Religious Competition and Public Service Provision

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Abstract

We argue that Western missionaries represented an existential threat to domestic ethno-religious groups, inducing local elites to expand non-state modern education as a counter-mission. Using an original dataset spanning the universe of modern Egyptian schools in 1825–1913 and a dynamic difference-in-differences design, we show that missionary school entry increased Coptic school provision starting from year six after entry, with no comparable response among Muslims. The effect is driven by American Protestant missionaries. We attribute this to successful Coptic conversions that alarmed Coptic elites, British colonial facilitation of missionary activities, and a Coptic religious-secular elite coalition emphasizing modern non-sectarian education.

Keywords: religious competition, public service provision, missionaries, education, Egypt
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> "The missionary regards the spiritual uplift of the Copts [as an] immediate duty whose accomplishment [is] important not merely for [its] own sake, but also as a piece of missionary strategy."
>
> C.R. Watson, *Egypt and the Christian Crusade* (1907)

1 Introduction

Ample empirical evidence indicates that ethno-religious heterogeneity may reduce public service provision. Higher ethnic diversity has been found to reduce public goods provision in the United States (Alesina et al. 1999), India (Banerjee et al. 2005), Kenya (Miguel 1999, Miguel and Gugerty 2005), and Uganda (Habyarimana et al. 2007).[1] However, this literature has paid less attention to the conditions under which ethno-religious groups may *increase* their provision of public services. We argue that direct existential threats posed by new entrant groups—propagating for out-conversions from incumbent groups—can induce incumbent groups to increase public service provision. The mechanism is via competition of incumbent and entrant group leaders over incumbent group members.

Specifically, this paper examines the effect of the emergence of Western missionary schools on the provision of modern education by local non-Muslim minorities in precolonial and colonial Egypt (1825–1913).[2] Modern education refers to schooling with a standardized curriculum, grade progression, and secular subjects such as science, history, and geography, with or without a religion subject. This contrasts with traditional elementary religious schools (*kuttabs*), which focused on Arabic literacy and recitation of religious texts. Western missionaries—primarily American Protestants and French Catholics—entered the Egyptian educational landscape with an explicit objective of converting Coptic Orthodox Christians, the largest non-Muslim minority in Egypt (7 percent of the population and 94 percent of Egypt's non-Muslim population in 1848) and in the Middle East and North Africa outside the Ottoman core. Muslims were largely immune to missionary activity because they were less targeted by missionaries and the death penalty for apostates. In this context, we show that this external existential threat triggered

[1] For comprehensive reviews of this literature, see Stichnoth and Van der Straeten (2013) and Dinesen et al. (2020).

[2] Egypt fell under British occupation in 1882.

a competitive response: Coptic religious and secular elites expanded their own provision of modern schools as a "counter-mission" to protect their community from missionary conversion efforts. By 1907/08, modern (non-state) schools administered by all domestic religious groups combined—Copts, Muslims, Jews, non-Coptic Christians—accounted for 52% of all modern schools, exceeding the 41% share of all foreign schools (missionary and secular). In 1947/48, Copts owned 40 percent of all modern community schools, a remarkable share given their 7 percent population share (Saleh 2016). This was a *private-order* provision of modern education by local religious groups, in the context of the withdrawal of the Egyptian state from modern education provision in the second half of the 19th century.

Our empirical analysis exploits an original sub-district-year level dataset spanning the universe of modern Egyptian schools in 1825–1913, that we constructed from the 1907/08 and 1912/13 modern school censuses (*Statistique Scolaire*). Using a dynamic difference-in-differences framework following Callaway and Sant'Anna (2021)—which addresses the well-documented problems with two-way fixed effects estimators under staggered treatment adoption and heterogeneous treatment effects—we exploit the variation in timing of missionary school entry across Egyptian sub-districts. Our baseline results show a positive effect of missionary school entry on Coptic school supply, starting from approximately year six after missionary school construction.[3] This effect is largely driven by Protestant American missionary schools rather than French Catholic missionaries. We find no comparable response among Muslims, non-Coptic Christians, or Jews, consistent with the fact that missionaries primarily targeted Copts for conversion. Our results are robust to alternative DID estimators by De Chaisemartin and d'Haultfoeuille (2020) and Sun and Abraham (2021), controlling for foreign secular schools, and dropping never-treated sub-districts.

We examine several mechanisms underlying these results. American Protestant missionaries—particularly the US Presbyterians—were ideologically dedicated to the "re-Christianization" of the Copts (Sharkey 2013), whereas French Catholic missionaries adopted a more accommodating approach, seeking to have the Coptic Church acknowledge the supremacy of the Pope while

[3]This lag is consistent with the time required for Coptic communities to organize a collective response, secure funding from the Coptic Church and secular elites, construct schools, and most importantly, provide well-trained teachers capable of teaching secular subjects, in reaction to missionary presence.

continuing to follow their own doctrines (Boulos 2016, Sadek 2015). The Protestant mission achieved greater success in converting Copts, probably due to their more widespread penetration of Egyptian sub-districts especially in the Middle Nile Valley where Copts were relatively more concentrated. Consistent with this, the effect is larger in sub-districts with a higher proportion of Coptic converts to Protestantism and Catholicism in 1907. We further provide historical evidence that British colonial occupation after 1882 facilitated Protestant missionary expansion, and that Coptic Patriarchs in 1854–1927 (Cyril IV, Demetrius II, and Cyril V) formed a coalition with secular Coptic elites emphasizing modern secular non-sectarian education, open to all religious groups including Muslims. Finally, the national-level withdrawal of the Egyptian state from modern education plausibly created the conditions under which community-based provision became both necessary and feasible, even though our sub-district-level heterogeneity analysis—comparing areas with and without state schools in 1912/13—does not isolate this macro-level channel and if anything, shows higher Coptic response in sub-districts *with* state school presence.[4]

This paper contributes to three literatures. First, we offer a revisionist view of the impact of Western missionaries on economic development. A substantial literature documents positive and persistent effects of Western missionary activity on human capital, economic growth, and democracy (Woodberry and Shah 2004, Gallego and Woodberry 2010, Woodberry 2012, Lankina and Getachew 2013, Cagé and Rueda 2016, Valencia Caicedo 2019). The prevailing interpretation is that Western missionaries exerted a *direct* positive effect on human capital by providing modern education to local populations. We argue that an important—and largely overlooked—mechanism is *indirect*: missionaries represented an existential threat to indigenous religious communities, and the resulting ideological competition with indigenous intelligentsia spurred local communities to develop their own modern educational institutions. The aggregate positive effect of missionary presence on education may thus reflect not only the schools that missionaries built, but also—and perhaps more importantly—the schools that local communities built in response.

[4]State school presence in 1912/13 is itself a post-withdrawal outcome, so cross-sectional variation in state school presence compares sub-districts at different points within an already low-provision equilibrium rather than capturing the aggregate effect of state withdrawal.

Second, we contribute to the literature on ethno-religious diversity and the provision of public goods. While the prevailing finding is that diversity reduces public goods provision, a smaller literature suggests that religious competition may enhance it. Most closely related are Cantoni et al. (2018), who show that religious competition following the Protestant Reformation increased investment in education in early modern Europe, and Bazzi et al. (2025), who show that Islamic schools in Indonesia competitively expanded—entering new markets and intensifying religious curriculum—in response to the state's mass public schooling program in the 1970s. We complement these findings by showing that a similar competitive dynamic operated in a very different setting—a non-Western, non-Christian-majority context in the 19th century—and through a different channel: rather than competition between confessional rivals or between religious and state schools, we document private-order provision by a politically marginalized minority responding to a foreign existential threat.[5] Our findings also speak to Carvalho et al. (2024), who model how religious leaders use education strategically to sustain group cohesion against secular encroachment. We show that when the encroaching force is not a secular state but a foreign proselytizing mission, community leaders adopt the *form* of the threat—modern secular schooling—as a defensive instrument, rather than resisting it outright.

Third, we speak to the literature on community-based (private-order) versus state (public-order) provision of public services (Ogilvie and Carus 2014). Whereas Bazzi et al. (2025) document a competitive expansion of religious schools in response to state school construction, we examine the converse: private-order provision that arose in the context of state *withdrawal* from education. The Egyptian state under Muhammad Ali Pasha (r. 1805–1848) was the primary provider of modern education, but it served Muslims almost exclusively and withdrew from education provision starting from the 1850s. This withdrawal was exacerbated under British colonial rule after 1882. State modern schools constituted only 7 percent of all modern schools by the 1907/08 census. Within this context of diminished state provision, the competitive threat posed by Western missionaries was a key catalyst for Coptic private-order educational expansion. Muslims, less exposed to the conversion threat, opened community modern schools half a century later than Copts.

[5] See also Trejo (2009) on indigenous causes in Latin America, Cammett (2015) on sectarian politics in Lebanon, and Gill (2008) for a theoretical framework on how religious competition shapes institutional strategies.

The remainder of this paper is organized as follows. Section 2 provides the historical background. Section 3 describes the data. Section 4 presents the empirical analysis, including the empirical strategy, threats to identification, results, robustness checks, and mechanisms. Section 5 concludes.

2 Historical Background

2.1 Traditional and Modern Education in Egypt

Prior to the 19th century, the Egyptian educational system consisted primarily of elementary religious schools known as *kuttabs*. These schools focused on teaching Arabic literacy and the recitation of religious texts. Coptic *kuttabs* also included instruction in arithmetic and geometry. Modern education—characterized by a standardized curriculum, grade progression, and secular subjects—was first introduced to Egypt by Western missionaries in the late 18th century.

State modern schools emerged in 1816 under Muhammad Ali Pasha, the autonomous Ottoman viceroy of Egypt in 1805–1848.[6] These schools were designed to produce trained personnel for the military, bureaucracy, and modernization programs of the state. Crucially, state modern schools served Muslims almost exclusively until 1873. Following the decline of Muhammad Ali's modernization project, mass closures of state modern schools occurred. Some renaissance in state education occurred under Khedive Ismail (r. 1863–1879), but the growth of state schools stagnated under the British occupation (1882–1913). By the time of the 1907/08 school census, state schools constituted only 7 percent of all modern schools in Egypt. This withdrawal of the state meant that domestic religious groups had to rely on community-funded schools to meet the growing demand for modern education.

2.2 Western Missionaries in Egypt

Western missionaries expanded their presence in Egypt throughout the 19th century, benefiting from the Ottoman capitulation system, which granted foreign nationals extraterritorial privileges.

[6]Throughout this period, Egypt was first an autonomous Ottoman vassal state until 1882, then a de facto British colony under nominal Ottoman sovereignty in 1882–1914, a British protectorate from 1914 to 1922, and a sovereign monarchy yet with substantial British influence in 1922–1957.

By the 1907/08 census, foreign schools—both missionary and secular—accounted for 41 percent of all modern schools. The two largest missionaries in Egypt were the American Protestant and French Catholic missions.

American Presbyterian Missions (1854–1900s). The American Presbyterian mission arrived in Egypt in 1854, when Thomas McCague and James Barnett established a mission in Cairo, as part of the broader Third Great Awakening. Sponsored by the United Presbyterian Church of North America (UPCNA) and funded by American congregations via the Board of Foreign Missions headquartered in Pittsburgh and Philadelphia, the mission's primary target was the Coptic Orthodox Christian community, then estimated at approximately 600,000.[7]

American Protestant missionaries pursued a strategy of "re-Christianization" of the Copts, seeking to bring the Bible to what they regarded as a spiritually degraded community (Sharkey 2013). American missionaries located their schools strategically in sub-districts with high Coptic population shares, directly targeting the community they aimed to convert (see Section 3). Archival evidence confirms this intent. In 1864, the missionary G. Lansing reported that the Coptic Patriarch "had sent there an excommunication against all the parents who should send their children to our school," and that the Patriarch "was there moving heaven and earth against us, and had even caused public prayers to be made in the church against our work in the upper country."

French Catholic Missions (1847–1900s). French Catholic missionaries entered Egypt slightly earlier. The Frères des Écoles Chrétiennes (Christian Brothers) arrived in 1847 and established the first Catholic school in Cairo, later founding free schools in Alexandria and Assiut that focused on education for poor children. The Jesuits (Society of Jesus) arrived in 1879 at the request of Pope Leo XIII and founded the Collège de la Sainte Famille in Cairo, which continues to operate today.[8]

In contrast to the American Protestants, Catholic missionaries adopted a more accommo-

[7]The mission grew rapidly, from approximately 600 converts by 1875 to 12,500 Protestants by 1900, which was the largest Protestant community in the Near East. Major institutions included Assiut College (1870s), Assiut Hospital (1891), and eventually the American University in Cairo (1919). The mission gave rise to the Evangelical Church of Egypt (the Coptic Evangelical Church).

[8]French Catholic missions were funded by French government subsidies and the Society for the Propagation of the Faith, and benefited from French diplomatic and consular protection.

dating approach. They sought to have the Coptic Church acknowledge the supremacy of the Pope in Rome while allowing Copts to continue following their own doctrines (Boulos 2016, Sadek 2015) and consequently, they were reportedly applauded for their tactfulness. This difference in missionary strategy—confrontational versus accommodating—has implications for understanding both the greater geographic reach of American missionaries throughout Egypt and the heterogeneous effects of Protestant versus Catholic missionary schools that we document in Sections 3 and 4.

The British Occupation and Missionary Growth. The British occupation of Egypt in 1882 marked a turning point for Protestant missionary activity. In 1878, the Khedive had recognized Protestantism as a state religion under foreign pressure, granting Protestant missionaries official representation. Following the British occupation, Protestants gained the right to build churches, greater freedom to purchase land, and expanded opportunities to open schools. The rapid growth of Western missionary schools after 1882 intensified the competitive pressure on the Coptic community.

Coptic Orthodox Christians constituted the largest non-Muslim minority in Egypt, representing approximately 7 percent of the population, and became the primary target of Western missionary conversion efforts. Muslims were largely immune to missionary activity because they were less targeted and (perhaps, relatedly) the death penalty for apostates, making the Coptic community the most exposed to the existential threat of conversion.

3 Data

3.1 Data Sources

Our primary data source consists of the 1907/08 and 1912/13 modern school censuses of Egypt (*Statistique Scolaire de l'Égypte*) that were conducted by British colonial authorities. These comprehensive school-level censuses record the universe of modern schools in Egypt, including each school's name, location, founding year, and administering body (state, local religious community, or foreign entity). We use both censuses because their coverage is complementary: a number of schools recorded in one census are absent from the other, and vice versa, due

to discrepancies in enumeration coverage.[9] The two censuses together record 2,518 modern schools.[10]

We classify schools into three broad categories based on their administering body: state schools; local community schools, disaggregated by religious group (Coptic Orthodox, Muslim including Waqf, non-Coptic Christian, and Jewish); and foreign schools, disaggregated into missionary schools—classified by denomination and nationality (American Protestant, British Protestant, German Protestant, French Catholic, Italian Catholic, Austrian Catholic)—and secular foreign schools.

The censuses record each school's founding year, which allows us to construct a retrospective panel of modern school counts—both cumulative counts and new entries—by sub-district and year for each school category covering the period 1825–1913, comprising 3,491 sub-districts.[11] The retrospective construction of the panel assumes that there were no modern schools that closed down before 1912/13 and that the surviving schools recorded in the censuses remained in continuous operation from their founding year through the census date. Both assumptions are defensible for non-state schools—including missionary, foreign secular, Coptic, Muslim, Jewish, and other community schools—for which we find no qualitative evidence of systematic closures. State schools, by contrast, experienced substantial closures following the decline of Muhammad Ali Pasha's modernization project. However, these closures occurred primarily between 1848 and 1868 (Saleh 2013), preceding the onset of missionary treatment for most sub-districts. Since both our treatment variable (missionary school entry) and main outcome (Coptic school supply) concern non-state schools, the no-closure and continuous operation assumptions are most defensible where they matter most for our analysis.

The censuses also record enrollment, number of teachers, and classrooms, but only as cross-sectional snapshots at the time of each census (1907/08 and 1912/13). Because these variables lack time variation, they cannot be used in the dynamic difference-in-differences framework that

[9] Four school-level censuses exist for this colonial period: 1906/07, 1907/08, 1912/13, and 1914/15. Starting from 1921/22 until 1951/52, school censuses were reported at the district level only, precluding sub-district-level analysis. We focus on the 1907/08 and 1912/13 censuses as they provide the most comprehensive sub-district-level coverage.

[10] The 1912/13 census records 2,098 schools, and the 1907/08 census records 420 additional schools that do not appear in the 1912/13 census. Schools appearing in both censuses are matched using name and location.

[11] The sub-district is the third administrative level below province and district. In rural Egypt, sub-districts correspond to villages (*qarya/nahya*); in urban Egypt, they correspond to quarters (*shiyakha*).

is central to our empirical strategy.

We geo-code schools to the sub-district level using the 1882 census list of sub-districts and 2006 census shape files. Because historical place names often have multiple transliterations, the geo-coding process required careful manual matching of historical and modern place names across multiple sources.[12]

3.2 Controls

We draw control variables from the 1897 Egyptian population census, which is the earliest available source of sub-district-level demographic data that reports religion.[13] Our controls include the sex ratio and the proportion of Copts in each sub-district, interacted linearly with year in our regressions to control for differential trends across sub-districts with different demographic compositions. Although the 1897 census postdates the onset of treatment for some sub-districts, the religious composition of Egyptian sub-districts was highly stable over time, so the 1897 Coptic share closely approximates pre-treatment demographic conditions.

3.3 Descriptive Statistics

Figure 1 shows the cumulative number of sub-districts with at least one missionary school and at least one local religious community school over the period 1825–1913. Missionary schools began entering new sub-districts earlier than local religious schools, with notable acceleration after the British occupation in 1882. Local religious community schools—predominantly Coptic—followed with a lag, expanding rapidly from the 1870s onwards. By 1913, the number of sub-districts with local religious schools had surpassed the number with missionary schools. Muslim community school construction began approximately half a century later than Coptic school construction, consistent with the lower exposure of Muslims to missionary conversion efforts. Jewish and non-Coptic Christian school construction remained limited in comparison because of their smaller population size and spatial concentration in a small number of sub-

[12] We first identify the province and district from the school census, then match the sub-district name to the 1882 census administrative units, and finally geo-locate the sub-district using the 2006 census maps.

[13] The 1848 and 1868 census samples constructed by Saleh (2013) are individual-level samples representative at the district level, not the sub-district level. The 1882 census, while available at the sub-district level, does not report religion.

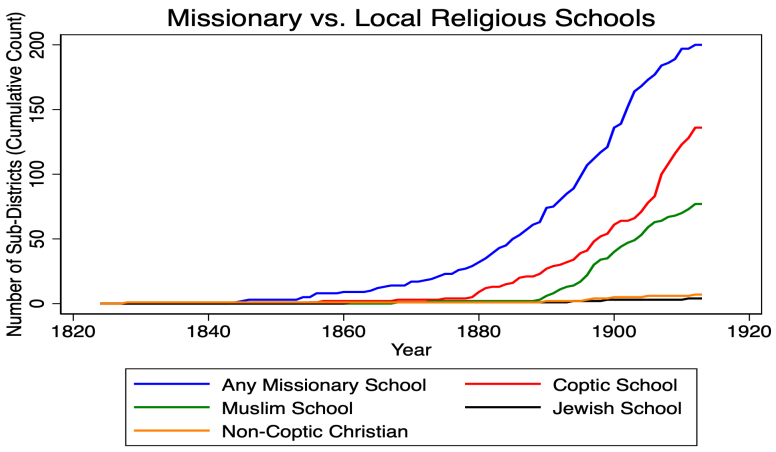


Figure 1: Egyptian Sub-Districts with Western Missionaries' and Local Religious Communities' Modern Schools (Cumulative Counts), 1825–1913

districts.[14]

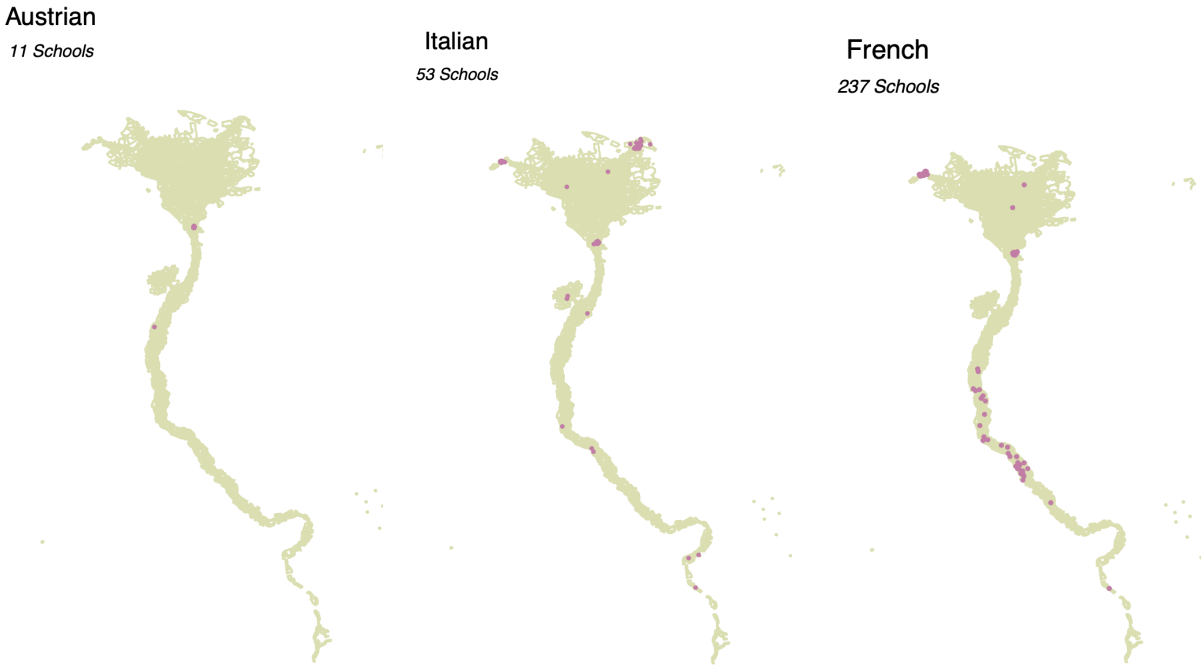
Figure 2 shows the spatial distribution of missionary schools in Egypt by nationality. Among Catholic missions, Austrian missionaries were concentrated in a few urban locations, Italian missionaries had a broader but still limited presence, and French missionaries—the largest Catholic group—operated schools across both Lower and Upper Egypt. Among Protestant missions, British missionaries concentrated in commercial hubs (Alexandria, Cairo, the Suez Canal zone), German missionaries had a limited presence, and American missionaries—by far the largest group—spread extensively into Upper Egypt, targeting sub-districts with high Coptic population shares (see Appendix Figure A.3), which is consistent with the historical evidence that the primary target of the American mission was the Coptic Orthodox community.

4 Empirical Analysis

4.1 Empirical Strategy

Our identification strategy exploits the staggered roll-out of Western missionary schools across Egyptian sub-districts. We estimate a dynamic difference-in-differences model with absorbing treatment—once a sub-district is treated by missionary school entry, it remains treated. The

[14]The temporal ordering—missionaries first, then Coptic schools—is consistent with our argument that Coptic school provision was a competitive response to missionary entry.



(a) Austrian (Catholic) (b) Italian (Catholic) (c) French (Catholic)



(d) British (Protestant) (e) German (Protestant) (f) American (Protestant)

Figure 2: Spatial Distribution of Western Missionary Schools in Egypt by Nationality, 1825–1913

estimating equation is:

$$Y_{it} = \sum_{\tau \neq -1} \beta_\tau D_{it}^\tau + \beta_2 X_{it} + \alpha_i + \phi_t + \varepsilon_{it} \tag{1}$$

where Y_{it} is the number of Coptic schools in sub-district i in year t. D_{it}^τ is an indicator equal to one if sub-district i has had missionary presence for exactly τ years in year t, where $\tau < 0$ denotes leads (pre-treatment periods), $\tau = 0$ is the treatment year, and $\tau > 0$ denotes lags (post-treatment periods), with $\tau = -1$ serving as the omitted reference period. β_τ captures the dynamic treatment effect at relative time τ. The vector X_{it} consists of time-varying controls: the sex ratio and proportion of Copts from the 1897 census, each linearly interacted with year. α_i denotes sub-district fixed effects, ϕ_t denotes year fixed effects, and ε_{it} is an error term, clustered at the sub-district level.

Our main estimation follows Callaway and Sant'Anna (2021), which addresses the well-documented problems with two-way fixed effects estimators in settings with staggered treatment adoption and heterogeneous treatment effects. The Callaway and Sant'Anna (2021) estimator computes group-time average treatment effects—where groups are defined by their treatment cohort (the year of first missionary school entry)—and then aggregates these into an event-study plot. In the Callaway and Sant'Anna framework, each period compares the change between the previous and current period across treated and control groups, so there is no single omitted reference period in the traditional sense.[15]

4.2 Threats to Identification

The validity of equation (1) rests on three main assumptions. First, the *parallel trends* assumption requires that, in the absence of missionary school entry, treated and control sub-districts would have followed parallel trajectories in Coptic school provision. As Roth et al. (2023) note, this assumption allows treatment to be assigned non-randomly based on characteristics that affect the *level* of the outcome, provided that selection is independent of time-varying factors that affect the *trend* in the outcome. In other words, treated and control sub-districts may differ in levels—and indeed they do, since missionaries targeted sub-districts with larger Coptic populations—so long as their counterfactual trends are parallel. Second, the *no-anticipation* assumption requires that

[15] For robustness, we also report estimates using the De Chaisemartin and d'Haultfoeuille (2020) and Sun and Abraham (2021) estimators. See Section 4.4.

the provision of Coptic schools should not respond to the future entry of missionary schools.

We provide two pieces of evidence in support for these assumptions. First, if both assumptions hold, the lead coefficients in our event-study estimates should be statistically insignificant and close to zero. We note that our controls—Coptic population share and sex ratio from the 1897 census, each linearly interacted with year—allow sub-districts with different demographic compositions to follow different linear trends in school provision over time. Controlling for Coptic population share is particularly important because Western missionaries explicitly targeted sub-districts with signficant Coptic population.

Second, we drop never-treated sub-districts as a robustness check, restricting the comparison group to sub-districts that eventually received a missionary school. This is our most demanding specification and our strongest test against selection bias. By comparing only sub-districts that were all, to some degree, attractive to missionaries, the identifying variation comes from the *timing* of missionary entry rather than the *incidence* of treatment. The stability of point estimates under this restriction (Section 4.4, Figure A.8) indicates that the results are not driven by the contrast between fundamentally different treated and never-treated sub-districts.

4.3 Results

4.3.1 Baseline Results

Figure 3 presents our baseline results from the Callaway and Sant'Anna estimator, showing the dynamic treatment effects of any missionary school entry on Coptic school supply. The pre-treatment coefficients are generally small and statistically insignificant, providing support for the parallel trends and no-anticipation assumptions. The post-treatment coefficients show a positive and increasing effect that becomes statistically significant starting from approximately year six after missionary school entry. The temporal lag of approximately six years is consistent with an organizational response by the Coptic establishment to missionary presence rather than with a pre-existing trend or an immediate level difference. Historical evidence indicates that the bottleneck was the provision of qualified teachers for the new secular subjects in Coptic modern schools.

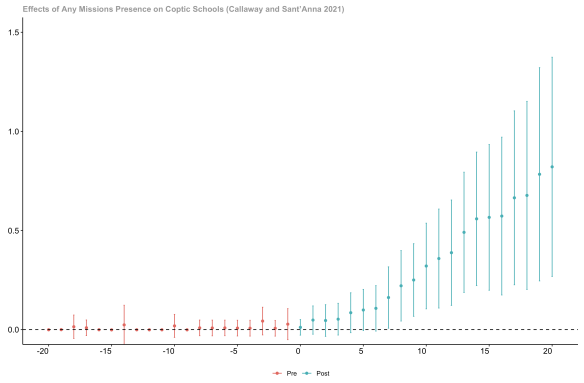


Figure 3: The Effect of Missionary School Entry (Any Denomination) on Coptic School Supply

Notes: Estimates are based on Callaway and Sant'Anna (2021) using the `DID` package in `R`. Controls are sex ratio and proportion of Copts in the 1897 census, each linearly interacted with year. There is no omitted period because each period compares the change between the previous and current period (short differences) across treated and control groups.

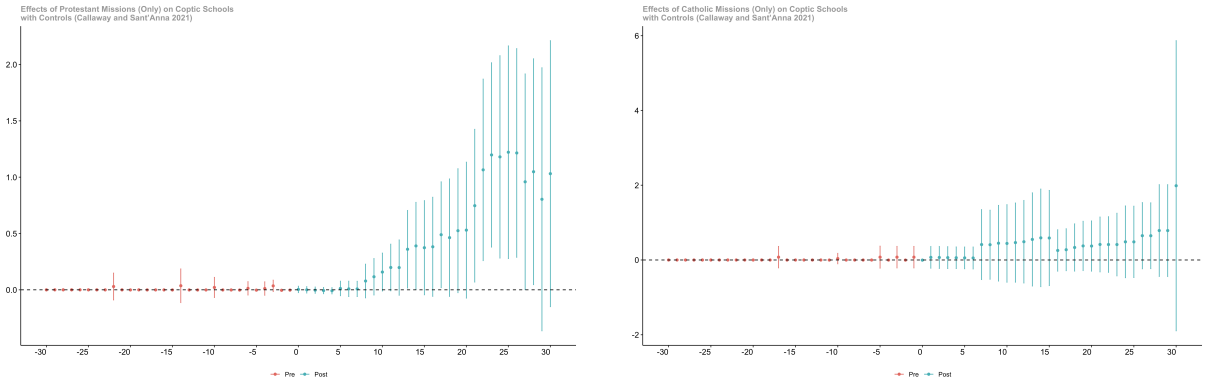
4.3.2 Heterogeneous Effects by Missionary Denomination

We next examine whether the effect varies by the denomination of the entering missionary school. Figure 4, Panel (a), presents the effect for Protestant missionary schools. To isolate this effect, we restrict the treated group to Protestant-only sub-districts, whereas the control group consists of both never-treated and not-yet-treated sub-districts. That is, we exclude from the treated group Catholic-only sub-districts and sub-districts with both Protestant and Catholic presence. The effect is positive, statistically significant, and of substantial magnitude, consistent with the historical evidence that American Protestant missionaries posed a significant existential threat to the Coptic community through their aggressive conversion strategy. Panel (b) presents results for Catholic missionary schools. Here, we restrict the treated group to Catholic-only sub-districts, whereas the control group consists of both never-treated and not-yet-treated sub-districts. The effect is considerably smaller and less precisely estimated, consistent with the fact that there were fewer sub-districts where Catholic schools operated alone without Protestant competition.

4.3.3 Heterogeneous Effects by Local Religious Group

To further establish that the competitive response was specific to the group targeted by missionaries, we examine effects on school provision by other religious groups.

Figure 5 presents results for Muslim school supply (including Waqf schools). We find no significant effect of missionary school entry on Muslim school provision, consistent with the



(a) Protestant Missionary Schools: Sub-Districts Where Catholic Schools Never Entered

(b) Catholic Missionary Schools: Sub-Districts Where Protestant Schools Never Entered

Figure 4: Effects by Denomination of Missionary Schools

Notes: Estimates are based on Callaway and Sant'Anna (2021). In panel (a), the sample is restricted to Protestant-only sub-districts and never-treated sub-districts. We exclude areas with *any* Catholic entry; that is, Catholic-only areas and areas with both missionary types are both excluded. In panel (b), the sample is restricted to Catholic-only sub-districts and never-treated sub-districts. We exclude areas with *any* Protestant entry; that is, Protestant-only areas and areas with both missionary types are both excluded. Controls are sex ratio and proportion of Copts in the 1897 census, each linearly interacted with year.

fact that Muslims were far less exposed to missionary conversion efforts. Appendix Figure A.5 presents results for non-Coptic Christian school supply (e.g., Armenian, Greek, Levantine communities) and for Jewish school supply. We find no significant effects in either case. The null results for non-Coptic Christians and Jews may partly reflect the smaller size of these communities and their spatial concentration in a handful of sub-districts, mainly in Cairo and Alexandria. Nonetheless, these null results strengthen the interpretation that the positive effect on Coptic schools reflects a competitive response to the specific existential threat that missionaries posed to the Coptic community.

4.4 Robustness Checks

We conduct several robustness checks to assess the sensitivity of our baseline results.

Alternative Estimators. We replicate our main results using two alternative estimators designed for staggered difference-in-differences settings: De Chaisemartin and d'Haultfoeuille (2020) and Sun and Abraham (2021). Both yield qualitatively similar results, confirming that our findings are not driven by the choice of estimator (Appendix Figures A.6 and A.7).

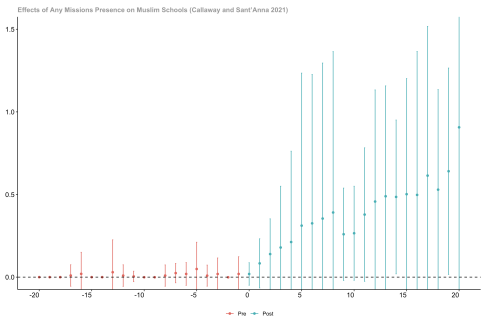


Figure 5: Effects by Local Religious Group: Muslim School Supply

Notes: The dependent variable is the number of non-state Muslim schools, including Waqf schools. Estimates are based on Callaway and Sant'Anna (2021). Controls are sex ratio and proportion of Copts in the 1897 census, each linearly interacted with year.

Dropping Never-Treated Sub-Districts. Our baseline specification uses both never-treated and not-yet-treated sub-districts as the comparison group. We check robustness by restricting the sample to eventually-treated sub-districts only, dropping those that never received a missionary school. The results remain qualitatively similar (Appendix Figure A.8).

Controlling for Western Secular Schools. To address the concern that Western secular (non-missionary) schools may confound our estimates, we exclude sub-districts where Western secular schools were ever present. The results are robust to this restriction (Appendix Figure A.9), suggesting that our findings reflect the competitive response to missionary—rather than secular foreign—school presence.

4.5 Mechanisms

Having established the positive effect of missionary school entry on Coptic school provision, we now examine the mechanisms through which this effect operated.

4.5.1 Coptic Conversion to Protestantism and Catholicism

The primary channel through which missionaries posed an existential threat was through successful conversion of Copts. Protestant and Catholic missionaries pursued different conversion strategies, as described in Section 2. The British occupation of Egypt after 1882 significantly facilitated the expansion of Protestant missionary activity: Protestants gained official recognition, the right to build churches, greater freedom to purchase land, and expanded opportunities to

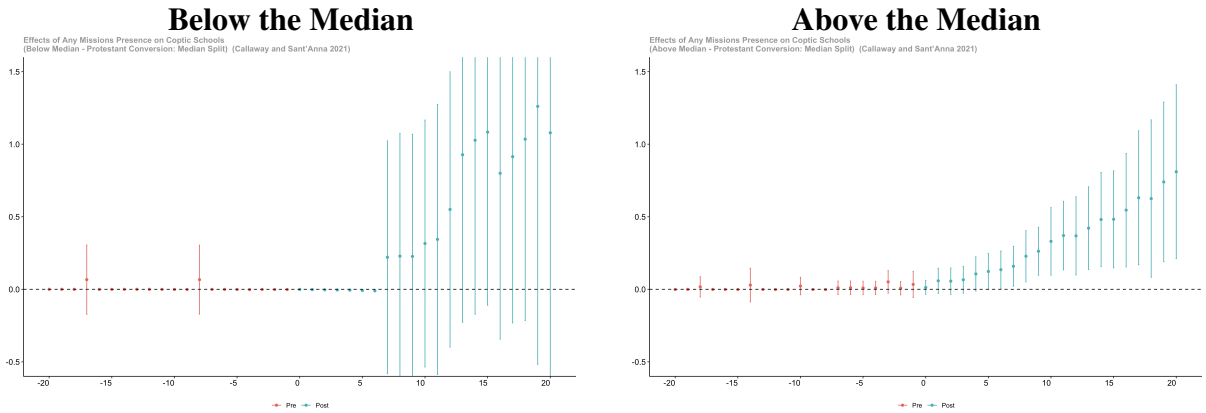


Figure 6: Coptic School Supply by Proportion of Coptic Converts to Protestantism in 1907

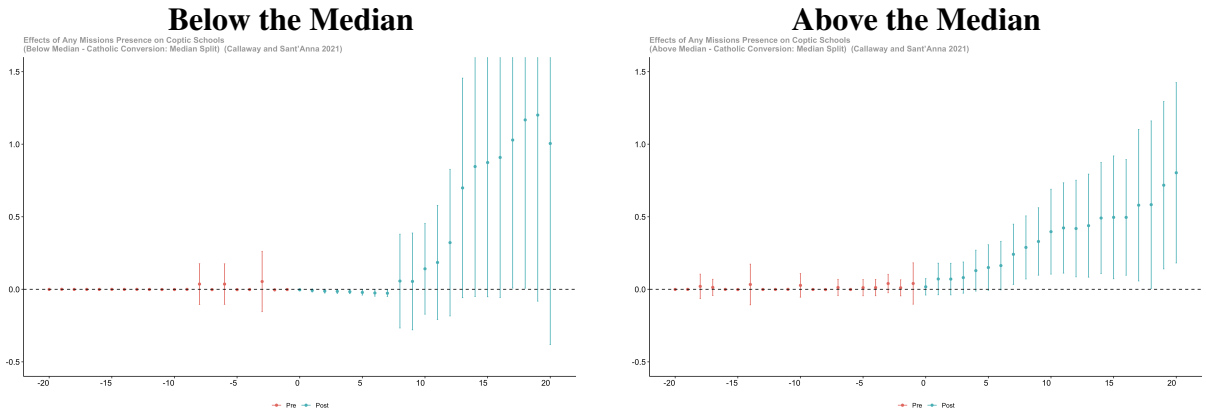


Figure 7: Coptic School Supply by Proportion of Coptic Converts to Catholicism in 1907

open schools.[16] The rapid growth of Western missionary schools after 1882 intensified the competitive pressure on the Coptic community.

We test whether the effect of missionary school entry on Coptic school supply is larger in sub-districts where missionary conversion was more successful, by splitting the sample at the median proportion of Coptic converts to Protestantism and Catholicism in 1907. Figures 6 and 7 show that the effect is indeed larger in sub-districts with a higher (above the median) proportion of Coptic converts, consistent with the interpretation that the competitive response was stronger where the existential threat of conversion was more acute.[17]

[16]We do not have a clean empirical design to isolate the effect of the British occupation on missionary expansion, as the occupation coincided with other political changes. However, the acceleration of missionary school construction after 1882 is clearly visible in the data (Figure 1).

[17]The interpretation of these heterogeneity results must be cautious, as the proportion of converts in 1907 is itself endogenous to the competitive dynamics we study. Sub-districts where missionaries were more successful in converting Copts are also sub-districts where, presumably, Coptic communities had weaker initial institutional capacity to resist. The fact that these are also the sub-districts with a stronger Coptic school response suggests that the competitive mechanism was powerful enough to overcome initial institutional weaknesses.

4.5.2 Coptic Religious-Secular Coalition

The Coptic response to missionary competition was organized through a coalition of religious and secular elites. Coptic Patriarchs Cyril IV (r. 1853–1861), Demetrius II (r. 1862–1870), and Cyril V (r. 1874–1927) led significant educational reforms, including the establishment of the Grand Coptic School, a Coptic School for Girls, a printing press, and programs for the teaching of foreign and Coptic languages. Funding came from both the Coptic Church and secular Coptic elites. A notable feature of the Coptic educational response was its non-sectarian character: Coptic schools generally adopted universal enrollment policies, opening their doors to students of other religious groups including Muslims.

Watson (1907), the first president of the American University in Cairo, illustrates the broader mobilization against missionaries. Watson reports that boys returned to Coptic schools after local sheikhs—who were Muslims and had no religious motive to interfere between Christian sects—threatened parents who sent children to missionary schools. This suggests that the competitive dynamic extended beyond purely religious channels and involved broader community and political networks.

4.5.3 State Withdrawal from Modern Education

The withdrawal of the Egyptian state from modern education provision plausibly created the macro-level conditions under which community-based provision became both necessary and feasible. State schools experienced mass closures after Muhammad Ali Pasha's reign, and the growth of state schools stagnated under the British occupation. This meant that domestic religious groups—particularly non-Muslim minorities who had been largely excluded from state schools—had to rely on community-funded schools.

We examine heterogeneous effects by the presence of state schools in 1912/13. Figure 8 shows that the effect of missionary entry on Coptic school provision is particularly pronounced in sub-districts *with* state school presence, whereas in sub-districts without state schools, the effect is attenuated. This pattern does not support a simple vacuum-filling interpretation in which Coptic schools substituted for absent state schools. If anything, state school presence may have represented an additional secularizing threat to Coptic elites, reinforcing the competitive

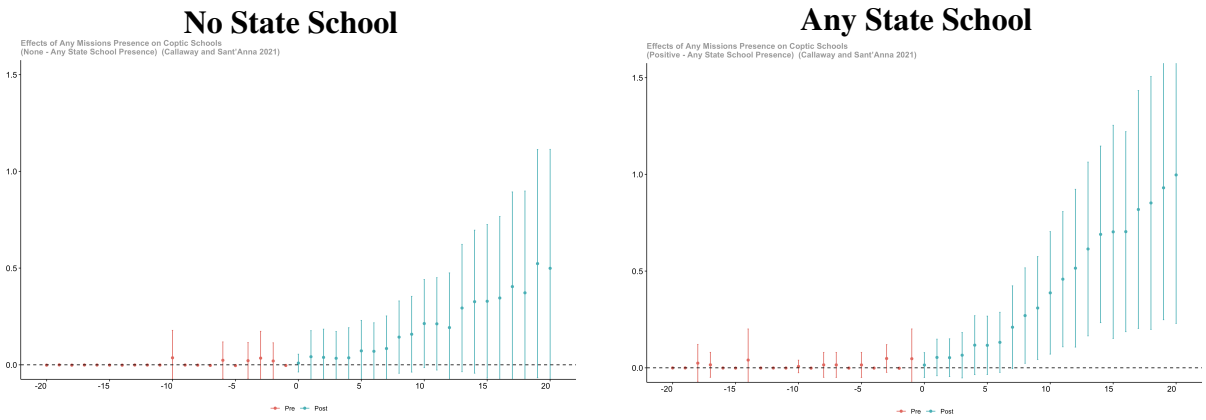


Figure 8: Coptic School Supply by Presence of State Schools in 1912/13

response. However, this sub-district-level heterogeneity analysis cannot isolate the aggregate effect of state withdrawal, which operated at the national level.[18]

5 Discussion and Conclusion

This paper examined how religious competition—driven by the external existential threat of Western missionary conversion efforts—affected public service provision by a religious minority in 19th and early 20th century Egypt. Using a novel sub-district-year level dataset spanning the universe of modern Egyptian schools in 1825–1913 and a dynamic difference-in-differences design (Callaway and Sant'Anna 2021), we showed that the entry of Western missionary schools led to a significant increase in Coptic modern school provision. The effect is concentrated among Protestant American missionary schools, is specific to the targeted Coptic community, and operates through a combination of conversion threats, British colonial facilitation of missionary activity, and Coptic elite coalition-building—all in the context of the withdrawal of the Egyptian state from modern education.

These findings carry two principal implications. First, we add nuance to the literature on ethno-religious heterogeneity and public service provision. While the prevailing finding in this literature is that diversity undermines public goods provision, we show that minorities can succeed at providing public services when faced with existential threats from external actors. Foreign influence can enhance minorities' production of public services through a competition

[18] State school presence in 1912 is itself a post-withdrawal outcome, so cross-sectional variation in state school presence compares sub-districts at different points within an already low-provision equilibrium rather than capturing the aggregate effect of state withdrawal.

mechanism triggered by an existential threat.

Second, we offer a revisionist view of the role of Western missionaries in economic development. While we do not dispute that Western missionaries created positive aggregate-level economic outcomes, we show that an important mechanism operates through the competitive response of local actors to conversion threats. Missionaries' positive effects on human capital may reflect not only the schools they built, but also the schools that indigenous communities built in response. Understanding local agency under colonialism is essential for a complete account of how missionary activity shaped long-run development.

A natural question is how large the indirect channel is relative to the direct provision of education by missionaries themselves. Our data allow a suggestive comparison: by 1907/08, private schools by local religious communities constituted approximately 52 percent of all local modern private schools, exceeding the 41 percent accounted for by all foreign schools combined. The indirect competitive response thus generated a volume of modern schooling of a similar order of magnitude to the direct missionary contribution—suggesting that studies focusing exclusively on missionary-built schools may substantially understate the total effect of missionary presence on education.

More broadly, the competitive dynamics we identify in Egypt may have operated in other settings where Western missionaries targeted indigenous religious communities. American and French missionaries were active across the Ottoman Empire, including Greater Syria (Lebanon, Syria, Palestine, Jordan) and Anatolia, where they similarly targeted local Christian communities—Syrian Orthodox, Maronites, Greek Orthodox, and Armenians—triggering educational responses by local religious institutions. Christians in Kerala, India, undertook similar modernization efforts in response to Western missionary presence. Systematic comparative analysis of these cases would help establish the generalizability of the mechanisms we document and clarify the conditions under which existential threats from external actors generate private-order public goods provision.

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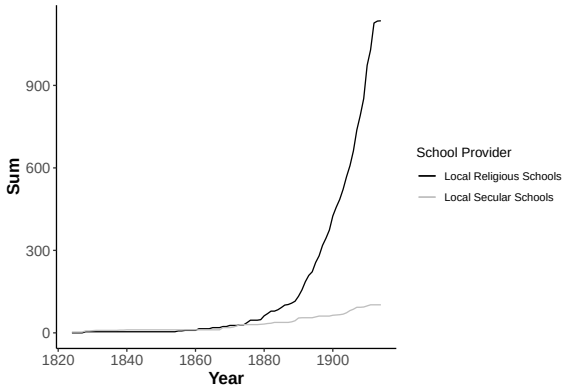


Figure A.1: Local (Non-State, Non-Foreign) Schools by Religious Community, 1825–1913

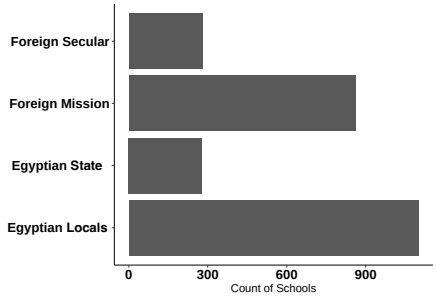


Figure A.2: Modern Schools Built between 1825 and 1913, by Type

Online Appendix

A Additional Figures

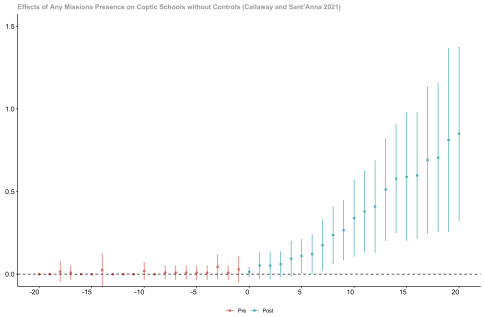


Figure A.4: Any Missionary School Entry and Coptic School Supply—Without Controls

Notes: Estimates are based on Callaway and Sant'Anna (2021) without control variables.

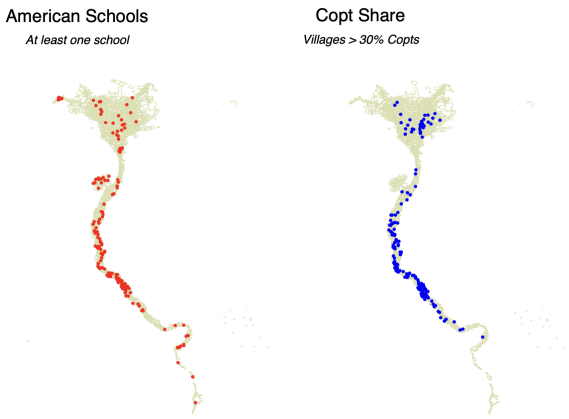
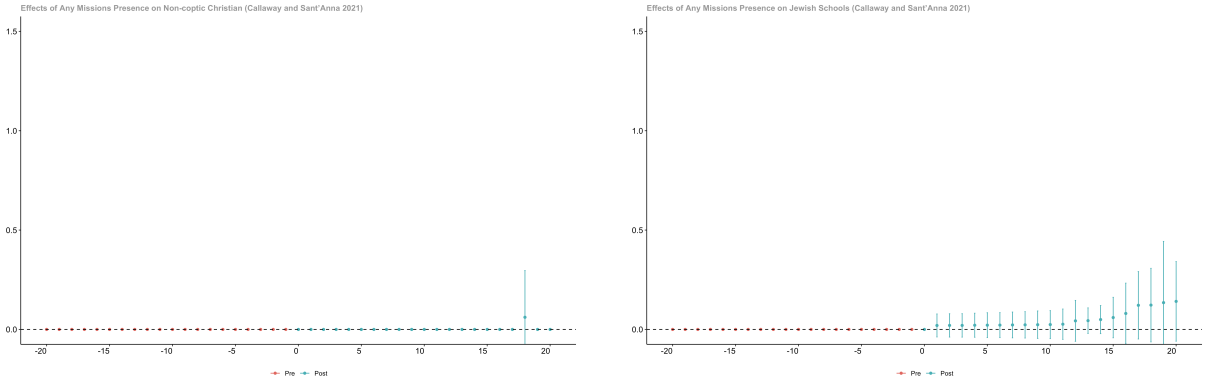


Figure A.3: Locations of American Missionary Schools and Villages with High Copt Share



(a) Non-Coptic Christian School Supply

(b) Jewish School Supply

Figure A.5: Effects by Local Religious Group: Non-Coptic Christian and Jewish School Supply

Notes: The dependent variable in panel (a) is the number of non-state schools administered by local non-Coptic Christian communities (e.g., Armenians, Greeks, Levantines). The dependent variable in panel (b) is the number of non-state schools administered by local Jewish communities (e.g., Karaites, Rabbinites). Estimates are based on Callaway and Sant'Anna (2021).

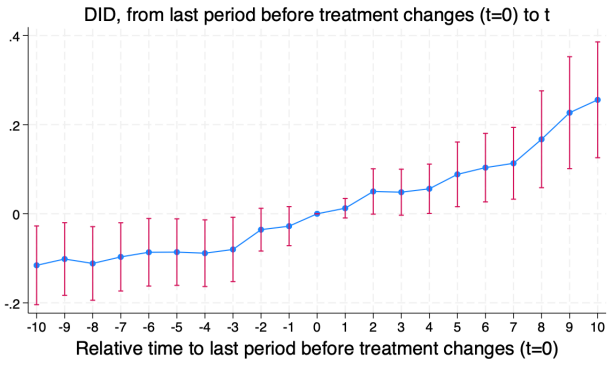


Figure A.6: Any Missionary School Entry and Coptic School Supply—De Chaisemartin & D'Haultfoeuille (2020)

Notes: Alternative estimator for robustness. Controls are sex ratio and proportion of Copts in the 1897 census, each linearly interacted with year.

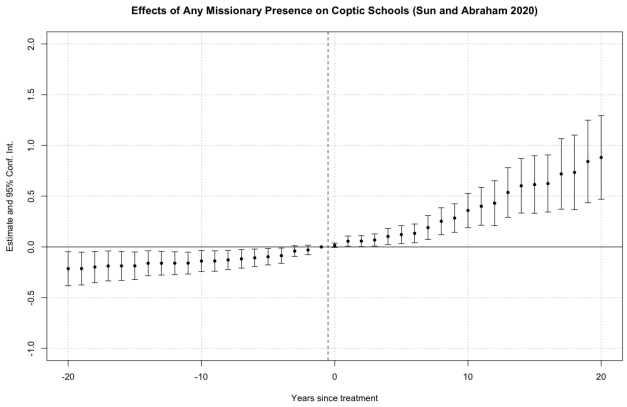


Figure A.7: Any Missionary School Entry and Coptic School Supply—Sun & Abraham (2021)

Notes: Alternative estimator for robustness. Controls are sex ratio and proportion of Copts in the 1897 census, each linearly interacted with year.

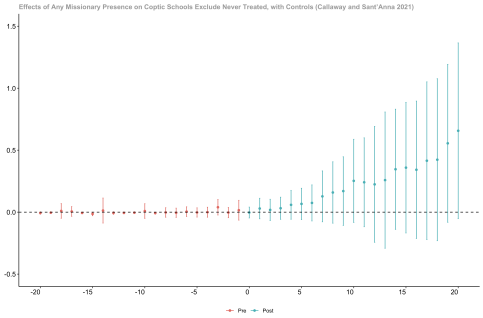


Figure A.8: Any Missionary School Entry and Coptic School Supply—Excluding Never-Treated Sub-Districts

Notes: Sample restricted to eventually-treated sub-districts. Estimates are based on Callaway and Sant'Anna (2021).

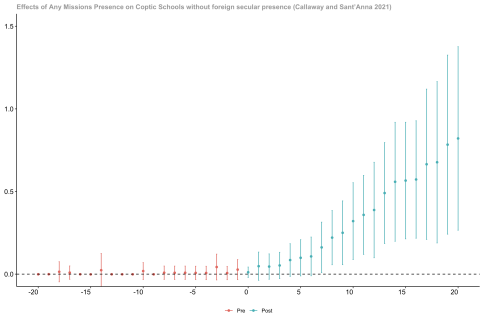


Figure A.9: Any Missionary School Entry and Coptic School Supply—Sub-Districts Where Western Secular Schools Never Entered

Notes: Sample excludes sub-districts with any Western secular school presence. Estimates are based on Callaway and Sant'Anna (2021).