

CIVIL WAR, STATE CONSOLIDATION,
AND THE SPREAD OF MASS EDUCATION

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Why do some governments provide more public goods than others? Focusing on the case of public education, this article is motivated by the puzzle that historically, in Latin American and European countries, primary education systems emerged and achieved considerable expansion during non-democratic regimes and in the absence of popular demand for education. Why did political elites have an interest in setting up these costly systems in the absence of electoral incentives to do so? Based on historical evidence for select cases, I posit that instances of widespread internal political disorder such as civil wars propelled elites to use mass education as a means to instill values that would help prevent future rebellions against their authority. The statistical tests for this argument focus on assessing how a legacy of civil war impacts post-war investments in education provision. I exploit the geographic concentration of civil war in mid-nineteenth century Chile, and show that in the aftermath of the 1859 civil war—the causes of which had nothing to do with education provision—the central government made an unprecedented investment in mass schooling, and the expansion was greatest in those provinces that had rebelled against it. I also show the generalizability of this argument in non-parametric difference-in-difference estimates of the impact of civil war using original data on primary education enrollment rates for Latin American and European countries beginning in 1830. Overall, the paper conceptualizes mass education less as a service for ordinary citizens and more as a tool used by political elites to consolidate power.

Ernest Gellner famously argued that “the monopoly of legitimate education” is a “more important” tool of state power “than is the monopoly of legitimate violence” (Gellner 1983: 33). Education systems, he claimed, are an instrument for nation-building used by states in modern, industrial societies. This state-centered explanation of education provision contrasts sharply with more recent political economy theories. For the past twenty years, political economy has conceptualized the provision of primary education as a form of progressive redistribution that raises the human capital of the poor; and, drawing on median voter models that predict increased redistribution when the poor can vote, has argued that educational expansion is driven not by state goals but by democratization (Baum and Lake 2003; Lindert 2004; Stasavage 2005; Ansell 2010; Gift and Wibbels 2014).¹ But the emphasis on democracy and the voice of the poor in theories of why some governments provide more education than others overlooks a key historical fact that I have documented elsewhere:² around the world, state-controlled primary education systems emerged under non-democratic regimes and achieved considerable expansion well before the poor were enfranchised. In particular, in Europe and Latin America, the two regions that are the focus of this paper, a majority of school-age children were already enrolled in primary schools well before countries first transitioned to democracy (see Figure 1).

The central puzzle that emerges from this historical fact is this: Why did political elites incur the cost of setting up and expanding primary education

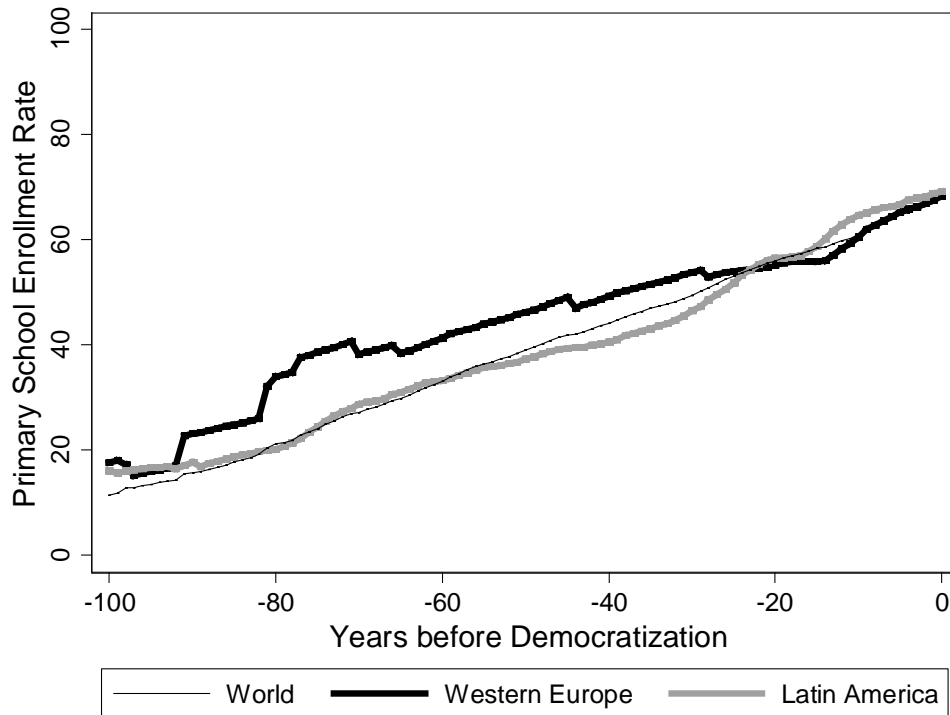
¹ See also Brown 1999; Mariscal and Sokoloff 2000; Lake and Baum 2001; Lindert 2002; Baum and Lake 2003; Brown and Hunter 1999, 2004; Stasavage 2005; Acemoglu, Bautista, Querubin and Robinson 2007; Go and Lindert 2010; Naidu 2013; Harding and Stasavage 2013; Hoffman 2015.

² Paglayan 2017.

systems in the absence of electoral incentives for mass redistribution? To address this question, this paper brings back the statist conceptualization of education provision present in [Gellner's \(1983\) *Nations and Nationalism*](#) and in other classic works such as [Weber's \(1976\) *Peasants Into Frenchmen*](#) and [Green's \(1990\) *Education and State Formation*](#). Like these authors, I argue that primary education systems emerged and expanded as a means to serve the state's nation-building goals. Where I depart from existing state-centered theories is in the explanation I provide for *why* political elites sought to instill common national values, beliefs and behaviors. Scholars have argued that elites' interest in the "socialization" or "nation-building" function of schools was prompted by the demands of an industrial economy and urban society ([Gellner 1983](#); [Weber 1976](#); [Bowles and Gintis 1976](#)) or the need to fight inter-state wars ([Ramirez and Boli 1987](#); [Tilly 1990](#); [Aghion, Jaravel, Persson and Rouzet 2013](#)). Schools, according to this literature, were used to create loyal and skilled workers or soldiers. I posit that a key reason why mass schooling emerged was the need to address problems of internal political disorder.

I argue that instances of widespread internal political disorder that constituted a threat to political elites' authority, such as peasant revolts and civil wars, were a key historical factor that prompted elites to turn to mass primary schooling as a means to contain future political instability—not by buying off rebels through redistribution, but by using schools to instill values of order, obedience, and respect for the rule of law that, elites hoped, would help prevent future mass rebellions against the state's authority.

Figure 1. Average Primary School Enrollment Rate before Democratization



SOURCE: Primary school enrollment rates (as a percentage of the school-age population) from Lee and Lee (2016); timing of democratization from Boix, Miller and Rosato (2012).

I illustrate this theory with qualitative evidence on what political elites had to say about their reasons for providing mass primary education in two canonical cases that became models for elites around the world: absolutist Prussia in the eighteenth century and oligarchic Argentina in the nineteenth century. The theory I propose, and the qualitative evidence that informs it, runs counter to the common wisdom that civil conflict lowers educational access and reduces the incentive to invest in state capacity (Boli, Ramirez and Meyer 1985; Collier et.al. 2003; Besley and Persson 2008, 2010; Cardenas 2010; Shemyakina 2011; Chamarbagwala and Moran 2011; Swee 2009; Leon 2012; Blattman and Miguel

2010; UNESCO 2011). It also challenges existing arguments that mass education constitutes a threat to autocrats and, as result, autocrats will not provide it (e.g., Lipset 1960; Huntington 1991; Bourguignon and Verdier 2000; Acemoglu and Robinson 2000).

The main empirical tests of this theory focus on assessing how a legacy of civil war impacts post-war investments in primary education. I use country-level data to assess the theory's generalizability, and subnational data to better identify the presence of a causal relationship and its underlying mechanisms.

First, to determine whether civil wars generally increased the incentives to expand access to primary schooling, I estimate non-parametric difference-in-differences models of the impact of civil war using an original panel dataset of primary school enrollment rates for European and Latin American countries beginning in 1830. I find that civil wars led to an increase in primary school enrollment rates of 10 percentage points in the post-war period, a large effect considering that the average pre-war enrollment rate was 20%.

Next, to improve on the internal validity limitations inherent in country-level analyses and examine the plausibility of competing mechanisms, I focus on the relationship between civil war and primary education provision in nineteenth-century Chile. I exploit within-country geographic variation in the exposure to the 1859 civil war—the causes of which had nothing to do with education—and show that in the aftermath of the war the central government made an unprecedented effort to construct primary schools, and the effort was concentrated in those provinces that had rebelled against it. Using quantitative and qualitative evidence, I show that this differential expansion of primary

schooling in rebelling provinces was not driven by rebels' demand for education, by differences in local state capacity, by the central government's interest in promoting certain sectors of the economy, or by war-induced increases in the central government's capacity.

Overall, the paper shows that primary education for the masses emerged less as a form of redistribution toward the poor and more as a tool to serve political elites' interest in building and consolidating the state's power. In addition to contributing to the expansive literature on the comparative politics and political economy of education provision, the paper has important implications for the literatures on state capacity, civil war, the sources of legitimacy in autocratic regimes, the determinants of public goods provision, and the political economy of development.

2 Political Order and the Spread of Mass Primary Education

Setting up mass primary education systems was a costly endeavor. Schools had to be constructed; teachers had to be recruited and trained in accordance with state goals; textbooks had to be printed and distributed; inspectors had to be deployed to enforce regulations and report back to central authorities on the state of education provision throughout the territory.

Why did political elites incur the cost of setting up and expanding these systems well before the extension of the franchise to the poor? Where did their incentives stem from if not from mass electoral pressure for redistribution? These questions, which so far have received little attention by political scientists, are a

central piece to the puzzle of why some governments provide more education than others.

The existing literature on this question, although scant, provides three main answers: diffusion, industrialization, and inter-state wars. The diffusion theory holds that state-controlled primary school systems first emerged in Europe during the eighteenth and nineteenth centuries as part of the formation of modern Nation-States, and then spread to the rest of the world because of a prevalent idea that these systems were an indispensable part of the recipe for nation-building ([Ramirez and Boli 1987](#)). While it is true that education systems first emerged in Europe; that the rest of the world looked at Europe—especially Prussia—for inspiration; and that education systems became a common feature of modern states' activity, the diffusion theory does not explain *when* or *why* nation-building efforts emerged, and therefore cannot account for the differences in the timing of educational expansion across countries.

The industrialization theory is based on the premise that when the rich are in power, their incentives to provide education to the masses will depend on the economic activities that the rich participate in. While land owners may oppose education provision fearing that this will lead workers to migrate to the cities and thus raise agricultural wages ([Galor, Moav and Vollrath 2009](#); [Wegenast 2010](#)), pressure for education provision may stem from assembly-line factory owners in need of a large workforce that can read manuals, communicate in a common language, and follow instructions ([Bowles and Gintis 1976](#); [Gellner 1983](#)). Although logically plausible, industrialization has lost weight as an explanation of what drives governments to set up costly mass education systems because the

emergence of these systems tended to precede industrialization ([Ramirez and Boli 1987](#); [Green 1990](#); [Goldin 1998](#); [Goldin and Katz 2009](#)).

Another possibility is that elites set up mass education systems in response to the need to fight interstate wars. Historically, the fact that in both Europe and Latin America public education systems and centralized bureaucracies emerged at the same time ([Brockliss and Sheldon 2012](#)) suggests that the two phenomena were driven by a common cause—and, at least for the case of Europe, a clear candidate cause is the need to fight interstate wars ([Tilly 1990](#); [Besley and Persson 2011](#)). Indeed, [Ramirez and Boli \(1987\)](#) and more recently [Aghion, Jaravel, Persson and Rouzet \(2013\)](#) argue that education systems were put in place to help states win war. By transmitting “basic knowledge in calculus, reading and reasoning skills; . . . group discipline; . . . and . . . patriotic values against neighboring countries” ([Aghion et.al. 2013: 11](#)), schools would help generate a large pool of loyal and skilled soldiers and also raise aggregate income and the available tax base to fight war effectively.

While interstate wars may have fed European elites’ interest in education and state-building, in Latin America interstate wars do not appear to have been a key factor in state-building ([Centeno 1997](#)) nor is it likely that they played a central role in explaining post-independent states’ involvement in the provision of mass education. This is because most of the fighting that took place after independence and throughout the nineteenth century—the period when states set up mass education systems—took the form of civil wars, with interstate wars accounting for only one fourth of the fighting in 1810-1900 ([Centeno 1997](#)).

Without denying that interstate wars may have fed political elites' interest in mass education, especially in Europe, I argue that instances of widespread *internal* political disorder such as peasant revolts and civil wars led political elites to turn to schooling as a means to instill beliefs and behaviors that would help prevent future mass rebellions against their authority.

Political elites' idea that mass schooling could be used to "moralize" the masses so they would behave in "civilized" ways is well known to historians. What is novel about the argument I advance is that this idea alone was insufficient to prompt elites to invest in schooling; and that the experience of political instability and widespread internal disorder within the territories that they ruled played a crucial role in triggering a change in the status quo of policies that elites had used until then to promote order.

Schools were seen as vehicles to promote order for two reasons. In the short term, placing children and the youth in schools meant keeping them off the streets (or the countryside), and could help contain their participation in rebellions. In the long term, and more importantly, schools were seen as a tool that, if properly designed, would prevent future adults from developing a desire to rebel against authority.

To be sure, the provision of schooling was a non-obvious policy choice, as education had the potential to empower the masses to question the established order (Lipset 1960; Huntington 1991; Bourguignon and Verdier 2000; Acemoglu and Robinson 2000). Elites were aware of this risk. To minimize it, they established a centralized curriculum, the content of which depended on what they thought was the best way to promote respect for authority; and introduced

teacher training and recruitment policies and institutions to ensure that teachers shared the state's educational goals. Some scholars refer to schools' emphasis on the inculcation of specific values as "socialization" (Bowles and Gintis 1976; Pritchett 2002). Elites setting up these systems referred to it as the "moralizing" function of schools.

Why didn't elites just rely on repression to deter and contain disorder? Here, it is important to recall that mass education in Europe and Latin America emerged when central authorities were trying to extend and consolidate their power over a large territory (Green 1990; Brockliss and Sheldon 2012). This required an array of strategies which included investments in the military, in communication systems, in tax collection, and in education. Primary education systems enabled the central authority to penetrate the territory and control mass behavior through *ideology*—something schools were uniquely positioned to accomplish. Elites believed that targeting children and shaping their beliefs and behaviors at the age when human minds are most susceptible would help prevent future disorder and rebellion in ways that repression could not. Repression could sometimes deter adults who had a reason to rebel from actually doing so out of fear of the consequences. Mass education was envisioned as a way to convince future adults that they had no reason to rebel in the first place.

This argument contrasts sharply with existing theories of how internal conflict affects the incentives to invest in state capacity. Some scholars have argued that conflict had nothing to do with the expansion of mass schooling; and that, when "facing problems of disorder," elites "relied on straightforward repression . . . Expanding the educational opportunities of the disorderly or potentially

disorderly classes was unthinkable . . . when maintaining order was seen as most problematic” (Boli, Ramirez and Meyer 1985: 154-5). A second set of studies claims that conflict *reduces* educational access and the incentive to invest in state capacity (Collier et.al. 2003; Besley and Persson 2008, 2010; Cardenas 2010; Shemyakina 2011; Chamarbagwala and Moran 2011; Swee 2009; Leon 2012; Blattman and Miguel 2010; UNESCO 2011). A common trait of these studies is that they focus only on the short-term effects of conflict. I agree that during civil war it is unlikely that the state will prioritize the expansion of schooling, and will instead focus on winning the war. What I argue is that, in the long-run, having experienced a civil war is likely to lead to levels of education provision above and beyond what we would have seen had the war not occurred.

3 Illustrative Historical Cases

Two canonical cases, Prussia and Argentina, help illustrate the argument that widespread internal political disorder often triggered political elites to set up mass primary education systems as a means to prevent future disorder and consolidate power. Absolutist Prussia and oligarchic Argentina were leaders in education provision in Europe and Latin America, respectively. Elites from other parts of the world often traveled to learn about these education systems and gather ideas they could introduce in their own countries. Because the education systems of Prussia and Argentina became models for other countries, understanding how political elites in Prussia and Argentina thought about education is important not only because of what it tells us about these early cases but also because the ideas that these elites had about the benefits of education shaped the thinking of elites in the rest of Europe and Latin America.

3.1 Peasant Revolts and Primary Education in Prussia

The *General School Regulations for the Rural Schools* signed by Frederick II in 1763 established compulsory primary schooling throughout the monarchy. Some authors have argued that its timing, which coincided with the end of the Seven Years War, indicates that “the union of state and schools . . . was sparked by a clear challenge to Prussia’s position in the European state system” (Ramirez and Boli 1987: 153-4). What this argument overlooks is that in 1754, two years before the outbreak of the Seven Years War, Frederick II had already approved educational plans very similar to those introduced in 1763, the implementation of which had to be suspended when the war broke out. Nor was mass education conceived as a strategy to disseminate a common religion or language—schools were allowed to teach Protestant or Catholic religion (Lamberti 1989: 15), and multiple languages were allowed (Melton 2002).

What, then, led Frederick II to turn his attention to education? In his book on the origins of primary schooling in eighteenth-century Prussia, James Melton (2002) documents the link that existed between the king’s interest in education and the peasant revolts that arose in the countryside in the 1740s and 1750s. During the first half of the eighteenth century, economic changes including the rise of a landless class of rural day laborers and the purchase of estates by wealthy individuals who did not live in them had led to an eroded sense of duty from peasants toward landed elites (Melton 2002: 147; Schleunes 1989: 20). In this context, when grain prices increased in the 1740s and 1750s, and landowners responded by increasing the number of days that they obliged peasants to work for them, peasants responded by revolting.

What peasants demanded was a reduction in their labor obligations. “Strikes and rebellions increased in number and intensity during the middle decades of the eighteenth century” (Melton 2002: 149). Prussia became immersed in “a period of protracted social and political instability” marked by “thievery and banditry” and “a propensity toward disobedience and disorder” (Schleunes 1989: 18). As revolts spread throughout the countryside, the unrest became “an urgent political issue” (Melton 2002: 151).

Frederick II responded with two policy innovations: agrarian reform and the creation of a public primary education system for the rural lower class. Agrarian reform—specifically, the king’s order that lords reduce the number of days they required peasants to work—was envisioned as a means to appease peasants (Melton 2002: 152-4). However, in a society where order had been maintained by the physical, coercive presence of the lord, these reforms by themselves were insufficient. The central dilemma that the changes in the agrarian economy posed for the king was: How could peasants’ obedience in the periphery be maintained once the coercive role of the lord was removed? (Melton 2002: 152; Schleunes 1989: 38).

State-controlled schooling emerged as a mechanism to solve this dilemma. In the past, peasant discipline had been instigated by the threat of external coercion. Now, as those mechanisms of coercion began to erode, the state turned toward a new mechanism, self-coercion, or the internalization of values of loyalty, obedience, and devotion to the king. The primary goal of mass schooling as conceived by the Prussian state was to mold the moral character of peasants.

Individual character was assumed to be especially malleable during childhood, placing schools in a unique position to cultivate a moral character that would promote order.

Reflecting on this objective, Johann Felbiger—advisor on education issues to Frederick II and to Maria Theresa in Austria—wrote that students “must be convinced that it is useful and correct to follow the schoolmaster’s wishes. Only then will they learn to obey even in situations where force is absent. In this way, the schoolmaster accomplishes his most important task: his pupils will observe their duties not only in school, but throughout their lives” (cited in [Melton 2002: 187](#)). Similarly, Carl Egon von Furstenberg, governor of Bohemia in 1771-1782, argued that the future stability of society depended on peasant education: “As long as the peasant’s moral character is not reformed, his indolence and resentment toward his lord will persist . . . But if one improves his character . . . this education will muffle his discontent and suppress the dangerous impulses bred by constant maltreatment” (cited in [Melton 2002: 165](#)).

To cultivate children’s moral character, the *General School Regulations* of 1763 established a curriculum that focused on religion, reading, writing, and “loyalty, obedience and devotion to the King,” teaching students that “to resist authority is to rebel against divine order” (Felbiger, cited in [Melton 2002: 186](#)).

Political elites were explicit that the goal of schooling was not to empower peasants but to convince them to accept their social role as peasants. Frederick II claimed that “we do not confer upon the individual or upon society any benefit

when we educate him beyond the bound of his social class and vocation” (cited in [Ramirez and Boli 1987: 5](#)). Carl Zedlitz, appointed by Frederick II to head the Ecclesiastical Department in charge of overseeing compulsory primary schooling, noted that “one must teach the peasants what they need to know, but in such a manner that they will not flee the countryside, but remain there contentedly” (cited in [Melton 2002: 188](#)). Latin was prohibited in rural schools because it was believed that “peasants who have learned Latin . . . are in all respects the most disobedient”; and children in rural areas were forbidden from studying beyond the elementary level to prevent them from migrating to the cities ([Melton 2002: 188](#)).

While historians generally agree that compulsory schooling was conceived by Prussian autocratic rulers “as a mechanism of social control to indoctrinate children in political submissiveness” and prepare the masses for their role as subjects ([Barkin 1983: 32](#)), whether schools attained this goal is unclear. Implementation of the 1763 regulations was not straightforward owing in part to the lack of an adequate number of trained teachers and to peasants’ resistance to send their children to school, whom they needed to work in the field and at home ([Melton 2002: 175-180, 195](#)).

3.2 Civil War and Primary Education in Argentina

In Argentina, the *Law of Common Education* of 1884, known as Law 1420, marked the beginning of the central government’s role in regulating, funding, and providing primary education. Expert historian Juan Carlos Tedesco argues that “first and foremost, the diffusion of schooling was linked to the accomplishment of

internal political stability . . . It was believed that education, to the degree that it massively diffused certain [moral] principles, would effectively contribute to the goal of eliminating pockets of resistance to the central government that remained especially in the interior of the country.” (Tedesco 1986: 64).

The “pockets of resistance . . . in the interior of the country” that Tedesco refers to are the warlords who challenged the authority of Buenos Aires elites. Following independence, Argentina became immersed in a series of intermittent civil wars that lasted from 1814 to 1880. These wars were fought by political elites in Buenos Aires who wanted a unitary government with monopoly control over the revenues of the Buenos Aires port, and by warlords in the interior of the country who wanted a federation of autonomous provinces and access to the port’s revenues. The armed conflict ended in 1880 with the federalization of Buenos Aires—what the interior provinces had fought for—but also the election of Julio Roca as president, who led the formation of a centralized state bureaucracy that gave elites in Buenos Aires the ability to exert national influence (Oszlak 2012).

In the realm of education, the most influential politician under Roca’s presidency was Domingo F. Sarmiento. An advocate since the 1840s for the establishment of a national primary education system, Sarmiento had been governor of San Juan (1862-64), President of Argentina (1868-74), and Minister of the Interior (1879) before he was appointed by Roca as Superintendent General of Schools and charged with the responsibility to draft the bill that eventually became Law 1420.

Sarmiento's belief in the importance of state-controlled mass primary schooling was deeply shaped by his understanding of what were the causes of the Argentine civil wars of 1814-1880, the subject of his book *Facundo: Civilization and Barbarism*. In a nutshell, Sarmiento believed that warlords' lack of education, as well as the lack of education of the rural masses they recruited to fight with them, were to blame for the violence and chaos of Argentine political life during 1814-1880; and saw primary education as the main vehicle to eradicate "barbarism" and ensure political order and stability throughout the territory (Sarmiento 1845, 1849; Bravo 1993).

In his book *Educacion Popular*, in which he further developed his ideas about the need for a national primary education system, Sarmiento writes that "Primary instruction must be exclusively devoted to moral development and to the maintenance of social order" (Sarmiento 1849: 23). "The masses are less inclined to respect lives and property to the degree that their reasoning capabilities and moral sentiments are not cultivated. For selfish motives, thus, of those who today have greater advantages within society, there must be an effort to temper that instinct to destroy that now exists" (Sarmiento 1849: 48). Citing French statistics on the relationship between crime and literacy, he argued that primary "instruction moralizes the masses, as observed in the fact that there are relatively more criminals among the illiterate population than among those who are literate" (Sarmiento 1849: 36).

Law 1420, passed in 1884, mandated primary education for all children ages 6 to 14; established that education ought to be free and secular; set teacher

certification requirements, including the requirement to prove “moral competence” and to graduate from a Normal School regulated by the central government; established funding mechanisms to expand education; and gave the central government the responsibility to monitor compliance with regulations through a system of inspectors, implementation of School Censuses, and regular gathering of education statistics. In addition to its influence on education provision in Argentina until today, this law, and the ideas that gave rise to it, also shaped conceptions about the role of education elsewhere in Latin America ([Bravo 1993](#)).

4 Civil War and Primary Education: Cross-Country Evidence

The accounts for Prussia and Argentina provided in the previous section help illustrate the theory that widespread internal political disorder was a key factor that prompted political elites to turn to education provision as a strategy to prevent future instability. But are these accounts an accurate representation of elites’ thinking, and does the theory travel to other places besides Prussia and Argentina? To address these concerns, I examine what the statistical evidence has to say about the relationship between civil war and primary education provision in Europe and Latin America, using an original longitudinal dataset of country-level primary school enrollment rates beginning in 1830. My theory is not exclusively about civil wars, but I test the argument for this type of internal political disorder because conventional wisdom suggests that civil wars should reduce, not increase, the incentives to invest in state capacity. If, contrary to common wisdom, we find evidence that civil wars triggered investments in the state’s educational infrastructure, then the argument that other types of disorder will also trigger investments in schooling becomes more plausible. In addition, by

using data about the occurrence of civil wars collected by others, I prevent any possibility of unconsciously coding conflict in a way that biases the findings in favor of my hypothesis.

4.1 Original Historical Dataset

Primary school enrollment rates in Europe and Latin America, 1830-2015. I rely on an original dataset of country-level primary school enrollment rates—the most common measure of education provision in the extant literature—that I assembled for 40 European and Latin American countries using primary and secondary sources. The Appendix details how I constructed this dataset. The starting point was the annual data on total students enrolled in primary education compiled by [Mitchell \(2003\)](#) and updated by [Palgrave Macmillan \(2010\)](#). After determining the reliability of Mitchell’s annual data by contrasting it with decennial data from [Benavot and Riddle \(1988\)](#) for 1870-1940, I extended the student enrollment time series several decades backwards using country-specific primary and secondary sources, multiple volumes from the [U.S. Bureau of Education’s](#) annual *Reports of the Commissioner of Education* for the period 1872-1915, and [Flora \(1983\)](#).

As a result of this data collection effort, I extended Mitchell’s data backwards by on average 15 years per country. In 18 countries, the earliest data I found were the same as what Mitchell reports. In another 22 countries, I extended the series backwards by on average 26 years per country (29 years for European countries and 24 for Latin American ones). Primary school enrollment rates were

computed taking the information on total students enrolled in primary education and dividing it by the population ages 5 to 14 years.

The resulting dataset has an annual frequency and goes as far back as 1830 for Europe and 1850 for Latin America, but there is variation in the initial year of data availability across countries in part because of the variation in the timing of emergence of state-controlled primary education systems. The resulting trends of primary school enrollment rates, aggregated at the regional level for illustration purposes, are shown in Figure A1 of the Appendix.

Civil war. I use the Correlates of War dataset to identify civil wars taking place from 1830 to the present. Of the 40 countries with enrollment data, 24 experienced at least one civil war since 1830 and the remaining 16 did not.³ I focus on estimating the impact of the earliest civil war within each country in this period, both because of the concern that subsequent wars might be endogenous to the provision of education triggered by previous wars, and because of the paper's theoretical interest in the early stages of public education. Among the 24 civil wars identified, 12 occurred during non-democratic regimes, 6 during democratic regimes, and 6 coincided with regime change. 17 wars begin and end in the same year, or begin in year t and end in year $t+1$; 6 wars last three to six years, and one war lasts eleven years.

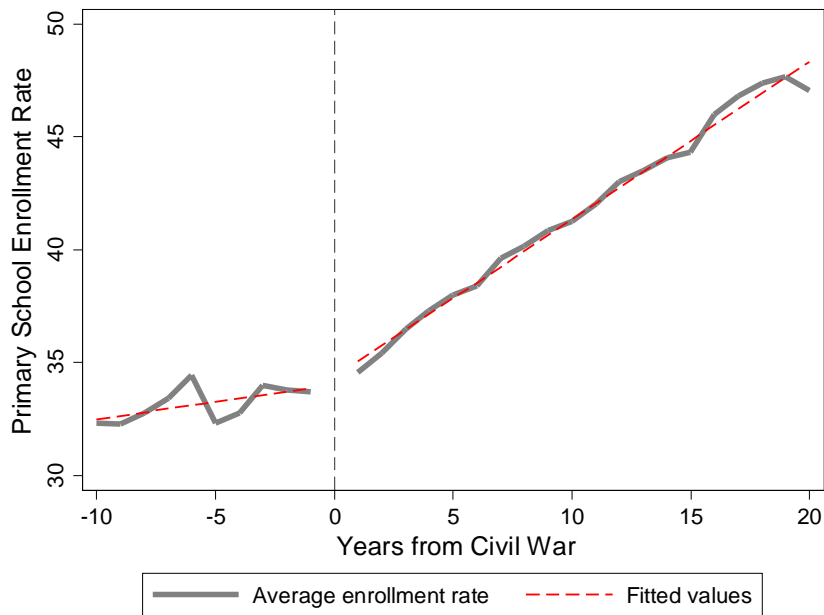
4.2 Difference-in-Differences Estimates of the Impact of Civil War

If we plot the average primary school enrollment rate in the 10 years before the outbreak of a civil war and the 20 years after the end of the war, the pattern that emerges is one of relatively flat trends in the provision of education prior to the

³ Table A1 of the Appendix provides the list of civil wars and the list of countries without war.

outbreak of a civil war, but accelerated educational provision immediately following the end of the civil war. This is shown in Figure 2. Note that $t = 0$ encompasses all the years over which the civil war extended. The pattern is consistent with the theory advanced here and cast doubt on the prevailing argument that civil war hampers incentives to invest in state capacity.

Figure 2. Average Primary School Enrollment Rate 10 Years Before the Outbreak and 20 Years After the End of Civil War



SOURCE: Author for primary school enrollment rates (as a percentage of the population ages 5-14); Correlates of War for timing of civil wars.

While this pattern is highly suggestive, in order to determine whether there is a causal relationship between civil war and education provision we need to know what education provision would have looked like in the post-war period had the civil war not occurred. To estimate this, I rely on the following non-parametric difference-in-differences model with country and year fixed effects:

$$(1) \quad Y_{i,t} = \gamma_i + \phi_t + \sum_{\substack{n=-10 \\ n \neq 0}}^{20} \beta_n I_{i,t}^n + \epsilon_{i,t}$$

In this model, γ_i accounts for long-standing observable and unobservable country-level characteristics that may have influenced both the likelihood of civil war and the level of education provision; and ϕ_t accounts for common time shocks that affect all countries' enrollment rates similarly. The set of dummies $I_{i,t}^n$ indicate, for $n < 0$, whether country i in year t is n years away from the beginning of a civil war; and, for $n > 0$, whether country i in year t is n years away from the end of a civil war. I estimate Equation 1 for the 10 years before the beginning of a civil and the 20 years after its end; $n = 0$ encompasses all the years during which there was a civil war, which are excluded from the model. The results are robust to defining the treatment as either the onset of civil war (i.e., $n = 0$ in the year when civil war begins) or the end of civil war (i.e., $n = 0$ in the year when civil war ends).

For any given $n > 0$, β_n is the average difference in enrollment rates between countries where civil war ended n years before and countries that had not yet experienced civil war, net of the country and year fixed effects. These β_n parameters can be interpreted as the causal impact of civil war if we believe the identifying assumption that the post-war trend in enrollment rates among countries that experienced civil war had they not experienced it would have looked the same as the average trend among those countries that had not yet experienced civil war. In addition to estimating the causal impact of civil war at

different points in time, another advantage of this model compared to a linear difference-in-differences model is that it gives us information about the plausibility of the identifying assumption. To interpret the β_n parameters for $n > 0$ as the unbiased causal effect of civil war, what we would want to see is that $\beta_n = 0$ for $n < 0$. This indicates the presence of parallel enrollment rate trends between treated and control units in the pre-treatment period, and would increase the plausibility of the assumption that we would have observed parallel trends in the post-treatment period as well had the treatment not occurred.

The results, plotted in Figure 3 (see also Table 2A), provide support for the theory. Panel A estimates the average impact of civil war among all countries that experienced a war. The scale for the y-axis was chosen to facilitate comparison of the estimated impact of civil war with the average enrollment rate of 34% reached right before the outbreak of war. Note that the values of β_n for $n < 0$ are not statistically different from zero, lending credibility to the parallel trends assumption. The estimated values of β_n for $n > 0$ suggest that the acceleration of education provision after civil war observed in Figure 2 is not just driven by secular forces, and that experiencing a civil war leads to a gradual and sustained increase in primary education enrollment rates during the post-war period. Twenty years after the end of a civil war, the enrollment rate is 11.6 percentage points above would have been observed had the civil war not taken place. This represents a 34% increase from pre-war enrollment rates.

Because past studies have claimed that democratization leads to increases in enrollment, Panel B restricts the analysis to those civil wars that did not coincide with a regime transition in order to better isolate the effect of war. Again, the

scale of the y-axis is chosen to facilitate comparison of the estimated effect with the average pre-war enrollment rate, 27%. The values of β_n for $n < 0$, which are not statistically different from zero, again provide confidence for the plausibility of the identifying assumption; and the values of β_n for $n > 0$ suggest that 20 years after the end of the civil war, the enrollment rate is 8.8 percentage points above the level that would have been observed had the civil war not taken place. This represents a 32% increase from the level of enrollment attained before the war.

Finally, Panel C further restricts the analysis to civil wars that took place in the context of non-democratic regimes only, given the argument advanced here that civil wars were a key factor that led political elites in to provide education in the absence of mass electoral pressure for redistribution. The results suggest that civil war has a particularly strong effect on education provision under non-democracy: it increases enrollment rates by about 9.2 percentage points after a 20-year period, which represents a 45% increase from the pre-war average enrollment rate of 20%.

A concern that these results might raise is that many of the civil wars fought during the nineteenth century were wars that brought liberals to power. Indeed, liberals won half of the wars that took place in the non-democratic regimes analyzed in Panel C. Do the positive effects of civil war actually reflect the political ascendance of liberals? To address this concern, I estimate a linear difference-in-differences model that allows for heterogeneous treatments effects of civil war depending on whether liberals won or not. The model is given by the following Equation:

$$Y_{i,t} = \gamma_i + \phi_t + \beta_1 CivilWar_{i,t} + \beta_2 CivilWar_{i,t} LiberalsWin_i + \epsilon_{i,t}$$

where γ_i and ϕ_t are dummies that account for country and year fixed effects, respectively; $CivilWar_{i,t}$ takes a value of 1 for treated countries in the post-treatment period, and a value of 0 otherwise; and $LiberalsWin_i$ takes a value of 1 if liberals win the civil war in country i , and a value of 0 otherwise. The coefficient of interest is β_2 , which should be positive and statistically significant if civil wars led to greater increase in education provision when liberals won. What we find, instead, is that the estimated β_2 coefficient is negative and statistically insignificant (see Table 3A of the Appendix). This suggests civil wars won by liberals vs. other civil wars had no differential effect. If anything, the negative coefficient indicates that civil wars *lost* by liberals triggered greater increases in primary school enrollment rates.

Together, these results suggest that, in Europe and Latin America, civil wars triggered a considerable expansion of primary education and that the effect was particularly large when civil war took place in non-democratic regimes.

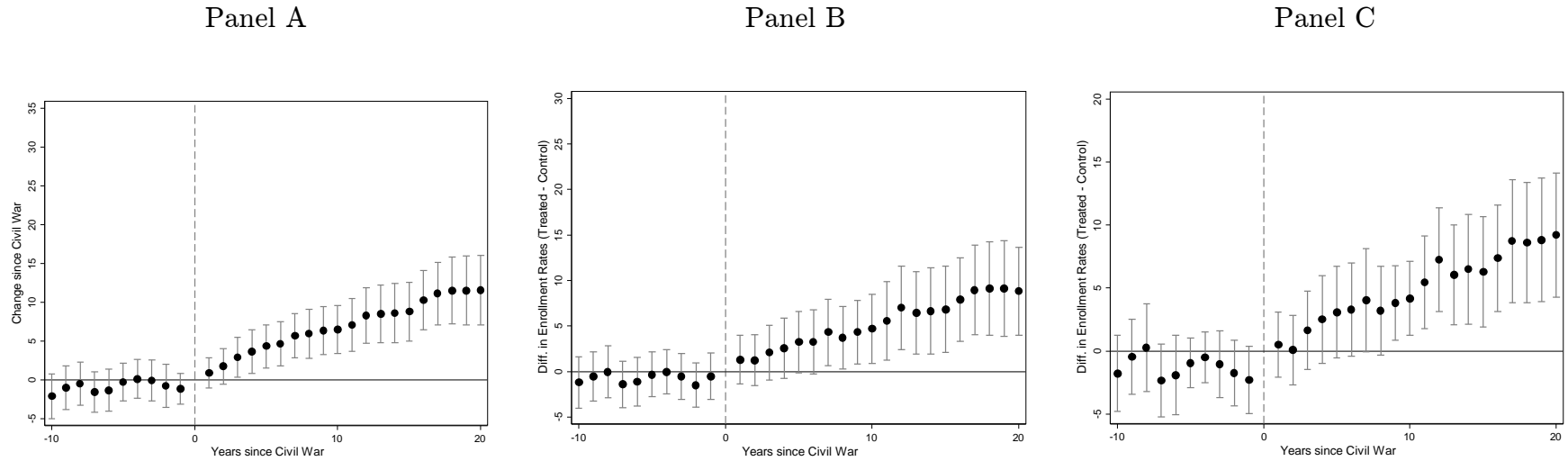
While consistent with the theory, these results present three main limitations. First, causal claims on the basis of cross-country difference-in-differences analyses rely on the assumption that nothing affected differentially the treated and untreated countries in the post-treatment period. This can be a difficult assumption to defend because, in addition to experiencing civil wars at different times, countries often democratized, industrialized, fought interstate wars, received immigrants, and engaged in international trade at different points in time. In principle, if we could control for these and other changes that are likely

to have impacted education provision and whose timing differed across countries, this would not be a problem, but because of the historical nature of the analysis, measuring these changes reliably is not always possible.

Second, although it is common to use primary school enrollment rates as a measure of education provision, enrollment reflects both supply-side and demand-side decisions. Because the theory proposed seeks to explain supply-side decisions to expand schooling, measures of the number of schools constructed would be a more appropriate choice to test the argument. Finally, while these country-level results are encouraging, they say little about the mechanisms that link civil wars and educational expansion.

To address these limitations, I leverage within-country variation in the exposure to civil war, focusing on how the 1859 civil war in Chile impacted the central government's decision to construct schools. This approach allows us to maintain fixed all the national institutional, demographic, geopolitical, economic, and social variables that may have affected education provision within a country. In addition to providing a more credible identification strategy for the impact of civil war, the focus on a single country also enables me to rule out other explanations for the patterns of education provision observed—including the possibility that post-war education provision was driven by the central government's interest in appeasing rebels by catering to their demands.

Figure 3. Impact of Civil War on Primary Education Enrollment Rates



NOTES: Point estimates and 90% confidence intervals for the effect of civil war on primary enrollment rates, based on a non-parametric difference-in-differences model (Equation 1). Standards errors clustered at the country level. The equation is estimated for the 10 years before the beginning and the 20 years after the end of a civil war. Panel A includes all civil wars (N=23). Panel B is restricted to civil wars that did not coincide with regime change (N=17). Panel C is further restricted to civil wars that took place during non-democratic regimes (N=12).

SOURCE: Author for primary school enrollment rates (as a percentage of the population ages 5-14); Correlates of War for timing of civil war.

5 Civil War and Education Provision: Evidence from Chile

The canonical cases of Prussia and Argentina illustrate the argument that political elites developed an interest in mass schooling in response to instances of widespread political disorder and as a tool to prevent future rebellions against authority. The country-level analyses show that civil wars in Europe and Latin America were followed by an expansion of primary schooling.

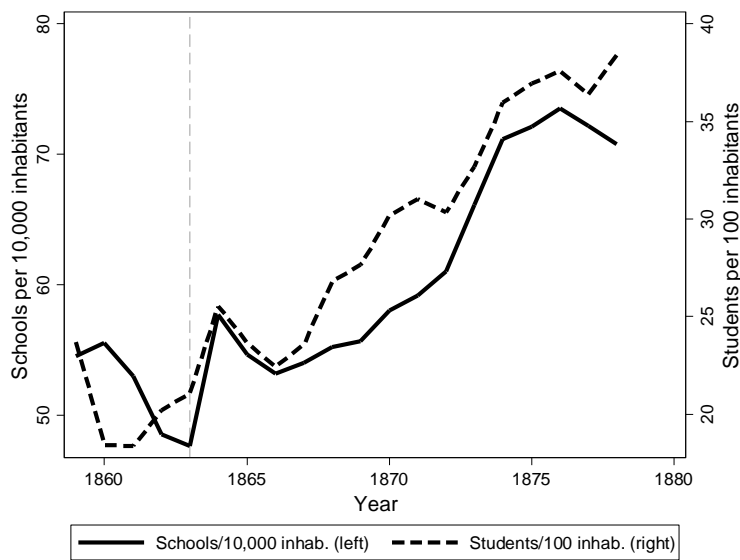
In this section, I use provincial-level data from nineteenth-century Chile to provide an additional and more rigorous test of the theory I have posited. Chile is known as an example of early and successful state-building in Latin America (Soifer 2015), and was among the first countries in the region to set up a centrally-controlled primary education system (Newland 1994). Chile in the nineteenth century provides a unique opportunity to assess whether educational expansion was driven by an interest in establishing order in the aftermath of the civil war, because unlike Prussia or Argentina, where political disorder was geographically dispersed, civil war in Chile was concentrated in certain provinces and not others.

5.1 Historical Background

The Chilean civil war of 1859 was “the most acute conflict that the ruling oligarchy faced since the consolidation of its political project in the 1830s” (Martinez and Apiolaza 2006: 13). In January of 1859, military leaders in Atacama, a mining province in the north of Chile, rebelled against the central government in Santiago. They questioned the central government’s “authoritarianism”, opposed the intromission of the Church in state matters,

demanded lower taxes on copper and silver exports, and ultimately claimed political autonomy from the center. Initially, the rebel forces were four times the size of the central government's army, forcing the government to invest considerable resources before it could defeat the rebels, which it accomplished after four months (Martinez and Apiolaza 2006).

Figure 4. Public Primary Schools and Enrollment in Chile



SOURCE: Author based on *Anuario Estadístico de la República de Chile* (multiple years).

Following the end of the war, in 1860 Congress passed the first national law regulating primary education, the *General Law of Primary Education*. Although education bills had been debated since 1843, prior to 1860 political elites had not been able to agree over whether education provision should remain a municipal responsibility or be transferred to the central government (Egaña Baraona 2000: 49-57). The law passed in 1860 established the central government as the primary

provider, regulator and supervisor of primary education in Chile.⁴ The regulations necessary to implement the law (*Reglamento General de Instruccion Primaria*) were approved in 1863, after which, as shown in Figure 4, there was a rapid expansion in the number of schools and in student enrollment.

5.2 Empirical Approach

The timing of the 1860 law is suggestive that the 1859 civil war prompted Congress members to compromise their specific interests and work together toward the creation of a national education system that would help prevent future rebellions against the central government.

Rather than relying on a temporal coincidence, however, we can examine whether the central government's intervention in education varied across provinces depending on each province's participation in the 1859 civil war. If the argument advanced earlier holds, we should observe that the central government's efforts to expand primary schooling were greater in those provinces where it had faced the greatest challenge from rebels. According to the account of battles provided in [Martinez and Apiolaza \(2006\)](#), the greatest challenge came from Atacama, and to a lesser extent, Santiago and Valparaiso. In Aconcagua, Coquimbo, Colchagua, and Talca the government was able to quickly contain the rebels. In Chiloé, Llanquihue, Valdivia, Arauco, Concepcion, Ñuble, and Maule there were no rebellions at all.

I examine the central government's effort to expand primary schooling using annual provincial-level data retrieved from multiple years of the *Anuario*

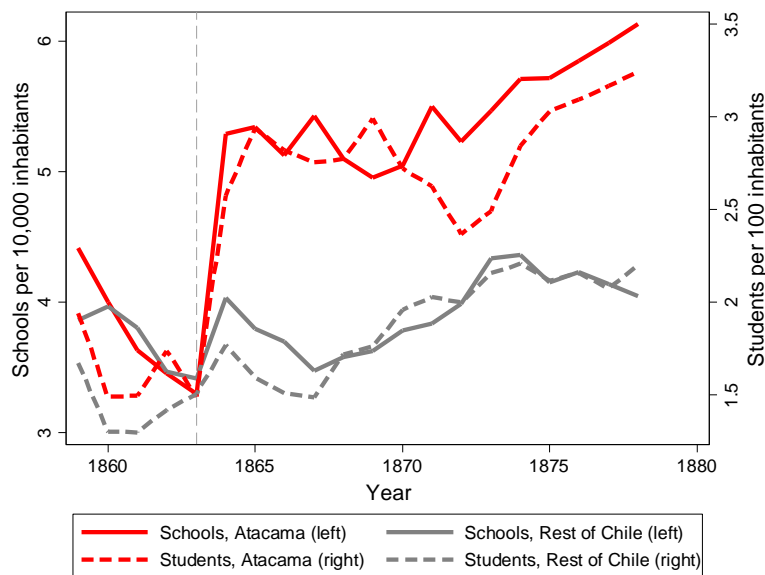
⁴ Archivo Nacional de Chile, accessed online 8/29/2016: <http://www.archivonacional.cl/616/w3-article-28319.html>

Estadístico de la Republica de Chile. I use two measures of provision: number of primary schools established by the central government and number of students enrolled in public primary schools, both adjusted by total provincial population.

5.3 Findings

I begin by examining whether the central government’s effort to expand primary schooling differed between Atacama and the rest of the country. Figure 5 shows that the aggregate expansion in the number of schools and students after 1863 was driven by the central government’s effort to expand education in Atacama.

Figure 5. Public Primary Schools and Enrollment in Atacama vs. the Rest of Chile



SOURCE: Author based on *Anuario Estadístico de la Republica de Chile* (multiple years).

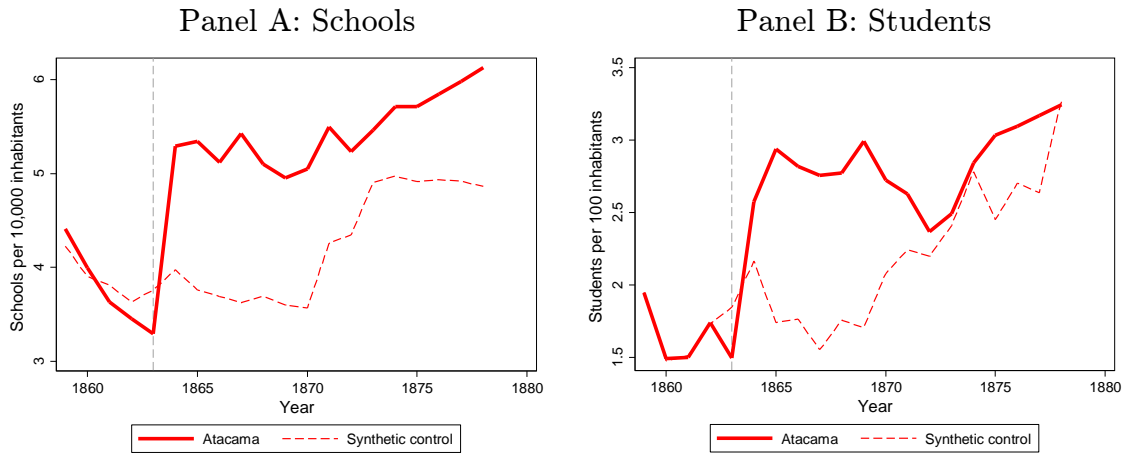
Suppose that the *Reglamento* of 1863 had nothing to do with the civil war of 1859, and would have been passed even if rebels in Atacama had not challenged the central government. What would educational expansion in Atacama have

looked like in that case? To address this question, I estimate a synthetic control for Atacama using data from those provinces that were not involved in the war. The results, shown in Figure 6, suggest that, fifteen years after the passage of the *Reglamento*, the number of schools built in Atacama was 26% greater than it would have been had Atacama not engaged in the civil war against the central government.

Finally, we can extend the analysis beyond Atacama and examine educational expansion in all provinces depending on their participation in the civil war, as classified earlier following [Martinez and Apiolaza \(2006\)](#). The results are shown in Figure 7 for both schools (Panel A) and students (Panel B).

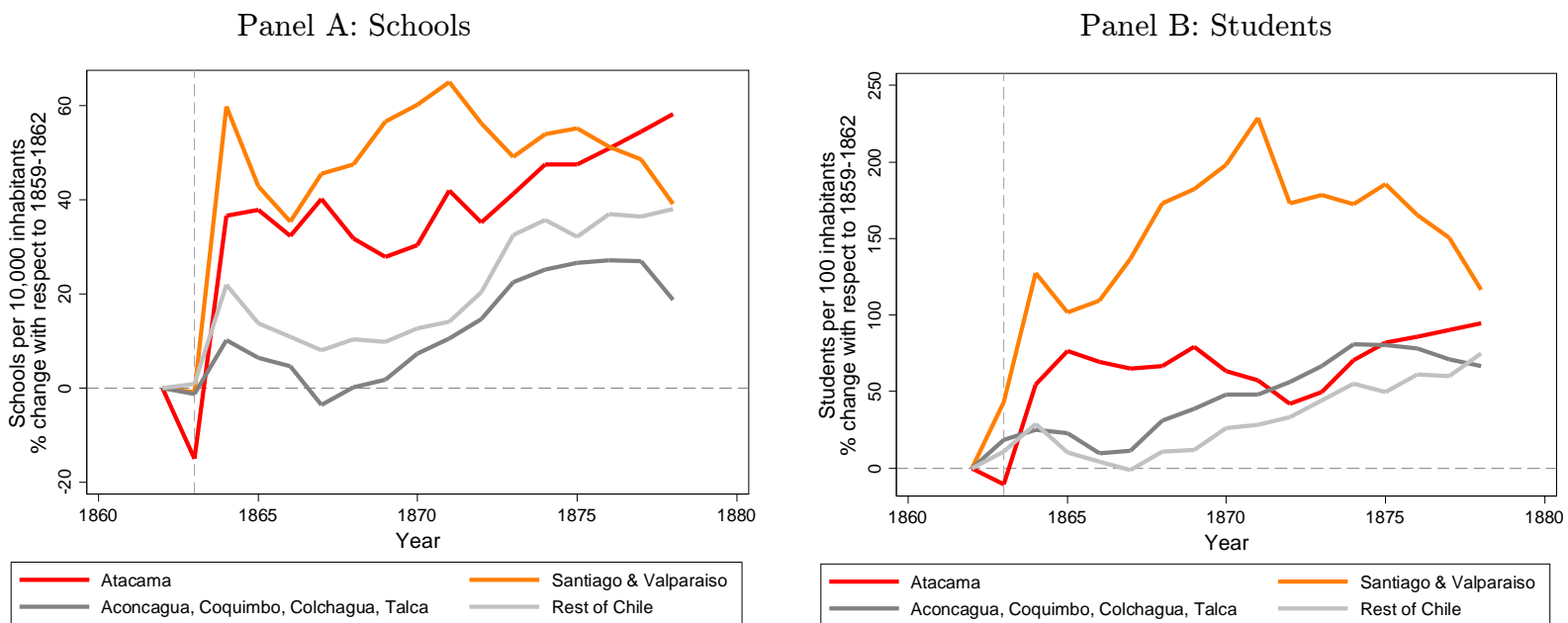
Again, the central government's efforts to expand primary schooling were greater in provinces where the rebels had presented the greatest challenge and were most difficult to defeat (Atacama, in red; and Santiago and Valparaiso, in orange). By contrast, the central government barely expanded education in provinces whose activism had been easy to defeat (in dark grey) and in those that did not rebel against the central government at all (in light grey).

Figure 6. Public Primary Schools and Enrollment in Atacama vs. a Synthetic Control



SOURCE: Author based on *Anuario Estadístico de la República de Chile* (multiple years).

Figure 7. Public Primary Schools and Enrollment in the Provinces, % Change By Participation in the 1859 Civil War



NOTE: Percent change in the number of schools and students (adjusted by population) with respect to the 1859-1862 average for each group (i.e., the pre-*Reglamento* average). The classification of provinces into groups depending on their participation in the civil war is based on the account of battles provided in [Martinez and Apiolaza \(2006\)](#).

SOURCE: Author based on *Anuario Estadístico de la República de Chile* (multiple years).

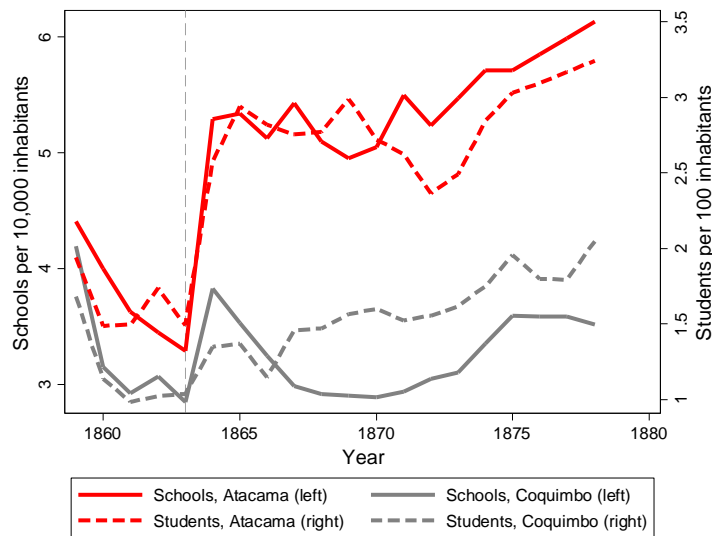
5.4 Alternative Mechanisms?

The patterns shown in Figures 5-7 are consistent with the argument that the central government increased education provision in response to the civil war and as a means to instill values and beliefs that would prevent future rebellions.

The differential expansion of primary schooling in rebelling provinces cannot be explained by differences in *population* (the number of schools and students are adjusted by the total provincial population), nor can they be driven by differences in *local capacity to construct schools* (the graphs above refer to schools built and controlled by the central government).

The educational expansion in Atacama is unlikely to have been driven by the *central government's interest in fostering the mining economy of Atacama*. To see why, we can compare educational expansion in Atacama and Coquimbo. Like Atacama, Coquimbo was a major exporter of metals, but unlike Atacama, where almost everyone in the population joined the rebellion, in Coquimbo only some sectors of society rebelled, and they were easily defeated by the central government (Martinez and Apiolaza 2006). If the central government expanded education with the goal of fostering the mining economy, we should not observe big differences in the number of schools constructed in both provinces. If, however, the logic of state intervention in education responded to the civil war, we should observe greater expansion of schooling in Atacama compared to Coquimbo. The latter is what we observe, as shown in Figure 8.

Figure 8. Public Primary Schools and Enrollment in Atacama and Coquimbo



SOURCE: Author based on *Anuario Estadístico de la República de Chile* (multiple years).

It is also unlikely that the post-war expansion in schooling was driven by *war-induced increases in the central government's capacity*. First, fiscal revenues in 1863-64 were lower than in 1858 (Braun-Llona et.al. 1998). Second, the main investments in state capacity that were needed to win the war involved recruiting soldiers and acquiring more gunpowder, none of which were very useful for providing education (Martinez and Apiolaza 2006). Third, war-induced increases in state capacity cannot explain why the government expanded schooling in Santiago and Valparaiso, two provinces where it already had easy access prior to the war.

Finally, the patterns shown in Figures 5-7 are unlikely to be driven by *local demand for education*. In principle, it could be that the superior organizational capacity that enabled rebels in Atacama but not, say, Coquimbo, to pose a

serious threat to the central government, also enabled Atacama to pressure the central government for the construction of schools after the civil war. Similarly, it could be that the central government created schools in Atacama not to instill values of authority but to provide the rebels with goods and services they wanted, and thus prevent future rebellions not by instilling an ideology that emphasized respect for authority but by “buying off” potential rebels.

Empirically, however, the central government’s effort to expand education in Atacama does not appear to have been driven by local demand for schools. First, the rebels in Atacama were of liberal extraction, and were fiercely opposed to the intromission of the Church in any state matters ([Martinez and Apiolaza 2006](#); [Frias 1971: 326-7](#)). Despite their demand for secular institutions, the General Law of Primary Education of 1860 mandated a curriculum consisting of four subjects, one of which was “Christian doctrine and morality,” and the primary schools that were established by the central government after the civil war were heavily Catholic. In other words, not only was education not among the demands made by the rebels, but if it had been, the education they would have asked for would have looked very different from what they got.

Moreover, political elites in Santiago did not have the sense that the masses wanted education, but the opposite—they were concerned that parents were generally disinterested in education ([Egaña Baraona 2000](#); [Archivo Nacional de Chile](#)). During the parliamentary debate of the 1860 law, they debated different policies to foster school attendance, and eventually settled on monetary rewards for parents whose children excelled in school. In line with elites’ perception, school inspectors repeatedly reported that “parents’ general indifference toward

their children's education continues to be the most powerful obstacle we face when it comes to disseminating primary instruction" (School Inspection Report, 1861).

5.5 Qualitative Evidence

The interpretation that Chilean elites turned to mass education as a means to instill values of order and respect for authority is further reinforced by a wealth of qualitative evidence. First, the moralizing function of schools and their role in promoting order is present in the writings of the Amunategui brothers, who along with Sarmiento were the politicians who most influenced education in mid-nineteenth century Chile ([Egaña Baraona 2000: 30](#)):

"Children generally acquire in school habits of order, of submission, of continuous and incessant work, which later on they shall not forget . . . Wherever they go, they will . . . understand the costs of violating divine and human laws." (cited in [Egaña Baraona 2000: 30](#))

"The best way to prevent future revolutions is to educate children" (cited in [Sagredo & Gazmuri 2005](#)).

In addition, the value-inculcation function of schools was evident in the curriculum, which emphasized the teaching of religion and morality, and in the way teachers were recruited and trained. Abelardo Nuñez, who was commissioned to study primary schooling in Europe and the Americas and make policy recommendations for Chile, emphasizes the importance of teachers' moral training given their role as agents of the state:

“Moral education . . . is the number one foundation of all good education systems . . . Religious sentiment, family love and patriotic love, respect and obedience of the law, as well as a serious notion of duty and personal responsibility, constitute the fundamental principles that must be the constant subject of attention of teachers, and so naturally these should have a central role in . . . Normal Schools” (Núñez 1883: 96-97).

Finally, the goal of education stems from statistical publications linking crime and schooling. Beginning in 1862, the Chilean government began to publish a compendium of statistics, the *Anuario Estadístico de la República de Chile*. Included in this compendium were annual data on the number of individuals jailed in the previous year depending on whether the new prisoners had attended primary school or not. Public officials’ interpretation of these data reveals what they believed were the goals of schooling. In years when there had been a reduction in the share of prisoners who had formal education compared to the previous year, and interpreted this as “a good sign . . . because this reveals the good results that are produced by teaching morality to the masses” (*Anuario Estadístico de la Republica de Chile 1872: 120*). Similarly, in years where the proportion of new prisoners with formal education increased, officials lamented that public schools were not accomplishing their goal.

6 Summary and Implications

Why did political elites in non-democratic regimes set up and expand primary school systems for the poor? This paper argues that instances of widespread internal political disorder such as peasant revolts and civil wars prompted

political elites in Europe and Latin America to turn to primary schooling as a means to instill among children values and behaviors that would lead them to respect authority throughout their lives. The evidence for this theory includes: (i) qualitative evidence from Prussia and Argentina, two cases whose experience with education provision influenced elites elsewhere; (ii) difference-in-differences estimates using an original country-level dataset that suggest that civil war led to an increase of 10 percentage points in primary school enrollment rates, from a pre-war baseline of 20%; (iii) provincial-level data from nineteenth-century Chile showing that the 1859 civil war led the central government to construct primary schools in those provinces that had rebelled against it; and (iv) qualitative evidence showing that this expansion was driven by elites' interest to "moralize" the masses in order to prevent future rebellions against their authority.

The paper has implications for several important literatures in political science and economics. Most obviously, the paper contributes to a rich and growing literature on the comparative politics and political economy of education provision. While this literature assumes that education systems raise the human capital of the poor, and based on that concludes that we should see educational expansion in societies where the poor can vote (e.g., [Baum & Lake 2003](#); [Lindert 2004](#); [Ansell 2010](#); [Gift & Wibbels 2014](#)), the starting point for this paper is the fact that these systems emerged and expanded under non-democratic regimes. An examination of the political dynamics that led to the emergence and expansion of mass primary education systems reveals that these systems emerged less as a form of redistribution toward the poor and more as a tool to serve political elites' interest in building and consolidating the state's power. Assessing whether and

when, despite their original purpose, primary schooling led to redistribution and/or political instability is an important question for further research.

The evidence-based theory I advance contributes to the literatures on the determinants of state capacity and nation-building. Primary education systems were part of the centralized bureaucracies that emerged in eighteenth- and nineteenth-century Europe and Latin America, and they were a key strategy employed by states to instill common values and norms of behavior across the territory. Much research has focused on the role of interstate wars and economic modernization in triggering the emergence of centralized bureaucracies and the formation of national identities. Departing from these theories, this paper highlights that instances of widespread internal political disorder played a crucial role in triggering investments in mass schooling. This theory also departs from existing arguments that internal violence in general, and civil war in particular, tend to lower educational access and deter investments in state capacity ([Collier et.al. 2003](#); [Besley and Persson 2008, 2010](#); [North, Wallis and Weingast 2009](#)). A question for further research is whether internal political disorder also triggered investments in other forms of state capacity, and if so, what were the reasons why it did.

Empirically, this is the first paper to provide evidence of a systematic positive relationship between civil war and investments in state capacity, particularly investments in education. A central question that emerges is whether the theory travels to other regions besides Europe and Latin America, and to other forms of internal conflict besides civil war. The theory I have presented requires a clear end to internal conflict before the central government invests in educational expansion. Because the civil wars of the post-World War II period have been

much lengthier and more recurring than those of the nineteenth century, it is possible that the link between civil war and education expansion will be weaker for recent periods. Testing the theory outside of Europe and Latin America, and exploiting differences in the type and features of internal conflict (e.g., its duration, scale, and the way in which it ends) can help refine the theory in further research.

The evidence presented here has important implications for political economy theories of development. It suggests that a key reason why education systems often fail to reduce poverty and inequality ([World Bank 2011](#); [Pritchett 2013](#)) is because that is not what they were primarily designed to do. The obvious question that arises for further research is this: Why do some countries go well beyond the value-inculcation or moralizing function of education, and promote also the acquisition of productivity-enhancing skills? Argentina and Chile provide a good example of this variation. In both countries national primary education systems emerged in response to civil war with the goal of promoting order. But while the Chilean curriculum focused heavily on religion and included only basic elements of reading and writing and arithmetic, the Argentine curriculum also included geometry, physics, chemistry, history, geography, and French. Understanding why governments driven by the same goal chose very different curriculum policies is a crucial question given the importance of these policies for student learning, and given the importance of learning for economic development.

Finally, the theory advanced here has implications for the literature on the determinants of public goods provision. While the tendency in that literature has been to propose general theories of such determinants (e.g., [Alesina, Baqir and Easterly 1999](#)), this paper suggests that taking into account the specific features

of a good can be a fruitful path to theorize about why politicians might want to provide it. Different goods can do different things for elites. Schools can help inculcate values of respect for authority; fixing potholes cannot.

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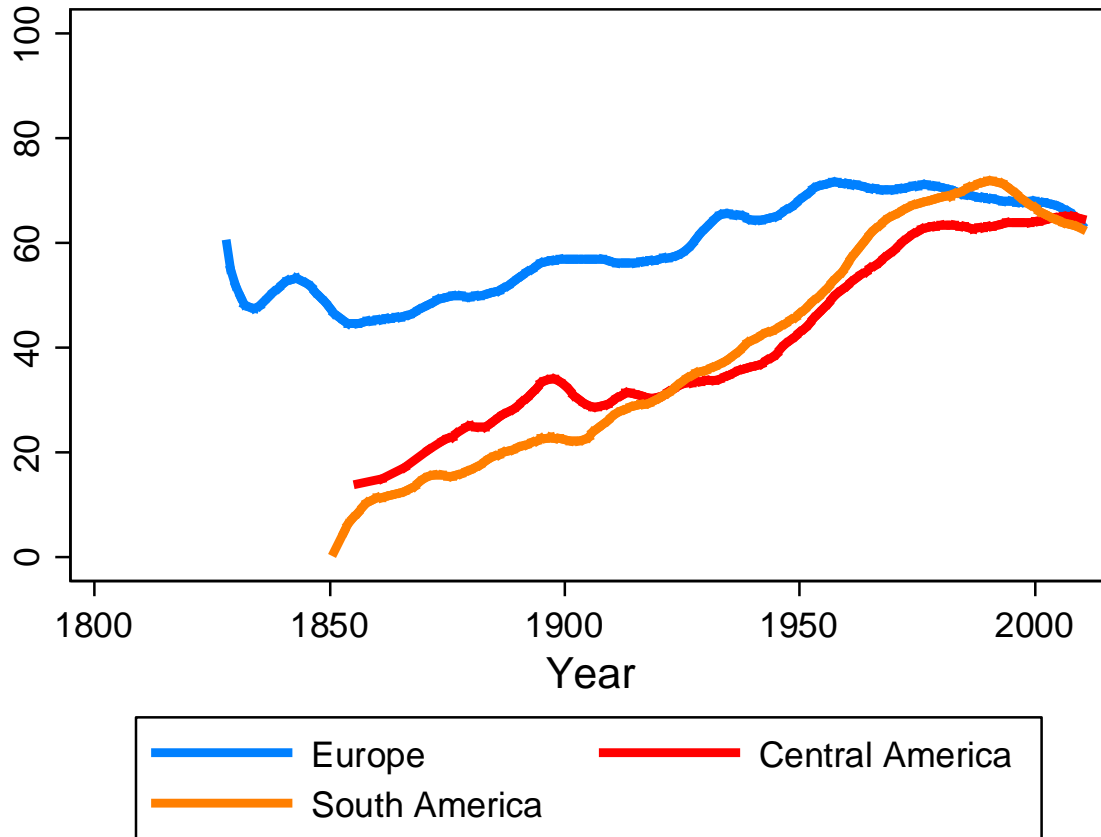
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APPENDIX

Figure A1. Primary enrollment rate (as a % of the popn. ages 5-14), by Region



SOURCE: See main text and Data Appendix.

Table 1A. List of Civil Wars

Country	Year(s)	Regime type
France	1848	transition to democracy
Austria	1848-1849	non-democratic
Argentina	1879-1880	non-democratic
Brazil	1893-1894	non-democratic
Peru	1894-1895	non-democratic
Mexico	1899-1900	non-democratic
Venezuela	1899-1903	non-democratic
Chile	1891	non-democratic
Uruguay	1904	non-democratic
Paraguay	1911-1912	non-democratic
Cuba	1912	democratic
Ecuador	1912-1914	non-democratic
Finland	1918	transition to democracy
Italy	1919-1922	transition to democracy
El Salvador	1932	non-democratic
Spain	1936-39	transition to non-democracy
Greece	1944-1949	democratic
Costa Rica	1948	democratic
Colombia	1948-1958	democratic
Bolivia	1952	non-democratic
Dominican Republic	1965	transition to democracy
Guatemala	1966-1971	democratic
Nicaragua	1978-1990	transition to democracy

The countries that did not experience civil war in 1830-2015 according to COW are: Switzerland, Belgium, Germany, Denmark, Great Britain, Guyana, Honduras, Haiti, Ireland, Jamaica, Netherlands, Norway, Puerto Rico, Portugal, Sweden, Trinidad and Tobago, and Panama

Table 2A. Impact of Civil War on Primary Education Enrollment Rates

	Includes cases where civil war coincides with regime transition		Excludes cases where civil war coincides with regime transition	
			All regime types	Non-democratic regimes only
β_{-10}	-2.13 (1.7542)		-1.20 (1.7045)	-1.77 (1.8349)
β_{-9}	-1.00 (1.7107)		-0.52 (1.6501)	-0.46 (1.8049)
β_{-8}	-0.50 (1.7000)		-0.01 (1.7381)	0.28 (2.1134)
β_{-7}	-1.57 (1.5717)		-1.39 (1.5534)	-2.34 (1.7557)
β_{-6}	-1.33 (1.6309)		-1.11 (1.6245)	-1.92 (1.9152)
β_{-5}	-0.29 (1.4724)		-0.32 (1.4933)	-0.94 (1.1996)
β_{-4}	0.12 (1.5231)		-0.02 (1.4831)	-0.49 (1.2265)
β_{-3}	-0.07 (1.6175)		-0.52 (1.5222)	-1.03 (1.6072)
β_{-2}	-0.78 (1.6880)		-1.48 (1.4857)	-1.75 (1.5809)
β_{-1}	-1.15 (1.1892)		-0.52 (1.5561)	-2.29 (1.6185)
β_1	0.88 (1.1881)		1.31 (1.6339)	0.50 (1.5669)
β_2	1.74 (1.3992)		1.26 (1.7078)	0.08 (1.6787)
β_3	2.89 * (1.5625)		2.07 (1.8279)	1.65 (1.9012)
β_4	3.63 ** (1.6987)		2.59 (2.0105)	2.50 (2.1185)
β_5	4.31 ** (1.6852)		3.22 (2.0454)	3.09 (2.2058)
β_6	4.65 ** (1.7371)		3.26 (2.1429)	3.29 (2.2578)
β_7	5.66 *** (1.7352)		4.31 * (2.2190)	4.02 (2.4864)
β_8	5.93 *** (1.9212)		3.71 * (2.0771)	3.20 (2.1366)
β_9	6.35 *** (1.8658)		4.33 ** (2.1261)	3.81 ** (1.7982)
β_{10}	6.46 *** (1.8717)		4.71 ** (2.3035)	4.18 ** (1.7915)

β_{11}	7.06 *** (2.0656)	5.57 ** (2.6089)	5.45 ** (2.2318)
β_{12}	8.26 *** (2.1712)	7.00 ** (2.7763)	7.25 *** (2.5032)
β_{13}	8.52 *** (2.2558)	6.46 ** (2.7659)	6.03 ** (2.4047)
β_{14}	8.59 *** (2.3133)	6.66 ** (2.8877)	6.49 ** (2.6419)
β_{15}	8.76 *** (2.3147)	6.86 ** (2.8678)	6.28 ** (2.6632)
β_{16}	10.25 *** (2.3328)	7.91 *** (2.7903)	7.38 *** (2.5660)
β_{17}	11.11 *** (2.4499)	8.98 *** (2.9867)	8.71 *** (2.9683)
β_{18}	11.51 *** (2.6284)	9.12 *** (3.1293)	8.60 *** (2.9011)
β_{19}	11.51 *** (2.6966)	9.12 *** (3.1830)	8.82 *** (2.9708)
β_{20}	11.57 *** (2.7180)	8.85 *** (2.9337)	9.19 *** (2.9898)
Constant	48.97 *** (1.6426)	49.13 *** (1.5720)	50.12 *** (1.5019)
Number of clusters	40	34	29

NOTES: Estimated effect of civil war on primary enrollment rates based on a dynamic difference-in-differences framework analogous to that given by Equation 1 (see main text). Because civil war can last more than one year, the equation is estimated for the 10 years before the beginning and the 20 years after the end of a civil war. Standards errors clustered at the country level reported in parenthesis. Primary enrollment rates are the number of students enrolled in primary education as a percentage of the population ages 5 to 14. A total of 23 civil wars are taken into account in column 1, while column 2 only considers the 17 civil wars that did not coincide with a regime change, and column 3 only considers the 12 civil wars that took place under stable non-democratic regimes.

SOURCE: Author for primary education enrollment rates [see Data Appendix]; Correlates of War for timing of civil war.

Table 3A. Heterogeneous Effect of Civil War on Primary Education Enrollment Rate, Depending on Whether Liberals Won the War or Not

DV: Primary enrollment rate		
<i>Civil War</i>	7.07 (2.1805)	***
<i>Civil War x LiberalsWin</i>	-2.32 (4.0562)	
Constant	44.95 (4.3074)	***
Country FE	Y	
Year FE	Y	
No. of clusters	29	

NOTES: Estimated effect of civil war on primary enrollment rates based on a linear difference-in-differences framework given by: $Y_{i,t} = \gamma_i + \phi_t + \beta_1 CivilWar_{i,t} + \beta_2 CivilWar_{i,t} LiberalsWin_i + \epsilon_{i,t}$. The model includes country (γ_i) and year (ϕ_t) fixed effects. $CivilWar_{i,t}$ takes a value of 1 for treated countries in the post-treatment period; and a value of 0 otherwise. $LiberalsWin_i$ takes a value of 1 if liberals win the civil war in country i , and a value of 0 otherwise. Because civil war can last more than one year, the equation is estimated for the 10 years before the beginning and the 20 years after the end of a civil war. Standards errors clustered at the country level reported in parenthesis. Primary enrollment rates are the number of students enrolled in primary education as a percentage of the population ages 5 to 14. Estimates take into account the 18 civil wars that did not coincide with a regime change. Effects are statistically significant at the *10%, **5%, and ***1% level.

SOURCE: Author for primary education enrollment rates [see Data Appendix]; Correlates of War for timing of civil war.