Online Appendix

Title: Social Networks and Technology Adoption: Evidence from Church Mergers in the U.S.
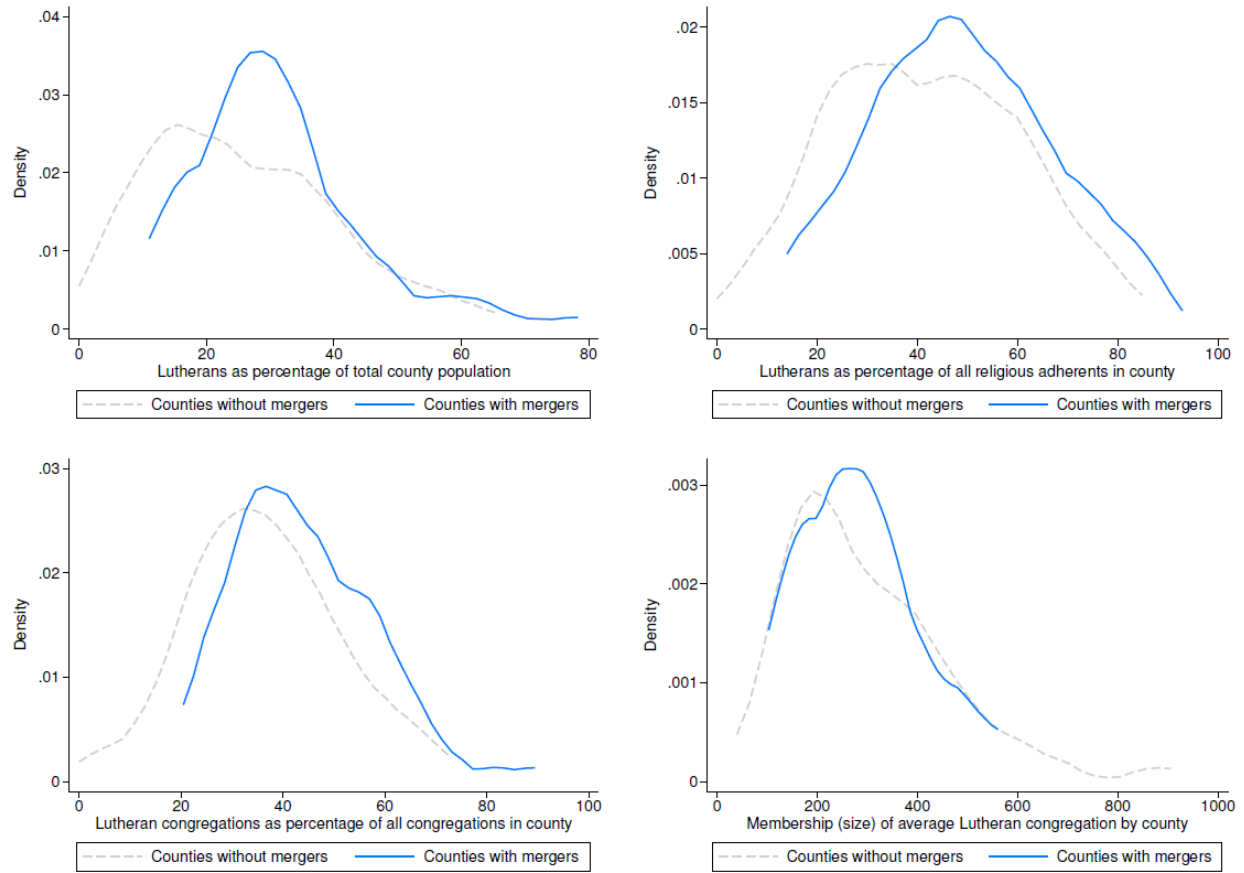
Midwest

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Date: August 26, 2023

Note: The material contained herein is supplementary to the article named in the title and

published in the *American Journal of Agricultural Economics*.

Figure A1: Descriptive statistics about Lutheranism in sample counties

Notes: County-level data from 1952 on Lutherans and Lutheran congregations are sourced from the Association of Religion Data Archives (ARDA). There are 51 counties that experienced mergers between 1959 and 1964 and 211 counties without mergers during the same period.

Table A1: Impact of Congregational Mergers on Fertilizer Use – Corn

VARIABLES	(1) Acres	(2) Tons: dry	(3) Tons: liquid	(4) Tons: total
Year = 1964 × merger	3,599.29**	271.63**	53.67	325.30**
	(1,411.71)	(119.66)	(53.53)	(133.02)
	[0.004]	[0.009]	[0.118]	[0.009]
Mean of dependent variable	24,493.82	2,034.65	231.80	2,266.44
Observations	524	524	524	524
Number of counties	262	262	262	262
County FE	YES	YES	YES	YES
State-by-year FE	YES	YES	YES	YES
Weather controls	YES	YES	YES	YES

Notes: This table shows results from estimating Equation (1). Year = 1964 × merger is equal to one if the year is 1964, and the county experienced a congregational merger between 1959 and 1964. The dependent variables are, in column (1), corn acres fertilized; in column (2), tons of dry chemical fertilizer used on corn; in column (3), tons of liquid chemical fertilizer used on corn; and in column (4), the total tonnage of chemical fertilizer used on corn. Weather controls include temperature ($^\circ$F), precipitation (in), heating degree days, and cooling degree days. Standard errors are in parentheses and are clustered at the county level. Significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Brackets contain p-values derived from a randomization inference procedure as described in the *Main Results* section.

Table A2: Impact of Congregational Mergers on Fertilizer Use – Proportion of Farms

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Year = 1964 × merger	0.02	0.02	0.02	0.02*	0.02	0.00
	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)
	[0.318]	[0.117]	[0.133]	[0.035]	[0.058]	[0.405]
Mean of dependent variable	0.47	0.47	0.47	0.47	0.47	0.41
Observations	524	524	524	524	524	396
Number of counties	262	262	262	262	262	198
County FE	NO	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
State-by-year FE	NO	NO	NO	YES	YES	YES
Weather controls	NO	NO	YES	NO	YES	YES
Wisconsin	YES	YES	YES	YES	YES	NO

Notes: This table shows results from estimating Equation (1). The dependent variable is the proportion of farms in a county reporting fertilizer use. Year = 1964 × merger is equal to one if the year is 1964, and the county experienced a congregational merger between 1959 and 1964. Note that state-by-year fixed effects nest year fixed effects. Weather controls include temperature (˚F), precipitation (in), heating degree days, and cooling degree days. Column (6) includes only counties in Minnesota, North Dakota, and South Dakota. Standard errors are in parentheses and are clustered at the county level. Significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Brackets contain p-values derived from a randomization inference procedure as described in the *Main Results* section.

Table A3: Impact of Congregational Mergers on Land Use and Irrigation

VARIABLES	(1) Strip: farms	(2) Strip: acres	(3) Irrigation: farms	(4) Irrigation: acres	(5) Orchard: acres
Year = 1964 × merger	5.40	2,648.28	−0.91	37.28	−46.87
	(6.36)	(2,299.40)	(0.80)	(214.00)	(46.59)
	[0.222]	[0.107]	[0.129]	[0.367]	[0.052]
Mean of dependent variable	139.36	17,643.04	9.26	893.07	55.29
Observations	524	524	524	524	524
Number of counties	262	262	262	262	262
County FE	YES	YES	YES	YES	YES
State-by-year FE	YES	YES	YES	YES	YES
Weather controls	YES	YES	YES	YES	YES

Notes: This table shows results from estimating Equation (1). Year = 1964 × merger is equal to one if the year is 1964, and the county experienced a congregational merger between 1959 and 1964. The dependent variables are, in column (1), farms reporting the use of strip cropping; in column (2), acres strip cropped; in column (3), farms reporting the use of irrigation; in column (4), acres irrigated; and in column (5), acres in fruit orchards, groves, vineyards, and nut trees. Weather controls include temperature (˚F), precipitation (in), heating degree days, and cooling degree days. Standard errors are in parentheses and are clustered at the county level. Significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Brackets contain p-values derived from a randomization inference procedure as described in the *Main Results* section.

Table A4: Impact of Future Congregational Mergers on Inputs

VARIABLES	(1) Fertilizer: farms	(2) Fertilizer: acres	(3) Fertilizer: tons	(4) Fertilizer: acres (corn)	(5) Lime: farms	(6) Lime: acres
Year = 1964 × future merger	−23.88	−1,681.69	−689.67	−1,608.50	0.66	−133.54
	(18.02)	(2,773.50)	(696.70)	(1,704.03)	(6.66)	(174.67)
	[0.104]	[0.269]	[0.106]	[0.140]	[0.474]	[0.250]
Mean of dependent variable	723.05	60,115.43	2,246.48	24,493.82	120.76	2,282.15
Observations	524	524	524	524	524	524
Number of counties	262	262	262	262	262	262
County FE	YES	YES	YES	YES	YES	YES
State-by-year FE	YES	YES	YES	YES	YES	YES
Weather controls	YES	YES	YES	YES	YES	YES

Notes: This table shows results from estimating Equation (1). Year = 1964 × future merger is equal to one if the year is 1964, and the county experienced a congregational merger between 1964 and 1969. Counties with mergers between 1959 and 1964 and between 1964 and 1969 are treated as controls. The dependent variables are, in column (1), farms reporting fertilizer use; in column (2), acres fertilized; in column (3), tons of chemical fertilizer used; in column (4), acres of corn fertilized; in column (5), farms reporting lime use; and in column (6), acres limed. Weather controls include temperature (˚F), precipitation (in), heating degree days, and cooling degree days. Standard errors are in parentheses and are clustered at the county level. Significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Brackets contain p-values derived from a randomization inference procedure as described in the *Main Results* section.

Table A5: Relationship Between Congregational Mergers and Miles of 2-digit Highway

VARIABLES	(1) Miles of 2-digit highway
Year = 1964 × merger	–0.03
	(0.96)
	[0.521]
Mean of dependent variable	1.39
Observations	524
Number of counties	262
County FE	YES
State-by-year FE	YES
Weather controls	YES

Notes: This table shows results from estimating Equation (1). Year = 1964 × merger is equal to one if the year is 1964, and the county experienced a congregational merger between 1959 and 1964. The dependent variable is miles of open 2-digit highway in the county (Baum-Snow 2007). Weather controls include temperature ($^\circ$F), precipitation (in), heating degree days, and cooling degree days. Standard errors are in parentheses and are clustered at the county level. Significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Brackets contain p-values derived from a randomization inference procedure as described in the *Main Results* section.