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RELIGION, EDUCATION, AND DEVELOPMENT

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### **ABSTRACT**

Over the course of development, state and non-state actors compete in the provision of public goods. We focus on the case of mass schooling and develop a new theoretical framework to understand how states take over education markets at the expense of alternative providers. We apply this model to a primary school expansion policy in 1970s Indonesia that aimed to homogenize and secularize education, at odds with a longstanding and largely informal Islamic school system. Using novel administrative data, we identify dynamic effects of the policy on education markets. Funded through growth in charitable giving and informal taxation, Islamic schools entered new markets, formalized, and introduced more religious curriculum to compete with the state. While primary enrollment shifted towards state schools, religious education increased overall as Islamic secondary schools absorbed increased demand for continued education. Exposed cohorts are not more attached to secular values and instead report greater religiosity. Our findings offer a new perspective on the consequences of education reforms and the persistence of dual institutional systems across numerous settings.

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An online appendix is available at <http://www.nber.org/data-appendix/w27073>

# 1 Introduction

Developing states face the challenge of becoming the sole legitimate provider of certain public goods (Weber, 1922). Throughout this process historically, European states “frequently found the traditional authorities allied with the people against them” (Tilly, 1975). In other settings, states still compete with a variety of incumbent informal providers, whether in the domains of tax collection (Olken and Singhal, 2011), health (Lowe and Montero, 2019), policing (Blattman et al., 2021), or justice (Acemoglu et al., 2020). Central to this challenge is how alternative providers adapt to government reforms, and how these responses might shape modernization and development.

Education is a key sector in which non-state actors compete with the state. Competition in education markets has far-reaching consequences as schooling might affect ideology, identity, and nation building (Akerlof and Kranton, 2002; Alesina et al., 2021). Recent work has examined the link between schooling reforms and culture (Bandiera et al., 2019; Cantoni et al., 2017) but has not explored the competitive response to state expansion in education markets, nor its potential to trigger a backlash (Fouka, 2020). In this paper, we examine how the interplay between state and religious schools, the main historical providers of education, affects educational expansion and cultural change.

We explore the political economy of education reforms in Indonesia, the world’s largest Muslim country. Millions of Indonesians were educated in religious institutions historically, and around one-fifth of students attended Islamic schools in 2019. This dual system persisted despite many attempts by the state to reform it. In the 1970s, the country underwent a drastic expansion of its public schooling system through the celebrated *Sekolah Dasar* Presidential Instruction, or SD INPRES (Duflo, 2001). This policy not only increased access to public primary education, but also aimed to secularize education through the adoption of a single, identity-building national curriculum (Boland, 1982; Kelabora, 1976). We study how Islamic schools adapted to this landmark policy and mitigated its impacts.

We develop a new theoretical framework to guide the analysis. The model first sheds light on the segmentation of education markets before mass public schooling. Public and religious schools target segments of the population with different underlying preferences; the latter prioritize either the more religious markets or any markets underserved by the state. An increase in the state budget allows public schools to enter new markets. This budget expansion also increases the number of markets served by religious schools and leads to greater curriculum differentiation inside religious schools, especially in crowded markets and in markets that were not previously served by the state. Introducing secondary schooling further changes the incentives faced by religious schools, which no longer seek to avoid competition from state schools but actively prioritize markets with large demand for secondary schooling.

Our analysis identifies dynamic effects of SD INPRES on education markets and exposed cohorts. Several novel data sources allow us to explore how the policy shaped multiple dimensions of schooling content and cultural outcomes. Nationally-representative surveys capture Islamic school choice, and administrative data record the universe of schools with date and location of establishment. The latter comprise nearly 220,000 secular and 160,000 Islamic schools, including day (*madrasa*), boarding (*pesantren*), and Qur’anic study schools (*diniyah*). Additional survey and administrative data help to identify local mechanisms for mobilizing and funding the Islamic sector response to SD INPRES. For some schools, we

also observe a breakdown of curriculum hours in 2019, which we use to measure religious instruction and to identify shifts in ideological differentiation. Together, these data enable us to characterize supply- and demand-side responses over the ensuing decades.

Using a suite of difference-in-differences (DID) methods, we evaluate how SD INPRES affected Islamic school entry at different levels of policy variation and market aggregation. The state allocated schools across districts proportional to their non-enrolled-student population. The theory clarifies why such targeting *de facto* implied greater SD INPRES construction in markets with more Islamic schools. Motivated by this insight, we estimate DID specifications that flexibly account for differential trends in Islamic education at the district level and deploy the new synthetic DID approach (Arkhangelsky et al., 2021), which is more robust to potential violations of parallel trends. We also use our granular administrative data to exploit, for the first time, the staggered entry of INPRES schools at the village level.

Islamic school construction increased in areas where the state built more primary schools. We find increased entry at the primary level, where new *madrassa* provided a substitute to newly built public primary schools. Meanwhile, at the secondary level, *madrassa* strategically entered new markets to capitalize on growing demand for continued schooling among INPRES graduates, especially in markets where the state was not building junior secondary schools. This dynamic response ensured that the state expansion in education markets failed to crowd out Islamic schools. Informal boarding schools and afternoon Qur'anic study schools also entered, but the prevalence of these informal institutions decreased as a fraction of all new Islamic schools. Such formalization, triggered by SD INPRES, further bolstered the resilience of the Islamic school system in the medium to long run.

The new *madrassa* entering high-INPRES districts after the program also provided more religious curriculum. Our model shows that such differentiation was necessary for Islamic schools to remain competitive in the new market equilibrium. We measure differentiation based on classroom hours devoted to religious subjects, e.g., Islamic law, theology, and ethics, as well as Arabic instruction. The increase in Islamic content comes, in part, at the expense of core subjects in the standard curriculum, including study of the national language and *Pancasila*, the secular ideology of the state. While such differentiation may have helped to address heterogeneous preferences for different types of schooling, it also directly undermined the state's efforts to homogenize and secularize education.

The Islamic sector leveraged its own resources and taxation mechanisms to respond to the state's mass schooling effort. While windfall oil revenues allowed the regime to build more than 61,000 schools between 1973–80, a simultaneous spike in the global price of rice increased revenue mobilization inside the largely informal Islamic taxation system. In addition, the Islamic sector leveraged inalienable religious endowments (*waqf*) to expand educational infrastructure. This revenue stream, built on private charity, supports Islamic investments in education markets across the Muslim world. We show that the entry response was stronger in villages with a larger *waqf* base before INPRES and greater exposure to the concurrent rice price shock. Meanwhile, capacity constraints inside public secondary schools likely facilitated the absorption of SD INPRES graduates in the Islamic school system.

As a result of these market dynamics, the policy increased exposure to formal (*madrassa*) Islamic education. Among exposed cohorts, SD INPRES decreased Islamic elementary enrollment. However,

*madrassa* absorbed some of the demand for secondary education that resulted from mass primary schooling.<sup>1</sup> The Islamic sector capitalized on this excess demand among INPRES graduates in some markets while also building more primary schools to compete locally with SD INPRES in others. We show that in markets where elementary *madrassa* also entered, the two types of schools acted as substitutes in generating years of education. Overall, demand effects at the secondary level offset substitution effects at the primary level and increased the likelihood that exposed cohorts attended a formal Islamic school. Thus, SD INPRES increased not only years of schooling but also, unexpectedly, exposure to *madrassa* education.

The model suggests that heterogeneous preferences determine the extent of market segmentation before mass schooling and shape demand-side responses thereafter. Empirically, we show that female students exhibit weaker substitution effects at the primary level, where *madrassa* offered an alternative to parents wary of educating their daughters in secular public schools, especially after a ban on female veiling in those schools. While SD INPRES had more limited impacts on total years of schooling among girls (roughly half the size among boys), those impacts might have been even more limited if not for the new Islamic elementary options. Families were also more likely to send their children to an Islamic (secondary) school in high-INPRES regions with deeper historical support for Islamic politics.

These results open a new window into the celebrated SD INPRES program and help explain the surprising political and ideological legacy of mass schooling. The school expansion did not benefit the autocratic President Suharto's political party, *Golkar*, in the 1977 and 1982 elections, nor after 1987 when affected cohorts began to vote. In the medium to long run, school-age exposure to SD INPRES did not increase support for *Pancasila*, use of the national language, or affinity with secular principles. Instead, exposed cohorts are more literate in Arabic (a core part of Islamic school curriculum) and exhibit greater piety across a range of Islamic practices. Among legislative candidates in the 2019 election, exposed cohorts are more likely to run with an Islamic party than with *Golkar* and less likely to campaign on nation-building themes. Finally, Arabic literacy among affected cohorts is passed on to children in the next generation. Overall, the policy did not bolster support for the regime nor adoption of a secular Indonesian identity. At the same time, the greater piety among INPRES-exposed cohorts was not accompanied by greater radicalization, measured via support for *sharia* law. Thus, while the state failed to curb religious influence in society, it did successfully stifle Islamism inside the classroom.

Our paper provides a new framework for understanding competition between the state and other providers of public goods over the course of development. While our focus is on education, the dynamics we study apply broadly to, e.g., interactions with informal tax systems or the challenges of imposing a monopoly on violence. Competitive frictions between state and non-state actors are especially salient in development settings, where limited capacity often leads states to outsource service delivery (Banerjee et al., 2019; Romero et al., 2020). Equipped with rich data on both formal and informal schools, we

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<sup>1</sup>Auxiliary data from the Indonesian Family Life Survey suggest that nearly 80% of students in Islamic secondary schools attended public primary schools, and Indonesia is perhaps not unique in the prevalence of public-to-private transitions. In a series of studies, James (1987a,b, 1993) observed, across many countries, that excess demand for secondary education was an inevitable outcome of mass primary schooling interventions and a potential driver of growth in private secondary schools. An advisor to the Indonesian government observed that “[i]n 1972, any plan that rapidly increased the number of students going beyond grade 6 would have resulted in grave problems of accommodation” (Beeby, 1979, p. 193). Moreover, a budgetary shock in the early 1980s due to declining oil revenue led to cutbacks in education spending, possibly frustrating the state's planned investments in secondary education. This created an opening for the Islamic sector in the years after SD INPRES.

provide original insights on the challenges associated with the formalization process. Our findings have implications for many settings where dual systems of governance involving traditional, informal, or religious authorities have endured (Acemoglu et al., 2014; Basurto et al., 2020).

Building on research across the social sciences, we also provide novel evidence on the role of education in nation building (Anderson, 1983; Boli et al., 1985; Erasmus, 1516; Gellner, 1983; Green, 1990). Recent work shows that mass schooling is introduced during periods of social conflict (Paglayan, 2022) and describes the strategies used by states to engage with religious schools (Ansell and Lindvall, 2013).<sup>2</sup> Our key innovation lies in understanding how the responses by non-state actors shape the impacts of mass schooling. Squicciarini (2020) shows how Catholic schooling slowed the diffusion of technical knowledge in 19th century France (see also Franck and Johnson, 2016); West and Woessmann (2010) argue that such backlash was pervasive in European states with a large Catholic population but where Catholicism was not the state religion.<sup>3</sup> In contrast, we explore competition between state and non-state schools after one of the largest school expansion programs ever implemented. Ultimately, the Islamic sector response contributed to the program's limited impacts on secular nation building.

Prior work on SD INPRES has not explored market dynamics or the program's nation-building consequences. Akresh et al. (2018) and Mazumder et al. (2019) explore intergenerational effects on similar outcomes as Duflo (2001), while Ashraf et al. (2020) study effects on ethnic groups with a bride price tradition. Martinez-Bravo (2017), Roth and Sumarto (2015), and Rohner and Saia (2019) explore impacts on governance, intergroup tolerance, and conflict. We expand the scope of analysis to provide new insights into the political economy of schooling reforms. Our findings on the market consequences of SD INPRES inform our understanding of education policy in societies with a strong non-state schooling sector.

These insights also advance the literature on education and its consequences for religious transmission. Some have explored the returns to Catholic schooling (Altonji et al., 2005; Neal, 1997), while others provide background on Islamic schooling in Muslim societies (Andrabi et al., 2006; Berman and Stepanyan, 2004). Few studies distinguish between private secular and religious schools, which often pursue distinct ideological objectives. Together, our findings suggest that mass public schooling in Indonesia fell short of its ideological objectives through a combination of exposure to religious education and increased transmission of Islamic values (as in Bisin et al., 2020; Carvalho et al., 2022). As a result, religiosity did not wane in the long run. As such, our paper is among the first to link educational expansion to greater piety, at the expense of secularization objectives.<sup>4</sup> We provide a novel answer to the puzzle of enduring religion in modernizing societies: religious institutions vary in their capacity to adapt to secularization, and religious schools can provide a relevant substitute to public education.

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<sup>2</sup>Alesina et al. (2021), Paglayan (2021), and Testa (2018) study why non-democratic regimes engage in mass schooling. In the U.S., Bandiera et al. (2019) link the rise of compulsory schooling to nation-building efforts in response to mass immigration. Cantoni et al. (2017) study how a curriculum reform affected political attitudes in China. Other studies show that (public and private) education fosters civic values and engagement (Andrabi et al., 2020; Dee, 2004; Larreguy and Marshall, 2017).

<sup>3</sup>On cultural backlash to state schooling policies, see also Fouka (2020) and Sakalli (2019) for examples from the U.S. and Turkey.

<sup>4</sup>Many studies show that education weakens religious practice (e.g., Hungerman, 2014), with examples in Germany (Arold et al., 2022; Becker et al., 2017) and Turkey (Cesur and Mocan, 2018; Gulesci and Meyersson, 2016). However, across countries there is considerable heterogeneity in the education-religiosity relationship (see Appendix Figure A.11).

## 2 Political Economy of Education in Indonesia

Indonesia's vibrant Islamic education sector reflects the enduring role of religious schools in a country home to more than 230 million Muslims. This section provides relevant background on the origins and the resilience of the country's dual education system.<sup>5</sup>

### 2.1 Origins and Characteristics of the Dual Education System

Indonesia's education system has historically been comprised of secular and religious schools. The former were modelled after the Dutch system and first built en masse during the colonial era. After 1945, Indonesia's new leaders sought to solidify the status of these schools. Amidst heated debate about the place of Islam in the young nation, they opted for a state-run secular education system governed by the Ministry of Education and Culture (MEC) and sought to diminish the influence of religious schools.<sup>6</sup>

Islamic schools long predated secular schools. The country's first religious schools were the *pesantren*, a type of boarding school blending Islamic and Javanese pedagogical principles. The oldest *pesantren* in our data was founded in the 15th century. Contemporary *pesantren* are dedicated to the study of Islam, face little regulatory oversight, and offer instruction across multiple ages often in the same classroom.

*Madrasa*, the main type of Islamic school operating today, are day schools that use methods similar to secular schools but offer more religious content. Inspired by reformist influences from Egypt, they appeared in Indonesia in the early 1900s as an attempt to modernize Islamic education and to counter growing Western influence (Kelabora, 1976; Kuipers, 2011). *Madrasa* operate at the same levels as secular schools, from primary to junior secondary to senior secondary, but teach a range of religious subjects that are not covered in the latter. This includes Islamic law (*fiqh*), doctrine (*aqidah*), ethics (*akhlaq*), the Qur'an and traditions of Prophet Muhammad (*hadith*), Arabic language, and history of the Prophets (*qisa al-anbiya*). The data described in Section 4 show that *madrasa* devote 26% of instruction hours to religious content on average with considerable variation (standard deviation of 6%). Meanwhile, only 5% is devoted to *Pancasila* and Civic Education and an additional 5% to Indonesian language and literature. Beyond the formal *madrasa*, more informal schools known as *madrasa diniyah* focus largely on Qur'anic study, often operate in the afternoon, and attract students who attend public schools in the morning.

Although officially under the purview of the Ministry of Religious Affairs (MORA), the Islamic education sector is highly decentralized with most establishments run through autonomous *waqf* endowments. *Waqf* provide the land on which schools are built and some of the revenue to cover construction and operating costs. Under Islamic law, assets held in *waqf* are inalienable and can only be used for a religious or charitable purpose. Bazzi et al. (2020) show how land transfers into *waqf* across much of the country in the 1960s allowed Islamic institutions such as *pesantren* and *madrasa* to thrive and ensured their financial autonomy for decades to come. These types of transfers would prove useful in funding the

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<sup>5</sup>Appendix C presents qualitative accounts from Islamic schools constructed during the mass schooling era. These oral histories provide additional insights into the legacy of competition between religious and state schools.

<sup>6</sup>In 1958, a reform effort failed to limit religious instruction time to 21–28% of study hours inside Islamic schools. Throughout the Sukarno era (1945–67), “the strong commitment of the Muslim community to having their own education system . . . made it impossible for the government to replace Islamic schools with non-religious schools” (Zuhdi, 2006, p. 75).

Islamic sector's response to mass public schooling in the 1970s and beyond. In addition to *waqf*-based financing, voluntary faith-based contributions (*infaq*) and obligatory alms (*zakat*) are important sources of revenue for Islamic schools. Large Islamic organizations run only a small fraction of all Islamic schools, but they are important vehicles for mobilizing these community contributions.<sup>7</sup>

Islamic schools comprise the majority (more than 60% in 2019) of all private schools, and within many markets, private school choice is effectively tantamount to Islamic school choice. Unlike non-religious private schools, Islamic and state schools charge minimal fees. According to 2015 household survey data (*Susenas*), average annual costs of primary *madrasa* were USD 20 compared to USD 21 for primary public, and students report traveling similar distances to attend each type of school. This suggests ample scope for local competition, something observed in the early 1970s as well: "[e]xcept for the small number who can afford the more expensive private schools, the only significant choice at the primary level is between schools under the Education Department [i.e., SD] and religious schools" (Beeby, 1979).

At the time of writing, Islamic schools enroll 21% of Indonesia's 60 million students (Appendix Table A.14). More than two-thirds of these students attend formal *madrasa* with the remainder in *pesantren*. The rest attend secular schools, the vast majority of which are public, especially at the primary level.

## 2.2 The Politics of SD INPRES

Despite multiple reform attempts, Indonesian governments under President Sukarno failed to homogenize the country's education system and to achieve universal primary schooling. In the 1960s, the country appeared deeply divided and a new regime, President Suharto's New Order, took hold after mass violence decimated a burgeoning Communist movement.

Suharto prioritized universal public education as part of a broader secular nation building agenda at odds with organized Islam. Confrontation emerged across multiple domains besides education. In the early 1970s, the state enacted a Marriage Law challenging Islamic marital norms traditionally enforced by Islamic courts (Cammack, 1989). The regime considered formal state recognition of indigenous animist religions, something Islamic leaders had long opposed. In 1973, the regime forced four existing Islamic political organizations into the umbrella United Development Party (*Partai Persatuan Pembangunan* or PPP). In 1977, the regime forced the PPP to drop Islamic symbolism (the Kabah shrine in Mecca) from its party symbol, and in 1984 forced it to adopt *Pancasila* as its official ideological platform.

The regime had tried in 1967 and again in 1972, failing both times, to convince Islamic schools to become state-run and to reduce their religious curriculum in exchange for greater fiscal subsidies. At the same time, Suharto's political party, *Golkar*, captured the Association for the Improvement of Islamic Education (known by its acronym, GUPPI). Less than a decade later in 1982, the government effectively banned the Islamic veil for girls inside public schools.

It is in this conflictual period that the government launched SD INPRES. With windfall oil revenues, the regime allocated considerable resources for primary school construction. Presidential Instruction No. 10/1973 and subsequent yearly decrees specified funding allocations to each district as a function

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<sup>7</sup>One of the large Islamic organizations, *Muhammadiyah*, operated roughly 1,900 or 3.6% of all *madrasa* in 2019. However, *Muhammadiyah* also controlled over 3,000 hectares of *waqf*-endowed property as of 2004 (Jahar, 2005).

of the child population not enrolled in school. In total, up to 61,000 schools were constructed between 1973–80 under the program, with districts receiving between 16 and 824 new elementary schools.<sup>8</sup>

Parallel to the school expansion program, a 1972 decree stipulated that all formal education must be administered by the MEC. This was strongly opposed by Muslim leaders and abandoned in 1975.<sup>9</sup> The regime also intended to expand secondary school construction after SD INPRES implementation. However, due to rapidly declining oil prices in the early 1980s, budgetary resources dried up, leaving the country with far fewer secondary public schools than anticipated by planners in the 1970s.

This vast educational reform agenda aimed at secularizing and homogenizing primary education. Civic education was to supplant certain Islamic subjects, while instruction was to take place in the national language, *Bahasa* Indonesia, rather than local ethnic languages or Arabic. The goal was to build a citizenry steeped in the inclusive *Pancasila* ideology and invested in the national identity. A [World Bank \(1989\)](#) report notes that "...public education was viewed by the Government as a key medium for promoting national unity—first, through instruction in *Pancasila*, and next through instruction in the national language" (p. 14), and that "[i]n so large and dispersed a country ... policymakers have consistently looked to neighborhood primary schools as vehicles for national integration" (p. 35).

Given its objective to expand public schooling, SD INPRES was prone to confrontation with the Islamic sector. The policy rule allocated resources proportional to the non-enrolled primary-school-age population at the district level within provinces. This meant building more schools in areas with greater unmet demand for formal education, where Islamic schools historically had a higher presence. [Section 3](#) offers a rigorous foundation for interpreting SD INPRES allocation across education markets, and [Section 5.1](#) provides evidence of targeting of communities long served by Islamic schools.

Yet, it seems unlikely that the state accounted for Islamic enrollment rates in the policy design. The SD INPRES guidelines were vague about how Islamic education should be treated. Decrees were only addressed to the Minister of Education and not the Minister of Religion who oversaw *madrasa*. An important article early in the original decree (10/1973) references students not accommodated in public elementary schools, but later discussions of the proportionality rule merely refer to children who have not been accommodated without specifying the type of school. Furthermore, the proportional targeting was informed by the 1971 Census, which did not distinguish Islamic school enrollment. Observers at the time noted that official "targets have no reference to children enrolled in primary Madrasah" ([Beeby, 1979](#), p. 196) and that the low enrollment rates in official data for some regions "could well be a function of the number of children who attend madrasah instead of sekolah dasar" ([Orr et al., 1977](#), p. 133).

Even though the state may not have been actively trying to target Islamic sector strongholds, this would have been a natural perception among many in the Muslim community, especially as the authoritarian regime became entrenched. Such tensions emerged in accounts from Islamic school leaders at the time (see [Appendix C](#)). Islamic school staff were required to take courses in *Pancasila*, accused of mobilizing for the PPP, and pressured to join GUPPI. In some communities, preachers urged congregants not

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<sup>8</sup>The Presidential Decrees for 1973–74 (INPRES 10/1973 and 6/1974), 1975–76 (6/1975 and 3/1976), 1977–78 (3/1977 and 6/1978) and 1979–80 (12/1979 and 6/1980) authorized grants for 6,000, 10,000, 15,000, and 14,000 new schools, respectively.

<sup>9</sup>According to [Zuhdi \(2006, p. 89\)](#), Muslim leaders believed the Decrees "intended, among other things, to weaken the status of the Islamic educational institutions ... they assumed that the government was trying to eliminate these latter ..."

to send their children to SD INPRES, which were derided as “school in hell” (*sekolah dalam neraka*) using a twist on the official acronym (*sekolah dasar negeri* or SDN).

Ultimately, the realized allocation of SD INPRES came from observable policy variation across districts and unobservable decisions by local officials within districts and over time. We prioritize the former variation in much of our analysis while using the latter to characterize hyper-local school entry dynamics. We also microfound and provide empirical evidence for the proposed correlation between Islamic school enrollment and the official enrollment rates used to target SD INPRES.

### 3 Theoretical Framework

In this section, we develop a general framework for understanding the interplay between public and religious schools. The extent to which religious schools can mitigate the impact of education reforms depends on the nature of competition in local markets as well as preferences for different types of schooling. We characterize local market conditions before the introduction of mass public schooling, as well as the response of religious schools to a windfall in the state budget allowing it to serve all markets.

This setup offers several new insights that can inform empirical analyses of school reforms in diverse societies. Before the advent of mass education, public and religious schools generally avoid serving the same markets. Budget constraints in each sector lead to market segmentation: religious schools enter (i) markets where the state has not entered, or (ii) markets where the state has entered but preferences are sufficiently diverse to support both types of schools. Because of this separation, a state-led educational expansion necessarily targets markets with a greater prevalence of religious schools. This expansion creates political frictions as new religious schools further differentiate their curriculum. In Appendix B, we show that mass primary schooling also increases demand for secondary education and leads religious schools to prioritize different markets, including those where the state has previously entered.

#### 3.1 Setup

The model features  $N$  markets each home to a unit mass of students with heterogeneous preferences for religious schooling. The state and religious sectors each aim to maximize total student enrollment, and they compete through market entry and curriculum choices. Each market can support a state school  $s$  and/or a religious school  $r$ . Preferences are uniformly distributed over  $[0, J]$ , and  $J$  varies across markets. Schools compete on a line à la [Hotelling \(1929\)](#) with students ordered from most secular to most religious. Student  $i$  has preferences  $\rho_i \in [0, J]$  and receives fixed utility  $u_{i(k)}$  from school  $k$ :

$$u_{i(k)} = v_k - (x_k - \rho_i)^2$$

where  $x_k$  denotes school curriculum and  $v_k$  school quality. We assume that state schools have higher quality than religious schools but that this quality differential is not large enough to enable the state to capture all demand, i.e.,  $v_r < v_s < 2v_r$ .<sup>10</sup> Student  $i$  attends school  $k$  if  $u_{i(k)} > 0$ , and otherwise chooses

<sup>10</sup>We further assume  $J > 2\sqrt{v_r}$  to focus on the case where markets are large enough to accommodate at least one school, be it  $s$  or  $r$ . Evidence on test-score differentials support the assumption about average quality differences (see Appendix A.3).

the school that maximizes  $u_i$ .

State and religious schools offer different curricula. At one end of the spectrum,  $s$  must provide a secular curriculum,  $x_s = 0$ . This captures the state's objective to standardize and secularize education. Religious schools endogenously choose their curriculum,  $x_r > 0$ .

To enter any market, a school must pay a fixed cost of 1. The state initially has budget  $S < N$ , preventing it from entering all markets. The budget of the religious sector is a constant fraction of the state's budget,  $R = \alpha S$ ,  $\alpha \in (0, 1)$ . Intuitively, the state and the religious sector raise revenue from the same tax base, but the religious sector has inferior tax capacity. We also use  $\alpha$  as a reduced form representation of the strength of Islamic institutions in terms of their capacity to mobilize resources. More generally, this parametrization reflects the idea that income shocks that enable the state to fund mass schooling reforms may also trickle down to other segments of society, including non-state providers of education.

**Timing.** The timing of the game is as follows:

1. The state decides which markets to enter.
2. The religious sector decides which markets to enter.
3. Each religious school  $r$  sets curriculum  $x_r$  in the market where it entered.
4. Students in each market decide which school to attend, if any.

In what follows, we solve the model by backward induction. Then, we consider the effects of an exogenous windfall in the state's education budget. In Appendix B.1, we provide all proofs. In Appendix B.2, we extend the model to allow religious schools to also provide secondary education.

## 3.2 Equilibrium

**Stage 4 (student choice).** In the final stage, each market may be served by a state school  $s$ , a religious school  $r$ , both schools, or no school. In markets with only  $s$ , all students who satisfy  $\rho_i \leq \sqrt{v_s}$  will attend  $s$ , and the total mass of these students is  $\sqrt{v_s}$ . In markets with only  $r$ , all students who satisfy  $\rho_i \in [x_r - \sqrt{v_r}, x_r + \sqrt{v_r}]$  will attend  $r$ . Given  $J > 2\sqrt{v_r}$ , in stage 3 school  $r$  will choose  $x_r$  such that its enrollment equals  $2\sqrt{v_r}$  in these markets. In markets with both  $s$  and  $r$ , any student satisfying both  $\rho_i \leq \sqrt{v_s}$  and  $\rho_i \in [x_r - \sqrt{v_r}, x_r + \sqrt{v_r}]$  will choose to attend  $s$  over  $r$  if and only if:

$$(v_s - v_r) \geq x_r(2\rho_i - x_r)$$

Intuitively, students compare the benefit of higher schooling quality inside  $s$  with the benefit of more religious education inside  $r$ . Note that this constraint matters if and only if  $x_r < \sqrt{v_s} + \sqrt{v_r}$ .

**Stage 3 (curriculum choice).** In markets where it operates alone,  $r$  can pick from a range of  $x_r$  that yield a payoff of  $2\sqrt{v_r}$ . The range of optimal curricula is given by  $x_r \in [\sqrt{v_r}, J - \sqrt{v_r}]$ . In markets served by both  $s$  and  $r$ , two cases arise. In the more religious markets (satisfying  $J \geq 2\sqrt{v_r} + \sqrt{v_s} \equiv \mathcal{M}$ ), which

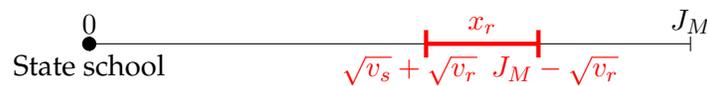
we call *major* markets,  $r$  is not constrained by competition from  $s$  and can choose any  $x_r$  that yields a payoff of  $2\sqrt{v_r}$ , e.g.,  $x_r = J - \sqrt{v_r}$ . In the less religious markets (satisfying  $J < \mathcal{M}$ ), which we call *minor* markets,  $r$  has a unique optimal choice of  $x_r = J - \sqrt{v_r}$ . In both cases, focusing on the most religious students by setting  $x_r = J - \sqrt{v_r}$  is always a best response for the religious school.

**Stage 2 (religious school entry).** From the perspective of school  $r$ , markets can be split into three groups: (i) major markets, (ii) minor markets with no school  $s$ , and (iii) minor markets with school  $s$ . The first two types of markets have value  $2\sqrt{v_r}$  to school  $r$ . The third market has value less than  $2\sqrt{v_r}$ , which is also increasing in the market's  $J$ . Thus, the religious sector will prioritize the first two types of markets, namely the more religious markets (higher  $J$ ) and less religious markets where the state has not entered. Only then, if it has any budget left over, will it enter remaining markets in descending order of  $J$ .

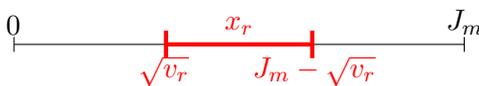
**Stage 1 (state school entry).** The state can enter up to  $S < N$  markets and anticipates that religious schools will be present in  $\lfloor R \rfloor$  markets. From the state's perspective, there are two cases to consider. Let  $m$  be the number of major markets satisfying  $J \geq \mathcal{M}$ . If the combined budget of both sectors is small enough (i.e., if  $S + R \leq N + m$ ), then the two sectors split markets in such a way as to never compete for the same students. That is, there is no minor market where both schools enter—the schools might enter the same major market but would split minor markets without overlap.

If  $S + R > N + m$ , then there are multiple equilibria where both schools enter *all* major markets and  $S + R - N - m$  of the largest minor markets, and split the remaining minor markets in a non-overlapping way. Multiple equilibria come from rearranging how the schools split the smaller minor markets, but all equilibria have them jointly enter every major market and a few of the largest minor markets. The figure below illustrates the equilibrium prevailing in each market where a religious school has entered, with the range of optimal curricula for the religious school highlighted in red:<sup>11</sup>

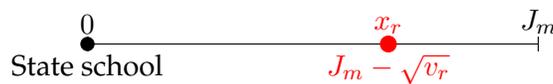
1. Major markets with a state school:



2. Minor markets with no state school:



3. Minor markets with a state school:



<sup>11</sup>If  $S + R \leq N + m$ , then there may also be major markets with no state school, in which case school  $r$  sets  $x_r$  as in case 2. If  $S + R < N$ , then there are some markets where neither school  $s$  nor school  $r$  enters.

Overall, this setup sheds light on the market segmentation that characterizes the education sector before the introduction of mass public schooling. State schools and religious schools target segments of the population with different underlying preferences, with the latter prioritizing either the more religious markets or less religious markets that are underserved by the state. Curriculum differentiation allows religious schools to maximize student attendance in crowded markets, but the absence of state schools in some markets implies that curriculum may be set at a lower (less religious) level in those markets.

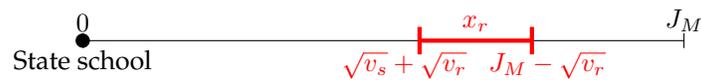
### 3.3 Budget Windfall

We now consider an exogenous increase in the state's budget to  $N$ . This allows the state to build schools in markets where it had not previously entered. In this case, there is an equilibrium in which the state enters all markets, whereas the religious sector enters  $\lfloor \alpha N \rfloor$  markets. If there are many major markets, where  $m \geq \lfloor \alpha N \rfloor$ , then the religious sector simply enters as many of them as it can afford. If  $m < \lfloor \alpha N \rfloor$ , then the religious sector enters all major markets and  $\lfloor \alpha N \rfloor - m$  of the largest minor markets, and this is a unique equilibrium. Regardless of the exact equilibrium outcome, the increase in the state's budget leads to a corresponding increase of  $\lfloor \alpha N \rfloor - \lfloor \alpha S \rfloor$  in the number of markets that religious schools enter, where  $S$  is the initial state budget before the windfall.

**Religious Curriculum.** The state's budget windfall affects the choice of curriculum for religious school  $r$ . Recall that in the baseline case, the optimal curriculum  $x_r$  depends on the type of market. In any market without  $s$ , any  $x_r \in [\sqrt{v_r}, J - \sqrt{v_r}]$  is optimal. In major markets with  $s$ , any  $x_r \in [\sqrt{v_s} + \sqrt{v_r}, J - \sqrt{v_r}]$  is optimal. In minor markets with  $s$ , the unique optimal choice is  $x_r = J - \sqrt{v_r}$ .

Mass public schooling affects curriculum choice in all markets where  $r$  previously was and  $s$  was not. In major markets where the state could not previously afford to enter, the set of optimal curricula shifts upward from  $[\sqrt{v_r}, J - \sqrt{v_r}]$  to  $[\sqrt{v_s} + \sqrt{v_r}, J - \sqrt{v_r}]$ , i.e., some of the less religious curricula are eliminated. In minor markets, the change is even more pronounced. All less religious curricula are eliminated, and the only optimal choice is the previous upper bound  $x_r = J - \sqrt{v_r}$ . As a result, mass public schooling increases incentives to further differentiate curriculum inside religious schools. The figure below illustrates the new equilibrium prevailing across major and minor markets.

1. Major markets:



2. Minor markets:



**Taking Stock.** The results above guide our analysis of the effects of SD INPRES on Islamic school entry, curriculum differentiation, and students' school choice. There are four main implications to consider.

First, SD INPRES increases the number of markets where both types of schools compete and coexist. That is, we expect to see a larger number of markets supporting both types of schools, rather than state schools crowding out religious schools in districts with higher SD INPRES intensity. In order to maximize enrollment, the religious sector continues to prioritize major markets, which are the same markets prioritized by the state in the process of educational expansion. If there were previously markets served by neither sector, then mass schooling may lead to both sectors jointly entering these markets. Regardless of the exact baseline situation, mass schooling increases religious school entry.

Second, a higher fundraising capacity of the religious education sector (higher  $\alpha$ ) allows the latter to compete in more markets. If we allow  $\alpha$  to vary across markets (e.g., if the funds raised for Islamic school construction are not fully fungible across markets), then the markets with higher taxation capacity should see relatively more religious school entry.

Third, the entry of state schools in new markets induces religious schools to differentiate towards more religious curriculum in those same markets. In the model, such differentiation is needed for the religious sector to minimize the potential loss in enrollment induced by mass public schooling. In practice, if schools face frictions in their ability to adjust curriculum over time, then we expect newer schools founded after SD INPRES to be more differentiated on curriculum than older ones.

Finally, introducing religious secondary education makes it relatively more likely that Islamic schools will locate in the same markets as public schools, as they seek to capture excess demand from primary graduates educated in either sector. This also increases incentives to make curriculum more religious at the primary level. Appendix B.2 discusses the formal details underlying this last set of predictions. We turn now to a discussion of the novel data that allow us to test these hypotheses.

## 4 Data

We explore the effects of SD INPRES on education markets by combining survey data on Islamic education with administrative data on Islamic school construction and curriculum. Additional data sources, described in Section 7, help establish how the policy shaped downstream nation-building outcomes.

**Survey Data on Schooling.** We measure Islamic school attendance and other information on education status using six rounds of the National Socioeconomic Survey (*Susenas*) from 2012–2018. These surveys report breakdowns of *madrassa* and secular education as well as information on birthplace, which is needed to identify childhood exposure to SD INPRES. *Susenas* does not record informal (*pesantren*) Islamic education. Moreover, it only identifies school type for the final level of attainment and hence misses switching across Islamic and secular schools. We revisit this in Section 6.1, where we also use the Indonesia Family Life Survey (IFLS) for validation. The IFLS is a longitudinal survey spanning 1993 to 2014, which unlike *Susenas* records schooling type for each year of education. However, the IFLS has limited geographic scope, which complicates analyses of policies with spatial variation like SD INPRES. Appendix Table A.14 reports Islamic schooling rates in the IFLS, *Susenas*, and administrative data.

**School Registries.** We use newly compiled administrative data from MORA comprising the universe of *madrassa* and *pesantren* active in 2019 (see Appendix D for details). In total, there are 52,398 formal *madrassa*

across different grade levels, 82,871 informal *madrasa diniyah* (Qur'an study schools), and 25,938 *pesantren* with establishment dates spanning more than 100 years. We rely on an analogous MEC registry of secular schools active in 2019. These data comprise 219,145 schools and include date of establishment, grade level, and private/public status. We address potential concerns about survival bias in these registries using a triennial administrative census of villages (known as *Podes*) beginning in 1980.

While *pesantren* may constitute an important part of the response to SD INPRES, their higher level of informality makes them more difficult to study than *madrasa*. *Susenas* does not record *pesantren* attendance as *pesantren* do not follow the national exams. Nor does the MORA registry clarify the level at which a given *pesantren* organizes its instruction; many, in fact, teach students of all ages under one roof.

**School Curriculum.** We study curriculum using an online registry of schools, called *Sistem Informasi Aplikasi Pendidikan* (SIAP). This database includes breakdowns of *madrasa* curriculum with hour-by-hour subject timetables each week. While the data cover nearly 20% of *madrasa*, secular schools do not report to SIAP, in large part because those schools offer much more standardized curricula, leaving little scope for (marketable) differentiation. The timetables provide a unique window into the learning environment at Islamic schools. Our main interest lies in time allocated to (i) Islamic subjects, including Arabic language and literature, (ii) *Pancasila*/civic education, and (iii) Indonesian language and literature.

## 5 Religious School Entry and Differentiation

This section establishes how SD INPRES shaped education markets in light of the model in Section 3. We begin by clarifying why the program appears to have targeted areas with a larger Islamic school sector. We then show how the Islamic sector responded. First, Muslim society, equipped with a mechanism for quickly mobilizing private resources (*waqf*), expanded religious schooling in locations with greater SD INPRES entry. Second, Islamic schools entering high-INPRES districts after the policy provide a greater volume of religious content. Third, SD INPRES incentivized formalization within the Islamic sector. Together, these results set the stage for understanding subsequent changes in religious school choice.

### 5.1 Initial Placement of Islamic and SD INPRES

Section 3 shows that before mass schooling, religious schools mainly serve two types of markets: those without a state school and those with sufficiently heterogeneous preferences to host both religious and state schools. As a result, the introduction of mass public schooling leads to the state entering many markets previously served solely by religious schools.

We test this conjecture in Figure 1. Panel (a) illustrates the policy rule: the number of INPRES schools allocated to a district is proportional to the population of children not enrolled in school in the 1971 Census. Panel (b) shows that, consistent with the model, Islamic primary schools are more likely to operate in areas under-served by the state. The elasticity of Islamic schools with respect to the unenrolled population is 0.84. This induces a strong correlation between the number of SD INPRES schools built and the pre-existing stock of Islamic schools (panel c). The elasticity of SD INPRES built with respect to existing Islamic schools, controlling for province dummies and the population of children not unrolled,

is 0.19. The elasticity is similar in panel (d), which controls for the vote share of Islamic parties in the 1955 and 1957 elections, the last democratic contests before our study period.

Table 1 validates the graphical evidence in Figure 1 and offers additional insights. First, we find similar evidence of endogenous targeting using supply-side (column 1) or demand-side (column 2) measures of Islamic primary education. The latter is consistent with the *de jure* targeting rule not including Islamic school enrollment (see Section 2.2). Second, conditional on the prevalence of Islamic education, the vote share of Islamic parties in the 1950s is also positively correlated with SD INPRES allocation (column 4). This aligns with the model’s prediction that the state would allocate more schools to markets with a greater range of religious preferences (even if those markets were not served by an Islamic school at baseline). Finally, column 5 provides more localized, village-level evidence on confrontation: INPRES schools were more likely to be built in villages with an Islamic elementary school and less likely in villages with a public or private (non-Islamic) elementary school.

Together, these results support the model’s insights about SD INPRES allocation. The state allocated more schools to areas with lower enrollment in formal educational institutions. It was in these areas that less formal religious schools had been more prevalent prior to SD INPRES. Thus, even though the state may not have explicitly aimed to contest religious schools’ market power, this would have been the perception among Muslim leaders witnessing public schools being built in their communities for the first time. Such perceptions underlie the tension between the Islamic sector and the Suharto regime (Section 2.2). We turn now to evidence of competitive dynamics induced by the policy.

## 5.2 Islamic School Entry

This section characterizes the Islamic sector entry response to SD INPRES using two distinct identification strategies. The first relies on cross-sectional policy variation at the district level. The second exploits the staggered entry of SD INPRES at the village level.

**District Level.** We estimate a balanced panel specification at the district-year level from 1960–99:

$$y_{jt} = \theta_j + \theta_t + \beta \text{INPRES}_{jt} + (\mathbf{X}'_j \boldsymbol{\theta}_t)' \boldsymbol{\eta} + \varepsilon_{jt}, \quad (1)$$

where  $y_{jt}$  denotes the number of Islamic schools built in district  $j$  and year  $t$ , per 1,000 children in 1971, and  $\theta_j$  and  $\theta_t$  are corresponding fixed effects.  $\text{INPRES}_{jt}$  equals zero for all districts before 1972 and equals SD INPRES schools per 1,000 children thereafter. With  $\mathbf{X}'_j \boldsymbol{\theta}_t$ , we flexibly account for differential trends by interacting year fixed effects with (i) the INPRES targeting variables (i.e., the district’s 1971 child population, school enrollment) and a concurrent governmental water and sanitation program (as in Duflo, 2001), and (ii) the prevalence in 1959 of Islamic elementary, junior secondary, senior secondary, and boarding schools, each separately. Standard errors are clustered at the district level.

We estimate equation (1) using a standard difference-in-differences (DID) as well as the new synthetic differences-in-differences (SDID) approach from Arkhangelsky et al. (2021). In the standard DID, we construct  $\text{INPRES}_{jt}$  as the interaction between the number of INPRES schools built per 1,000 children in district  $j$  between 1973–78 and a dummy variable for panel years from 1973 onwards. The synthetic

DID approach reweights and matches pre-INPRES trends in Islamic school construction across high- and low-INPRES exposure districts. This delivers estimates that are more robust than standard DID to violations of parallel trends. For implementation, SDID requires a binary regressor; we set  $\text{INPRES}_{jt}$  equal to 1 for districts above the 51st percentile in INPRES school construction (in years  $\geq 1973$ ).<sup>12</sup>

Table 2 shows greater entry of Islamic schools in high-INPRES districts: formal *madrassa* at the elementary (column 1), junior secondary (column 2), and senior secondary level (column 3), the informal *pesantren* (column 4) and *diniyah* (column 5), and the total number of Islamic schools of all types (column 6). In the standard DID (panel a), a one standard deviation increase in INPRES schools leads to 0.013 more Islamic schools per district-year and per 1,000 children, i.e, 1.4 additional Islamic school entries in the average district relative to a mean entry of 1.9 Islamic schools per district in 1972. The SDID specification delivers positive and slightly larger estimates (panel b). This suggests that the increased supply of Islamic schools in high-INPRES districts is not an artifact of diverging pre-trends. Rather, the point estimates panels (a) and (b) are consistent with a break in trend around the mid-1970s as religious leaders and organizations mobilized in locations with greater public school entry.

We provide further evidence of this trend break in Figures 2 and 3, which plot event studies showing the dynamic response to the state’s primary school expansion. Figure 2 allows  $\beta$  in equation (1) to vary by semi-decade in the standard DID, and Figure 3 reports an analogous visualization for SDID. The latter tracks the annual variation in the high-INPRES (in red) and low-INPRES districts (in blue), and the straight lines and black arrow indicate the magnitude of the entry differential in the mid-1980s. Across both approaches, high-INPRES districts experience more secondary *madrassa* and *pesantren* entry after 1973. A similar pattern holds for elementary *madrassa*, though the village-based results below offer a clearer, more granular window into the entry response at this grade level.

*Robustness.* Several robustness checks point to a causal interpretation of the Islamic sector response. First, in addition to the SDID results being robust to violations of parallel trends, the formal procedure in Roth and Rambachan (2022) further validates the visual impression from Figure 2 of a lack of pre-trends in the standard DID (see Appendix Figure A.1).<sup>13</sup> Second, the patterns are unlikely to be an artifact of survivor bias in the 2019 registry of Islamic schools. Appendix Table A.2 shows that the increase in Islamic school entry after the 1970s can be seen in historical administrative data (from Podes 1980, 1983, 1990, 1993) that is not subject to the attrition biases inherent to contemporary administrative registries. Third, we show robustness to interacting year FE with several other factors associated with

<sup>12</sup>We use the 51st percentile rather than the median because the estimator requires the number of control units to be larger than the number of treated units. While SDID uses less INPRES variation, by necessity of this discretization, it offers more compelling “local” comparisons across districts and time periods in which parallel trends are more likely to hold.

<sup>13</sup>This new approach departs from the usual visual inspection and testing for the significance of pre-trends—a procedure that has been criticized in recent work for its lack of theoretical foundation. Roth and Rambachan (2022) propose a novel method that formalizes the motivation behind pre-trends tests, namely that the counterfactual post-intervention trends cannot depart too much from the pre-trends. Their method circumvents the need for pre-trends testing, instead allowing for uncertainty over the magnitude of the true trends in the pre-period. In Appendix Figure A.1, we report confidence sets that answer how much the post-INPRES trends in Islamic school entry would need to differ from the pre-trends in order to nullify the findings. We compute these confidence sets allowing this “how much” factor  $\bar{m}$  to vary from 0 to 1.5 and find that for most outcomes the results break down at rather large values of  $\bar{m}$ , suggesting that our findings are unlikely to be driven by non-parallel trends. To invalidate the aggregate Islamic school entry results, we would need to allow for a post-INPRES violation of parallel trends that is more than 1.5 times larger than the maximal pre-treatment violation.

a stronger religious schooling sector historically, including the prevalence of *waqf* endowments in 1960, the Muslim population share in the 1972 Census, Islamic political party support in the 1950s, historical Arab minority populations, and the presence of an armed Islamist insurgency in the 1950s.<sup>14</sup> In this set of controls we also include an indicator for districts involved in an experimental compulsory schooling program after 1957 (see Section 6.1). Some of these factors shaped the Islamic sector response to SD INPRES as we show later, but Appendix Table A.1 shows that the core results in Table 2 are robust to allowing for differential trends with respect to these predetermined controls.

**Village Level.** The district-level estimates capture Islamic sector entry effects averaged across several local education markets. We now use a village-level specification to identify more local entry dynamics:

$$y_{vt} = \theta_v + \theta_t + \sum_{\tau=-5}^{10} \gamma_{\tau} \text{INPRES}_{v,t-\tau} + (\mathbf{X}'_v \boldsymbol{\theta}_t) \boldsymbol{\eta} + \varepsilon_{vt}, \quad (2)$$

where  $y_{vt}$  denotes Islamic schools built in village  $v$  in year  $t$  with corresponding fixed effects,  $\theta_v$  and  $\theta_t$ .  $\text{INPRES}_{v,t-\tau}$  is a binary indicator for each year until/after the first SD INPRES school is constructed from 1973 to 1978 (entry is normalized to  $\tau = 0$ ). The  $\mathbf{X}'_v \boldsymbol{\theta}_t$  vector includes the numbers of public and Islamic schools (combining *madrassa* and *pesantren*) in village  $v$  in 1959, each interacted with year FE. Standard errors are clustered at the village level.

We estimate equation (2) on a balanced panel from 1960 to 1999 using the robust and efficient estimator developed by Borusyak et al. (2021).<sup>15</sup> In robustness checks, we also use a shorter panel spanning 1968–83. By allowing for arbitrary effect heterogeneity, this estimator addresses the concern that the staggered entry of SD INPRES may have had time-varying effects, which complicates the interpretation of standard DID estimates. Such time-varying heterogeneity could arise if, for example, the Islamic sector responded more effectively later in the 1970s once the government’s secularization effort behind SD INPRES became more widely understood.

Although this specification provides more granular evidence of strategic Islamic school entry, it does so by eschewing the policy variation across districts and instead relying on differences in the timing of SD INPRES entry. While much of this variation at the village level is likely driven by idiosyncratic factors such as local administrative frictions and availability of funds, some of this variation in the timing of entry may also be endogenous with respect to latent and realized differences in religious schooling. Reassuringly, the Borusyak et al. (2021) estimator shows no evidence of pre-trends for Islamic (Figure 4) or non-Islamic private schools (Appendix Figure A.4). In Appendix Table A.3, we show that the timing of SD INPRES entry at the village level between 1973–78 is largely uncorrelated with the presence of various types of Islamic schools in 1972, as well as predetermined agricultural productivity (potential crop yields) and natural advantages (e.g., elevation, distance to the coast).

<sup>14</sup>In the Indonesian context, support for Islamic parties correlates strongly with support for greater religious influence in various public domains including education (see Pepinsky et al., 2018). We draw on data compiled by Bazzi et al. (2020) to measure (i) Islamic political party support in the 1955 and 1957 legislative elections, (ii) ethnic Arab populations in the colonial era, and (iii) the presence of the Darul Islam movement, an insurgency aimed at establishing an Islamic state in Indonesia.

<sup>15</sup>This procedure (i) estimates fixed effects using untreated observations (i.e., villages with no SD INPRES entry from 1973 to 1978), then (ii) imputes untreated outcomes for treated observations, and finally (iii) computes estimates of  $\gamma_{\tau}$  parameters as weighted averages over the differences between actual and imputed outcomes.

The results in Figure 4 provide further evidence of a dynamic Islamic sector response that varies across types and levels of schooling. Following largely flat pre-trends, the construction of an INPRES school is followed by a jump in the likelihood of Islamic school entry (panel a), which is driven in the short run by primary *madrassa* (MI) entry (panel b). The latter persists for roughly six years, and effect sizes imply a doubling of the baseline annual entry rate (roughly 0.002). Six years after SD INPRES entry, we see a reduction in MI entry back to baseline. This suggests that Islamic leaders sought to compete head-on with the newly built public primary schools in their communities.<sup>16</sup> At the same time, Islamic junior secondary school (MTs) entry peaks around year 6–9 after SD INPRES construction (panel b). This is intuitive and in line with the model extension in Appendix B.2. As SD INPRES students graduate (alongside those from newly built MI), MTs entered in order to capture some of their demand for continued education. In panel (c), we find smaller responses at the senior secondary (MA) level, perhaps in part because these schools tend to serve multiple villages.

In addition to greater entry of formal *madrassa*, SD INPRES construction is also associated with greater entry of informal Islamic schools. The patterns are stronger for Qur’anic study schools (panel e) than for Islamic boarding schools (panel d). Entry of the former ratchets upwards around the time when SD INPRES students would have acquired sufficient reading skills to engage with the Qur’an (2nd or 3rd grade). This is consistent with the common practice of attending SD INPRES in the morning and *madrassa diniyah* (MD) in the afternoon. Moreover, at the local level, formal elementary MI and informal MD appear to be substitutable: the post-INPRES entry dynamics are mirror images across panels (a) and (e), and 86% of the MD entering from 1973–78 were built in villages without any MI construction, while 91% of the entering MI were built in villages without any MD construction.

Panels (c) and (d) of Table 2 summarize the graphical evidence in a single DID estimate, providing similar takeaways as the district-level results in panels (a) and (b). These village-level results hold using a standard DID estimator (panel c) or the Borusyak et al. (2021) estimator (panel d), which suggests limited biases due to time-varying heterogeneity (see also Appendix Figure A.3).<sup>17</sup> This is reassuring as it supports use of the standard DID estimator when looking below at interactions of SD INPRES entry and Islamic sector supply shifters. Overall, these results suggest that SD INPRES did not displace Islamic schools but instead increased options for both secular and religious education.

### 5.3 Financing New Islamic Schools

How did the Islamic education sector finance its expansion in the aftermath of SD INPRES? For decades, private Muslim actors, both individuals and organizations, had funded schools through *waqf* endowments (Bazzi et al., 2020). In addition to endowing as *waqf* the land on which Islamic schools are built, Muslims in rural areas also endow agricultural land and regularly offer harvest revenue to support religious infrastructure (see Section 2.1). Given this common practice, large swings in commodity prices might affect the scope for charitable giving. Somewhat fortuitously for Islamic leaders, the initial year of

<sup>16</sup>The immediate Islamic elementary response, within a year of SD INPRES being built, is consistent with the very short time required to establish an Islamic school at that level through the use of informal financing (see Appendix C for examples).

<sup>17</sup>Appendix Table A.4 shows that the Borusyak et al. (2021) estimates are robust to removing time-varying controls, using a shorter panel window spanning 1968–83 (as in panel b of Table 3), and clustering standard errors by district.

SD INPRES saw a huge spike in the price of rice, Indonesia’s main agricultural commodity.<sup>18</sup>

Using granular village-level data, we show that these informal financing mechanisms fueled the Islamic sector response to SD INPRES. In Table 3, we examine the role of *waqf* endowments as well as exposure to the 1970s rice price boom in supporting Islamic school construction. We estimate these heterogeneous effects using the following balanced panel specification:

$$y_{vt} = \theta_v + \theta_t + \beta_0 \text{INPRES}_{vt} + \beta_1 (\text{INPRES}_{vt} \times \text{rice yield}_{v0}) + \beta_2 (\text{INPRES}_{vt} \times \text{waqf}_{v0}) + (\mathbf{X}'_v \boldsymbol{\theta}_t) \boldsymbol{\eta} + \varepsilon_{vt}, \quad (3)$$

where *rice yield* is a standardized measure of potential yield from the FAO-GAEZ based on predetermined agroclimatic characteristics, and *waqf* is a binary indicator equal to one if the village has any *waqf* endowments before the initial year of the panel. The fixed effects, differential trends controls, and inference are otherwise similar to the DID analogue of equation (2).

Table 3 reveals stronger entry responses in villages with greater capacity to fund new Islamic schools. Panel (a) reports results for 1960–99 as in Table 2, and panel (b) restricts to 1968–83. Villages with pre-existing *waqf* endowments and a one-standard-deviation higher potential rice yield exhibit, respectively, a ten- and four-fold greater likelihood of building an Islamic school after the construction of SD INPRES (column 6). Overall, the results point to a mobilization mechanism whereby local institutions and resources enabled the Islamic sector to compete with the rapidly expanding state sector.

**Robustness and Validation Checks.** Several robustness checks corroborate our interpretation of these results. First, the heterogeneous response to SD INPRES entry does not arise in other periods (e.g., 1960–68 or 1990–98, Appendix Table A.6) when the interplay between Islamic leaders and the regime was less conflictual *and* when rice prices were much lower. Second, we find less heterogeneity with respect to the potential yield for maize, which, although also subject to a large price shock, dwarfs in importance relative to rice (Appendix Table A.7).<sup>19</sup> Third, during the SD INPRES period, entry of non-Islamic private schools did not vary systematically with the prevalence of *waqf* endowments (Appendix Table A.8).

As further indication of a financing channel, we find evidence that informal private contributions sustained the Islamic sector response to SD INPRES. Appendix Table A.9 reports higher rates of informal taxation to finance educational infrastructure in villages with Islamic schools built during the SD INPRES era. These rates do not vary and may, in fact, be lower in villages with public schools built at that time. These results, based on survey data from 2007–13 (see Olken and Singhal, 2011), are consistent with religious schools relying more heavily on private funding and faith-based charitable giving.

Finally, we find suggestive evidence of resource constraints as informally-financed religious schools crowd out other local public goods. Appendix Table A.9 reveals crowd-out of non-religious goods: in villages with Islamic schools, informal taxation to finance schools (and houses of worship) crowds out

<sup>18</sup>Prices increased by 280% from 1972 to 1973 and remained unprecedentedly high for the remaining years of the 1970s (see Appendix Figure A.6). Although many rice farmers are net consumers, larger, net producers are those most likely to contribute large sums to fund local religious infrastructure and to endow *waqf* properties. Even small net consumers may have contributed to such infrastructure: we encountered several Islamic school founders describe a so-called “cash *waqf*” wherein villagers offer very small contributions out of agricultural income to support local Islamic schools (see Appendix C).

<sup>19</sup>The rice-price-shock mechanism is also broadly consistent with rice-growing areas having a more collectivistic culture that enables faster community-based mobilization in response to shocks (Geertz, 1963; Talhelm et al., 2014).

informal financing of roads and bridges. Appendix Table A.10 reveals crowd-out of other religious goods: in districts with greater SD INPRES construction, Islamic schools comprise a larger share of total *waqf*-endowed land as of 2019, and this comes at the expense of mosques.<sup>20</sup> In sum, SD INPRES induced greater mobilization of *waqf* resources to support an expansion of religious schooling, and, in prioritizing education, the Muslim community partially crowded out *waqf*-based religious public goods.

## 5.4 Curriculum Differentiation

Section 3 shows that as public schools enter new markets, Islamic schools must adjust their curriculum. We explore such curricular shifts using equation (1) and the SIAP data, which allow us to identify differences in the 2018–19 curriculum across *madrasa* built before and after SD INPRES.<sup>21</sup>

Table 4 shows that Islamic schools created in high-INPRES districts after 1972 provide more religious content. Each additional SD INPRES is associated with a 1.2 percentage point (p.p.) increase in the share of classroom time devoted to religious content among newly created Islamic schools (panel a, column 1), with increases of 1.3 p.p. and 2.3 p.p. at the primary and junior secondary levels, respectively (panel a, columns 2–3). These are sizable effects relative to curriculum among schools built before 1972, e.g., the 2.3 p.p. increase equals 9% of the mean and 82% of the standard deviation. We find similar effect sizes for Arabic instruction (panel b). Although noisy, the estimates in panels (c) and (d) suggest that some of the increase in Islamic content and Arabic instruction comes at the expense of *Pancasila*/civic education and national language (*Bahasa Indonesia*) instruction.<sup>22</sup> Appendix Table A.12 shows that these general patterns hold when measuring total instruction hours. This is important inasmuch as some Islamic schools may have increased classroom time to accommodate other non-religious subjects.

These findings are generally consistent with a key prediction of the model. As the state built more secular schools, Islamic school curricula became more religious so as to continue attracting students from more conservative families. Appendix Table A.13 validates this interpretation by showing, especially at the secondary level, a stronger curriculum differentiation response in markets with greater historical support for conservative Islam (again proxied by Islamic political party vote shares in the 1950s).

Ultimately, students in these new religious schools would devote less time to civic education and study of the national language—two important inputs to the homogenizing function of mass schooling. This crowding out of secular subjects may also have broader implications for human capital formation (see Appendix A.3 for evidence on the link between curriculum and standardized test scores).

<sup>20</sup>These results are based on administrative data from the Indonesian *Waqf* Board, which provides detailed breakdown of the type of infrastructure but does not provide reliable measures of the time at which the *waqf* was founded.

<sup>21</sup>Unlike equation (1), these are unbalanced panel specifications where each outcome is a mean across all schools entering in a given district-grade-year. A school's curriculum is closely attached to its ideology, which arguably has persistent features tied to the identity of founders. Moreover, given the legacy of conservative schools' opposition to state oversight, we suspect that the *madrasa* included in the SIAP registry are those with less Islamic content. This could work against our findings if such selective reporting is differential in high-INPRES districts. Yet, we find no evidence of differential reporting: *madrasa* created after 1972 in high-INPRES districts are no more or less likely to report to SIAP.

<sup>22</sup>Despite these shifts at the primary and junior secondary level, we find different patterns at the senior secondary level where SD INPRES is associated with a reduction, albeit statistically insignificant, in Islamic content and an increase in Arabic and *Pancasila* instruction (panels a–c, column 4). This goes against some of the findings elsewhere but may be an artifact of the small number of senior secondary schools in SIAP. It also hints at a possible secularization of senior secondary Islamic schools aimed at capturing junior secondary graduates intent on going on to non-Islamic universities.

## 5.5 Formalization and the Durability of the Dual System

The Islamic education sector adapted to mass public schooling in a way that ensured its survival over the long run. Here, we offer additional insights into this process, documenting a pattern of formalization within the Islamic sector, and comparing entry responses across Islamic and other education providers.

**Formalization of the Islamic Sector.** Prior to the 1970s, *pesantren* and *madrassa diniyah* played a prominent role in Islamic education. After SD INPRES, these informal providers continued to enter systematically (see Section 5.2). *Diniyah* offered extracurricular religious instruction in communities where young children were now spending most of their day in secular schools. *Pesantren* offered even more religious content than formal *madrassa* and continued to cater to the most conservative segment of society.

While informal religious education expanded in high-INPRES markets, formal religious education expanded even faster. Figure 5 shows that these markets experienced a rise in the influence of *madrassa* at the expense of the more informal *pesantren* and *diniyah*: while entry of the former increased (panel a), the latter declined as a share of all new school entries (panel b). The share of entering *madrassa* was relatively lower in high-INPRES districts during the height of the program in the late 1970s. By the early 1980s, however, formal *madrassa* entry outpaced non-Islamic school entry. The reverse is true for informal Islamic schools. Appendix Table A.5 corroborates this set of results: *madrassa* entry increased as a share of all new school entry (column 1), while the entry of informal Islamic schools (*pesantren* and *diniyah*) declined as a share of all new schools (column 2) and all new Islamic schools (column 3).

Unlike *pesantren*, the formal *madrassa* are organized along the same primary-to-secondary trajectory as state schools. This ensures steady progression across grade levels and allows for switching between public and religious schools, providing option value to moderate but still religious parents.<sup>23</sup> While outpacing *pesantren* entry in many high-INPRES markets, the newly entering formal *madrassa* still introduced more religious curriculum than incumbent *madrassa* (see Section 5.4). This ensured that greater formalization of the Islamic sector did not come at the expense of religious instruction. In the end, such formalization contributed to the durability of the Islamic sector.

**Islamic and Other School Entry.** While other types of schools entered in response to SD INPRES, we show here that the Islamic sector's response appears distinctive and confrontational. First, in Appendix Figure A.2, we consider the district-level entry of private non-Islamic schools, of which there are 41,969 as of 2019. Although some of these secular schools enter in response to SD INPRES, such entry is limited at each instruction level.<sup>24</sup> Appendix Figure A.4 provides further, village-level evidence of distinctive entry by primary *madrassa* when compared to private non-Islamic primary schools.

Alongside these dynamics at the primary level, more secular junior secondary schools entered markets with greater SD INPRES construction (Appendix Figure A.5). Combined with our earlier findings,

<sup>23</sup>Hefner (2009) provides examples of *pesantren* leaders that built formal *madrassa* on *pesantren* grounds in order to attract families who were averse to the informal, religion-centric *pesantren* curriculum but open to the *madrassa* alternative to state schools.

<sup>24</sup>Moreover, the downward pre-trend in panel (a) might suggest that SD INPRES did crowd out non-Islamic primary schools built before the program. This stands in stark contrast with the corresponding estimates in Figure 2: unlike their secular counterparts, Islamic schools proved resilient against the mass entry of public elementary schools.

these results suggest efforts by the three sectors—Islamic, private non-Islamic, and state—to meet the rising demand for secondary education. Yet, these efforts largely took place in distinct markets, avoiding the local confrontation seen at the primary level: among villages with any SD INPRES construction, the correlation between subsequent construction of Islamic and public (private) junior secondary schools is 0.04 (0.05). Put simply, there was enough excess demand for junior secondary education that the Islamic sector could avoid head-on competition with the state while still growing its aggregate market share.

## 6 Religious School Choice

Having identified the Islamic sector response to SD INPRES, we now explore demand-side dynamics. We begin with evidence on Islamic school choice mirroring the supply-side patterns. Next, we characterize heterogeneous responses across genders and across regions with varying religious ideologies. Finally, we show that public and Islamic primary schools built in the 1970s act as substitutes in generating years of schooling. This limits the potential for mass schooling to displace religious education.

### 6.1 Religious Schooling Response to SD INPRES

We identify effects of SD INPRES on religious school choice based on the following specification:

$$y_{ijt} = +\theta_j + \theta_t + \beta(\text{INPRES}_j \times \text{young}_{it}) + (\mathbf{X}'_j \boldsymbol{\theta}_t)' \boldsymbol{\eta} + \varepsilon_{ijt}, \quad (4)$$

where  $y_{ijt}$  is some schooling outcome for individual  $i$  born in district  $j$  in year  $t$ ;  $\text{INPRES}_j$  is measured as either (i) elementary public schools constructed per 1,000 children from 1973–1978, in the DID estimation, or (ii) an indicator for districts above the 51st percentile in SD INPRES intensity, in the SDID estimation;  $\text{young}_{it} = 1$  for individuals aged 2–6 in 1974 and zero otherwise;  $\theta_j$  and  $\theta_t$  are district and cohort FE, respectively; and  $\mathbf{X}'_j \boldsymbol{\theta}_t$  includes cohort FE interacted with the same set of variables as in equation (1) with baseline Islamic schools measured as of 1957, the birth year of the oldest comparison cohort. Like Duflo (2001), we compare individuals aged 2–6 with those already of school age, but no older than 17 when the program began. Exposed cohorts were born between 1968–72. In a second specification, we add 15 cohorts to the exposure group, covering one generation of students born between 1968–87. This captures medium-run dynamics, inclusive of the supply response to SD INPRES. In the DID estimation, we exclude partially exposed cohorts, aged 7–11 in 1974, as in Duflo (2001). In the SDID estimation, these cohorts are used in the construction of the synthetic control group.<sup>25</sup>

Table 5 reports the effects of SD INPRES on *madrassa* attendance. Panels (a) and (b) report DID and SDID estimates, respectively. The outcomes equal one if the respondent’s highest level of education is Islamic primary (columns 1–2), junior secondary (columns 3–4), senior secondary (columns 5–6), or any (columns 7–8). SD INPRES pulled students away from primary *madrassa* and pushed them towards non-Islamic schools. Among cohorts aged 2–6 in 1974, one additional SD INPRES reduces the likelihood

<sup>25</sup>Our core sample comprises 275 districts based on boundaries at the time of SD INPRES in the 1970s. Duflo (2001) reports 283 districts based on boundaries in 1995, by which time four districts from the 1970s had split in two.

of Islamic primary by 7% (column 1). At the secondary level, Islamic schools absorbed some of the increased demand for post-primary education (columns 3 and 5). Together, these effects combine to a net increase in exposure to Islamic education: each additional SD INPRES increased the likelihood of attending an Islamic school by roughly 5% (column 7).<sup>26</sup> These patterns persist among later cohorts, for whom we find relatively larger effects on secondary and overall Islamic education (even-numbered columns), which aligns well with the supply-side results in Section 5.

**Time-Varying Effects.** These exposure effects are even clearer when looking across cohorts. Figure 6 reports cohort-specific Islamic school completion rates separately for high- and low-INPRES districts, and Figure 7 reports cohort-specific  $\beta$  from equation (4). In both cases, we see SD INPRES leading to a shift away from Islamic primary schools and towards Islamic secondary schools, both in the short (panels a, c, and e) and medium run (panels b, d, and f). The effects grow steadily for younger cohorts who would have had more opportunities to attend newly built Islamic schools. The corresponding graphical evidence for the SDID estimates can be found in Appendix Figure A.8 (panels a, c, and e).

**Islamic Graduation Shares.** One concern with the outcomes in Table 5 is that the likelihood of completing an Islamic education could be increasing simply because SD INPRES increases overall education. Thus, in Table 6, we look at Islamic schooling conditional on graduating with a degree at the given level of education (primary, junior secondary, and senior secondary). These measures capture the share of Islamic graduation at each level and clarify that our results in Table 5 are not driven solely by the INPRES-induced increase in overall education. Table 6 shows that the same patterns hold in this conditional specification: students shift out of Islamic schools at the elementary level (columns 1–2) and into Islamic schools at the secondary level (columns 3–6) with the net effect being an increase in the likelihood of graduating from Islamic school (columns 7–8). Here, too, the effects are generally larger when considering all cohorts exposed to the Islamic sector supply response (compare even to odd columns), and the standard DID (panel a) and synthetic DID (panel b) agree with few exceptions.

**Accounting for Selection.** SD INPRES increased total years of education *and* Islamic schooling.<sup>27</sup> Tables 5 and 6 suggest that these outcomes are jointly determined: greater schooling brings more opportunities for exposure to Islamic schools. Framed as a selection issue, only those continuing to secondary education, for example, have the potential to attend Islamic secondary schools. And if those continuing on are more religious, this could introduce bias. In panels (c) and (d) of Table 6, we adjust our estimates of Islamic school choice for this type of selection.

We consider parametric (Heckman, 1976) and semiparametric (Newey, 2009) two-step procedures. First, we estimate the likelihood of completing a given level of education. Second, we estimate the likelihood of completing Islamic education for those reaching that level. The second-step includes selection-correction terms. In the Heckman (1976) case, this is the inverse Mills ratio. In the Newey (2009) case,

<sup>26</sup>These results are driven in part by those moving from public elementary to Islamic junior secondary. *Susen* allows us to observe a subset of these transitions, namely for those that attend but do not graduate from Islamic junior secondary. Appendix Table A.15 shows that indeed SD INPRES increased the likelihood of such transitions.

<sup>27</sup>Column 1 of Table 8 shows that each SD INPRES increased years of schooling by 0.14 years. The male-specific estimate of 0.17 in panel (b) of Table 7 lies between the range of estimates in Duflo (2001)—0.12 to 0.19—based on the 1995 *Supas* data.

this is a series approximation to the true correction term; in practice, we use a cubic polynomial in first-step probabilities based on flexible covariates (specified by taking quintiles in each continuous regressor, interacted with cohort FE).<sup>28</sup> Key to both strategies is the exclusion from the second stage of at least one variable correlated with grade completion but otherwise unrelated to Islamic school choice. For this purpose, we rely on measures of exposure to a pilot compulsory schooling program in the 1960s.<sup>29</sup> This program shifted demand for education just prior to SD INPRES and was not systematically related to predetermined Islamic schooling or correlates thereof (see Appendix Table A.18).

The selection-adjusted estimates in panels (c) and (d) of Table 6 are in line with the unadjusted estimates in panel (a). Some of the estimates are larger (and noisier), but overall the magnitudes and signs are consistent, especially at the elementary and junior secondary level. Together, the selection-adjusted estimates approximately identify a local average treatment effect of INPRES exposure on Islamic schooling among compliers, namely children who received additional education as a result of the policy. For those induced to reach elementary school, this meant less exposure to Islamic education (columns 1–2), but for those induced to go beyond elementary, INPRES exposure increased the likelihood of attending Islamic junior secondary (columns 3–4). This is again intuitive and in line with the excess demand for continued education among new primary graduates being met by newly built Islamic schools.

**Robustness Checks.** We first address two identification concerns. First, we account for district-specific factors correlated with SD INPRES intensity and latent potential for Islamic schooling. Recall that cohort FE interacted with Islamic schools in 1957 are already in our baseline specification. In Appendix Table A.17, we also include interactions of cohort FE with proxies for the potential strength of the Islamic sector prior to SD INPRES (see the discussion of Appendix Table A.1 in Section 5.2). With a few minor exceptions, the key finding of increased Islamic school choice in high-INPRES regions remains intact.

Second, we show that SD INPRES was not systematically allocated towards districts with different preexisting trends in Islamic schooling. Figure 7, described above, shows little indication of systematic pre-trends in Islamic school attainment (and, in fact, exhibits a similar *S*-shaped exposure curve as the original Duflo, 2001, figure for years of schooling). Thus, although the state built more SD INPRES in districts with more Islamic schools (see Section 5.1), they did not and arguably could not—given available statistical information at the time—target areas where Islamic choice was growing faster. Furthermore, the synthetic DID estimates in Appendix Figure A.8 are robust to any residual differential trends.

One additional concern with the results in Tables 5 and 6 is the low Islamic enrollment shares reported in *Susenas*. Appendix Table A.14 shows that exposure to Islamic schooling is considerably higher in other sources.<sup>30</sup> There are three reasons why the *Susenas* data may lead to underestimates of SD IN-

<sup>28</sup>We select the polynomial order based on consistency results in Newey (2009), which imply an upper bound of 3 on the order of the approximating power series in a sample with effective size of 275 (i.e., the level of policy variation). We conduct inference with a percentile-*t* bootstrap shown to work well with two-step selection estimators (Yamagata, 2006).

<sup>29</sup>This compulsory primary education (*Wajib belajar*) pilot program, which applied to children aged 8 to 14, was rolled out in 35 pilot districts in the late 1950s and early 1960s (Sarumpaet, 1963). We identified in government reports from 1958–1960 the 35 affected districts. In the first step of the selection-correction procedure, we include interactions of cohort FE with the extensive and intensive margin (total teachers and schools allocated) of the program in respondents' district of birth. Appendix Tables A.1 and A.17 show that our results on Islamic school entry and choice, respectively, are robust to these controls as well.

<sup>30</sup>In the IFLS, Islamic education rates range from 11% in primary to 23% in junior secondary (20% overall). Administrative enrollment records for 2019 show rates ranging from 13% in primary to 23% in junior secondary (21% overall).

PRES effects on Islamic education. First, *Susenias* indicates whether the highest graduation level and/or the final year of education took place in a *madrasa*; it therefore misses individuals who attended Islamic schools earlier in their educational trajectory. Second, *Susenias* does not allow respondents to indicate *pesantren* education. Third, many students attend state schools in the morning and *madrasa* in the afternoon while, for enumeration purposes, only the former is deemed official.<sup>31</sup> Given that informal Islamic schools also entered to compete with SD INPRES, our estimates plausibly provide a lower bound on the total effect of SD INPRES on Islamic schooling. The strong *pesantren* entry results in Section 5.2 make it unlikely that the growth in *madrasa* enrollment arose through an absolute decline in *pesantren*. Lacking historical *pesantren* attendance data, we nevertheless show, in Appendix Figure A.9, that *pesantren* entering in response to SD INPRES enroll more students in the long run.

As a validation exercise, we estimate the effects of SD INPRES in the IFLS (Appendix Table A.16). Unlike *Susenias*, the IFLS reports the type of education completed at every level. SD INPRES decreased the likelihood and total years of Islamic elementary (columns 1–2 and 5–6, respectively) and increased the likelihood and total years of Islamic junior secondary (columns 3–4 and 7–8, respectively). Although noisy given the coverage limitations of IFLS, these results mirror those in *Susenias*. Moreover, the point estimates are roughly 10 times larger, which is what one would expect given the ten-fold difference in mean Islamic schooling rates across the two surveys.

## 6.2 Heterogeneity: Gender and Ideology

The model in Section 3 highlights the important role of heterogeneous preferences in determining school entry decisions and, hence, school choices. We characterize here two important sources of heterogeneity in gender norms and ideology, both of which speak to salient cultural divides in diverse societies.

**The Gender Dimension.** Table 7 shows that SD INPRES led to smaller gains in total years of education for women in exposed cohorts (column 1). At the same time, the INPRES-induced decline in Islamic elementary attendance is less pronounced (columns 3–4), and effects on overall Islamic school choice are roughly 50% larger for women (columns 9–10). One explanation for these patterns is that some parents were reluctant to send their daughters to the newly built INPRES schools while viewing Islamic schools as an acceptable alternative. With its more conservative approaches to gender relations at school, the Islamic sector would have appealed to such families.<sup>32</sup>

These gender norms became especially salient in the early 1980s when the Suharto regime imposed a ban on the Islamic veil (*hijab*) in public schools. A 1982 decree standardized the use of school uniforms, which amounted to a crackdown on veiling (Jo, 2020; Shofia, 2020). Women who veiled thus faced a choice between transferring to a *madrasa* or dropping out of school. In Appendix Table A.19, we explore how this policy shaped the effects of SD INPRES on Islamic school choice for girls. We interact equation (4) with exposure to the ban, effectively comparing INPRES-exposed girls who were too young to

<sup>31</sup>We learned about this during conversations with officials at the Ministry of Education in July 2019.

<sup>32</sup>An early insight into this possibility comes from Oey-Gardiner (1991), who reports strongly female-biased sex ratios in religious schools and male-biased ratios in public schools, especially at the primary level, in administrative data from 1984–5. She interprets this difference as evidence of more conservative parental preferences for schooling girls than boys. We find a similar sex ratio differential among exposed cohorts in our *Susenias* data.

complete their primary education before the ban to those that already completed primary school by 1982 (with boys as an additional control group).<sup>33</sup> The top row in Appendix Table A.19 shows that women exposed to the ban were more likely to complete Islamic elementary relative to other cohorts exposed to SD INPRES. Thus, Islamic schools helped to address Indonesia’s diverse gender norms.

**The Ideological Dimension.** Although 90% Muslim, Indonesia has long been home to diverse views on the role of religion in public life. Beyond gender norms, elections offer another lens on this diversity that we explore here, again using the 1950s vote share for Islamic parties to proxy for conservative ideology.

In Table 7, we find a stronger Islamic school choice response to SD INPRES in districts with deeper historical support for Islamic politics. In districts with one standard deviation higher support for Islamic parties, exposed cohorts are nearly 50% more likely to attend Islamic schools (columns 9–10). Moreover, such heterogeneity materializes at the secondary level (columns 5–8), which is where we identified the strongest average responses. While Islamic school choice is more affected in these conservative areas, total years of schooling is not (column 1). This is consistent with the model in Section 3: Islamic school construction and curriculum differentiation ensured that religiously conservative parents would have greater scope to educate their children in religious schools as mass public schooling expanded.

### 6.3 SD INPRES and Islamic Elementary Schools as Substitutes

Although Islamic and public schools cater to different groups in theory, it is important to understand whether schools from the two sectors are substitutes or complements in raising overall education. At the secondary level, it is clear from results above that Islamic schools generated some complementarities as they addressed excess demand for continued education among INPRES graduates that could not be met by the public sector.<sup>34</sup> At the primary level, this question is more ambiguous as elementary *madrassa* entry could have been market stealing or market expanding. In Table 8, we augment equation (4) to allow for entry of Islamic primary schools alongside and interacted with SD INPRES entry ( $\times$  exposed cohorts). A negative interaction term implies that the two types of schools are substitutes.

We begin with an OLS specification treating the entry of Islamic schools as exogenous conditional on the policy variables that determined SD INPRES allocations. We then treat Islamic sector entry as endogenous and construct instrumental variables (IV) based on the mobilization mechanisms uncovered in Section 5.3. We instrument Islamic elementary school construction ( $\times$  exposed cohort and *INPRES*) with the *waqf* endowment base, potential rice yields, and the Muslim population share ( $\times$  exposed cohort and *INPRES*). These instruments are collectively strong (see the weak-IV diagnostics in Table 8).

The estimates in Table 8 point to strong substitutability between public and Islamic elementary schools entering 1973–78. Although each type of school is associated with more education for exposed cohorts (columns 2 and 5), there are counteracting effects when the two enter simultaneously (columns

<sup>33</sup>Appendix Table A.19 interacts INPRES intensity and the exposed cohort indicator (aged 2–6 in 1974) with a gender dummy and a dummy for age less than 12 in 1982. All relevant two- and three-way interactions are included.

<sup>34</sup>The context laid out in Section 2 suggests that such complementarities did not arise from active cooperation between the state and Islamic leaders. Moreover, while this does not preclude head-on competition between Islamic and non-Islamic secondary schools, we showed in Section 5.5 that schools from the two sectors largely avoided direct competition at that level.

3 and 5). Taking the IV estimates in column 5 at the mean Islamic and INPRES school entry (0.08 and 2.1 per 1,000 children, respectively), we find similar effect sizes of around 0.35 additional years of education when each school enters on its own. These gains are reduced by 0.25 years of education when the two types enter jointly. This suggests that the baseline estimate of around 0.13 additional years of education (column 1) might have been much larger if not for competition from new elementary *madrassa*.

Across specifications, the IV estimates are significantly larger than the OLS ( $p\text{-value} < 0.01$ ). This may admit a LATE interpretation: elementary Islamic entry has the greatest impact on Islamic school choice in places where resource constraints in the Islamic sector were binding. The instruments capture, in part, supply shifts due to resource availability for Islamic organizations and leaders. In places where those entry decisions materialized, the latent demand for religious schooling would have been realized more quickly, giving rise to the larger own and substitution effects seen in the IV columns of Table 8.

Overall, these results provide further evidence of contestation between the Islamic sector and the state. We saw in Section 5.2 that Islamic elementary schools entered markets right after the state built SD INPRES. The estimates in Table 8 suggest that these sequential entry decisions were partially redundant from the perspective of generating additional years of schooling. However, because the learning environments were so different across the two sectors, a given year of education in public and religious schools would likely have been less substitutable in terms of impacts on identity and ideology. These downstream political consequences of school competition are the focus of the next section.

## 7 Mass Schooling and Nation Building

Like most mass schooling reforms, Indonesia's entailed significant ideological objectives. This section shows that such ambition fell short, likely frustrated by the response of the Islamic education sector (Section 5) and families' corresponding efforts to educate their children in religious schools (Section 6).

In the short run, SD INPRES failed to increase support for the Suharto regime. Appendix A.5 provides suggestive evidence of an electoral backlash: districts with greater SD INPRES intensity saw a larger decline in the vote share for Suharto's party, *Golkar*, between 1971—the last election prior to mass schooling and the first in which *Golkar* ran—and subsequent quinquennial elections. Some of these losses accrued to the main Islamic opposition party, the PPP, and appear to be driven by community reactions in the immediate aftermath of the program rather than by SD INPRES graduates coming of voting age.

These electoral shifts went hand in hand with deeper shifts in religious identity and culture that ultimately worked against the state's use of mass schooling as a tool for secular nation-building. In what follows, we explore the individual-level foundations of these changes. These results suggest that religion played a significant role in shaping the cultural legacy of SD INPRES.

### 7.1 National and Religious Identity

Table 9 provides evidence on the cultural impacts of SD INPRES over the long run. Panel (a) explores dimensions of secular identity, while panel (b) examines religious piety and practice.

We first examine a standard marker of attachment to the national identity in multilingual countries: the use of the national language at home. This is distinct from speaking ability. Nearly 90% of Indonesians can speak *Bahasa* Indonesia. Only 20% use it as the main language at home, which reflects greater attachment to national as opposed to ethnic or religious identity (see [Bazzi et al., 2019](#), for validation).

We find null effects of SD INPRES using the 2010 census with 32 million individuals in cohorts aged 2–6 and 12–17 in 1974 (column 1). Behind this null lies a religious divide: 15% of Muslims prefer using Indonesian at home compared to 28% of non-Muslims.<sup>35</sup> Among Muslims, exposed cohorts report slightly less home use of *Bahasa* Indonesia (column 2), while non-Muslims exhibit a smaller response (column 3). These weak effects are striking given that INPRES schools aimed to promote a single Indonesian identity built around one language. Although SD INPRES increased Indonesian proficiency (Appendix Table [A.20](#), columns 1–3), it did not increase vernacular attachment to the national language.

For those exposed to Islamic education, immersion in *Bahasa* Indonesia may have been crowded out by Arabic study. Table [4](#) showed that schools created in high-INPRES districts after 1972 devote more classroom time to Arabic and less to Indonesian. Table [9](#) shows that SD INPRES increased Arabic knowledge among exposed cohorts (column 4). This effect is driven by those with some Islamic education (two-thirds of whom report Arabic literacy, compared to one-third with secular education).<sup>36</sup> While SD INPRES increased literacy in the Latin alphabet on which Indonesian is based, it did not do so for other languages besides Arabic (Appendix Table [A.20](#), columns 4–9). This is consistent with the unique role of Arabic among Muslims and the importance of Islamic education in transmitting such knowledge (see Appendix Table [A.21](#) on the strong association of Islamic education with Arabic literacy).

These language shifts are accompanied by broader changes in piety. In panel (b) of Table [9](#), we look at Islamic practices using a nationally-representative survey conducted in 2008 by [Pepinsky et al. \(2018\)](#). These include praying 5 times a day (column 1), fasting during Ramadan (column 2), reading the Qur'an (column 3), attending Friday prayer (column 4), performing *Sunna* prayers (column 5), joining prayer groups known as *pengajian* (column 6), and paying *zakat* (column 7). Respondents' practices vary widely. For example, 62% report praying 5 times daily, while only 25% always regularly read the Qur'an. We find positive exposure effects across most measures, and each additional INPRES school is associated with a sizable 19% increase in a mean index across all practices (column 8).

Together, the results in Table [9](#) suggest that SD INPRES generated cultural resistance and increased religious identity at the expense of a secular national identity. For those attending Islamic schools, this could have occurred through learning Arabic and Islamic thought. For those attending state schools, this could have occurred through greater exposure to Islamic-educated peers in one's community or engagement with the Islamic sector outside formal schooling (e.g., through parental inputs or attendance of *madrasa diniyah* or mosque-based youth groups). We explore some of these mechanisms in Section [7.3](#).

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<sup>35</sup>Using this same data, we find a precise zero effect of SD INPRES on the likelihood of being Muslim: -0.0003(0.0011).

<sup>36</sup>Conditional on years of schooling fixed effects, Arabic literacy is 20–30 p.p. higher for those with Islamic education (Appendix Table [A.21](#)). We switch between sample splitting on religion and on religious schooling across outcomes in panel (a) because *Susenas* does not record religion, and the 2010 Population Census does not report type of schooling.

## 7.2 Political Attitudes and Ideology

Table 10 explores downstream effects of SD INPRES on political attitudes among citizens (panel a) and politicians (panel b). First, we consider citizen support for *Pancasila*, the secular national ideology advanced through state schools. The Pepinsky et al. (2018) survey asks whether *Pancasila* is the most suitable ideology for the nation. Column 1 in panel (a) shows that SD INPRES had a null effect on support for *Pancasila*, which stands at 85% across the population.

At the same time, SD INPRES did not increase support for conservative Islamist ideology as an alternative. We use several measures of support for Islamic legal principles from Pepinsky et al. (2018). Subjective measures in columns 2 and 3 indicate whether individuals report strong or very strong support for Islamic principles to govern public life. The index in column 4 combines these two questions with two others about support for *sharia* law. The final, objective measure in column 5 averages across six dimensions of *sharia*: corporal punishment for crime, prohibition of interest, mandatory *hijab*, legalized polygamy, stoning for adultery, and death for apostates (see Appendix Table A.22 for sub-component analysis). Across measures, we find null effects of SD INPRES on exposed cohorts of Muslim citizens.

The bottom panel (b) of Table 10 provides analogous evidence among 2019 legislative candidates. INPRES-exposed cohorts are significantly less likely to run with *Golkar* and more likely to run with the Islamic PPP (columns 1 and 2); no other party affiliations admit significant effects. In other words, the short-run electoral backlash against *Golkar* and support for the PPP (see Appendix A.5) persisted over the long run among affected cohorts running for legislative office. This is despite both parties being much less popular than in the repressive era of New Order politics. Hence, SD INPRES may have played a role in sustaining Suharto-era political cleavages over the long run.

Furthermore, INPRES-exposed candidates, across all parties, are less likely to campaign on *Pancasila* and related nation-building themes (column 3) and yet are no more likely to campaign on Islamist themes (column 4), which do not co-occur with nation-building themes (column 5). We construct these binary outcomes using text from online campaign documents, identifying appeals to the faith (e.g., Islam, Muslim, *umma*, *sharia*) and references to Indonesian nation-building concepts.<sup>37</sup> Putting together the results in Table 10, we conclude that political candidates look broadly similar to the citizens they represent in terms of the long-term effects of exposure to SD INPRES during their childhood.

## 7.3 Intergenerational Transmission of Religious Values

In this final section, we highlight the role of intergenerational cultural transmission in shaping the legacy of SD INPRES. Exposure to SD INPRES increased Islamic school attendance and deepened religious identity. Two generations after INPRES schools were built, attendance in Islamic schools remains very high: 21% of pupils were enrolled in *madrassa* or *pesantren* in 2019. This suggests that the shifts in religious values set in motion by SD INPRES were likely passed on to future generations.

Table 11 examines household-based mechanisms for such transmission, focusing on whether parents directly exposed to SD INPRES changed their investments in religion. For example, parents might

<sup>37</sup>Nation-building appeals include, e.g., “[defending] the just nation according to *Pancasila* and the 1945 constitution,” and “defending and maintaining *Pancasila* ideology and the existence of the unity of the Republic of Indonesia”. See Appendix D.

engage in greater religious socialization at home for fear that children would lose religious values in a fast-secularizing society. We explore here two main pathways for vertical religious transmission, which, in theory, could either complement or substitute for religious school choice.

First, men exposed to SD INPRES as kids were more likely to marry women with Islamic schooling (column 1). This could be explained by many forces including assortative matching among the religiously educated. It could also be an indirect consequence of the slightly larger effect of SD INPRES on *madrassa* education for girls (see Section 6.2). Yet, the effects are null for women’s marital choice (column 2), perhaps because women face greater constraints in selecting partners (see Rubio, 2014, for background on arranged marriages in Indonesia). Regardless, the greater presence of religiously educated people in the marriage market could have increased vertical religious transmission.

In the remaining columns of Table 11, we show how such transmission flows within the household. We proxy for engagement with Islam using the Arabic literacy of parents and children measured in *Susenas*. We saw in Section 7.1 that SD INPRES increased Arabic literacy. In columns 3–4, our dependent variable is a dummy for all three members of a nuclear household (the father, the mother, and the child) being literate in Arabic. Both a father’s and a mother’s exposure to SD INPRES increase the likelihood that the entire household is literate in Arabic, which is consistent with assortative mating and greater religious cultural transmission to children.

Finally, we examine the child’s Arabic literacy among parental respondents who are literate in Arabic and whose child has received no Islamic schooling (columns 5–6). Among Arabic-literate parents, children formally educated in non-Islamic schools are more likely to be literate in Arabic when the parents were directly exposed to SD INPRES. While such a sample split is endogenous to INPRES exposure, this provides further suggestive evidence of religious transmission outside the Islamic school system. Such transmission could be due to instruction inside the home, extracurricular education at the local mosque or *madrassa diniyah*, or both. Overall, parents exposed to mass public schooling ensured that their children maintain a strong religious identity through socialization choices at home.

## 8 Conclusion

One of the most ambitious educational policies ever implemented, SD INPRES pursued developmental as well as ideological objectives. A large literature documents the policy’s long-lasting effects on human capital. In contrast, we provide the first comprehensive investigation of the response by the state’s historical competitor in the provision of education, the Islamic school system. Before the 1970s, the Indonesian state sought to diminish the influence of Islamic schools in order to facilitate the emergence of a secular national identity. SD INPRES was designed with this goal in mind. As much as the program itself, the Islamic sector response not only shaped education markets for years to come but also plausibly counteracted the advance of secular nation building over the long run.

Our findings point to some surprising consequences of mass public schooling. The policy failed to crowd out religious schools; instead, we uncover evidence of a robust response by the Islamic education sector. The Muslim community raised funds locally to build new schools in response to the state’s

unprecedented investments in primary education. These Islamic schools, in turn, adapted to state competition by increasing the religious content of their curriculum, and by prioritizing formal pedagogy that allowed students to switch in and out of the public system. In this way, children raised in the Muslim faith could continue to gain exposure to formal Islamic teachings during at least some of their impressionable years. These shifts were especially beneficial to more conservative families and to their daughters, whose education levels increased due in large part to the presence of Islamic schools as a substitute to secular public schools. This allowed many Indonesian families to reconcile the challenges of “modernization” with a strong continued adherence to religious values.

Our paper raises important questions for countries striving to find the optimal mix between centralizing and outsourcing public goods provision and its corollary, the legitimacy to tax service recipients. On the one hand, Islamic schools helped the central state cater to heterogeneous preferences for different types of schooling and to meet the excess demand for secondary schooling coming from universal primary education. This is reminiscent of the “division of responsibility for education” in diverse societies conceptualized by James (1987a,b). Furthermore, while the increased piety and related cultural shifts we document may have weakened the push towards a secular Indonesian identity, they did so without posing a genuine threat to the legitimacy of the Indonesian state.

At the same time, this robust response by local Muslim communities illustrates the persistent challenges of designing and implementing centralized policy in settings with limited state capacity. These challenges were already salient during our period of interest in Indonesia: as a leading education expert noted, “the existence of two parallel and relatively independent [school] systems . . . poses very real problems for the reform and modernization of education” (Beeby, 1979, pp. 34-35). A recent literature has begun to explore why an uneasy coexistence between the state and informal authorities has endured in developing countries, and what this implies for policymaking and welfare. In much of Africa, for example, dual systems of government have persisted as a way to preserve the autonomy of local communities and continue to wield vast legitimacy and power (Robinson, 2022).

In Muslim societies, the challenges associated with such dual systems are especially pronounced because religion provides a strong alternative source of political legitimacy to that of the state. Like traditional institutions elsewhere, Islamic institutions are often perceived to be more compatible with local preferences than institutions bequeathed by colonization or Western influence. The organizations that derive their legitimacy from strict adherence to the Islamic faith actively compete with central authorities by providing alternative forms of justice, taxation and service provision mechanisms (Cammatt and Luong, 2014; Livny, 2018; Revkin, 2020). Our paper offers a framework for understanding how these competitive frictions unfold, and what this implies for future state-building efforts in diverse societies.

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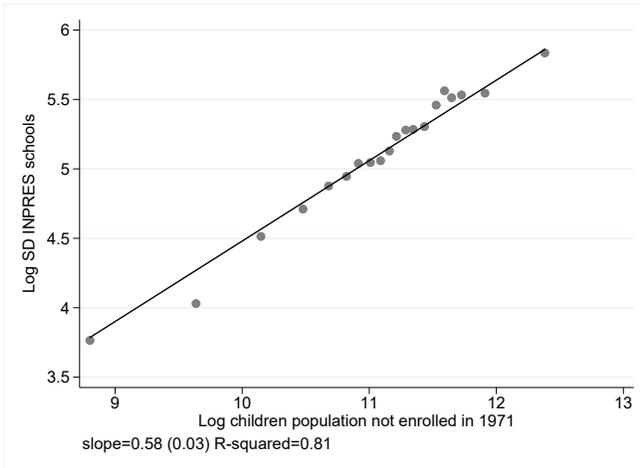
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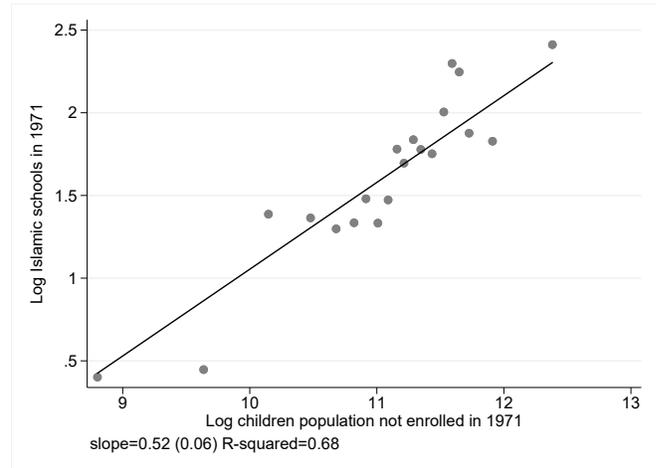
# Figures

**Figure 1: Targeting of INPRES School Construction**

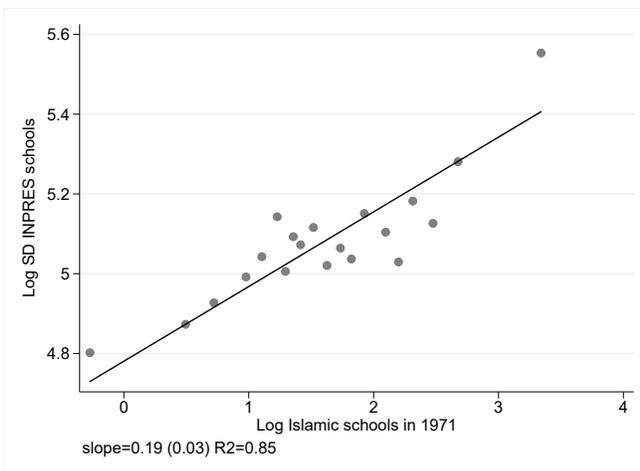
(a) Policy Rule



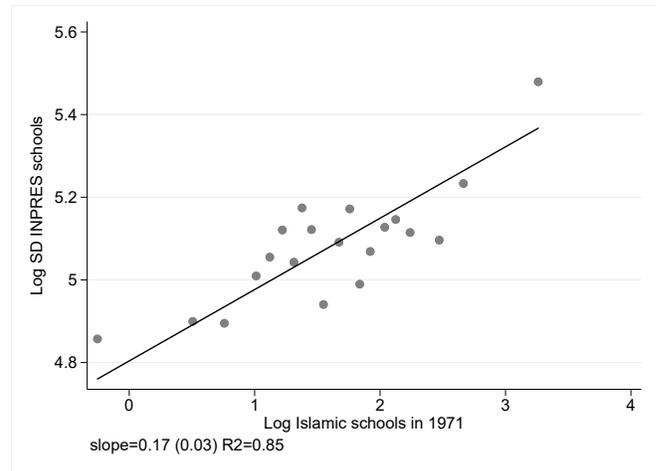
(b) Prevalence of Islamic Schools in Target Areas



(c) SD INPRES and Islamic School Presence



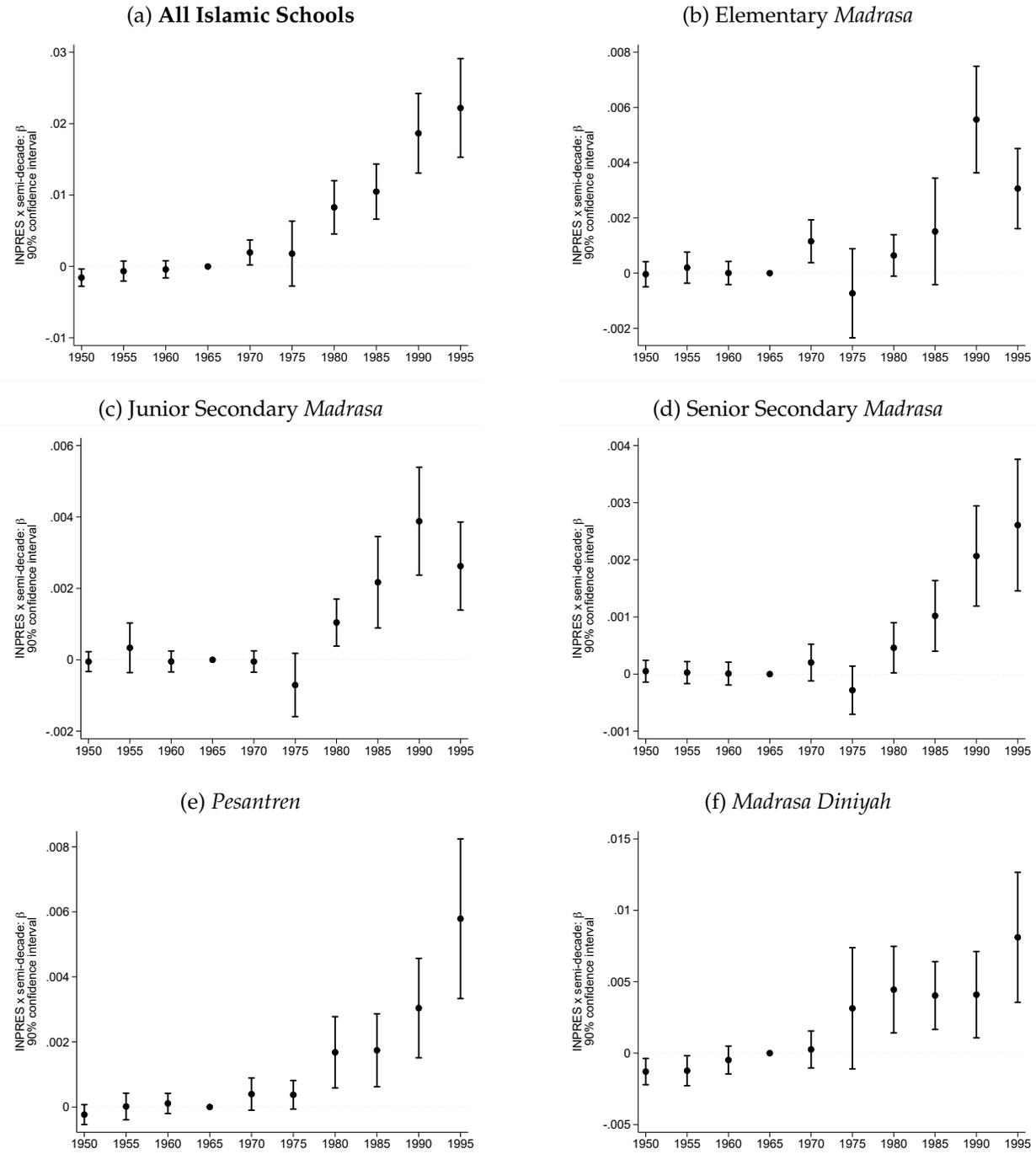
(d) SD INPRES and Islamic School Presence Controlling for Religious Preferences



*Notes:* This figure displays district-level binscatter plots between SD INPRES school construction, the population of children not enrolled in school in 1971, and the baseline presence of Islamic schools (elementary *madrassa* and *pesantren*) measured in 1971. Panel (a) illustrates the government's policy rule: SD INPRES school construction is proportional to the population of children not enrolled in 1971. In Panel (b), we regress the log of Islamic schools in 1971 on the log population of children not enrolled in 1971. In Panel (c), we regress log SD INPRES school construction on the log of Islamic schools in 1971, controlling for the population of children not enrolled and province dummies. In Panel (d), we estimate the same regression controlling for the vote share of Islamic parties in the 1955 and 1957 legislative elections, the last before the Suharto era.

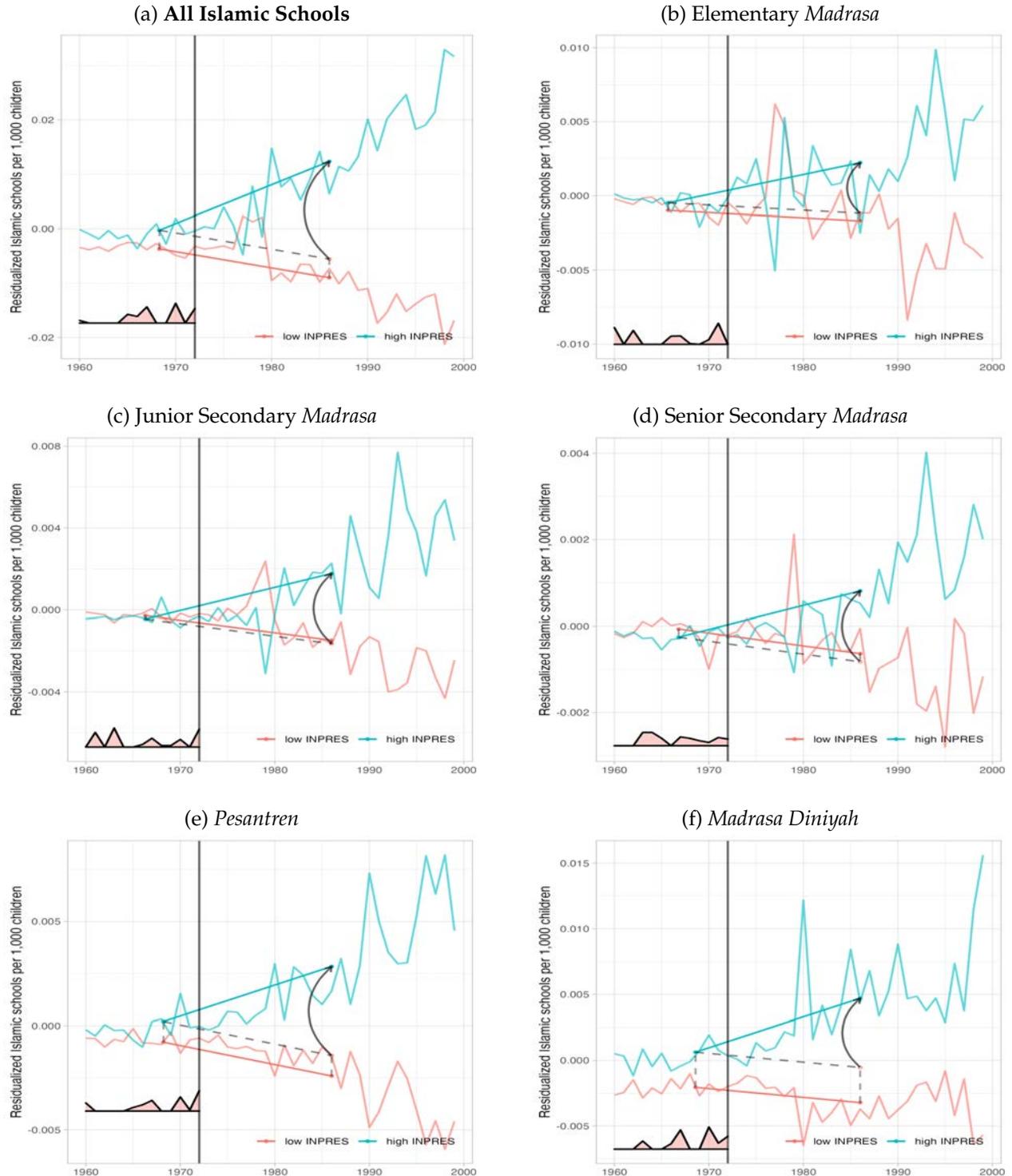
**Figure 2: INPRES Intensity and Entry of Islamic Schools**

New schools per 1,000 children



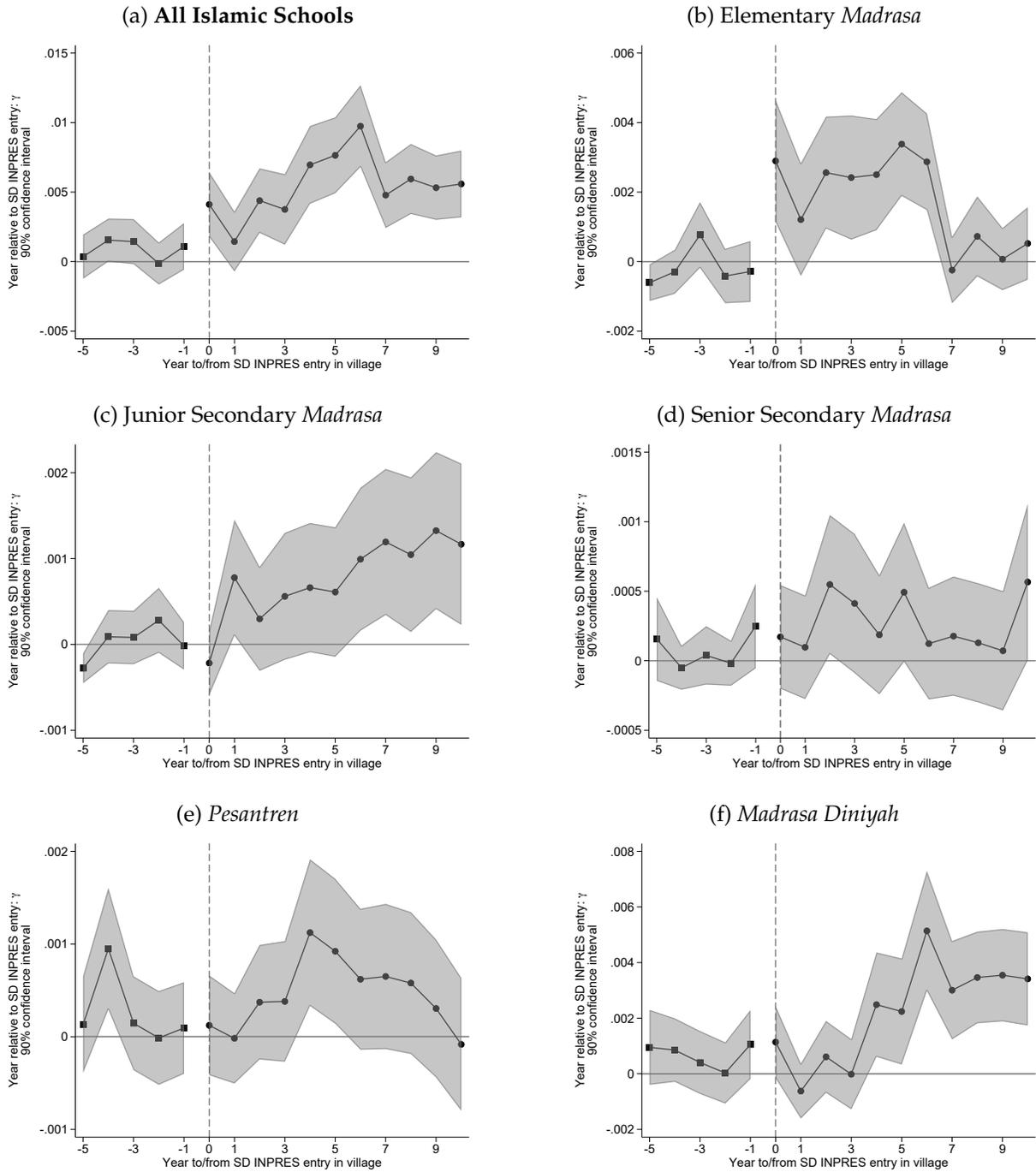
*Notes:* This figure reports semi-decade-specific estimates of  $\beta$  in equation (1) on a balanced district-year panel. INPRES intensity is defined as the number of SD INPRES schools constructed from 1973–78 per 1,000 children in 1971. The dependent variable measures the total number of Islamic schools (panel a), elementary *madrasa* (b), junior secondary *madrasa* (c), senior secondary *madrasa* (d), *pesantren* (Islamic boarding schools across all levels) (e), and *madrasa diniyah* (Qur’anic afternoon schools) (f) established by semi-decade and by district per 1,000 children in 1971. The 1965–69 period is the reference period given district fixed effects. The dots correspond to the period-specific  $\beta$ , and the bars to 90% confidence intervals with standard errors clustered by district, of which there are 275. All specifications include district fixed effects and year fixed effects interacted with the 1971 children population, the 1971 enrollment rate, district-level exposure to the water and sanitation program, the number of elementary, junior secondary, senior secondary *madrasa* in 1949, and the number of *pesantren* in 1949.

**Figure 3: Islamic School Entry: Synthetic Difference-in-Differences**



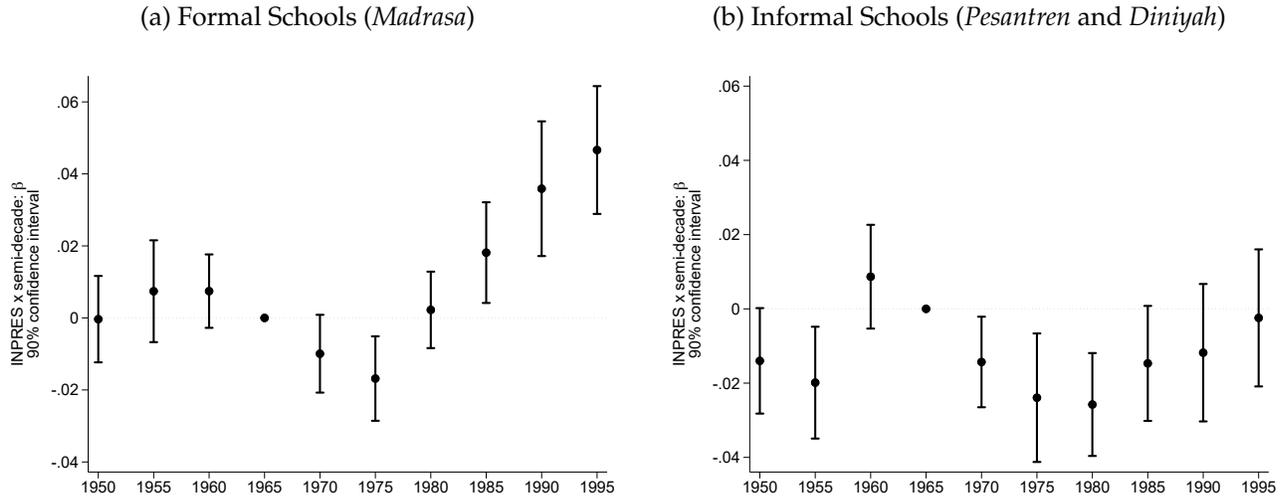
*Notes:* This figure reports synthetic difference-in-differences (SDID) estimates of the effect of SD INPRES on Islamic school entry at the district–year level from 1960–99. Each figure shows trends in entry of Islamic schools over time for districts above the 51st percentile of SD INPRES intensity (“high INPRES” in blue) and the relevant weighted average of comparison districts below the 51st percentile (“low INPRES” in red), with the weights used to average pre-INPRES time periods at the bottom of each panel (in red). The dashed diagonal line indicates the counterfactual parallel trend, and the arrow indicates the estimated effect. Following [Arkhangelsky et al. \(2021\)](#), we apply the SDID estimator to the residuals from equation (1):  $y_{jt}^{res} = y_{jt} - (\mathbf{X}'_j \boldsymbol{\theta}_t)' \hat{\boldsymbol{\eta}} - \hat{\theta}_j - \hat{\theta}_t$ , where  $y_{it}$  is the total number of Islamic schools (panel a), elementary *madrasa* (b), junior secondary *madrasa* (c), senior secondary *madrasa* (d), *pesantren* (e), and *madrasa diniyah* (f) built per district–year and per 1,000 children in 1971;  $\mathbf{X}'_j \boldsymbol{\theta}_t$  includes year fixed effects interacted with the 1971 children population, the 1971 enrollment rate, exposure to the water and sanitation program, the number of elementary, junior secondary, senior secondary *madrasa*, and the number of *pesantren* in 1959.

**Figure 4: Islamic School Entry at the Village Level**



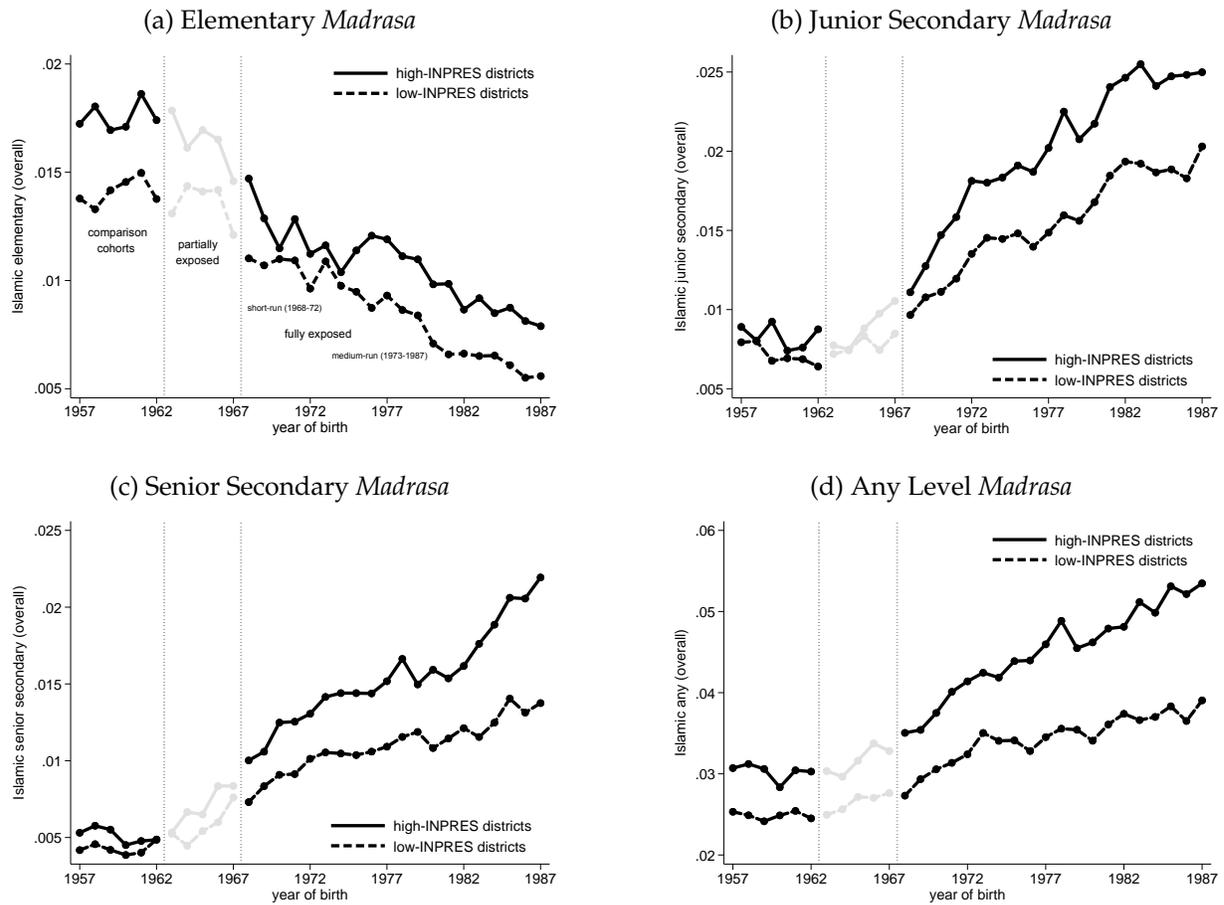
*Notes:* This figure reports estimates of  $\gamma$  in equation (2) using the robust and efficient estimator from [Borusyak et al. \(2021\)](#) and a balanced panel of villages spanning 1960–99. The dependent variable measures the total number of Islamic schools (panel a), elementary *madrassa* (b), junior secondary *madrassa* (c), senior secondary *madrassa* (d), *pesantren* (e), and *madrassa diniyah* (f) established per village–year. All specifications include village fixed effects and year fixed effects interacted with the number of secular elementary schools and Islamic schools in the village as of 1959. The gray shading corresponds to 90% confidence intervals with standard errors clustered by village.

**Figure 5: Entry of Formal and Informal Islamic Schools  
As a Share of All School Entry**



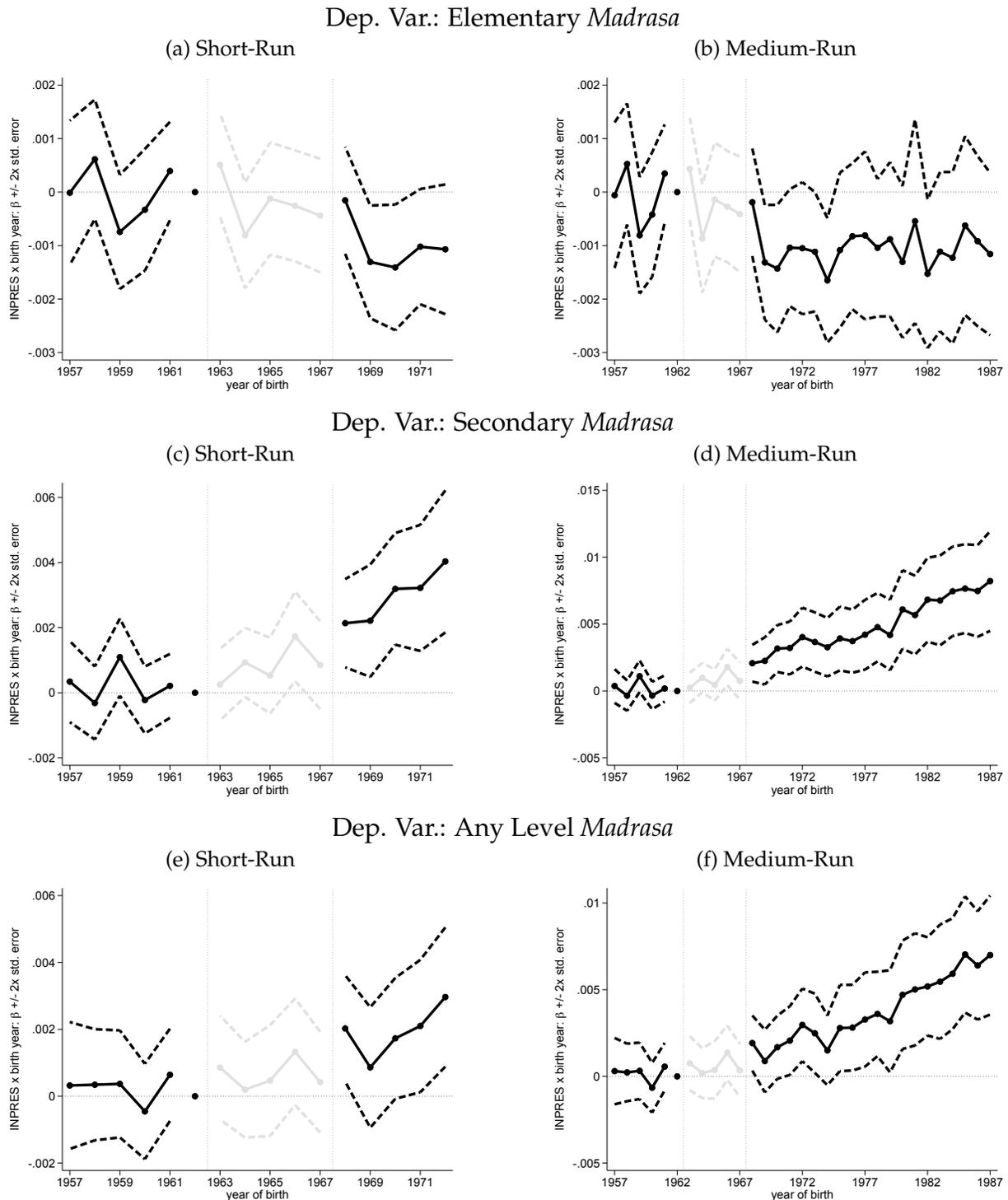
*Notes:* This figure reports semi-decade-specific estimates of  $\beta$  in equation (1). The dependent variable measures: (a) *madrasa* at all instruction levels built per district-year as a fraction for all formal schools (including secular public, private, and Islamic schools), and (b) *pesantren* and *madrasa diniyah* built per district-year as a fraction of all schools (including formal and informal schools). As in Figure 2, the 1965–69 period is the reference period given district fixed effects. The dots correspond to the period-specific  $\beta$ , and the bars to 90% confidence intervals with standard errors clustered by district. All specifications include district fixed effects and year fixed effects interacted with the 1971 children population, the 1971 enrollment rate, district-level exposure to the water and sanitation program, the number of elementary, junior secondary, senior secondary *madrasa* in 1949, and the number of *pesantren* in 1949.

**Figure 6: INPRES Exposure and Islamic Schooling – Raw Summary**



*Notes:* This figure reports mean Islamic school completion rates over time for districts with above-median (high) and below-median (low) INPRES intensity from 1973–78. INPRES intensity is defined as the number of SD INPRES schools constructed from 1973–78 per 1,000 children in 1971. The rates are computed for cohorts from 1957 to 1987, pooling across annual *Susenas* data from 2012 to 2018, and they indicate whether the final level of education is (a) elementary *madrasa*, (b) junior secondary *madrasa*, (c) senior secondary *madrasa*, and (d) any level *madrasa*. The outcomes are the same as those in Table 5. The cohorts born before 1963 would have fully completed primary schooling before SD INPRES was rolled out in 1973. The cohorts born from 1968 onwards would have been fully exposed to SD INPRES given that they would have been no more than 6 years old just prior to school construction ensuing. The cohorts born from 1963 to 1967 (greyed out) correspond to the partially-exposed cohorts. See Section 6 for further discussion of these distinctions across cohorts.

**Figure 7: INPRES Exposure and Islamic Schooling – Estimated Effects by Cohort**



*Notes:* This figure reports age-specific estimates of  $\beta$  in equation (4). INPRES intensity is defined as the number of SD INPRES schools constructed from 1973-78 per 1,000 children in 1971. The dependent variable in panels (a) and (b) is an indicator equal to one if the individual's final year of schooling was completed in an Islamic elementary school. Panels (c) and (d) are for an Islamic secondary school, and panels (e) and (f) for any Islamic school. Panels (a), (c), and (e) correspond to the original cohort specification: fully-exposed born 1968-1972 (black), partially-exposed born 1963-1967 (gray), and unexposed born 1957-1962 (black). Panels (b), (d), and (f) expand exposed cohorts to 1987. The 1962 cohort serves as the reference age, given age fixed effects, in both the short- and long-run specifications. All specifications include survey year  $\times$  district of birth dummies and year of birth with the 1971 children population, the 1971 enrollment rate, district-level exposure to the water and sanitation program, the number of elementary, junior secondary, senior secondary *madrasa* in 1957, and the number of *pesantren* in 1957. The dashed lines correspond to 90% confidence intervals with standard errors clustered by district of birth.

## Tables

**Table 1: Correlates of INPRES Elementary School Allocation**

	Dependent Variable:				
	log SD INPRES in district				SD INPRES in village
<i>District Level</i>	(1)	(2)	(3)	(4)	(5)
% Islamic primary enrollment, 1967–72	0.039*** (0.009)	0.028*** (0.009)		0.011 (0.008)	
log school-aged children not enrolled, 1971	0.684*** (0.076)		0.622*** (0.080)	0.628*** (0.072)	
% Non-Islamic primary enrollment, 1967–72		-0.016*** (0.005)		-0.014*** (0.005)	
log Islamic primary schools, 1971			0.130*** (0.030)	0.079*** (0.025)	
Islamic parties vote share, 1950s				0.004*** (0.001)	
<i>Village Level</i>					
any public elementary in village, 1971					-0.028** (0.012)
any private non-Islamic elementary in village, 1971					-0.046*** (0.015)
any private Islamic elementary in village, 1971					0.052*** (0.019)
Number of Districts or Villages	275	275	275	275	75,208
Targeting Policy Controls	✓	✓	✓	✓	✓
R <sup>2</sup>	0.872	0.812	0.872	0.893	0.030

*Notes:* This table reports correlates of SD INPRES school construction at the district and village levels. The dependent variable is the log number of INPRES elementary schools constructed at the district level between 1973–78 (columns 1–4) and an indicator for any SD INPRES built in the village during that same period (column 5). All regressions control for the variables that informed the policy rule for INPRES school allocations: province fixed effects, the 1971 children population, the 1971 enrollment rate, and exposure to the water and sanitation program.

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Robust standard errors in parentheses, clustered by district in column 5.

**Table 2: SD INPRES Intensity and Islamic School Entry**

	Formal <i>Madrasa</i>			Informal		All
	Elementary (1)	Junior Sec. (2)	Senior Sec. (3)	<i>Pesantren</i> (4)	<i>Diniyah</i> (5)	Islamic (6)
(a) Difference-in-Differences, District Level						
INPRES $\times$ post-1972	0.0017*** (0.0005)	0.0016*** (0.0004)	0.0009*** (0.0002)	0.0021*** (0.0005)	0.0041** (0.0016)	0.0105*** (0.0023)
(b) Synthetic Difference-in-Differences, District Level						
INPRES $\times$ post-1972	0.0034*** (0.0013)	0.0034*** (0.0009)	0.0016*** (0.0004)	0.0043*** (0.0010)	0.0052* (0.0027)	0.0179*** (0.0039)
1959 Islamic Schools $\times$ Year FE	✓	✓	✓	✓	✓	✓
District FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Number of District–Years	11,000	11,000	11,000	11,000	11,000	11,000
Dep. Var. Mean	0.007	0.005	0.002	0.007	0.018	0.039
R <sup>2</sup> (panel a)	0.179	0.169	0.169	0.313	0.564	0.463
(c) Difference-in-Differences, Village Level						
SD INPRES Entry	0.0021*** (0.0004)	0.0018*** (0.0002)	0.0007*** (0.0001)	0.0017*** (0.0003)	0.0043*** (0.0007)	0.0105*** (0.0012)
(d) Robust Difference-in-Differences Estimator, Village Level						
SD INPRES Entry	0.0022*** (0.0002)	0.0017*** (0.0001)	0.0008*** (0.0001)	0.0013*** (0.0002)	0.0035*** (0.0003)	0.0094*** (0.0005)
1959 Islamic Schools $\times$ Year FE	✓	✓	✓	✓	✓	✓
Village FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Number of Village–Years	3,334,560	3,334,560	3,334,560	3,334,560	3,334,560	3,334,560
Dep. Var. Mean	0.0009	0.0001	0.0001	0.0005	0.0025	0.0011
R <sup>2</sup> (panel c)	0.035	0.029	0.028	0.068	0.063	0.045

*Notes:* The dependent variables are measured as new schools of a given type created per district–year and per 1,000 children in 1971 in panels (a) and (b) and per village–year in panels (c) and (d). Panel (a) reports difference-in-differences estimates of  $\beta$  in equation (1). INPRES refers to SD INPRES schools constructed from 1973–78 per 1,000 children in 1971. Panel (b) reports synthetic DID estimates computed using [Arkhangelsky et al. \(2021\)](#); see the notes to Figure 3 for details on the implementation. In panels (a) and (b), all specifications include district fixed effects and year fixed effects interacted separately with the 1971 children population, the 1971 enrollment rate, exposure to the water and sanitation program, the number of elementary, junior secondary, senior secondary *madrasa* in 1959, and the number of *pesantren* in 1959. Both (a) and (b) are estimated on a panel at the district–year level spanning 1960–99. Panels (c) and (d) report estimates of the average of post-SD-INPRES-entry coefficients  $\tau$  in equation (2). Panel (c) reports standard difference-in-differences estimates and panel (d) reports estimates computed using the robust imputation method from [Borusyak et al. \(2021\)](#). SD INPRES Entry is a binary indicator equal to one in the first year of public primary school construction from 1973–78 and remains one in all years thereafter. All specifications include village fixed effects and year fixed effects interacted separately with the number of secular elementary schools and Islamic schools in the village as of 1959.

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Robust standard errors are clustered by district in panel (a), and using the cluster bootstrap described in Algorithm 2 of [Arkhangelsky et al. \(2021\)](#) in panel (b). Robust standard errors are clustered by village in panels (c) and (d).

**Table 3: SD INPRES Intensity and Heterogeneous Entry of Islamic Schools, Village Level**

	Formal <i>Madrassa</i>			Informal		All
	Elementary (1)	Junior Sec. (2)	Senior Sec. (3)	<i>Pesantren</i> (4)	<i>Diniyah</i> (5)	Islamic (6)
(a) 1960–1999						
SD INPRES Entry	0.0011*** (0.0003)	0.0011*** (0.0002)	0.0004*** (0.0001)	0.0009*** (0.0003)	0.0025*** (0.0006)	0.0059*** (0.0011)
SD × potential rice yield	0.0015*** (0.0004)	0.0013*** (0.0003)	0.0004*** (0.0001)	0.0009** (0.0004)	0.0033*** (0.0008)	0.0074*** (0.0013)
SD × any <i>waqf</i> , predetermined	0.0041*** (0.0007)	0.0027*** (0.0004)	0.0013*** (0.0003)	0.0049*** (0.0011)	0.0073*** (0.0018)	0.0202*** (0.0023)
1959 Islamic Schools × Year FE	✓	✓	✓	✓	✓	✓
Village FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Number of Village–Years	3,007,920	3,007,920	3,007,920	3,007,920	3,007,920	3,007,920
Dep. Var. Mean	0.0013	0.0001	0.0001	0.0006	0.0026	0.0047
R <sup>2</sup>	0.036	0.029	0.029	0.068	0.063	0.075
(b) 1968–1983						
SD INPRES Entry	0.0001 (0.0005)	0.0002 (0.0001)	0.0001 (0.0001)	0.0001 (0.0002)	0.0006 (0.0005)	0.0011 (0.0007)
SD × potential rice yield	0.0023*** (0.0007)	0.0006*** (0.0002)	0.0000 (0.0001)	-0.0000 (0.0001)	0.0011** (0.0005)	0.0041*** (0.0009)
SD × any <i>waqf</i> , predetermined	0.0069*** (0.0012)	0.0007 (0.0005)	0.0004** (0.0002)	0.0006 (0.0004)	0.0023*** (0.0009)	0.0109*** (0.0017)
1967 Islamic Schools × Year FE	✓	✓	✓	✓	✓	✓
Village FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Number of Village–Years	1,203,168	1,203,168	1,203,168	1,203,168	1,203,168	1,203,168
Dep. Var. Mean	0.0013	0.0001	0.0001	0.0006	0.0026	0.0047
R <sup>2</sup>	0.077	0.068	0.066	0.085	0.107	0.105

*Notes:* The dependent variables are measured as new schools of a given type created per village-year. We report estimates over the period 1960–99 (panel a) or the period 1968–1983 (panel b). Both panels report estimates of the average of post-SD-INPRES-entry coefficients  $\tau$  in equation (2) estimated via standard DID. SD INPRES Entry is a binary indicator equal to one in the first year of public primary school construction from 1973–78 and remains one in all years thereafter. “potential rice yield” is a time-invariant measure from FAO-GAEZ and averages over dry and wet rice yields; this measure is standardized prior to interacting with SD INPRES Entry. We do not have reliable measures of potential yield for some villages and districts and hence the slightly smaller sample size relative to panel (c) and (d) in Table 2. “any *waqf*, predetermined” is a binary indicator equal to one if the village had any *waqf* endowments prior to 1960 in panel (a) and prior to 1968 in panel (b). All specifications include village fixed effects and year fixed effects interacted separately with the number of secular elementary schools and Islamic schools in the village as of 1959.

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Robust standard errors clustered by village.

**Table 4: SD INPRES Intensity and Curriculum Differentiation in Islamic Schools**

	All Levels (1)	Primary (2)	Jun. Sec. (3)	Sen. Sec. (4)
(a) Islamic Subject Share				
INPRES $\times$ post-1972	0.012* (0.007)	0.013** (0.006)	0.023*** (0.008)	-0.040 (0.025)
Dep. Var. Mean	0.246	0.238	0.261	0.242
Dep. Var. Std. Dev.	0.047	0.033	0.028	0.036
(b) Arabic Share				
INPRES $\times$ post-1972	0.002* (0.001)	0.003** (0.001)	0.008** (0.002)	0.017*** (0.002)
Dep. Var. Mean	0.053	0.050	0.068	0.054
Dep. Var. Std. Dev.	0.013	0.009	0.010	0.007
(c) <i>Pancasila</i> /Civic Share				
INPRES $\times$ post-1972	-0.001 (0.001)	n/a	-0.003 (0.003)	0.008*** (0.002)
Dep. Var. Mean	0.012		0.060	0.039
Dep. Var. Std. Dev.	0.023		0.008	0.004
(d) <i>Bahasa</i> Indonesia Share				
INPRES $\times$ post-1972	-0.004** (0.002)	0.000 (0.003)	-0.005 (0.004)	0.002 (0.002)
Dep. Var. Mean	0.027	0.001	0.123	0.084
Dep. Var. Std. Dev.	0.047	0.008	0.016	0.008
District FE	✓	✓	✓	✓
Grade-Level FE	✓	✓	✓	✓
Year-of-Entry FE	✓	✓	✓	✓
Number of Observations	4,128	1,404	1,662	1,046
Number of Districts	239	213	213	178

*Notes:* This table presents estimates from a modified version of equation (1). We use an unbalanced panel at the school-grade (primary, jun. sec., sen. sec.)  $\times$  district  $\times$  year level, including only years in which the given district had any school-grades enter. The estimating equation is  $y_{sijt} = \beta(INPRES_j \times Post1972_t) + (\mathbf{X}_j \times Post1972_t)' \Theta + \delta_s + \delta_j + \delta_t + \varepsilon_{sijt}$ , where  $s$  is a school-grade level and other terms are defined as in equation (1). The dependent variable measures the mean share of weekly instruction time devoted to Islamic subject material in panel (a), Arabic instruction in panel (b), *Pancasila* and civic education in panel (c), and instruction of the national language and literature, *Bahasa* Indonesia in panel (d). The measures come from the SIAP registry for the 2018–19 school year, and we categorize subject material using a procedure detailed in Appendix D. It is not possible to identify *Pancasila* and civic subjects for primary schools as such hours are not recorded in the database and hence the omission of column 2 in panel (b). All specifications include district  $\times$  grade-level fixed effects, year-of-entry fixed effects, and a post-1972 dummy interacted with the 1971 children population, the 1971 enrollment rate, exposure to the water and sanitation program, and the baseline number of elementary, junior secondary, senior secondary *madrasa*, and *pesantren*.

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Robust standard errors clustered by district.

**Table 5: SD INPRES Exposure and Islamic School Choice**

	Elementary		Highest Education Level: [...] <i>Madrasa</i>				Any Level	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) Difference-in-Differences								
INPRES × young	-0.0010** (0.0004)	-0.0010 (0.0006)	0.0018*** (0.0004)	0.0031*** (0.0007)	0.0010*** (0.0003)	0.0018*** (0.0004)	0.0017** (0.0007)	0.0037*** (0.0012)
(b) Synthetic Difference-in-Differences								
INPRES × young	-0.0025*** (0.0008)	-0.0049*** (0.0012)	0.0034*** (0.0008)	0.0031** (0.0015)	0.0020*** (0.0007)	0.0025** (0.0010)	0.0026* (0.0014)	0.0002 (0.0025)
District × Survey Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓
1957 Islamic Schools × Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓
Cohorts born 1968–72 vs. 1957–62	✓		✓		✓		✓	
Cohorts born 1968–87 vs. 1957–62		✓		✓		✓		✓
Number of Individuals	839,026	2,315,949	839,026	2,315,949	839,026	2,315,949	839,026	2,315,949
Number of Districts	275	275	275	275	275	275	275	275
Dep. Var. Mean	0.014	0.011	0.011	0.016	0.008	0.012	0.031	0.038
R <sup>2</sup> (panel a)	0.031	0.024	0.014	0.021	0.009	0.011	0.033	0.037

*Notes:* This table reports estimates of equation (4) based on annual *Susenas* data from 2012 to 2018. INPRES refers to SD INPRES schools constructed from 1973–78 per 1,000 children in 1971. The dependent variables include an indicator equal to one if the individual’s final year of schooling took place in an Islamic elementary (columns 1–2), junior secondary (columns 3–4), senior secondary (columns 5–6), or any level Islamic (columns 7–8). Panel (a) reports standard DID estimates. All specifications include district of birth times survey–year fixed effects and cohort fixed effects interacted separately with the 1971 children population, the 1971 enrollment rate, exposure to the water and sanitation program in the district of birth, the number of elementary, junior secondary, senior secondary *madrasa* in 1957, and the number of *pesantren* in 1957. In odd-numbered columns, the sample is composed of all individuals aged 2–6 (young) or 12–17 in 1974. In even-numbered columns, the young group additionally includes cohorts born between 1973 and 1987. Robust standard errors are clustered by district of birth. Panel (b) reports synthetic DID estimates. The dependent variables are residualized outcomes obtained using the same set of covariates as in panel (a); see Figure 3 for generic details on SDID implementation. Analogous to Appendix Figure A.8, partially exposed cohorts aged 7–11 in 1974 are used in the construction of the synthetic control group; thus the sample is composed of all individuals aged 2–6 (young) or 7–17 in 1974 in odd-numbered columns, and the young group additionally includes cohorts born between 1973 and 1987 in even-numbered columns.

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Standard errors are clustered by district of birth in both panels and, in panel (b), are computed using the cluster bootstrap described in Algorithm 2 of Arkhangelsky et al. (2021).

**Table 6: SD INPRES Exposure and School Choice, Conditional Estimates**

	Highest Education Level: [...] <i>Madrasa</i>   Graduating at that Level							
	Elementary (1)	(2)	Junior Secondary (3)	(4)	Senior Secondary (5)	(6)	Any Level (7)	(8)
(a) Difference-in-Differences (DID)								
INPRES × young	-0.0017** (0.0007)	-0.0016* (0.0009)	0.0057*** (0.0020)	0.0059*** (0.0021)	-0.0001 (0.0014)	0.0030** (0.0014)	0.0011* (0.0007)	0.0024*** (0.0009)
(b) Synthetic Difference-in-Differences								
INPRES × young	-0.0043*** (0.0016)	-0.0088*** (0.0023)	0.0117*** (0.0044)	0.0027 (0.0060)	-0.0004 (0.0028)	0.0020 (0.0040)	0.0016 (0.0017)	-0.0011 (0.0025)
(c) DID with Selection Correction (Parametric)								
INPRES × young	-0.0029** (0.0012) [0.049]	-0.0042** (0.0012) [0.020]	0.0037 (0.0027) [0.347]	0.0055* (0.0020) [0.068]	0.0017 (0.0021) [0.481]	0.0028 (0.0017) [0.202]	0.0002 (0.0008) [0.731]	0.0022 (0.0009) [0.222]
Selection Term, p-value	0.245	0.013	0.367	0.592	0.353	0.970	0.134	0.745
(d) DID with Selection Correction (Semiparametric)								
INPRES × young	-0.0017*** (0.0007) [0.001]	-0.0021*** (0.0008) [0.001]	0.0053*** (0.0020) [0.001]	0.0059*** (0.0020) [0.001]	0.0001 (0.0015) [0.986]	0.0018 (0.0013) [0.249]	0.0004 (0.0007) [0.479]	-0.0001 (0.0009) [0.575]
Selection Terms, p-value	0.902	0.034	0.002	0.000	0.155	0.000	0.111	0.000
District × Survey Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓
1957 Islamic Schools × Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓
Cohorts born 1968–72 vs. 1957–62	✓		✓		✓		✓	
Cohorts born 1968–87 vs. 1957–62		✓		✓		✓		✓
Number of Individuals	283,359	726,561	100,874	373,064	130,546	471,076	543,748	1,680,217
Number of Districts	275	275	275	275	275	275	275	275
Dep. Var. Mean	0.024	0.024	0.070	0.086	0.044	0.053	0.036	0.044

*Notes:* This table estimates the specifications in Table 5 on dependent variables defined conditional on graduating from a given level of education. These binary outcomes equal one for *madrasa* among elementary graduates (columns 1–2), among junior secondary graduates (columns 3–4), among senior secondary graduates (columns 5–6), and any level graduates (columns 7–8). The sample only includes individuals at the given graduation level. In panels (a) and (b), specification details for the DID and the SDID estimation are otherwise identical to those in panels (a) and (b) of Table 5, respectively. In panels (c) and (d), we report estimates from the second step of a two-step selection model that adjusts for the non-random sample selection, i.e., conditioning on those that reached the given level. Panel (a) estimates a parametric Heckman (1976) two-step procedure, which includes the inverse Mills Ratio in the second-step. Panel (b) estimates a semiparametric Newey (2009) procedure, which includes a cubic polynomial in flexibly estimated first-step probabilities; the cubic order is based on consistency results in Newey (2009), which imply an upper bound of 3 on the order of the approximating power series in a sample with effective size of 275 (i.e., the level of policy variation). In both cases, we exclude from the second step a set of covariates that capture exposure to a compulsory schooling pilot program in the 1950s and early 1960s: cohort FE times (i) an indicator equal to one if the individual’s district of birth was one of 35 pilot sites, (ii) the number of schools allocated to the district as part of the program, and (iii) the number of teachers allocated to the district as part of the program. In panel (d), to better approximate the true selection correction function, we create quintiles of all continuous regressors in the first step estimation, i.e., (ii) and (iii) plus the continuous regressors in the baseline specification.

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Robust standard errors clustered by district of birth in all specifications. Panels (c) and (d) deploy a percentile- $t$  cluster bootstrap procedure proposed by Yamagata (2006) and shown to work well with two-step selection estimators. The standard errors in those panels are based on non-bootstrap inference, but the significance levels on the coefficients and p-values reported below the standard errors are based on the asymmetric percentile- $t$  confidence intervals derived from 250 cluster bootstrap repetitions.

**Table 7: Heterogeneity in the Effects of SD INPRES on Islamic School Choice**

	Years of School		Elementary		Highest Education Level: [...] <i>Madrasa</i>				Any	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(a) Ideological Heterogeneity										
INPRES × young	0.1329*** (0.0254)	0.2044*** (0.0358)	-0.0007 (0.0005)	-0.0004 (0.0008)	0.0019*** (0.0005)	0.0032*** (0.0008)	0.0010*** (0.0004)	0.0017*** (0.0004)	0.0021*** (0.0008)	0.0042*** (0.0013)
INPRES × young × Islamic vote (1950s)	-0.0112 (0.0267)	0.0389 (0.0341)	0.0003 (0.0007)	0.0006 (0.0010)	0.0010* (0.0005)	0.0018** (0.0009)	0.0006* (0.0003)	0.0010** (0.0005)	0.0017* (0.0010)	0.0033** (0.0016)
(b) Gender Heterogeneity										
INPRES × young × male	0.1788*** (0.0306)	0.1969*** (0.0359)	-0.0012*** (0.0004)	-0.0013** (0.0005)	0.0017*** (0.0004)	0.0023*** (0.0006)	0.0010*** (0.0003)	0.0020*** (0.0005)	0.0014** (0.0007)	0.0029*** (0.0010)
INPRES × young × female	0.0984*** (0.0288)	0.1921*** (0.0419)	-0.0008 (0.0005)	-0.0006 (0.0008)	0.0020*** (0.0005)	0.0038*** (0.0009)	0.0010** (0.0005)	0.0016*** (0.0005)	0.0021** (0.0008)	0.0045*** (0.0014)
male=female, p-value	0.007	0.890	0.435	0.239	0.425	0.004	0.902	0.223	0.277	0.032
District × Survey Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1957 Islamic Schools × Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cohorts born 1968–72 vs. 1957–62	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cohorts born 1968–87 vs. 1957–62		✓		✓		✓		✓		✓
Number of Individuals	839,019	2,315,933	839,026	2,315,949	839,026	2,315,949	839,026	2,315,949	839,026	2,315,949
Dep. Var. Mean (overall)	7.5	8.4	0.014	0.011	0.011	0.016	0.008	0.012	0.031	0.038
Dep. Var. Mean (male)	8.1	8.8	0.011	0.009	0.010	0.014	0.008	0.011	0.027	0.033
Dep. Var. Mean (female)	6.9	8.2	0.016	0.012	0.011	0.018	0.007	0.012	0.034	0.042

*Notes:* This table reports estimates of a modified version of equation (4). Compared to the baseline DID specification, panel (a) interacts INPRES × young with the standardized vote share of Islamic parties in the 1950s elections, which is also separately interacted with cohort FE, and panel (b) interacts INPRES × young separately with male and female dummies while also interacting all baseline controls (and interactive FE) with a female indicator, i.e., all coefficients and FE are allowed to vary with gender. With the exception of columns 1–2, which looks at total years of education, the specifications in both panels are otherwise identical to those in Table 5 (see the notes therein). Panel (b) also reports the p-value from an  $F$  test of coefficient equality between genders.

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Robust standard errors clustered by district of birth.

**Table 8:** Substitution between SD INPRES and Islamic Elementary Schools

	Dep. Var.: Years of Education ( <i>mean</i> = 7.5)				
	OLS			IV	
	(1)	(2)	(3)	(4)	(5)
INPRES $\times$ young	0.133*** (0.029)	0.131*** (0.029)	0.154*** (0.032)	0.107*** (0.031)	0.176*** (0.043)
Islamic elementary $\times$ young		0.137 (0.163)	1.264** (0.504)	1.687*** (0.577)	4.167*** (1.413)
INPRES $\times$ Islamic elementary $\times$ young			-0.567*** (0.206)		-1.485** (0.685)
District $\times$ Survey Year FE	✓	✓	✓	✓	✓
Cohort FE	✓	✓	✓	✓	✓
1957 Islamic Schools $\times$ Cohort FE	✓	✓	✓	✓	✓
Number of Individuals	839,019	839,019	839,019	839,019	839,019
KP 1st stage Wald statistic				23.0	10.9
KP 1st stage LM test, p-value				< 0.01	< 0.01

*Notes:* This table reports estimates of equation (4) with years of schooling as the dependent variable and the regressors augmented with Islamic elementary school entry in the same period as SD INPRES entry 1973–78. Like the latter, Islamic elementary equals the total new Islamic school constructions during that period normalized by the district’s child population in 1971. Columns 1–3 are estimated by OLS and column 4–5 by IV. The instruments in column 4 include the exposed cohort indicator, young, times the district-level Muslim population share in 1972, the *waqf* endowment in 1972, and the predetermined potential rice yield from the FAO-GAEZ. The instruments in column 5 expand that set to include the triple interactions with INPRES. The OLS and IV specifications are otherwise identical to the baseline specification in the odd-numbered columns of Table 5 (see the notes therein). The KP 1st stage Wald statistic in column 4 is just the standard cluster-robust F statistic and column 5 is the Kleibergen and Paap (2006) multivariate Wald analogue. Sanderson and Windmeijer (2016) tests on the separate first stages in column 5 reject the null of weak instruments with p-values < 0.01. The KP 1st stage LM (Lagrange Multiplier) tests the null of underidentification. A Hausman GMM test strongly rejects the null (p-value < 0.01) that the OLS and IV are identical (i.e., that the regressors are endogenous).

\* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01. Robust standard errors clustered by district.

**Table 9: SD INPRES Exposure, Identity, and Religiosity**

	(a) Identity, Proxied by Language					
	National Language Use at Home			Arabic Literacy		
	All	Muslims	Non-Muslims	All	Islamic-Educated	Secular-Educated
	(1)	(2)	(3)	(4)	(5)	(6)
INPRES × young	-0.0011 (0.0015)	-0.0029* (0.0018)	-0.0018 (0.0018)	0.0112*** (0.0026)	0.0144 (0.00108)	0.0023 (0.0025)
Number of Individuals	31,680,947	27,811,517	3,869,430	839,026	25,935	813,087
Number of Districts	273	273	273	275	275	275
Dep. Var. Mean	0.166	0.150	0.275	0.343	0.688	0.332

	(b) Islamic Piety and Practice							
	Pray 5x daily	Fast during Ramadan	Reads the Qur'an	Friday	Prayer: Sunna	Group	Pay Zakat	Index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
INPRES × young	0.1344** (0.0604)	-0.0041 (0.0503)	0.0977** (0.0470)	0.1559** (0.0611)	0.0954* (0.0485)	0.0348 (0.0466)	0.0370 (0.0466)	0.0781*** (0.0294)
Number of Individuals	1,282	1,283	1,281	1,276	1,268	1,280	1,281	1,284
Number of Districts	144	144	144	144	144	144	144	144
Dep. Var. Mean	0.623	0.797	0.251	0.187	0.140	0.230	0.834	0.415

Notes: This table reports estimates of equation (4) using data from multiple sources. The dependent variable in columns 1–3 of panel (a) is an indicator for whether the individual speaks the national language, *Bahasa* Indonesia, as his/her main language at home. The data come from the complete-count 2010 Population Census. Columns 4–6 in panel (a) look at an indicator for whether an individual reports literacy in Arabic in the annual *Susenas* data from 2012 to 2018. Panel (a) sample splits across Muslims and non-Muslims in the Population Census (where we do not observe Islamic education) and across Islamic-educated and non-Islamic-educated in *Susenas* (where we do not observe religion). The specifications in panel (a) are restricted to mothers and fathers (husbands and wives) that fall within the original birth cohorts: aged 2–6 (young) or 12–17 in 1974. The dependent variables in panel (b) include indicators for whether an individual reports partaking in a range of Islamic practices as reported in the [Pepinsky et al. \(2018\)](#) survey data from 2008. The final column is a mean index across all 7 prior outcomes. The sample in panel (b) is restricted to Muslim respondents from 1957 to 1987, excluding the partially exposed cohorts born 1963–67. The specification is otherwise identical to panel (a) in Table 5, which includes district of birth (times survey–year) fixed effects and cohort fixed effects interacted separately with the 1971 children population, the 1971 enrollment rate, exposure to the water and sanitation program in the district of birth, the number of elementary, junior secondary, senior secondary *madrasa* in 1957, and the number of *pesantren* in 1957 (see the notes therein).

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01. Robust standard errors clustered by district of birth.

**Table 10: SD INPRES Exposure and Ideology**

	(1)	(2)	(3)	(4)	(5)
(a) Citizens					
	<i>Pancasila</i>	Respondent Supports ...			
		Islamic Politics	Islamic Economics	<i>Sharia</i> (Index)	
				Subjective	Objective
INPRES × young	0.0194 (0.0424)	-0.0005 (0.0875)	0.0365 (0.0615)	-0.0122 (0.0581)	0.0143 (0.0288)
Number of Individuals	1,444	1,284	1,297	1,377	1,286
Number of Districts	159	156	157	157	144
Dep. Var. Mean	0.857	0.616	0.732	0.637	0.434
(b) Candidates					
	Golkar Party	United Development Party (PPP)	Platform Appeals to		
			Nation Building	Islam	Nation Building Excl. Islam
INPRES × young	-0.0109* (0.0061)	0.0103** (0.0044)	-0.0106* (0.0059)	0.0028 (0.0023)	-0.0110* (0.0056)
Number of Candidates	17,123	17,123	17,123	17,123	17,123
Number of Districts	273	273	273	273	273
Dep. Var. Mean	0.118	0.045	0.116	0.027	0.110

Notes: This table reports estimates of equation (4) for ideological outcomes. The data in panel (a) come from the [Pepinsky et al. \(2018\)](#) survey data. The dependent variable in column 1 of panel (a) is an indicator for whether the individual supports the national, inclusive secular ideology of *Pancasila*, or thinks some other ideology would be preferable. We next look at measures of support for a greater role of Islamic principles in politics (column 2) or in economic life (column 3). Columns 4 and 5 consider measures of support for application of the *sharia* law. Column 4 is an indicator for whether the Muslim respondent express strong or very strong support for the implementation of *sharia* law. Column 5 is a mean index across several specific components of *sharia* law (e.g., prohibiting interest, mandating *hijab* for women), each of which is elaborated in Appendix Table A.22. The sample in panel (a) is restricted to Muslim respondents from 1957 to 1987, excluding the partially exposed cohorts born 1963–67. The dependent variables in panel (b) are based on legislative candidates in 2019. Columns 1 and 2 are indicators for whether the candidates are running on the party tickets of *Golkar* (former President Suharto’s party) and the Islamic United Development Party (PPP), respectively. Columns 3–5 are indicators for whether the candidate’s campaign platform mentions concepts that appeal to Indonesian nation building and *Pancasila* (column 3), to Islam and religious themes (column 4), and nation building exclusive of Islam and religious themes (column 5). The specifications in panel (b) are restricted to the original birth cohorts: aged 2–6 (young) or 12–17 in 1974. The specifications in both panels is otherwise identical to panel (a) in Table 5, which includes district of birth (times survey–year) fixed effects and cohort fixed effects interacted separately with the 1971 children population, the 1971 enrollment rate, exposure to the water and sanitation program in the district of birth, the number of elementary, junior secondary, senior secondary *madrasa* in 1957, and the number of *pesantren* in 1957 (see the notes therein).

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Robust standard errors clustered by district.

**Table 11: SD INPRES Exposure and Religious Cultural Transmission**

	<i>Marriage Matching</i>		<i>Arabic Literacy</i>			
	Islamic-Educated Partner		Arabic in the Home Parents & Children		Child's Arabic No Islamic Schooling	
	(1)	(2)	(3)	(4)	(5)	(6)
INPRES × young (Father)	0.0020** (0.0009)		0.0044* (0.0025)		0.0073** (0.0036)	
INPRES × young (Mother)		-0.0001 (0.0007)		0.0049* (0.0026)		0.0054 (0.0046)
Number of Individuals	725,803	544,174	304,048	246,060	95,678	77,068
Number of Districts	275	275	275	275	272	272
Cohorts born 1968–72 vs. 1957–62	✓	✓	✓	✓	✓	✓
Dep. Var. Mean	0.039	0.024	0.213	0.268	0.877	0.887
R <sup>2</sup>	0.038	0.026	0.112	0.138	0.048	0.043

*Notes:* This table reports estimates of a modified version of equation (4) where *young* now denotes the INPRES exposure of a parent (father or mother). INPRES refers to SD INPRES schools constructed from 1973–78 per 1,000 children in 1971. The dependent variable in columns 1–2 is an indicator for whether the spouse has an Islamic education, in columns 3–4 an indicator for all 3 members of the household (father, mother, and child) being literate in Arabic, and in columns 5–6 an indicator equal to 1 if the child is literate in Arabic, conditional on the parent being literate in Arabic and the child having received no Islamic schooling. All specifications are restricted to children with mothers and fathers (or to husbands and wives) that fall within the original birth cohorts: aged 2–6 (young) or 12–17 in 1974. We restrict to co-resident children that are at least 18 years old and hence likely to have completed their secondary schooling. The regressions additionally control for child birth cohort fixed effects. The specification is otherwise identical to panel (a) in Table 5 (see the notes therein).

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Robust standard errors clustered by the parent's district of birth.