.619)	-0.0702 (2.019)	-2.958 (2.869)	-1.951 (1.638)
Great Britain	1.657 (1.504)	1.657 (1.485)	-0.232 (1.414)	-0.325 (3.427)	-0.278 (1.292)	-0.237 (1.403)
Other European Countries	0.970 (4.683)	0.964 (4.727)	2.022 (5.166)	9.005 (9.421)	-5.578 (7.521)	1.456 (5.150)
France	-5.496 (6.117)	-5.493 (6.110)	-13.30* (6.630)	29.23* (15.55)	-15.41** (6.468)	-13.11* (6.608)

Germany	-1.279 (0.795)	-1.279 (0.796)	-1.866** (0.713)	-2.869** (1.129)	-1.332 (0.899)	-1.861** (0.704)
Greece	20.47** (9.972)	20.52* (10.44)	8.354 (12.85)	-2.161 (27.31)	24.76 (65.47)	9.125 (12.41)
Netherlands	0.944 (2.663)	0.943 (2.659)	-0.120 (3.327)	7.971 (4.876)	-4.075* (2.149)	-0.384 (3.292)
Hungary	-2.755 (4.174)	-2.755 (4.175)	-0.633 (3.682)	34.70 (23.86)	-4.067 (6.011)	-0.713 (3.697)
India	159.8 (102.4)	159.7 (102.4)	141.7* (74.83)	298.0** (143.7)	-253.6 (453.7)	138.7* (72.08)
Ireland	-3.724** (1.466)	-3.730** (1.613)	-2.541 (1.722)	-0.997 (3.752)	-0.701 (2.254)	-2.494 (1.739)
Italy	-4.521* (2.437)	-4.524* (2.473)	-3.695 (2.245)	-19.56** (8.141)	-3.423 (2.537)	-3.559 (2.257)
Luxembourg	5.146 (6.157)	5.150 (6.125)	10.19 (6.586)	-14.95 (9.835)	12.32 (15.76)	10.33 (6.482)
Mexico	-0.523 (0.908)	-0.523 (0.923)	-0.559 (1.021)	-0.113 (1.392)	-0.948 (1.724)	-0.565 (1.034)
Norway	-0.0783 (0.921)	-0.0770 (0.932)	-2.733** (1.234)	-3.076* (1.624)	-2.148** (0.828)	-2.710** (1.257)
Poland	-5.234* (2.771)	-5.238* (2.777)	-4.407 (2.678)	-6.179 (3.806)	0.380 (2.279)	-4.344 (2.672)
Portugal	14.21 (8.851)	14.23 (9.083)	14.10 (9.310)	-5.768 (26.81)	10.18 (10.18)	14.17 (9.348)
Russia	-3.204*** (1.086)	-3.205*** (1.086)	0.342 (1.710)	1.362 (2.660)	-0.433 (3.106)	0.287 (1.698)
Pacific Islands	173.0** (78.33)	172.9** (79.16)	169.2** (74.77)	39.37 (153.7)	165.9*** (50.37)	158.1** (75.39)
South America	36.55 (36.96)	36.54 (36.79)	8.916 (19.87)	178.4 (109.8)	3.131 (31.61)	12.28 (21.11)
Spain	-37.27 (52.51)	-37.30 (52.72)	-31.61 (48.92)	70.97* (38.32)	-87.58 (54.51)	-32.74 (48.72)
Sweden	-2.231*** (0.661)	-2.231*** (0.660)	-1.516** (0.595)	0.622 (1.030)	-3.602*** (0.735)	-1.556** (0.600)
Switzerland	-8.387*** (3.097)	-8.387*** (3.096)	-7.791** (3.264)	-6.781 (4.993)	-12.28 (7.623)	-7.655** (3.205)
Turkey	-7.083 (282.2)	-6.910 (283.9)	-61.67 (270.0)		142.6 (179.4)	-56.38 (269.4)

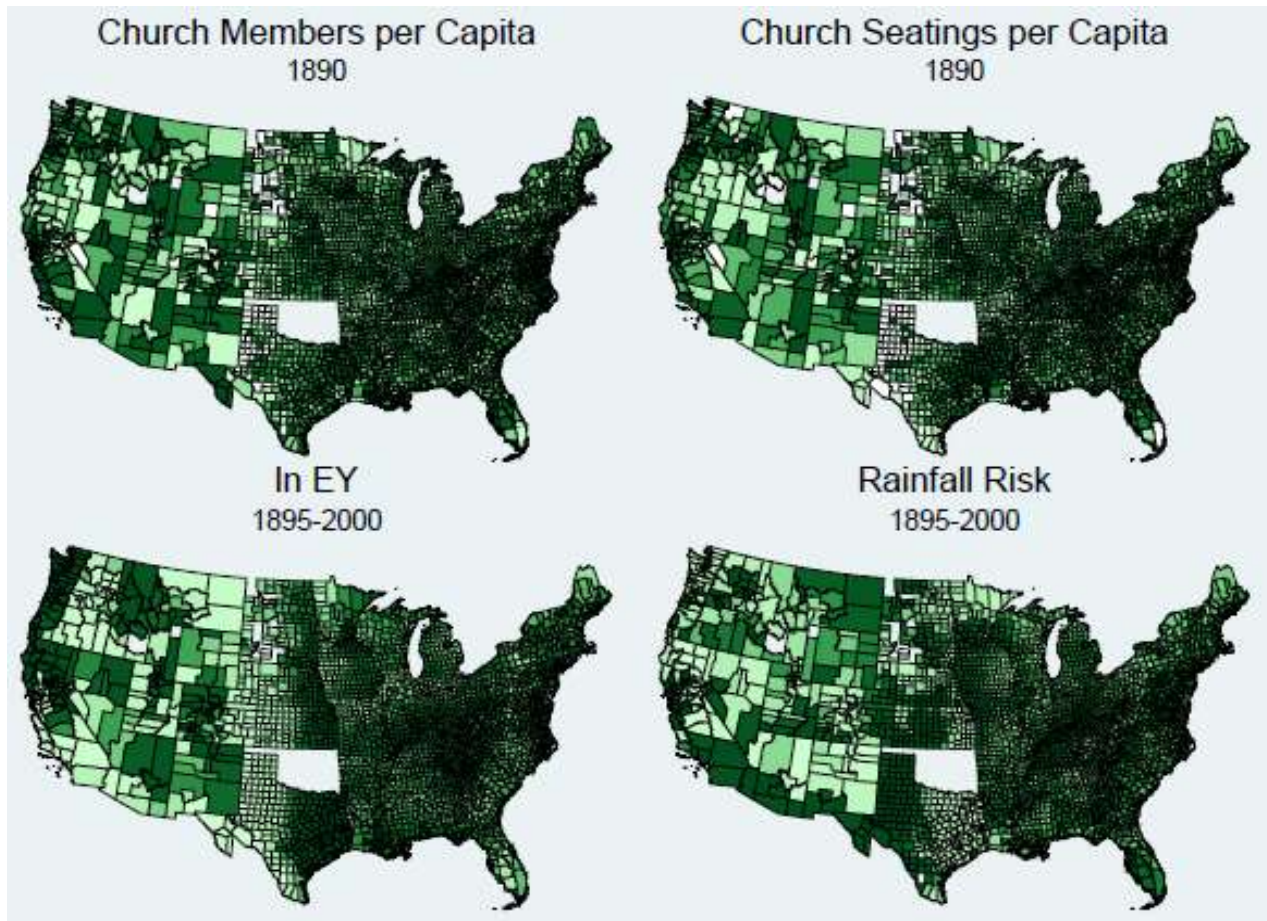
Share of Second Generation
Born in:

Austria	4.459 (3.977)	4.461 (3.961)	-1.326 (4.860)	-3.771 (7.148)	1.696 (3.901)	-1.395 (4.829)
Belgium	4.937 (3.276)	4.939 (3.295)	4.178 (3.656)	13.23 (11.98)	-3.024 (3.153)	4.173 (3.614)
Bohemia	1.739 (1.381)	1.738 (1.382)	1.572 (1.283)	0.660 (1.692)	-0.171 (2.011)	1.585 (1.269)

Canada	0.163 (0.491)	0.163 (0.490)	0.304 (0.529)	0.869 (1.874)	0.482 (0.540)	0.295 (0.526)
China	-1.957** (0.951)	-1.956** (0.950)	-2.074** (0.869)	-2.181 (2.412)	-1.814** (0.768)	-2.071** (0.873)
Cuba	-7.916 (7.291)	-7.917 (7.300)	-6.064 (6.629)	-192.3*** (48.00)	-13.73* (7.886)	-6.304 (6.605)
Denmark	0.749 (1.115)	0.747 (1.126)	1.429 (0.979)	0.360 (1.198)	0.698 (2.391)	1.400 (0.991)
Spain	-24.74 (32.23)	-24.74 (32.26)	-26.06 (29.91)	-71.52* (36.53)	7.859 (20.18)	-26.68 (30.46)
Finland	4.271 (3.079)	4.276 (3.029)	0.712 (3.161)	-9.387 (13.27)	1.353 (4.072)	0.854 (3.071)
France	-2.135 (1.295)	-2.134 (1.300)	-0.893 (2.237)	-6.622 (4.311)	0.882 (2.067)	-0.949 (2.181)
Germany	-0.125 (0.356)	-0.126 (0.352)	0.0182 (0.322)	0.574* (0.323)	-0.0700 (0.460)	0.0139 (0.319)
Greece	41.28 (26.65)	41.26 (26.74)	40.63 (26.41)	197.9 (281.5)	19.15 (50.39)	42.87 (26.57)
Netherlands	-0.362 (1.325)	-0.363 (1.328)	0.158 (1.614)	-2.982 (2.132)	2.345* (1.186)	0.311 (1.592)
Hungary	0.272 (7.455)	0.262 (7.447)	0.885 (7.824)	-28.41 (25.82)	-54.49*** (19.09)	0.928 (7.713)
Ireland	-0.202 (0.398)	-0.202 (0.403)	-0.614 (0.521)	0.414 (0.904)	-0.762 (0.786)	-0.632 (0.523)
Italy	1.837 (2.750)	1.838 (2.763)	1.871 (2.695)	15.83** (6.944)	2.892 (4.624)	1.701 (2.729)
Japan	895.8** (416.1)	896.2** (415.6)	882.6* (452.6)	564.5 (581.9)	238.7 (336.8)	846.5* (437.7)
Lithuania	357.4 (3,601)	352.6 (3,688)	215.8 (3,911)		3,748** (1,444)	185.3 (3,875)
Mexico	-1.271* (0.634)	-1.271* (0.645)	-1.029 (0.623)	-0.793 (0.827)	-1.596 (1.326)	-1.008 (0.606)
Norway	-0.362 (0.313)	-0.362 (0.321)	0.768 (0.505)	1.308** (0.564)	0.639 (0.386)	0.771 (0.514)
Poland	2.798* (1.636)	2.799* (1.631)	2.887* (1.477)	4.198 (3.287)	0.314 (1.512)	2.879* (1.468)
Portugal	-8.408* (4.226)	-8.412* (4.243)	-8.395* (4.346)	8.643 (14.58)	-10.95* (5.559)	-8.985* (4.559)
Romania	615.9* (335.3)	615.6* (329.9)	572.9* (333.9)	535.4 (407.3)	22.49 (611.8)	599.1* (332.8)
Russia	2.544*** (0.640)	2.544*** (0.640)	0.728 (0.901)	0.313 (1.344)	3.566 (2.830)	0.777 (0.899)
Sweden	1.175** (0.472)	1.174** (0.470)	0.760* (0.424)	-0.302 (0.665)	1.982*** (0.720)	0.781* (0.427)
Switzerland	3.375** (1.551)	3.376** (1.538)	3.422* (1.771)	5.041* (2.856)	2.521 (2.915)	3.400* (1.772)
Great Britain	0.243 (0.816)	0.243 (0.819)	0.710 (0.812)	1.051 (1.622)	0.140 (0.749)	0.731 (0.798)

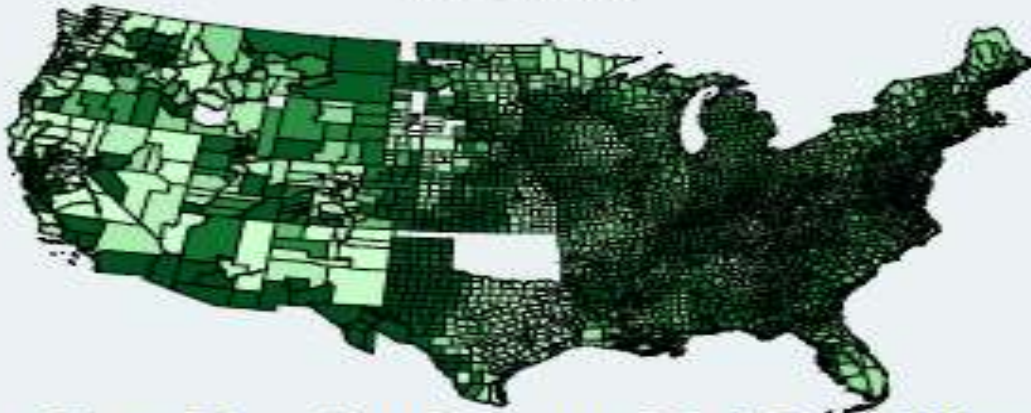
Yugoslavia	16.45 (11.42)	16.46 (11.33)	15.08 (11.13)	-126.5 (138.6)	32.01*** (11.20)	16.20 (10.86)
Observations	2,502	2,502	2,471	1,234	1,234	2,471
R-squared	0.609	0.609	0.617	0.656	0.698	0.617

9 Maps (deviations from state averages)

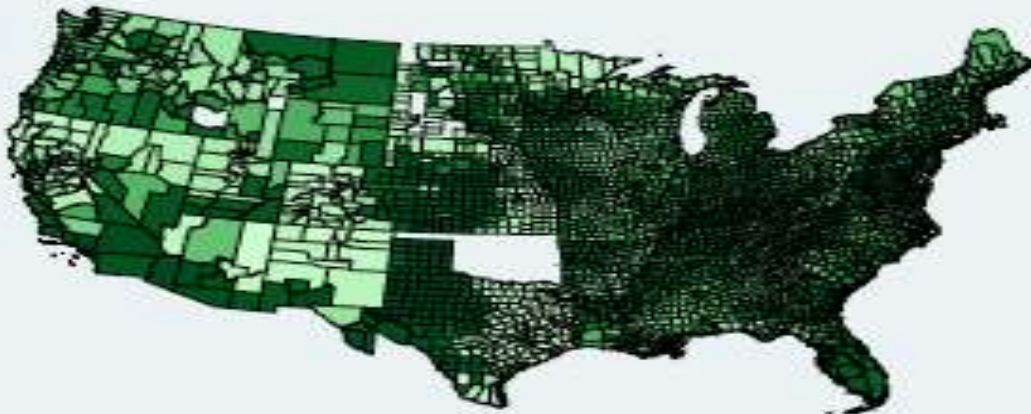


Notes: A darker color refers to higher values of church members per capita, church seatings per capita, lnEY, and rainfall risk. White polygons denote missing observations.

Growing Season Rainfall Risk 1895-2000



Non-Growing Season Rainfall Risk 1895-2000



Notes: A darker color refers to higher values of (growing/nongrowing) rainfall risk. White polygons denote missing observations.

10 Binscatter Plots: Rainfall Risk and Religious Communities in 1890

Relationship Rainfall Risk and Religious Communities in 1890

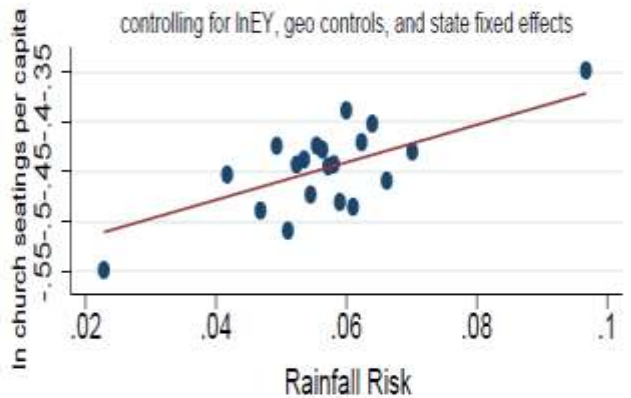
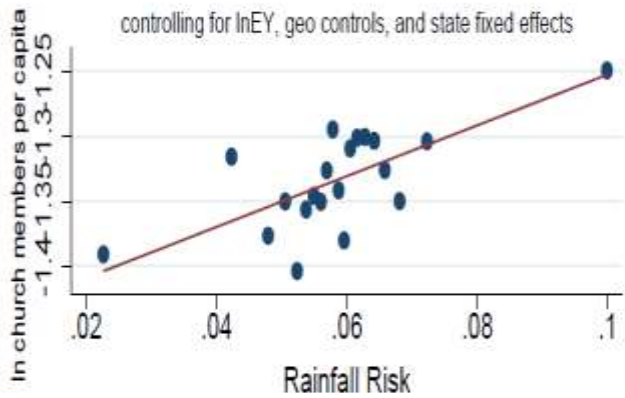
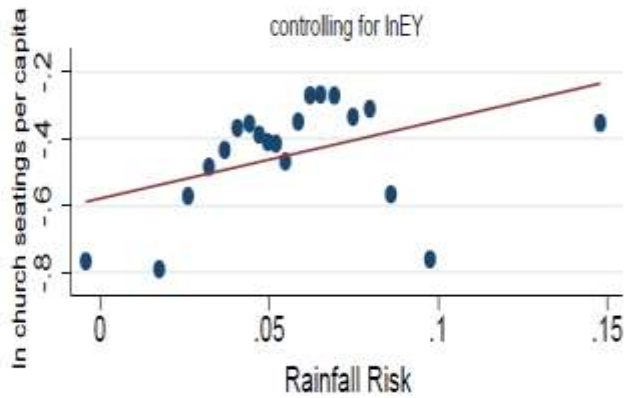
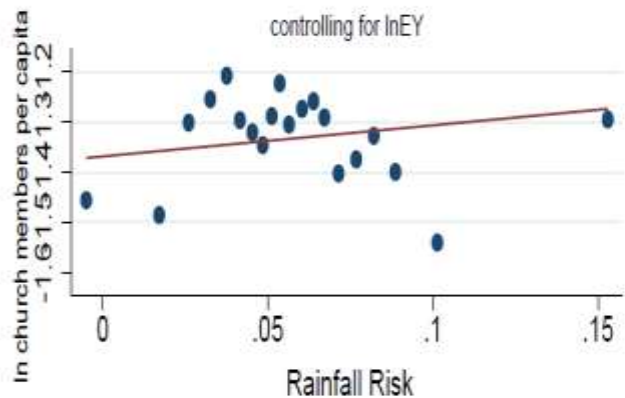
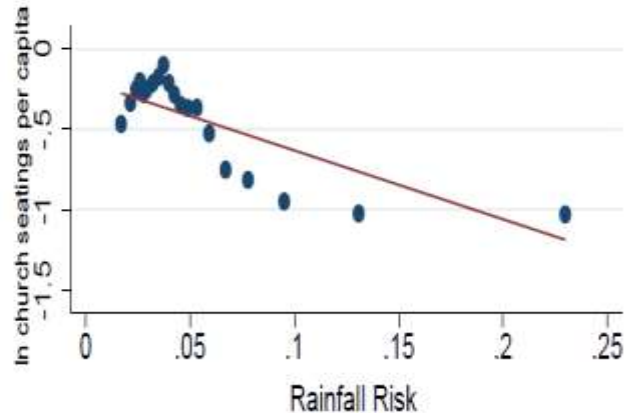
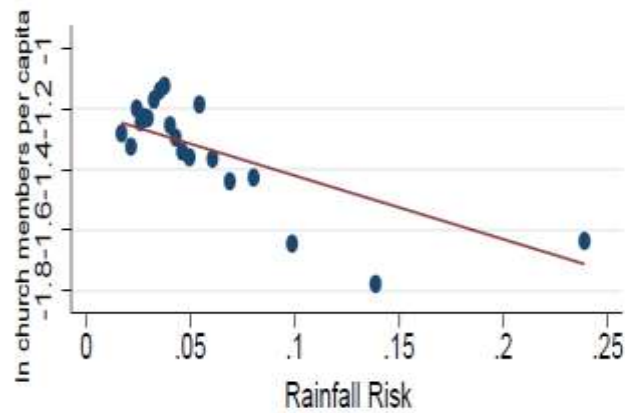


Table A22 – Regressions underlying Binscatter Plots

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>In Church members/population</i>			<i>In Church seatings/population</i>		
lnRY		0.656*** (0.232)	0.270 (0.210)		1.560*** (0.212)	0.799** (0.355)
Rainfall Risk	-2.111*** (0.633)	0.620 (0.951)	1.962*** (0.471)	-4.278*** (0.850)	2.325** (0.917)	1.888** (0.801)
Soil shares	No	No	Yes	No	No	Yes
Elevation shares	No	No	Yes	No	No	Yes
Average elevation	No	No	Yes	No	No	Yes
Average temperature	No	No	Yes	No	No	Yes
Longitude and latitude	No	No	Yes	No	No	Yes
Area	No	No	Yes	No	No	Yes
State FE	No	No	Yes	No	No	Yes
Observations	2,696	2,696	2,693	2,652	2,652	2,651
R-squared	0.040	0.088	0.463	0.122	0.337	0.576

Notes: The left-hand-side variable is the natural logarithm (ln) of total church members over population in columns (1)-(3) and church seatings over total population in columns (4)-(6) at the county level in 1890. Rainfall risk is defined in equation (14) and calculated using 1895-2000 rainfall data. The RY variable is defined just after equation (17) and is calculated using the same rainfall data and a value $\beta = 0.52$. In columns (3) and (6) other controls are ln land area of the county (area), the share of land of a given soil type using a 53-category soil classification system, the share of land at a given elevation using 11 elevation bins, average elevation, average temperature over the period 1895-2000, longitude and latitude, state fixed effects, and year fixed effects. The method of estimation is least squares. Standard errors (in parentheses) account for arbitrary heteroskedasticity and are clustered at the state level. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.