Policy for Closing Education Gaps across Gender and Culture: Tuition-Free Education or School Construction?

Kotaro Fujisaki*

January 3, 2026

Abstract

Education policies commonly fall into two categories: cost/demand-side and supply-side interventions. This paper examines which approach more effectively serves under-represented groups, taking local culture into account. Using a regression discontinuity design, it shows that Indonesia's Free Primary Education (FPE) program, which abolished primary school tuition fees in 1977–1978, improved previously low female educational attainment. These educational gains also reduced child marriage and raised future earnings. Unlike the concurrent school construction program, FPE was equally effective across communities, irrespective of whether bride price is practiced. Absent institutions raising demand for girls' schooling, tuition removal can be more effective in promoting female education than supply-side interventions, thereby reducing gender gaps across cultural contexts.

Keywords: Free primary education, Indonesia, Gender, Bride price, Culture
JEL classification: I24, I25, I28, J16, Z13, Z18

---

*PhD Candidate, Department of Economics, University College London; Junior Research Fellow, Research Institute for Economics and Business Administration (RIEB), Kobe University (Email: kotaro.fujisaki.22@ucl.ac.uk). I am grateful to Esther Duflo for sharing the INPRES school construction data. I thank Jonas Hjort, Suphanit Piyapromdee, Imran Rasul, Andrew Chesher, Michela Tincani, Liyang Sun, Lucas Conwell, Attila Lindner, Natalie Bau, Sascha O. Becker, Hasanbasri Ardina, Takuma Kamada, Shuhei Kitamura, Saisawat Samutpradit, Miki Kohara, Mariaflavia Harari, Hitoshi Shigeoka, Andreas Madestam, Chau Pham, Si Xu, Michael Tran, Victor Cheuk, Christiane Szerman, thesis supervisors at LSE (Maitreesh Ghatak and Gharad Bryan), seminar participants at UCL, PSE-CEPR Policy Forum, RES PhD Conference, Stockholm University, UCL-Stone Research Day, the University of Osaka, and the University of Luxembourg, and three anonymous referees for the Kanematsu Prize for helpful comments and suggestions. I gratefully acknowledge receiving the Kanematsu Prize from Kobe University for this paper. All errors remain my own. This paper replaces an earlier version titled "Heterogeneous Effectiveness of Education Policies by Gender and Culture."

I. Introduction

Culture shapes economic development (Collier, 2017). Beyond its documented role in long-run growth (Tabellini, 2010), culture can determine the success of development policies by altering incentives.[1] Conversely, institutional and policy reforms can reshape culture (Bau and Fernández, 2023; Alesina and Giuliano, 2015).[2] These policy–culture interactions underscore the need to account for local cultural contexts in policymaking (Bau et al., 2025).

Tailoring a policy design to cultural contexts may be particularly effective in delivering basic education to girls, who often face greater barriers to completing primary and higher education, and in narrowing persistent gender education gaps (UNICEF, 2022). Gender permeates many cultural institutions—including bride price, dowry, kinship systems, and inheritance customs—and profoundly shapes how parents invest in their children's education and health.[3] A policy design that successfully bridges educational divides across gender and cultural lines can serve as a powerful catalyst for economic development.

Education policies take many forms, but two broad patterns emerge: cost/demand-side interventions and supply-side interventions.[4] In the 1970s, Indonesia implemented both approaches: the Free Primary Education (FPE) program (1977-1978) eliminated tuition fees at public primary schools, while the Sekolah Dasar INPRES program (1973-1978, hereafter INPRES) constructed new primary schools nationwide.[5] By comparing their effectiveness in communities where bride price is practiced, this paper reframes the conventional question of *how culture shapes policy impact* to ask *whether policy effectiveness varies by intervention type*

[1]For example, whether women's inheritance-rights reforms improve female outcomes hinges on gender norms and son preference (Rosenblum, 2015; Bhalotra, Brulé, and Roy, 2020; Anderson and Genicot, 2015).

[2]Examples include kinship practices weakened by a pension reform (Bau, 2021); son preference exacerbated by land-rights reforms and China's one-child policy (Bhalotra et al., 2019, 2023; Roy, 2015; Ebenstein, 2010; Almond et al., 2019); and gender norms shaped by socialist regime collapses (Campa and Serafinelli, 2019; Boelmann et al., 2025) and political quota systems (Beaman et al., 2009; Chen et al., 2025).

[3]Bride price (Ashraf et al., 2020; Corno et al., 2020; Corno and Voena, 2023; Khalifa, 2022), dowry (Calvi and Keskar, 2023; Alfano, 2017), matri/patrilocality (Bau, 2021; Bhalotra et al., 2020), and matri/patrilinearity (La Ferrara and Milazzo, 2017) affect imperfectly altruistic parents' investments in their children's human capital (Becker et al., 2016; Banerjee, 2004). Son preference (Jayachandran and Kuziemko, 2011; Jayachandran and Pande, 2017; Wei and Zhang, 2011) influences investments in daughters' education and health, in part through compensatory behaviors related to land inheritance (Estudillo et al., 2001; Bhalotra et al., 2019, 2020; Roy, 2015; Walker et al., 2024; Rosenblum, 2015; Anderson and Genicot, 2015) and dowry (Bhalotra et al., 2020).

[4]The literature distinguishes supply-side (school input) interventions from cost/demand-side policies (Handa, 2002; Burde and Linden, 2013; Kazianga et al., 2013; Muralidharan and Sundararaman, 2015).

[5]"Sekolah Dasar" means primary school. INPRES stands for "Instruksi Presiden" or presidential instruction. INPRES is typically classified as a supply-side intervention (Glewwe and Kremer, 2006; Glewwe and Muralidharan, 2016; Mazumder et al., 2023).

conditional on local culture, thereby informing policy choices to achieve equitable educational access in culturally heterogeneous settings.

These two policies in Indonesia merit a comparative analysis for three reasons. First, the impact of tuition abolition under FPE can be cleanly separated from the INPRES school construction initiative. On the one hand, there is regional and temporal variation in the exposure to INPRES, which concentrated on traditionally underserved regions with staggered rollouts, where around 6,000 to 15,000 schools were built each year from 1973 to 1978. Prior studies, using difference-in-differences designs that exploit this region-time variation, report significant improvements in educational outcomes for both boys and girls.[6]

On the other hand, the suddenly announced, simultaneous, nationwide introduction of FPE creates variation suitable for a Regression Discontinuity (RD) design over birth cohorts (Keats, 2018; Grépin and Bharadwaj, 2015, among others). At its rollout, children still enrolled in primary school were eligible for FPE for the remainder of primary education, whereas marginally older cohorts who had already completed primary school were not. Both groups, however, were exposed to the continuous treatment of INPRES during their primary school years. The differing implementation of the two policies enables credible identification of the tuition-fee abolition effect via an RD design. By contrast, in much of the FPE literature, tuition fee removal coincided with parallel programs aimed at the same cohorts, making it impossible to disentangle which policy drove the observed effects.[7]

Second, in 1970s Indonesia, women's educational attainment lagged behind that of men, leaving girls underrepresented in schooling. Among pre-FPE cohorts (born 1961-1965), girls' primary and lower-secondary completion rates were 77.3% and 31.1%, compared to 85.3% and 44.9% for boys. Third, Ashraf et al. (2020) show that in Indonesia, communities practicing bride price have additional incentives to invest in daughters' education. Compared with non–bride-price communities, they display higher baseline female schooling and larger responses to INPRES. Their findings underscore the critical role of cultural institutions that create sufficient demand for female education in shaping education-policy effectiveness.

The first part of the paper abstracts from culture and evaluates the impact of FPE on edu-

[6] Early studies that typically use the 1995 Intercensus show gains in male schooling (Duflo, 2001, 2004; Martinez-Bravo, 2017; Mazumder et al., 2019; Jung et al., 2021; Bazzi et al., 2025; Rizal et al., 2023; Hsiao, 2024) but find no impact on average female education (Breierova and Duflo, 2004; Hertz and Jayasundera, 2007; Ashraf et al., 2020). More recent work using newer data, by contrast, documents positive effects on female schooling (Mazumder et al., 2019; Akresh et al., 2023; Bazzi et al., 2025; Rizal et al., 2023).

[7] Such multifaceted FPE programs, sometimes referred to as Universal Primary Education (UPE) programs, were implemented in Uganda (Deininger, 2003; Grogan, 2008; Nishimura et al., 2008; Keats, 2018); Malawi (Al-Samarrai and Zaman, 2007); Nigeria (Osili and Long, 2008); Burundi (Wild and Stadelmann, 2024); Ethiopia (Chicoine, 2019, 2021) and Kenya (Lucas and Mbiti, 2012a, 2012b). More details are in Table A1.

cational outcomes across gender. To the best of my knowledge, this is the first economics study to rigorously analyze Indonesia's FPE program.[8] The main analysis draws on the 2010 and 1995 Indonesian Population Census and Intercensus. The RD design compares cohorts born in January 1966 or later with those born earlier. Post-January-1966 cohorts were of primary school age or younger when FPE was launched and thus received at least one year of fee-free schooling. I show that this discontinuity cannot be explained by other concurrent education policies or pre-FPE differences, isolating the causal effect of FPE.

Results show that FPE was effective in promoting education for both girls and boys, as measured by primary and lower-secondary completion rates, literacy, and years of schooling. The relative gains for girls measured against the pre-FPE benchmark generally exceeded those for boys, highlighting FPE's role in reducing gender disparities. For example, receiving at least one year of FPE raised primary education completion by 5.3-6.0% (4.1-4.6 p.p.) for girls and by 3.4-3.8% (2.9-3.2 p.p.) for boys. Importantly, these improvements are observed among cohorts who had enrolled in non-INPRES schools before the program's launch. Results are robust to alternative functional forms, controls, bandwidths, and datasets.

Three complementary analyses provide greater confidence in, and a deeper understanding of, these education gains. First, I apply a Difference-in-Discontinuities (Diff-in-Disc) design to address two remaining identification concerns in the RD framework: cohort comparisons may partly capture maturity advantages, as older students within a grade tend to outperform younger peers (Bedard and Dhuey, 2006); and RD estimates reflect only the aggregate impact of eligibility for at least one year of FPE, without distinguishing varying exposure durations. The Diff-in-Disc approach, which differences out birth-month variation, produces estimates nearly identical to the RD results, indicating that maturity bias is minimal. Applied to younger cohorts exposed to FPE for longer, it further shows that each additional year of FPE raises attainment, with larger gains for women.

Second, a two-stage least squares extension of the RD design (Keats, 2018) shows that these gains translated into substantial social and economic benefits especially for women. Higher attainment reduced female child marriage and raised wages for both men and women. A cost-benefit analysis indicates that the resulting tax revenues exceed FPE's implementation costs, implying its prevailing economic returns and fiscal viability. Third, INPRES appears to have enabled these FPE gains by absorbing the enrollment surge and easing the overcrowding common among FPE programs (Lucas and Mbiti, 2012a). FPE effects are stronger in

[8]Studies on other Indonesian education reforms (Hertz and Jayasundera, 2007; Parinduri, 2014; Samarakoon and Parinduri, 2015) and policy reports (Chernichovsky and Meesook, 1985; Mertaugh et al., 1989) attribute increases in primary enrollment to FPE but do not offer rigorous analysis. Mazumder et al., 2023 also note the 1977 fee elimination.

areas with more intense INPRES school construction, suggesting complementarity between the two policies in promoting basic education in 1970s Indonesia.[9]

The second part of the paper addresses whether FPE's impact varied by bride price practice.[10] Ashraf et al. (2020) demonstrate that ethnic groups practicing bride price have stronger incentives to invest in daughters' education: bride price—a transfer from the groom's family to the bride and her family at marriage—increases with the bride's education, as educated women are more likely to marry educated partners who can offer higher payments. Reflecting this demand channel, INPRES raised female education only in bride price communities.

In contrast to INPRES, I find no evidence of a differential impact of FPE. FPE was equally effective in communities with and without bride price, indicating that it is more robust to culture-specific variation in education demand. This suggests that the immediate monetary returns from fee abolition more effectively substitute for future bride price gains than improved school access through INPRES. The discussion section formalizes this distinction and develops a conceptual framework that predicts that bride price shapes the effectiveness of supply-side, but not necessarily cost/demand-side, interventions.

This paper contributes to three strands of literature. First, it adds to the growing evidence that cultural customs and norms shape policy impacts (Estudillo et al., 2001; Roy, 2015; Ashraf et al., 2020; Rosenblum, 2015; Calvi and Keskar, 2023; Heath et al., 2020; Bhalotra et al., 2019, 2020; Anderson and Genicot, 2015; Moscona and Seck, 2024; Bau et al., 2025). Going beyond culture's interaction with a single policy, this paper addresses how policy effectiveness varies by intervention type given local culture by contrasting two policies in Indonesia's bride price communities: the enhanced effectiveness of INPRES (Ashraf et al., 2020) versus the absence of such heterogeneity for FPE. Compared to supply-side interventions such as INPRES, FPE emerges as a more robust approach to cultural differences affecting education demand.

Second, it complements the voluminous literature on policies that promote basic education, particularly cost-reducing policies (Glewwe and Muralidharan, 2016 for a review). As shown in Table A1, recent FPE and tuition-reform studies generally find positive effects on schooling and downstream outcomes such as labor market prospects and reproductive health.[11] Although benefits observed elsewhere may partly reflect accompanying initiatives,

[9]This regional heterogeneity, mediated by INPRES, does not threaten the validity of FPE estimates, since INPRES benefits varied smoothly across cohorts.

[10]This captures heterogeneity in education demand, a policy-relevant dimension that merits further investigation. Other demand determinants (e.g., household socioeconomic status or sibling composition in the 1970s) are poorly captured in available data, rendering this culture-based approach one of the few feasible strategies.

[11]Earlier studies often exploit cross-cohort variation (Deininger, 2003; Grogan, 2008; Nishimura et al., 2008;

Indonesia's context allows a cleaner isolation of tuition fee abolition. Aggregate effects, however, mask regional heterogeneity mediated by INPRES, which amplified FPE's effectiveness by mitigating overcrowding, indicating complementarity between the two policies. Viewed alongside evidence that bride price magnified the impact of INPRES (Ashraf et al., 2020), this episode illustrates the dual importance of school supply and household demand factors in shaping educational outcomes. The conceptual framework formalizes these interactions and their implications for policy design in bride-price settings.

Among Indonesia's 1970s education reforms, Duflo (2001) provides the seminal analysis of INPRES, the 1973–1978 school construction program.[12] The study finds that each additional school per 1,000 children increased schooling by 0.12-0.19 years and men's wages by 1.5-2.7%. Apart from INPRES, Parinduri (2014) and Samarakoon and Parinduri (2015) assess the 1978/79 academic calendar reform, which extended the school year by half a year for enrolled students. Parinduri (2014) shows that this reduced grade repetition and improved educational attainment. My paper credibly identifies FPE's contribution amid these reforms and demonstrates that its effects hold irrespective of bride price practice and are reinforced by INPRES.

Third, this paper contributes to the literature on gender inequality in education (Burde and Linden, 2013; Muralidharan and Sundararaman, 2015; Muralidharan and Sheth, 2016) by showing that FPE effectively reduces gender gaps. Its impacts are comparable to those of conditional cash transfers (CCTs)—some explicitly targeting girls, others especially effective for them (Filmer and Schady, 2008; Baird et al., 2011; Duflo et al., 2015; Dupas et al., 2021; Giacobino et al., 2024)—yet FPE circumvents the exclusion and monitoring costs typical of CCTs (Benhassine et al., 2015). Moreover, FPE is economically feasible, as tax revenues driven by wage increases exceeded implementation costs. Finally, FPE reduced female child marriage, consistent with evidence from other education programs (Giacobino et al., 2024; Dupas et al., 2021; Grépin and Bharadwaj, 2015).[13]

Al-Samarrai and Zaman, 2007), whereas recent work employs Difference-in-Differences (Kodila-Tedika and Otchia, 2022; Brudevold-Newman, 2021; Lucas and Mbiti, 2012a; Chicoine, 2019, 2021; Chyi and Zhou, 2014; Osili and Long, 2008) and RD designs (Keats, 2018; Grépin and Bharadwaj, 2015; Wild and Stadelmann, 2024). Unlike these RD papers, which define cutoffs by birth year, I use birth month and net out age-variation bias via a Diff-in-Disc design.

[12] Additionally, Duflo (2004) documents wage declines among older cohorts not covered by INPRES, attributed to the increased supply of younger graduates. Subsequent work has extended INPRES analysis to health (Rizal et al., 2023, Mazumder et al., 2023), fertility and child mortality (Breierova and Duflo, 2004), religion (Bazzi et al., 2025), time preferences (Jung et al., 2021), public goods provision (Martinez-Bravo, 2017), aggregate and distributional impacts via mobility (Hsiao, 2024), intergenerational spillovers (Mazumder et al., 2019; Akresh et al., 2023; Hertz and Jayasundera, 2007), and bride price (Ashraf et al., 2020).

[13] Child marriage and early pregnancy increase risks of domestic violence (Jensen and Thornton, 2003) and adverse health outcomes for young mothers and infants (Chari et al., 2017; Raj, 2010).

The paper proceeds as follows. Section II describes Indonesia's FPE program and other 1970s reforms. Section III outlines the data and empirical strategy. Section IV reports results on FPE's impact by gender, with robustness checks and complementary analyses. Section V examines heterogeneity by bride price practice, Section VI discusses the mechanisms, and Section VII concludes.

II. Background

A. Free Primary Education Program in Indonesia

Indonesia's education system consists of six years of primary, three of lower secondary, three of upper secondary, and either two years of post-secondary or four years of tertiary schooling, with postgraduate study beyond. Primary schooling became compulsory only after the 1984 National Compulsory Education program (Suryadarma et al., 2006, p.403; Parinduri, 2014, p.94). Most children in Indonesia enter primary schools in the year they turn seven years old (Parinduri, 2014, p.92; Samarakoon and Parinduri, 2015, p.441).

Female attainment was particularly low prior to the Free Primary Education (FPE) program in 1977-78. In the pre-FPE 2010 Census sample (born 1961-1965), primary enrollment was 88.5% for girls and 93.6% for boys. Gender gaps widened at higher levels: completion rates for girls were 77.3% (primary), 31.1% (lower secondary), 20.4% (upper secondary), and 4.6% (university), compared with 85.3%, 44.9%, 31.6%, and 7.6% for boys.

Prior to FPE, households faced substantial costs for primary education (Daroesman, 1971, p.81; Chernichovsky and Meesook, 1985, p.2). In 1976, tuition fees in public primary schools represented 1.0%/1.9% of monthly expenditures for the average urban/rural household.[14] While modest for average households, these fees imposed a significant burden on poorer ones: in 1976, rural households at the 5th/25th expenditure percentiles had monthly expenditures below 5,000 IDR/10,000 IDR (Yoneda, 1985, Table 3), implying tuition shares of at least 6.9%/3.4%.

Financial barriers were the most common reason students dropped out before completing primary school (Mertaugh et al., 1989, p.24). Table A2 documents that as of 1977/78, coincid-

[14]These estimates are derived from forgone tuition revenues under FPE replaced by the Subsidi Bantuan-Pemerintah untuk Pendidikan (SBPP), a government subsidy instituted in 1977 (Mertaugh et al., 1989, p.79; UNESCO, 1984, p.7). The annual SBPP allocation averaged 1,328 Rupiah per pupil (UNESCO, 1984, p.20), implying monthly household tuition costs of about 354.1 IDR/343.1 IDR in urban/rural areas, equivalent to 1.0%/1.9% of average monthly expenditures of 35,648 IDR/18,529 IDR in 1976 (Yoneda, 1985, Table 3). These figures account for the average number of primary-school-age children in 1973, about 3.2/3.1 in urban/rural households, based on the statistics for ever-married women aged 25–29 in West Java (Jones, 1977, Table 1).

ing with the launch of FPE, most households cited "No funds" as the main reason for non-enrollment of their children, regardless of location or child's gender. In contrast, "School too far away" was less frequently cited, especially at the primary school level (ages 7-12), likely due to the near completion of the INPRES school construction program. The data further suggest gendered perceptions of returns: at the primary level, parents of daughters were more likely than those of sons to report that schooling was either sufficient or too difficult.

To ease households' financial constraints, the Indonesian government abolished primary school tuition fees in two phases: the first three grades in 1977 and the remaining three in 1978 (Chernichovsky and Meesook, 1985, p.2). Consequently, individuals born in January 1966 or later were exempt from at least one year of tuition, while earlier cohorts paid full tuition throughout primary school (Table 1).

<Table 1>

President Soeharto announced the abolition of primary school tuition during his state address to the House of Representatives (DPR) on August 16, 1976 (Tempo, 1976).[15] As Tempo (1976) noted, "For many, the President's sudden decision was quite surprising."[16] With only four to five months between the announcement and implementation in January 1977, parents had little to no opportunity to delay enrollment strategically to benefit from the reform. Similar to INPRES, this reform swiftly materialized as part of the government's broader effort to expand access to primary education, financed in large part by a surge in state oil revenues driven by the oil price boom from 1973 onward (Mertaugh et al., 1989, Introduction, i.).

The FPE program applied to public primary schools (Bray, 1996, p.20; Rosser and Joshi, 2013, p.180), which vastly outnumbered private primary schools. In 1984/85, 93.5% of primary schools in Indonesia were public and only 6.5% private (Mertaugh et al., 1989, Table 1.2). In 1977, the government introduced the Subsidi Bantuan-Pemerintah untuk Pendidikan (SBPP), a subsidy to offset the loss of tuition fee revenue (Mertaugh et al., 1989, p.79). As a result, by 1989, private contributions and fee payments made up only 7.8% of budgets in public primary schools, compared to 30.0% in private primary schools (Bray, 1996, p.36).[17]

Policy papers on basic education in Indonesia, although largely descriptive and without rigorous evaluation, commonly credited the substantial gains in schooling to the introduction

[15] Media coverage of the FPE launch includes Antara (Aug. 28, 1976; Jan. 6, 1977, cited in Yusuf, 2008, pp.202–203, 537–538) and Tempo (Oct. 2, 1976).

[16] The original Indonesian sentence is: "Bagi banyak orang, keputusan Presiden yang datangnya seperti mendadak itu memang cukup mengejutkan."

[17] Importantly, the FPE program did not eliminate all out-of-pocket costs of public primary education. Families remained responsible for supplies, transportation, and admission registration. Parent associations (Badan Pembantu Penyelenggaraan Pendidikan, BP3) also often levied contributions (Bray, 1996, p.21).

of FPE: "[...] school enrollment rates have increased dramatically, especially since school fees were abolished" (Chernichovsky and Meesook, 1985, p.2), and "In 1980, dropout rates fell to 4% annually because of the abolition of public school fees and because of greater accessibility of schools" (Mertaugh et al., 1989, p.32). Table A3 confirms a sharp reduction in dropout rates, especially in the upper primary grades, after the 1977/78 rollout of FPE, although part of this decline may reflect secular trends rather than being solely attributable to FPE.

B. Other Education Reforms

Alongside the introduction of FPE, Indonesia undertook two major education reforms in the 1970s. The most prominent was the Sekolah Dasar INPRES program, a large-scale school construction initiative mandated by Presidential Instruction No.10/1973, issued in December 1973 (JDIHN, 2020, p. 97). Under INPRES, 6,000 primary schools were built in each of 1973/74 and 1974/75, 10,000 in each of 1975/76 and 1976/77, and 15,000 in each of 1977/78 and 1978/79, totaling 62,000 schools and nearly doubling the national stock of primary schools between 1971 and 1978 (Mertaugh et al., 1989, p.109; Duflo, 2001, 2004). The program targeted regions with low primary school access and high numbers of unenrolled children as of 1972 (Mertaugh et al., 1989; Duflo, 2001, 2004). In addition to school construction, it also financed teacher recruitment and training as well as textbook provision, contributing to a 43 percent increase in the teacher workforce between 1971 and 1978 (Mertaugh et al., 1989; Duflo, 2001, 2004).

The other reform was the academic calendar reform during the 1978/79 academic year. Previously, the school year ran from January to December. In mid-1978, the Ministry of Education and Culture extended the 1978 academic year through June 1979 to synchronize academic years and government budget sessions. Consequently, students enrolled in 1978 remained in the same grade for an extra six months rather than graduating in December. During this extension, teachers were instructed to review material from the prior year's curriculum (Parinduri, 2014).

Accounting for these contemporaneous reforms is essential for interpreting the estimates of the impact of FPE. The INPRES program primarily expanded access and infrastructure, while the 1978/79 calendar reform may have reinforced curriculum review by extending the school year by six months. Importantly, however, in my RD design with January 1966 as the cutoff, the adjacent 1965 and 1966 birth cohorts would have been exposed to these reforms in broadly similar, continuous ways.[18] Thus, among the major education reforms of

[18] Equivalently, most papers on INPRES, including Duflo (2001, 2004), define the 1963-67 cohorts as partially treated, with exposure increasing in birth date. In particular, by the time the first INPRES schools opened in 1974 (Duflo, 2001, 2004), children in the 1965–66 cohorts next to the RD cutoff were already seven or older and had enrolled in non-INPRES schools. In addition, I find no evidence of enrollment manipulation at the

the 1970s, only the abolition of primary school fees plausibly generates a sharp discontinuity in outcomes at the cutoff.

III. Data and Empirical Strategy

A. Data

This study uses cross-sectional individual data from multiple sources, selected based on the analytical focus of each section. All datasets contain gender and birth month, but differ in the availability of specific educational outcomes and control variables. The primary dataset is a 10% sample of the 2010 Population Census, drawn by IPUMS using geographically stratified sampling. It records educational attainment (primary, lower secondary, upper secondary, and university completion), literacy, school attendance, and rich demographic controls, including ethnicity (957 groups), province of birth (33), and religion (8).

For robustness and heterogeneity analyses, I supplement the 2010 Census with the 1995 Intercensus Population Survey (IPUMS subsample), the 1990 Population Census (IPUMS subsample), and the 2014 Indonesia Family Life Survey (IFLS 5).[19] These datasets record years of schooling and provide additional variables: the 1995 Intercensus includes marriage and labor market outcomes, while IFLS 5 contains rich detail on bride price and school entry age. The 1995 Intercensus further permits heterogeneity analysis by INPRES intensity, as measured in the INPRES data used by Duflo (2001), and by bride price practice, in the same setting as Ashraf et al. (2020). The 1990 Census allows respondents to report "unknown" for both birth year and month, mitigating recall bias.

Descriptive statistics in Table A4 (a) report persistent gender gaps in educational attainment, with disparities widening at higher levels. Panels (b)–(e) consistently document higher male attainment across datasets and across subgroups defined by INPRES intensity and bride price practice. Attainment is higher in regions with lower INPRES intensity, reflecting the concentration of INPRES schools in historically underserved areas. Female attainment is

cutoff, limiting differential access to INPRES. Finally, both cohorts received the extra six months of schooling introduced by the 1978 calendar reform, conditional on being enrolled.

[19] The 2010 Census remains the preferred dataset. First, other sources provide coarser controls. The 1995 Intercensus and 1990 Census lack ethnicity indicators, which are central for defining bride price communities, though roughly 120 language-at-home variables serve as proxies. IFLS 5 records religion and ethnicity at limited granularity (eight religions and 29 ethnic groups), while birthplace is missing for most respondents (available for only 12,570 of 83,774) and is thus omitted from the controls. Second, geographic coverage is limited: the 1995 Intercensus (IPUMS subsample) excludes Kalimantan, Sulawesi, Maluku, and Papua, while IFLS 5 covers only 13 of 27 provinces (Figure A1). Third, sample sizes are much smaller: about 100,000/130,000 observations in the 1995 Intercensus/1990 Census and 4,000 in IFLS 5, compared with nearly 3,000,000 in the 2010 Census.

notably elevated in bride price communities.

B. Regression Discontinuity Model

The empirical strategy relies on a Regression Discontinuity (RD) design, where the key discontinuity centers on whether individuals from a given birth cohort were eligible for at least one year of free primary education, following the approach of Keats (2018), Grépin and Bharadwaj (2015), and Wild and Stadelmann (2024). The cutoff falls between December 1965 and January 1966: children born in January 1966 would have been in sixth grade when FPE was introduced in 1978 and thus eligible for one year of tuition-free schooling, while those born in December 1965 had already completed primary school and were not eligible.

The RD model is given by

$$EA_i = \beta_0 + \beta_1 Treat_i + \boldsymbol{\beta_2 f(Birth\ month_i)} + \boldsymbol{\beta_3 X_i} + \nu_i$$

The outcome variable EA_i captures individual i's educational attainment using the standard measures in the FPE literature: primary and lower-secondary completion, literacy rates, and years of schooling (unavailable in the 2010 Census). The coefficient on $Treat_i := \mathbb{1}[Birth\ year_i \geq 1966]$, denoted β_1, isolates the discontinuous shift in educational outcomes at the cutoff and is interpreted as the causal impact of FPE. The specification includes flexible controls for birth month, $\boldsymbol{f(Birth\ month_i)}$, modeled as linear or quadratic polynomials recentered at the cutoff, and a vector of covariates, $\boldsymbol{X_i}$, capturing birthplace, religion, and ethnicity/language indicators. Estimation uses a triangular kernel with cluster-robust standard errors, clustered by birthplace (497 districts in the 2010 Census and 293 regencies in the 1995 Intercensus).

The sample consists of birth cohorts from 1961 to 1970, corresponding to a bandwidth of 60|60 months, with sensitivity checks extending to 84|84 months. This choice avoids including cohorts that were differently affected by the FPE program. For example, cohorts born in 1971 or later made enrollment decisions after the rollout of FPE, as demonstrated in Table 1, and thus widening the bandwidth could introduce sorting effects (e.g., FPE-induced enrollment among students from lower socioeconomic backgrounds). Restricting the sample to 1961–1970 also ensures that almost all individuals were exposed to the INPRES construction program (1973–1978), with benefits accruing broadly and varying only continuously by birth year. Finally, all included cohorts were exposed to the 1978/79 academic calendar reform, conditional on enrollment, ensuring uniform treatment from this policy.

C. Manipulation Test and Balance Check

Manipulation of enrollment timing at the time of FPE's introduction would threaten identification by inducing selection bias and violating the continuity assumption essential for an RD design. However, such manipulation is unlikely: the program was announced only 4–5 months before implementation, when the 1965 and 1966 cohorts around the cutoff were already enrolled in grades 5 and 6. The data reinforce this conclusion. Table A5 (a) shows no discontinuous increase in primary school entry age at the cutoff, which, if present, would suggest delayed enrollment to benefit from FPE. The difference in enrollment rates, while statistically significant in some specifications, are small relative to gains in completion measures reported later.[20] In addition, a later robustness check restricting the sample to children who had already entered primary school yields similar results, eliminating potential bias from enrollment rate differences.

However, the density plot indicates a potential discontinuity in the data-generating process that is not attributable to strategic manipulation (Figure A2). Specifically, there is bunching at 1965 and 1970, likely reflecting recall bias in reported birth years. Nevertheless, predetermined characteristics (ethnicity and birthplace) are balanced at the cutoff, with no discontinuous breaks in Table A5 (b).[21] I return to this bunching in the robustness checks.

IV. The Impact of FPE on Education

This section estimates the effect of FPE on educational outcomes by gender. In addition to robustness checks, I extend the analysis in three directions to reinforce the credibility of observed gains and enrich their interpretation. First, I apply a Difference-in-Discontinuities design to remove potential maturity advantage bias (Bedard and Dhuey, 2006) as well as to assess the effects of varying exposure levels to FPE. Second, motivated by evidence on social and economic benefits from female education (Duflo, 2012), I examine FPE's impacts on child marriage and labor market outcomes. Third, a heterogeneity analysis by INPRES intensity reveals how FPE interacted with the concurrent INPRES school construction program in shaping educational outcomes.

A. Results

The analysis begins with visual evidence of FPE's impact. Figure 1 plots completion rates across educational levels and literacy rates for both females and males, using monthly bins with linear fits and 95% confidence intervals. The graphs show clear upward shifts at the

[20] The muted effects on primary-school enrollment or age likely reflect characteristics of the RD sample: most cohorts born 1961–1970 had already enrolled in, or were ineligible to enter, primary school when FPE began (e.g., cohorts near the cutoff were 12–13 years old at rollout). Thus, the absence of manipulation in this sample need not generalize to younger cohorts.

[21] The ethnicity indicator identifies individuals from ethnic groups practicing bride price, as defined in Table B1. Birthplace is measured by two indicators: one for being born on Java Island, the most populous island, and another for being born in the capital, Jakarta.

cutoff across all measures. The pattern remains robust when using yearly bins and alternative data sources, including the 1995 Intercensus and IFLS 5 (see Figure A3 for females and Figure A4 for males).

<Figure 1>

Table 2 (a) presents RD estimates and pre-FPE means for female educational outcomes. The preferred specifications with linear and quadratic birth-month polynomials are presented in columns (3) and (4), while columns (1) and (2) provide more parsimonious estimates without covariates. Across specifications, FPE raised primary education completion by 4.1–4.6 percentage points, lower secondary by 7.9–8.6 points, and literacy by 2.3–2.6 points.

Columns (5) and (6) cross-check the results using the 1995 Intercensus (IPUMS subsample). In this dataset, where years of schooling are observed, girls gained about 0.4 years of schooling following FPE. This figure is broadly consistent with RD estimates of the FPE effect on female education in the literature: 0.715 years in Uganda (Keats, 2018), 1.223 years in Burundi (Wild and Stadelmann, 2024), and 1.684 years in Zimbabwe (Grépin and Bharadwaj, 2015).[22] For other outcomes, estimates from the 1995 Intercensus are slightly smaller than those from the 2010 Census, plausibly reflecting differences in geographic coverage and reduced vulnerability to birth-month misreporting.[23]

<Table 2>

Strikingly, FPE effects extend beyond primary school, even where tuition fees persisted, though they taper off at higher levels, a pattern consistent with evidence from Uganda's FPE program (Keats, 2018). The sizable gains in post-primary attainment, together with high pre-FPE dropout rates across all primary grades (Table A3), suggest that tuition fees at the primary level may have deterred potentially high-performing students from continuing to higher education. In contrast, the relatively modest impact on primary completion likely reflects the limited scope for FPE to shift the outcome within the RD sample. At the time of the reform, most individuals next to the cutoff (born 1965-66) had already progressed through at least five grades of primary school. In other words, as far as these cohorts are concerned, the only margin of variation was whether they completed sixth grade under FPE.

Displayed in Table 2 (b) are results for the male sample. Exposure to FPE raised primary completion by 2.9–3.2 percentage points, lower-secondary completion by 8.9–9.7 points, lit-

[22] Somewhat larger estimates in the literature may capture effects of initiatives accompanying tuition-fee abolition. More details are in Table A1.

[23] The 1995 Intercensus and the later IFLS 5 mitigate misreporting concerns suggested by bunching at 1965 and 1970 in Figure A2. These surveys allow respondents to indicate unknown birth months (but not years). If the 2010 Census bunches respondents with imperfect recall (potentially negatively correlated with educational attainment) at 1965, the estimated FPE effect will be upward biased.

eracy by 1.2–1.3 points, and years of schooling by roughly 0.6.[24] As with the female sample, the largest gains appear at the lower secondary level.

RD estimates point to varying program impacts by gender. Girls experienced larger gains in primary completion and literacy, while boys saw more pronounced improvements in lower-secondary completion. These gender differences are statistically significant at the 1 % level in the 2010 Census (Table 2 (c)). The stronger female response at early stages likely reflects historically lower attainment among girls, or ceiling effects among boys given their already high primary completion and literacy rates. In contrast, girls' more limited progression beyond primary school may stem from particularly low demand for female education at higher levels, which are beyond the scope of this paper.

Nevertheless, the relative changes for girls compared to pre-FPE cohorts exceed those for boys in these education measures, highlighting FPE's role in closing gender education gaps. In column (4), girls' primary completion, lower secondary completion, and literacy rates increased by 6.0%, 28.1%, and 3.0%, respectively, all of which exceed the corresponding increases of 3.8%, 21.8%, and 1.4% for boys.

B. Robustness Checks

To bolster the credibility of RD estimates, I first assess robustness across datasets and samples. A key concern is that the 2010 Census may suffer from compositional differences around the cutoff due to misreported birth years: pronounced bunching at 1965 and 1970 in Figure A2 suggests imprecise recall, with rounding to years ending in 0 or 5 (potentially correlated with education). The 1990 Census minimizes this misreporting by allowing respondents to indicate unknown birth years and months.[25] Table A6 (a) shows that estimates from this dataset are slightly larger but qualitatively similar. Table A6 (b) further confirms robustness in IFLS 5, although this dataset yields larger and more variable estimates across specifications.

In addition, to account for potential bias from small enrollment differences across cohorts (Table A5), Table A7 checks whether a restricted sample of individuals who had already entered primary school in the 2010 Census replicates the results. The estimates closely match the baseline both in magnitude and significance.

I next test whether the findings are sensitive to bandwidth choice. Figure A5 shows RD estimates across alternative bandwidths, with black and red markers denoting linear and quadratic specifications, respectively. The estimates are stable both in size and precision.

[24] For comparison, the estimated effect for boys exceeds the average schooling gain from INPRES (0.25–0.40 years) reported in Duflo (2001).

[25] 5.5% and 23.1% of the 1990 Census sample reported unknown birth years and months, respectively.

Notably, the most conservative estimates of FPE effects likely come from the 1965–66 cohorts within a 12-month bandwidth, who had completed enrollment decisions before the first INPRES schools were built in 1974. Any INPRES influence on these cohorts could only have been indirect—through alleviating enrollment surges of younger cohorts into their (non-INPRES) schools or expanding the local teacher supply. Strikingly, these estimates align closely with those from broader bandwidths, providing strong evidence that FPE effects are not confounded by INPRES. Moreover, the preferred 60-month bandwidth is also justified based on Mean Squared Error (MSE) optimality: using the 1995 Intercensus, the covariate-adjusted MSE-optimal bandwidth proposed by Calonico et al. (2019) generally ranges from 40 | 40 months to 80 | 80 months (Table A8).

To further assess the validity of the RD design, I implement a falsification test using the 1995 Intercensus. Table A9 shows that significant jumps in primary completion rates emerge only when the cutoff is correctly set at January 1966. In contrast, placebo cutoffs at yearly intervals fail to yield significant effects. Lastly, an alternative identification strategy, the Difference-in-Discontinuities design, detailed in the next subsection, produces nearly identical results, while adjusting for potential bias from birth-month-level age differences.

C. Difference-in-Discontinuities Analysis and Incremental FPE Exposure Effects

As a final robustness check, I address potential bias from birth-month-level age differences. Prior research suggests that starting school at an older age is advantageous (Bedard and Dhuey, 2006). In Indonesia, cohorts born on January 1 may attain more education on average than those born on December 31, holding grade level fixed. To correct for this potential upward bias, I follow Bertrand et al. (2021) and implement the Difference-in-Discontinuities (Diff-in-Disc) approach, which subtracts age-variation effects estimated from earlier cohorts.

Figure A6 plots monthly averages of primary education completion rates with linear fitted lines for three control windows (1962/63, 1963/64, and 1964/65) and the 1965/66 treatment window. In the control windows, we observe a drop in primary education completion rates for January cohorts compared to December cohorts.[26] Mirroring the RD estimates, the December–January gap in primary completion rates flips sign only within the treatment window, where the comparison includes cohorts eligible for FPE.

[26] Although this pattern may appear inconsistent with the maturity advantage for January-born cohorts, a plausible explanation is that lower-attainment individuals tend to recall birth months imprecisely and disproportionately report January. Such misreporting would compress the RD estimates, implying that they should be interpreted as a lower bound of FPE's effect. While further exploration of the mechanisms underlying the observed pattern is left for future research, the Diff-in-Disc model can account for birth-month-specific variation, including this pattern, and thereby yields cleaner identification.

I employ a Diff-in-Disc model following Bertrand et al. (2021):

$$
\begin{aligned}
EA_i = \tilde{\beta}_0 &+ \tilde{\beta}_1 Treat\ window_i + \tilde{\beta}_2 Jan\ to\ Jun_i + \tilde{\beta}_3 Jan\ to\ Jun_i \times Treat\ window_i \\
&+ Birth\ month_i(\delta_0 + \delta_1 Treat\ window_i + \delta_2 Jan\ to\ Jun_i + \delta_3 Jan\ to\ Jun_i \times Treat\ window_i) + \tilde{v}_i
\end{aligned}
$$

where $Treat\ window_i$ is an indicator variable for birth cohorts born between July 1965 and June 1966; $Jan\ to\ Jun_i$ indicates cohorts born between January and June within each window. The interactions with the running variable $Birthmonth_i$ allow slopes to vary flexibly across birth-month groups (July–December vs. January–June) and across treatment and control windows. The Diff-in-Disc parameter of interest is $\tilde{\beta}_3$.

<Table 3>

When applied to cohorts born July 1962–June 1966, the Diff-in-Disc model produces estimates that are somewhat larger but qualitatively consistent with the RD results (Table 3, columns (1)-(2)). The quadratic specification in column (2) is preferred, as Figure A6 reveals non-linear trends across birth months. Relative to RD estimates, Diff-in-Disc estimates are larger by roughly 2–3 percentage points for female completion rates and about 1 point for males. Accordingly, the estimated FPE impacts remain significant and even larger after accounting for age variation.

The Diff-in-Disc framework can also be applied to later treatment windows (1966/67 and 1967/68) to estimate the effects of incremental exposure to FPE.[27] These estimates identify the impacts of additional years of FPE under an assumption that factors other than FPE eligibility vary continuously across cohorts.[28] However, the grade at which FPE was first received may influence its effects, particularly given dropout dynamics (Table A4). For this reason, the incremental estimates should be interpreted as suggestive rather than definitive.

Table 3 columns (3)-(4) exploit the comparison of the 1966 and 1967 cohorts to estimate the effect of an additional year of FPE exposure. The quadratic specification indicates that one extra year of tuition-free schooling raised completion rates for girls by 1.7 points at the primary level and 3.0 at lower secondary, though effects for boys are statistically insignificant. Literacy improved by roughly 1 percentage point for both genders. Columns (5)-(6) compare the 1967 and 1968 birth cohorts. Importantly, the 1968 cohort was exposed to FPE for two additional years relative to the 1967 cohort, rather than just one year (Table 1). Although

[27] This exercise also attenuates concerns about 1965 bunching by leveraging discontinuities across successive cohort waves.

[28] INPRES eligibility is likely continuous. While younger cohorts were also increasingly exposed to INPRES, INPRES benefits varied smoothly (Section II). In particular, by the time the 1966, 1967, and 1968 cohorts enrolled at age seven, they had witnessed the construction of, at most, 0, 6,000, and 12,000 schools, respectively—far fewer than the planned 62,000—implying only modest differential exposure.

two extra years of FPE do not mechanically double the one-year gains, the effects for girls are larger than those in columns (3)–(4).

Having compared estimates of varying magnitudes, I conclude that the RD estimates from the 2010 Census remain the most reliable. Misreporting is unlikely to drive the results, as the 1990 Census, which is the most robust to reporting errors, yields comparable estimates. Nor is birth-month age variation a source of upward bias, since Diff-in-Disc estimates are, if anything, larger. Meanwhile, the Diff-in-Disc design usefully complements the RD by clarifying the impact of incremental exposure. Strikingly, the strongest effects arise when comparing cohorts with no exposure to those with at least one year of FPE. This suggests that the key margin is not duration but the threshold of receiving free education at all. Similar discontinuous jumps at the cutoff, without further discontinuous gains across later cohorts, are reported in other FPE studies (Keats, 2018, Figure 4; Grépin and Bharadwaj, 2015, Figure 1; Wild and Stadelmann, 2024, Figure 1).[29]

D. Social and Economic Benefits of FPE

Female education is widely recognized as a powerful driver of development, yielding substantial social and economic returns (Duflo, 2012). To assess whether such benefits arose in Indonesia, I evaluate the impact of FPE on child marriage, wages, and labor force participation. To address the endogeneity of schooling, I use FPE exposure as an instrument in a two-stage least squares (2SLS) framework, while also presenting reduced-form RD estimates. The instrument leverages quasi-random variation in eligibility for at least one year of FPE around the cutoff, with the first stage regressing years of schooling on this instrument. I draw on the 1995 Intercensus, which, unlike the 2010 Census, provides data on both years of schooling and wages.

<Table 4>

I first assess whether increased female schooling reduced early or child marriage, as highlighted in the existing literature (Keats, 2018; Brudevold-Newman, 2021; Giacobino et al., 2024). Using the 1995 Intercensus, results from both reduced-form and 2SLS estimations are reported in Table 4 (a). The reduced-form estimates in columns (1)-(2) indicate that FPE, which increased years of schooling by 0.39–0.42 for girls and 0.59–0.60 for boys (Table 2), delayed women's age at first marriage by 0.39-0.47 years and reduced female child marriage

[29] This pattern echoes evidence from behavioral and health economics showing that demand rises sharply when prices fall to zero, regardless of the size of the reduction (Shampanier et al., 2007; Dague, 2014; Douven et al., 2020; Iizuka and Shigeoka, 2022). While this paper does not attempt to rigorously identify the mechanism, such evidence helps explain why the initiation of tuition-free schooling, rather than the size of tuition fee reduction, generated the largest education gains.

(marriage before age 15) by 4.6-6.1 percentage points (29.6-38.7%). The 2SLS estimates imply nearly identical returns per additional year of schooling, suggesting that the local average treatment effects capture the average treatment effects well.[30]

Second, I investigate whether improved female attainment translated into higher wages, as presented in Table 4 (b). For women, both reduced-form and 2SLS estimates with full controls indicate large wage returns to education, with an additional year of schooling raising wages by 10.7–14.4%. These findings suggest that the education provided by FPE generated substantial improvements in women's earnings. For men, the estimated returns are more modest, 5.0-11.0 %, and almost coincide with prior estimates from the INPRES program, which ranged from 6.8–10.6% (Duflo, 2001). The nearly identical male wage returns across the two contexts suggest that those affected by FPE were broadly similar to those exposed to INPRES, despite minor differences in birth cohorts.[31] This comparability indicates that cohort or sample differences are unlikely to explain any divergence between this study's findings and earlier INPRES-based research.

Although estimated wage returns appear larger for women, comparisons across gender warrant cautious interpretation. The higher returns likely reflect selection effects (Ashraf et al., 2024), given the relatively small sample of women with wage data and persistently low female labor force participation. At the same time, Table 4 (c) confirms that schooling did not significantly affect labor force participation for either men or women, implying that wage gains were not driven by changes in employment status, consistent with Hsiao (2024).

Finally, using estimated wage returns, I conduct a back-of-the-envelope calculation to assess the costs and benefits of the FPE program (Appendix C). On the cost side, the government introduced a subsidy, Subsidi Bantuan-Pemerintah untuk Pendidikan (SBPP), in 1977 to offset the loss of primary school fee revenues (Mertaugh et al., 1989, p.79; UNESCO, 1984, p.7). The average SBPP allocation per pupil over six years was 7,968 Rupiah (UNESCO, 1984, p.20), serving as a proxy for the tuition revenues forgone per student as a result of FPE.

On the benefit side, I project lifetime tax revenue gains by combining estimated returns to education with the FPE-induced increases in schooling from the quadratic specification. Assuming a 40-year working life and a 10% income tax rate, the gains amount to 253,577 Rupiah for an average post-FPE woman and 660,407 Rupiah for a man. These figures exceed the SBPP subsidy of 7,968 Rupiah per student required to finance the program, implying that FPE more than paid for itself through future tax revenues.[32]

[30] Under the linear specification, one additional year of schooling postpones marriage by 1.1021 years. This is consistent with the reduced-form estimate of a 0.392-year delay arising from a 0.423-year FPE-induced increase in schooling (Table 2); $0.392/0.423 = 0.9267 \simeq 1.1021$.

[31] The Difference-in-Differences design in Duflo (2001) treats the 1963 or later cohorts as eligible for INPRES.

[32] While some have argued that SBPP funding was insufficient (Mertaugh et al., 1989, p.79), the projected

E. Heterogeneity of FPE's Impact by INPRES Intensity

This section examines how the FPE program interacted with the INPRES school construction initiative in shaping educational outcomes in 1970s Indonesia. To ensure comparability with prior work on INPRES (Duflo, 2001, 2004; Ashraf et al., 2020), I draw on the 1995 Intercensus. The analysis divides the sample into two groups: individuals born in regencies with high school construction intensity, defined as those with more than 1.7603 schools built per 1,000 children (the median), and those born in low-intensity regencies. Following the literature, I control for regency characteristics correlated with INPRES rollout: the number of children aged five to fourteen in 1971, primary school enrollment rates in 1971, and an indicator for the INPRES water and sanitation program.

<Table 5>

Table 5 (a)-(b) present estimates and pre-FPE means. Despite the limited statistical power of the smaller intercensal sample, FPE generated larger gains in primary completion in high-INPRES regions in general. This INPRES gain is significant under the quadratic specification with boys as the baseline (Table 5 (c), column (2)).[33] Importantly, these gains are not driven by baseline enrollment disparities between high- and low-INPRES-intensity regencies, as pre-INPRES primary enrollment rates are explicitly controlled for. No additional INPRES-related improvements are observed beyond primary education, consistent with the fact that INPRES focused on primary schools, leaving access to post-primary education unaddressed.

Stronger FPE impacts in areas with more intensive school construction underscore the complementarity between cost reduction and supply-side interventions. By widening catchment areas and alleviating potential overcrowding from FPE-induced increases in enrollment (Lucas and Mbiti, 2012a; Chicoine, 2019; Bold et al., 2017; Kazianga et al., 2013), INPRES likely preserved learning quality while expanding access. This regional heterogeneity also suggests that conventional Difference-in-Differences estimates of INPRES may overstate its causal impact on years of schooling, as they could inadvertently capture the amplified effects of FPE in high-construction regions.[34]

tax revenue gains far exceed typical education expenditures in the 1970s, including those for the INPRES program.

[33] The gender difference in the INPRES interaction is indistinguishable from zero (row 4). However, these patterns appear to be affected by limited statistical power, and I avoid drawing conclusions about gender heterogeneity.

[34] In contrast, upward bias in the RD estimates of FPE is unlikely: at the cutoff, access to INPRES schools was limited and exposure to the program varies only smoothly.

V. Heterogeneity of FPE's Impact by Bride Price

Building on Ashraf et al. (2020), who show that the INPRES school construction program had a larger impact on female education in bride price communities, I examine whether FPE's effect similarly varied with the cultural practice. This analysis informs the broader policy question of what policy should be implemented given a local cultural context.

A. Bride Price Customs

Bride price is a transfer from the groom's family to the bride and her parents, typically in cash, livestock, jewelry, or other valuable assets. These payments can be sizable, occasionally exceeding annual income. In Indonesia, the mean and median payments are 80% and 8.7% of per capita GDP in the year of marriage, respectively (Ashraf et al., 2020).[35] Ashraf et al. (2020) show that bride price creates an additional monetary incentive for parents to invest in their daughters' education: more educated brides command a higher bride price in Indonesia's marriage market, where matching is assortative by education.

To identify bride price communities, I follow Ashraf et al. (2020) and use the *Ethnographic Atlas* (Murdock, 1967), which records cultural practices across ethnic groups. I directly link this cultural practice information to roughly 960 ethnicity indicators in the 2010 Census. This approach bypasses the ad hoc ethnic-language mapping in Ashraf et al. (2020), which was necessitated by the 1995 Intercensus, as it lacks ethnicity data and includes only 130 mother tongue variables. Appendix B demonstrates that the 2010 Census–based ethnicity definition reduces misclassification and improves geographic representativeness relative to the 1995 Intercensus (Figure A1). Table B1 provides both ethnicity- and language-based classifications together with the original classification in Murdock (1967).

To establish the empirical link between the bride price custom and female education, I begin by replicating Ashraf et al. (2020). Table B2 (a) confirms that bride price payments increase with education, with premia rising steeply at higher attainment levels. Table B2 (b) further indicates that the presence of bride price is associated with higher educational attainment for both sexes, but especially for women, reflecting that payments accrue to the bride and her family. These patterns are robust across sampling periods, at least through upper secondary education.

I next examine whether the presence of bride price correlates systematically with other char-

[35] Bride price has been criticized for incentivizing early marriage and reinforcing unequal treatment of wives. Corno et al. (2020) show that during income shocks, bride price serves as a consumption-smoothing device, leading to earlier marriage and pregnancy. Lowes et al. (2017) find that high bride prices can improve marriage outcomes but also reduce women's happiness when divorce requires repayment.

acteristics that may influence policy impacts. First, Table B2 (c) assesses correlations between bride price and cultural practices from Ashraf et al. (2020)—matrilineality, traditional female participation in agriculture, and polygyny. Using the ethnicity-based measure developed in this paper, no statistically significant correlations emerge once all practices are jointly included. Nevertheless, the RD specifications control for these practices and include religious affiliation as a standard control.

Second, Table B2 (d) exhibits no correlation between bride price practices and rural/urban residence or economic disadvantage. Third, Table B2 (e) indicates that although family-composition variables are significantly associated with bride price, their magnitudes are negligible.[36] Lastly, Table B2 (f) reports no correlation with labor force participation. Taken together, heterogeneity in FPE's effects by bride price is unlikely to be driven by alternative mechanisms.

B. Results

Figure 2 plots estimates for all educational outcomes from the 2010 Census, disaggregated by gender and bride price status. They come from a quadratic specification with standard controls plus cultural covariates (matrilineality, female agricultural participation, and polygyny). Full regression results are reported in Table 6. For girls, FPE effects are indistinguishable across bride price and non–bride-price communities. The same pattern holds for boys, with no statistically significant gender-specific gains.

<Figure 2>

<Table 6>

Although this finding contrasts with the amplified INPRES effects for girls in bride price communities documented by Ashraf et al. (2020), the discrepancy can reflect differences in data and bride price definitions rather than policy design. To isolate the role of policy, I cross-check the results using the 1995 Intercensus and the language-based bride price definition (Table B4). While the smaller intercensal sample reduces precision, the results again show no female-specific gains within bride price communities. The consistent null results across datasets and definitions suggest that the contrast with Ashraf et al. (2020) stems from differences in the policies themselves.

[36] Between bride price and non–bride price groups, the average number of children differs by only 0.097 and the male child share by 0.350 percentage points. These differences are too small to meaningfully affect policy impacts.

VI. Discussion

A. Demand–Supply Interactions: FPE vs. INPRES

In contrast to INPRES, FPE was equally effective in communities with and without bride price. This suggests that fee abolition is a more robust policy instrument than school construction in contexts where cultural institutions shape demand for female education. One interpretation is that expected bride price returns and the immediate cost reduction from fee abolition function as substitutes in generating demand.

At the same time, FPE's effectiveness was amplified in regions with more intensive INPRES construction, indicating complementarity: the success of a demand-side intervention depends on sufficient school supply. Combined with evidence that INPRES impacts were larger in bride price communities (Ashraf et al., 2020), these findings highlight the need to jointly address household education demand and school supply in designing education policy.

In what follows, I argue that this dual demand–supply perspective also rationalizes the lack of heterogeneity in FPE effects between bride price and non–bride-price communities.

B. Conceptual Framework

FPE was equally effective across communities regardless of the presence of bride price, suggesting that its immediate monetary returns more readily substitute for future bride price gains than improvements in school access through INPRES. In turn, INPRES amplified FPE effects by expanding school availability. These findings motivate a conceptual framework that distinguishes cost/demand-side (FPE) from supply-side (INPRES) interventions (Glewwe and Kremer, 2006; Glewwe and Muralidharan, 2016; Mazumder et al., 2023) and explicitly incorporates their complementarity. The rest of the discussion formalizes the conceptual framework and shows how it accounts for (1) greater education demand and stronger INPRES impacts in bride price communities, and (2) uniform FPE impacts between bride price and non–bride-price communities.

I build on the two-period model of parental schooling choice in developing countries proposed by Glewwe (2002), where education occurs in the first period and the child's labor market participation in the second. I extend this model to allow parents to consider two different types of education costs tied to each policy approach: direct costs or tuition p (lowered by FPE) and opportunity costs associated with commuting to distant schools τ (reduced by INPRES). Focusing on daughters, I also incorporate bride price as an additional future return to education. Unlike Ashraf et al. (2020), I abstract from modeling the marriage market, adopting instead a parsimonious framework that effectively distinguishes the two policy approaches. The baseline model without bride price is presented in Appendix B. The version with bride price is as follows:

$$\max U = C_1 + \delta C_2 + \sigma A$$
$$\text{s.t.} \begin{cases} C_1 = Y_1 - pS + (1 - S - \tau \mathbb{1}[S > 0])Y_H \\ C_2 = Y_2 + kY_c \\ 0 \leq S \leq 1 - \tau \end{cases}$$

Let $Y_t > 0$ be exogenous parental income in period $t \in \{1, 2\}$, and $C_t \geq 0$ denote consumption in period t. The daughter's schooling choice is $S \in [0, 1]$, the share of period 1 time allocated to education. The price of schooling, or tuition, is $p \geq 0$, while $\tau \in (0, 1]$ denotes commuting time, a proxy for school access.[37] Her contribution to housework in period 1 is $Y_H > 0$. Her cognitive skills are modeled as $A = \alpha f(S) \geq 0$, with $f(S)$ strictly increasing but concave (i.e., $f'(S) > 0$, $f''(S) < 0$ for $S \in [0, 1 - \tau]$), and $\alpha > 0$ representing learning efficiency. Parents receive a fraction $k \in (0, 1]$ of the daughter's future income, discounted by $\delta \in (0, 1]$. Parental preferences for education are captured by $\sigma > 0$.

The daughter's future earnings in period 2 are

$$Y_c = \pi A + C^{BP} \bar{f}(S) \geq 0$$

where $\pi > 0$ is the parameter for labor market returns to education. In bride price communities ($C^{BP} > 0$), income combines labor earnings πA with bride price transfers $C^{BP} \bar{f}(S)$, which rise convexly with schooling. In non–bride-price settings ($C^{BP} = 0$), future income derives solely from the labor market ($Y_c = \pi A$). The function $\bar{f}(S)$ is strictly increasing and convex (i.e., $\bar{f}'(S) > 0$, $\bar{f}''(S) > 0$ for $S \in [0, 1 - \tau]$), as higher education strengthens its signaling value in the marriage market.[38] This assumption fits the Indonesian context of the 1970s, when only a small fraction of women attained higher education. The data confirm this pattern, progressively higher bride price amounts for greater levels of education, as documented in Table B2 (a).

By assumption, parameters other than the presence of bride price C^{BP} do not differ between bride price and non–bride price communities. Prior correlational evidence supports this

[37] The model abstracts from ancillary education costs such as uniforms, textbooks, or registration fees.

[38] For tractability, I assume that bride price $\bar{f}(S)$ moderates but does not overturn diminishing total income returns to education. Accordingly, C^{BP} must remain sufficiently small such that the second derivative of total income with respect to schooling is negative:

$$\frac{\partial^2 Y_c}{\partial S^2} = \pi \alpha f''(S) + C^{BP} \bar{f}''(S) < 0 \quad \text{for } S \in [0, 1 - \tau].$$

assumption. Both communities exhibit similar levels of rurality and economic status (Table B2 (d)), likely facing comparable costs and quality of primary education (p, τ, α). They are also similar in female labor force participation (Table B2 (f)), an important determinant of labor market returns (π).

Parents allocate income across two periods, trading off current consumption against investments in their daughter's education. In period 1, schooling entails both direct costs ($-pS$) and opportunity costs, as commuting time reduces the child's contribution to housework ($-(S+\tau)Y_H$), thus lowering parental consumption. At the same time, education yields benefits: it directly increases parental utility ($\sigma A = \sigma\alpha f(S)$), raises transfers from the daughter's labor market earnings in period 2 ($k\pi\alpha f(S)$), and, where customary, adds household resources via bride price transfers ($kC^{BP}\bar{f}(S)$). The schooling decision is subject to a time constraint, which hinges on school supply and proximity: commuting τ and schooling S together must not exceed the normalized endowment of one unit ($S \leq 1-\tau$).

Without savings, parents exhaust their period-1 budget, so C_1 is a function of schooling S. In period 2, the entire budget is devoted to consumption, as the daughter has completed education. Thus, unless tuition p or the value of housework Y_H is prohibitively high, the problem reduces to maximizing parental utility with respect to years of schooling S[39]:

$$\max_{0<S\leq 1-\tau} U = Y_1 + \delta Y_2 - pS + Y_H(1-S-\tau) + \alpha f(S)(\delta k\pi + \sigma) + \delta k C^{BP}\bar{f}(S)$$

I solve the model following the approach of Glewwe (1999). The optimal schooling level S^* satisfies the first- and second-order conditions[40]:

$$\frac{\partial U}{\partial S} = -p - Y_H + \alpha f'(S)(\delta k\pi + \sigma) + \delta k C^{BP}\bar{f}'(S) = 0 \tag{FOC}$$

$$\frac{\partial^2 U}{\partial S^2} = \alpha f''(S)(\delta k\pi + \sigma) + \delta k C^{BP}\bar{f}''(S) < 0 \tag{SOC}$$

By totally differentiating the first-order condition, I obtain:

$$\begin{aligned} &dS[\alpha f''(S)(\delta k\pi + \sigma) + \delta k C^{BP}\bar{f}''(S)] \\ &= dp + dY_H - d\delta[k(\alpha\pi f'(S) + C^{BP}\bar{f}'(S))] - dk[\delta(\alpha\pi f'(S) + C^{BP}\bar{f}'(S))] - d\pi[\alpha\delta k f'(S)] \\ &- d\sigma[\alpha f'(S)] - d\alpha[(\delta k\pi + \sigma)f'(S)] - dC^{BP}[\delta k\bar{f}'(S)] \end{aligned}$$

[39] If tuition p or the child's housework contribution Y_H is extremely large, zero schooling ($S = 0$) may be optimal. To rule this out, I assume both p and Y_H remain sufficiently low so that:

$$\left.\frac{\partial U}{\partial S}\right|_{S=0} = -p - Y_H + \alpha f'(0)(\delta k\pi + \sigma) + \delta k C^{BP}\bar{f}'(0) > 0$$

[40] Because $\frac{\partial^2 Y_c}{\partial S^2} = \pi\alpha f''(S) + C^{BP}\bar{f}''(S) < 0$ for $S \in [0, 1-\tau]$, the SOC is satisfied.

The impact of tuition on optimal schooling follows directly:

$$\frac{\partial S^*}{\partial p} = \frac{1}{\alpha f''(S^*)(\delta k \pi + \sigma) + \delta k C^{BP} \bar{f}''(S^*)} < 0$$

This leads to a central prediction on cost-reducing education policies:

Prediction 1: Cost reduction improves education unless the supply-side constraint is binding.

Because FPE effectively reduces the price of schooling, p, the model predicts an increased demand for education. Yet, the model's dual structure, where supply enters as a constraint ($0 \leq S \leq 1-\tau$), implies that the effectiveness of FPE hinges on sufficient school supply and proximity. Equivalently, the absence of the proximity parameter τ from the FOC yields the following:

Prediction 2: Supply-side interventions improve education only when demand is sufficiently high for the supply-side constraint to bind.

Together, these two predictions provide a formal rationale for the observed complementarity: FPE was more effective in areas with greater INPRES school construction.

Beyond complementarity, the model elucidates how bride price institutions shape baseline attainment and mediate policy effects. For attainment, it delivers:

$$\frac{\partial S^*}{\partial C^{BP}} = \frac{-\delta k \bar{f}'(S^*)}{\alpha f''(S^*)(\delta k \pi + \sigma) + \delta k C^{BP} \bar{f}''(S^*)} > 0$$

This yields the following prediction:

Prediction 3: Bride price communities exhibit higher average female educational attainment than non–bride-price communities.

This prediction aligns with the pattern in Table A4 (d) and Table B2 (b). The implication is that households with daughters in bride price communities are more likely to confront a binding supply constraint, given their relatively high demand for education. Accordingly:

Prediction 4: Supply-side interventions are more effective for women in bride price communities than in non-bride-price communities.

This mirrors the amplified INPRES effects for women in bride price communities (Ashraf et al., 2020). Lastly, to assess how bride price mediates FPE, I derive the following cross-partial:

$$\frac{\partial^2 S^*}{\partial p \, \partial C^{BP}} = -\frac{\delta k \, \bar{f}''(S^*)}{D^2} + \frac{\left(\alpha(\delta k \pi + \sigma) f'''(S^*) + \delta k \, C^{BP} \, \bar{f}'''(S^*)\right) \delta k \, \bar{f}'(S^*)}{D^3}$$

with $D = \alpha f''(S^*)(\delta k \pi + \sigma) + \delta k \, C^{BP} \, \bar{f}''(S^*)$. A detailed derivation is presented in Appendix B. The sign cannot be pinned down without additional assumptions on the third derivatives of the education return functions, $f'''(S)$ and $\bar{f}'''(S)$. Therefore, *Prediction 5: Whether bride price improves or diminishes the effectiveness of cost reduction is theoretically ambiguous.*

Since both FPE and bride price affect education demand, more complications arise relative to INPRES, where the built-in complementarity ensured unambiguous gains. Bride price introduces two countervailing forces: by adding a convex component to the returns function, it steepens the slope and amplifies the marginal impact of FPE; yet by elevating baseline attainment, it flattens the slope and dampens marginal returns. The net effect is parameter- and level-dependent and, in this paper's setting, neutral. This demand–supply framework thus reconciles the amplification of a supply-side policy (INPRES) in bride price communities with the muted heterogeneity of a cost/demand-side intervention (FPE).

VII. Conclusion

Indonesia in the 1970s—when tuition fees were abolished and a large-scale school construction initiative was launched—provides an ideal setting to compare the effectiveness of education policies given a cultural context. Specifically, this study provides a critical case for how bride price mediates the impacts of cost-reduction (FPE) and supply-side interventions (INPRES) differentially, and more broadly, for identifying which policy instruments are most effective given a local cultural context.

The RD analysis shows that FPE significantly raised attainment for both genders, with larger gains in female completion rates relative to pre-FPE levels. Notably, FPE improved female education uniformly, even among women in non-bride-price communities, underscoring its robustness to cultural variation and contribution to closing gaps across gender and culture. At the same time, FPE proved more effective in areas with greater INPRES school construction, highlighting the complementarity between cost reduction and supply expansion. Together with evidence that the bride price practice magnified the effects of INPRES (Ashraf et al., 2020) but not those of FPE, these results point to the need to jointly address demand- and supply-side conditions to ensure policy success. More generally, distinguishing between cost/demand-side and supply-side interventions offers a useful framework for interpreting policy heterogeneity across groups with differing education demand.

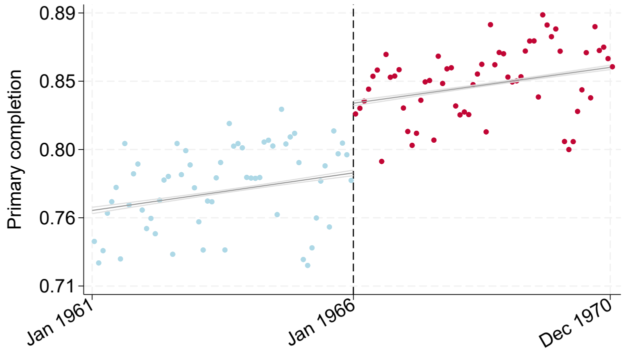
Tables and Figures

Table 1: Exposure to FPE across Birth Cohorts

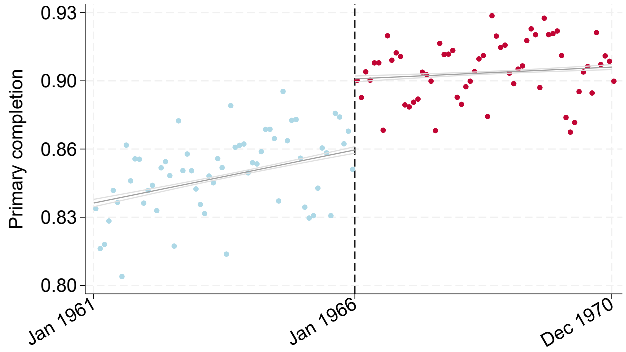
Age of the cohort \ Year	1976	1977	1978	1979	1980	1981	1982	1983	1984
6	70	71	72	73	74	75	76	77	78
7	69	70	71	72	73	74	75	76	77
8	68	69	70	71	72	73	74	75	76
9	67	68	69	70	71	72	73	74	75
10	66	67	68	69	70	71	72	73	74
11	65	66	67	68	69	70	71	72	73
12	64	65	66	67	68	69	70	71	72
13	63	64	65	66	67	68	69	70	71
14	62	63	64	65	66	67	68	69	70

Notes: This table summarizes the extent of FPE exposure across birth cohorts. Each cell reports the birth year of the cohort (e.g., 70 = 1970). Primary education typically begins at age seven and ends at age twelve. Darker cells indicate cohorts exposed to a greater number of years under the FPE program. Primary school fees were abolished in two phases, in 1977 and 1978; however, the initial reform covered only the first three years of primary education. The RD cutoff is based on eligibility for at least one year of FPE, with the cutoff between December 1965 and January 1966. Parinduri (2014) and Samarakoon and Parinduri (2015) also adopt the same cohort–grade mapping, arguing that children born in 1972 entered primary school in 1979.

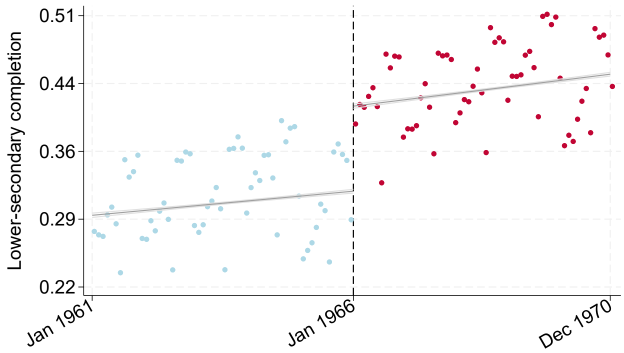
Figure 1: RD Plots by Birth Month and Gender



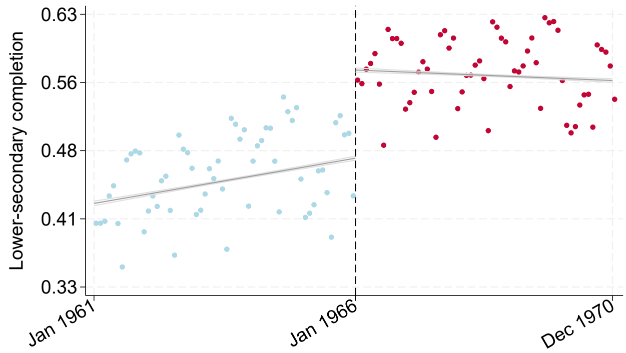
(a) Female Primary Education Completion



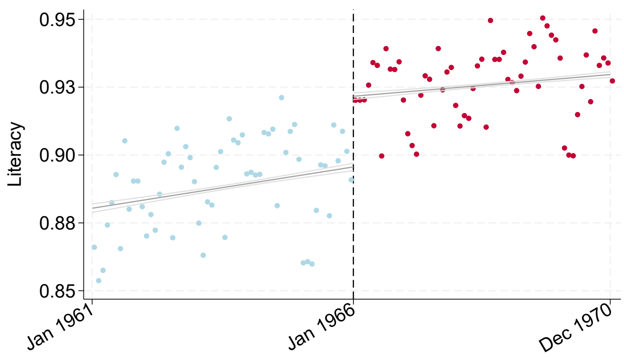
(b) Male Primary Education Completion



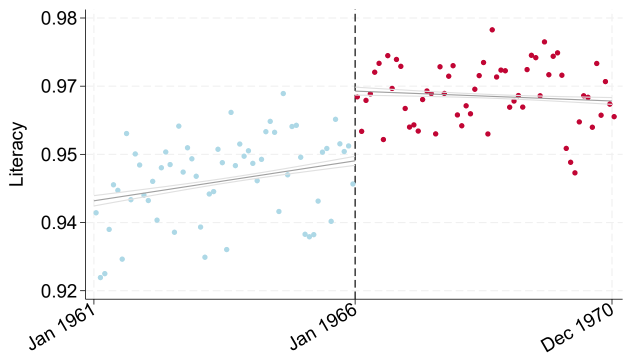
(c) Female Lower Secondary Education Completion



(d) Male Lower Secondary Education Completion



(e) Female Literacy



(f) Male Literacy

Notes: These figures display three educational outcomes across birth months separately for women and men, using the 2010 Census. Fitted lines are plotted with 95% confidence intervals.

Table 2: Impact of FPE on Educational Outcomes

(a) Female Educational Outcomes

Data:	2010 Census				1995 Intercensus	
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: Complete primary education	0.0486***	0.0523***	0.0407***	0.0458***	0.0309***	0.0304**
	(0.0130)	(0.0129)	(0.00882)	(0.00894)	(0.0115)	(0.0140)
	Mean: 0.773				Mean: 0.720	
Dependent variable: Complete lower secondary education	0.0918***	0.0960***	0.0792***	0.0858***	0.0476***	0.0423**
	(0.0202)	(0.0199)	(0.0133)	(0.0132)	(0.0144)	(0.0173)
	Mean: 0.311				Mean: 0.375	
Dependent variable: Be literate	0.0283***	0.0312***	0.0227***	0.0261***	0.0142**	0.0151**
	(0.00878)	(0.00880)	(0.00547)	(0.00553)	(0.00567)	(0.00742)
	Mean: 0.889				Mean: 0.916	
Dependent variable: Years of schooling					0.423***	0.390***
					(0.123)	(0.143)
					Mean: 7.300	
Covariates	No	No	Yes	Yes	Yes	Yes
Observations for attainment and literacy	710,874 | 820,896		710,445 | 820,387		22,956 | 26,859	
Observations for years of schooling					22,956 | 26,857	
Bandwidth	60	60	60	60	60	60
Order of polynomial function	1	2	1	2	1	2

(b) Male Educational Outcomes

Data:	2010 Census				1995 Intercensus	
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: Complete primary education	0.0346***	0.0365***	0.0292***	0.0319***	0.0330***	0.0351***
	(0.00830)	(0.00828)	(0.00553)	(0.00551)	(0.00909)	(0.0118)
	Mean: 0.853				Mean: 0.818	
Dependent variable: Complete lower secondary education	0.0980***	0.1040***	0.0882***	0.0969***	0.0800***	0.0810***
	(0.0191)	(0.0191)	(0.0131)	(0.0132)	(0.0148)	(0.0184)
	Mean: 0.449				Mean: 0.518	
Dependent variable: Be literate	0.0158***	0.0163***	0.0123***	0.0129***	0.0121***	0.0128**
	(0.00467)	(0.00478)	(0.00262)	(0.00263)	(0.00364)	(0.00527)
	Mean: 0.945				Mean: 0.960	
Dependent variable: Years of schooling					0.600***	0.586***
					(0.122)	(0.148)
					Mean: 8.615	
Covariates	No	No	Yes	Yes	Yes	Yes
Observations for attainment and literacy	709,741 | 835,623		709,276 | 835,069		22,291 | 25,079	
Observations for years of schooling					22,289 | 25,077	
Bandwidth	60	60	60	60	60	60
Order of polynomial function	1	2	1	2	1	2

(c) Analogous Estimation Results with Interaction Terms

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable:	Complete primary education		Complete lower secondary education		Be literate		Years of schooling	
Data: 2010 Census								
RD cutoff	0.029***	0.032***	0.088***	0.097***	0.012***	0.013***		
	(0.002)	(0.002)	(0.003)	(0.004)	(0.001)	(0.001)		
RD cutoff x Female	0.012***	0.014***	-0.009***	-0.011***	0.010***	0.013***		
	(0.002)	(0.002)	(0.003)	(0.004)	(0.001)	(0.002)		
Data: 1995 Intercensus								
RD cutoff	0.033***	0.035***	0.080***	0.081***	0.012***	0.013***	0.600***	0.586***
	(0.008)	(0.011)	(0.011)	(0.016)	(0.003)	(0.005)	(0.084)	(0.125)
RD cutoff x Female	-0.002	-0.005	-0.032**	-0.039*	0.002	0.002	-0.177	-0.196
	(0.011)	(0.015)	(0.014)	(0.021)	(0.005)	(0.007)	(0.108)	(0.158)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bandwidth	60	60	60	60	60	60	60	60
Order of polynomial function	1	2	1	2	1	2	1	2

Notes: Panels (a) and (b) report RD estimates of the impact of FPE on educational outcomes. Panel (c) tests whether gender differentially affects the impact of FPE by reporting RD estimates with interaction terms. Standard errors are clustered at the birth district level (2010 Census) or birth regency level (1995 Intercensus). Covariates include religion, birth province (2010 Census) or birth regency (1995 Intercensus), and ethnicity (2010 Census) or language (1995 Intercensus) indicators. Pre-FPE means of dependent variables are reported based on the 1961-1965 birth cohort sample. * Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level.

Table 3: Difference-in-Discontinuities Estimates of FPE Impact on Educational Outcomes

(a) Female educational outcomes

Data: 2010 Census	Female					
Treatment window	July 1965 - June 1966		July 1966 - June 1967		July 1967 - June 1968	
Estimating ...	No FPE vs One-year FPE		One-year vs Two-year FPE		Two-year vs *Four*-year FPE	
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: Complete primary education	0.071***	0.065***	0.020***	0.017**	0.031***	0.022***
	(0.006)	(0.009)	(0.005)	(0.007)	(0.005)	(0.008)
Dependent variable: Complete lower secondary education	0.112***	0.111***	0.016***	0.030***	0.030***	0.025**
	(0.006)	(0.010)	(0.006)	(0.010)	(0.006)	(0.011)
Dependent variable: Be literate	0.044***	0.041***	0.009**	0.010*	0.018***	0.008
	(0.004)	(0.006)	(0.004)	(0.006)	(0.004)	(0.006)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Observations	605,021		581,344		601,858	
Order of polynomial function	1	2	1	2	1	2

(b) Male educational outcomes

Data: 2010 Census	Male					
Treatment window	July 1965 - June 1966		July 1966 - June 1967		July 1967 - June 1968	
Estimating ...	No FPE vs One-year FPE		One-year vs Two-year FPE		Two-year vs *Four*-year FPE	
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: Complete primary education	0.041***	0.038***	0.013***	0.006	0.006	0.000
	(0.004)	(0.007)	(0.004)	(0.007)	(0.004)	(0.007)
Dependent variable: Complete lower secondary education	0.096***	0.103***	0.004	-0.004	0.009	0.007
	(0.007)	(0.010)	(0.006)	(0.011)	(0.006)	(0.010)
Dependent variable: Be literate	0.022***	0.024***	0.010***	0.009**	0.009***	0.005
	(0.003)	(0.005)	(0.003)	(0.004)	(0.003)	(0.004)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Observations	602,079		579,533		602,267	
Order of polynomial function	1	2	1	2	1	2

Notes: This table reports Difference-in-Discontinuities estimates of the impact of FPE on educational outcomes. Standard errors are clustered at the birth district level. Covariates include indicators for religion, birth province, and ethnicity. * Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level.

Table 4: Impacts of FPE on Child Marriage and Labor Market Outcomes

(a) Impact of FPE on Female Child Marriage

Data: 1995 Intercensus	(1)	(2)	(3)	(4)
Sample: Female	Reduced form		2SLS	
Dependent variable: Age of first marriage	0.392***	0.467***	1.1021***	1.6980***
Mean: 19.26	(0.107)	(0.130)	(0.2079)	(0.5644)
Observations	42,890		42,699	
First stage F-statistic			22.52	6.346
Dependent variable: Child marriage dummy	-0.0464***	-0.0607***	-0.1098***	-0.1556***
Mean: 0.157	(0.00847)	(0.0107)	(0.0198)	(0.0406)
Observations	49,815		49,612	
First stage F-statistic			35.07	15.03
Covariates	Yes	Yes	Yes	Yes
Bandwidth	60	60	60	60
Order of polynomial function	1	2	1	2

(b) Impact of FPE on Hourly Wages

Data: 1995 Intercensus	(1)	(2)	(3)	(4)
Dependent variable: log (hourly income)	Reduced form		2SLS	
Sample: Female	0.0718**	0.103**	0.1069***	0.1443***
Mean: 6.863	(0.0365)	(0.0499)	(0.0365)	(0.0524)
Observations	9,062		9,034	
First stage F-statistic			13.89	8.065
Sample: Male	0.0266	0.0503**	0.0496	0.1097*
Mean: 6.970	(0.0197)	(0.0251)	(0.0310)	(0.0569)
Observations	22,395		22,260	
First stage F-statistic			28.81	9.165
Covariates	Yes	Yes	Yes	Yes
Bandwidth	60	60	60	60
Order of polynomial function	1	2	1	2

(c) Impact of FPE on Labor Force Participation

Data: 1995 Intercensus	(1)	(2)	(3)	(4)
Dependent variable: No labor force participation indicator	Reduced form		2SLS	
Sample: Female	0.00427	0.00146	0.0101	0.0038
Mean: 0.497	(0.0110)	(0.0147)	(0.0230)	(0.0340)
Observations	49,815		49,612	
First stage F-statistic			35.07	15.03
Sample: Male	-0.00193	0.00000	-0.0035	-0.0005
Mean: 0.0123	(0.00231)	(0.00329)	(0.0038)	(0.0056)
Observations	47,370		47,120	
First stage F-statistic			50.98	21.86
Covariates	Yes	Yes	Yes	Yes
Bandwidth	60	60	60	60
Order of polynomial function	1	2	1	2

Notes: This table reports reduced-form and two-stage least squares (2SLS) estimates of the impacts of FPE on child marriage, wages, and labor force participation. Standard errors are clustered at the birth regency level. Covariates include indicators for religion, birth regency, and language. The child marriage indicator equals one if the individual married at or before age 15. Hourly wages are measured in Indonesian Rupiah. The reduced-form model follows the main RD specification. For 2SLS estimation, years of schooling are instrumented using the RD cutoff. Pre-FPE means of dependent variables are reported. * Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level.

Table 5: Impact of FPE on Educational Attainment by INPRES Intensity

(a) RD Results by INPRES Intensity (Female)

Data: 1995 Intercensus	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Female							
	More schools constructed				Less schools constructed			
Dependent variable: Complete primary education	0.0379**	0.0478**	0.0336**	0.0470**	0.0209	0.0125	0.0279**	0.0196
	(0.0154)	(0.0196)	(0.0143)	(0.0193)	(0.0146)	(0.0184)	(0.0140)	(0.0185)
	Mean: 0.652				Mean: 0.787			
Dependent variable: Complete lower secondary education	0.0468***	0.0459**	0.0417***	0.0426**	0.0450**	0.0357	0.0536***	0.0446*
	(0.0175)	(0.0215)	(0.0159)	(0.0207)	(0.0208)	(0.0254)	(0.0175)	(0.0243)
	Mean: 0.321				Mean: 0.428			
Dependent variable: Be literate	0.0138	0.0145	0.0127	0.0195*	0.0137**	0.0154**	0.0153**	0.0179**
	(0.00908)	(0.0125)	(0.00792)	(0.0117)	(0.00601)	(0.00733)	(0.00698)	(0.00861)
	Mean: 0.878				Mean: 0.954			
Dependent variable: Years of schooling	0.421***	0.434**	0.354***	0.412**	0.398**	0.330	0.447***	0.378**
	(0.147)	(0.183)	(0.123)	(0.167)	(0.179)	(0.207)	(0.139)	(0.186)
	Mean: 6.675				Mean: 7.913			
Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Additional INPRES covariates	No	No	Yes	Yes	No	No	Yes	Yes
Observations for attainment and literacy	11,354 | 13,434		10,411 | 12,229		11,602 | 13,425		9,542 | 10,674	
Observations for years of schooling	11,354 | 13,433		10,411 | 12,229		11,602 | 13,424		9,542 | 10,673	
Bandwidth	60	60	60	60	60	60	60	60
Order of polynomial function	1	2	1	2	1	2	1	2

(b) RD Results by INPRES Intensity (Male)

Data: 1995 Intercensus	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Male							
	More schools constructed				Less schools constructed			
Dependent variable: Complete primary education	0.0457***	0.0566***	0.0433***	0.0565***	0.0190*	0.0125	0.0177	0.0127
	(0.0130)	(0.0180)	(0.0125)	(0.0178)	(0.0110)	(0.0134)	(0.0120)	(0.0151)
	Mean: 0.774				Mean: 0.862			
Dependent variable: Complete lower secondary education	0.0808***	0.0742***	0.0768***	0.0693***	0.0765***	0.0841***	0.0801***	0.0933***
	(0.0179)	(0.0228)	(0.0176)	(0.0228)	(0.0216)	(0.0276)	(0.0187)	(0.0246)
	Mean: 0.462				Mean: 0.573			
Dependent variable: Be literate	0.0155**	0.0177*	0.0112**	0.0159**	0.00908**	0.00843*	0.00995**	0.0107*
	(0.00620)	(0.00908)	(0.00484)	(0.00762)	(0.00360)	(0.00510)	(0.00418)	(0.00601)
	Mean: 0.943				Mean: 0.977			
Dependent variable: Years of schooling	0.643***	0.641***	0.580***	0.564***	0.534***	0.503**	0.581***	0.594***
	(0.140)	(0.183)	(0.129)	(0.173)	(0.182)	(0.218)	(0.140)	(0.178)
	Mean: 8.079				Mean: 9.143			
Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Additional INPRES covariates	No	No	Yes	Yes	No	No	Yes	Yes
Observations for attainment and literacy	11,060 | 12,586		10,200 | 11,415		11,231 | 12,493		9,111 | 9,604	
Observations for years of schooling	11,058 | 12,585		10,198 | 11,414		11,231 | 12,492		9,111 | 9,604	
Bandwidth	60	60	60	60	60	60	60	60
Order of polynomial function	1	2	1	2	1	2	1	2

(c) Analogous Estimation Results with Interaction Terms

Data: 1995 Intercensus	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable:	Complete primary education		Complete lower secondary education		Be literate		Years of schooling	
RD cutoff	0.0178	0.0125	0.0808***	0.0941***	0.0100**	0.0104*	0.5864***	0.5997***
	(0.0112)	(0.0145)	(0.0151)	(0.0232)	(0.0041)	(0.0062)	(0.1180)	(0.1751)
RD cutoff x INPRES	0.0260	0.0440*	-0.0034	-0.0240	0.0013	0.0052	-0.0002	-0.0340
	(0.0164)	(0.0227)	(0.0223)	(0.0332)	(0.0060)	(0.0093)	(0.1676)	(0.2503)
RD cutoff x Female	0.0088	0.0057	-0.0294	-0.0517*	0.0050	0.0067	-0.1558	-0.2374
	(0.0188)	(0.0232)	(0.0184)	(0.0310)	(0.0073)	(0.0101)	(0.1489)	(0.2169)
RD cutoff x INPRES x Female	-0.0189	-0.0155	-0.0062	0.0238	-0.0038	-0.0036	-0.0742	0.0764
	(0.0252)	(0.0327)	(0.0277)	(0.0427)	(0.0106)	(0.0153)	(0.2104)	(0.3172)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Additional INPRES covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bandwidth	60	60	60	60	60	60	60	60
Order of polynomial function	1	2	1	2	1	2	1	2

Notes: Panels (a) and (b) report RD estimates of the impact of FPE on educational attainment, separately for areas with higher or lower INPRES intensity, using the 1995 Intercensus. Panel (c) tests whether INPRES intensity differentially affects the impact of FPE by reporting RD estimates with interaction terms. Standard errors are clustered at the birth regency level. Covariates are indicators for religion, birth regency, and language. Additional INPRES controls include the number of children aged 5–14 in 1971, primary school enrollment rates in 1971, and an indicator for regency-level implementation of a water and sanitation program under INPRES. Duflo (2001) documents that the first two variables, as measured in 1973, were strongly correlated with the number of INPRES schools constructed. Pre-FPE means of dependent variables are also reported. * Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level.

Table 6: Impact of FPE on Educational Attainment by Bride Price Practice

(a) RD Results by Bride Price Practice (Female)

Data: 2010 Census	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Female							
	Bride price				No bride price			
Dependent variable: Complete primary education	0.0390***	0.0517***	0.0391***	0.0517***	0.0410***	0.0451***	0.0409***	0.0451***
	(0.0148)	(0.0160)	(0.0148)	(0.0160)	(0.00969)	(0.00978)	(0.00967)	(0.00976)
		Mean: 0.778				Mean: 0.773		
Dependent variable: Complete lower secondary education	0.0728***	0.0817***	0.0730***	0.0819***	0.0800***	0.0863***	0.0798***	0.0861***
	(0.0241)	(0.0246)	(0.0241)	(0.0246)	(0.0142)	(0.0141)	(0.0141)	(0.0140)
		Mean: 0.427				Mean: 0.296		
Dependent variable: Be literate	0.0277***	0.0383***	0.0277***	0.0384***	0.0221***	0.0245***	0.0220***	0.0245***
	(0.0105)	(0.0117)	(0.0105)	(0.0117)	(0.00599)	(0.00601)	(0.00598)	(0.00600)
		Mean: 0.890				Mean: 0.889		
Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls for other cultural practices	No	No	Yes	Yes	No	No	Yes	Yes
Observations		81,718 | 101,189				628,727 | 719,198		
Bandwidth	60	60	60	60	60	60	60	60
Order of polynomial function	1	2	1	2	1	2	1	2

(b) RD Results by Bride Price Practice (Male)

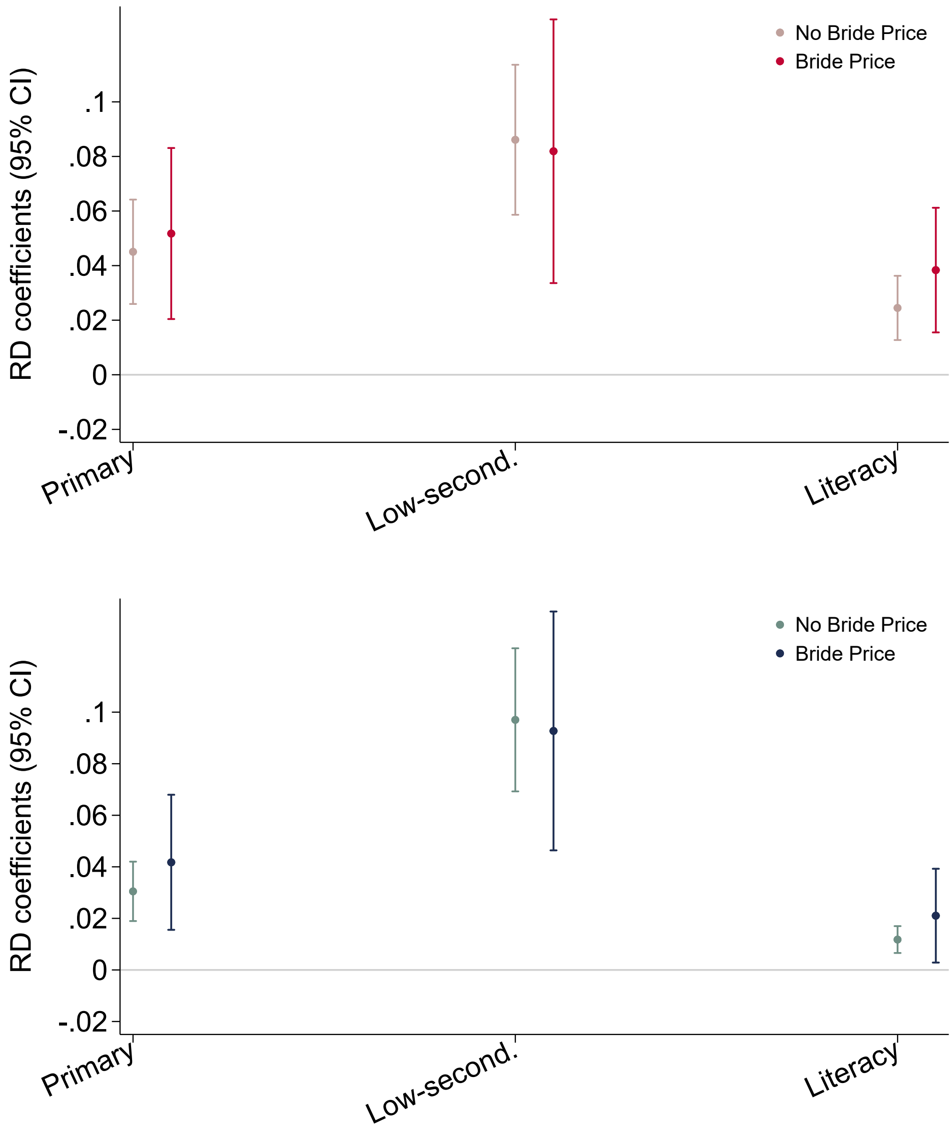
Data: 2010 Census	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Male							
	Bride price				No bride price			
Dependent variable: Complete primary education	0.0381***	0.0417***	0.0381***	0.0418***	0.0280***	0.0306***	0.0279***	0.0305***
	(0.0125)	(0.0134)	(0.0125)	(0.0134)	(0.00596)	(0.00589)	(0.00594)	(0.00588)
		Mean: 0.836				Mean: 0.855		
Dependent variable: Complete lower secondary education	0.0840***	0.0926***	0.0841***	0.0927***	0.0888***	0.0973***	0.0885***	0.0970***
	(0.0232)	(0.0236)	(0.0232)	(0.0236)	(0.0142)	(0.0142)	(0.0141)	(0.0142)
		Mean: 0.545				Mean: 0.436		
Dependent variable: Be literate	0.0196**	0.0210**	0.0196**	0.0210**	0.0113***	0.0118***	0.0113***	0.0118***
	(0.00835)	(0.00927)	(0.00836)	(0.00928)	(0.00271)	(0.00266)	(0.00271)	(0.00266)
		Mean: 0.932				Mean: 0.946		
Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls for other cultural practices	No	No	Yes	Yes	No	No	Yes	Yes
Observations		82,568 | 103,304				626,708 | 731,765		
Bandwidth	60	60	60	60	60	60	60	60
Order of polynomial function	1	2	1	2	1	2	1	2

(c) Analogous Estimation Results with Interaction Terms

Data: 2010 Census	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	Complete primary education		Complete lower secondary education		Be literate	
RD cutoff	0.028***	0.030***	0.089***	0.097***	0.011***	0.012***
	(0.002)	(0.002)	(0.003)	(0.004)	(0.001)	(0.001)
RD cutoff x Bride price (ethnicity definition)	0.010*	0.011*	-0.004	-0.004	0.008**	0.009**
	(0.005)	(0.007)	(0.007)	(0.008)	(0.004)	(0.004)
RD cutoff x Female	0.013***	0.015***	-0.009***	-0.011***	0.011***	0.013***
	(0.002)	(0.003)	(0.003)	(0.004)	(0.002)	(0.002)
RD cutoff x Bride price (ethnicity definition) x Female	-0.012**	-0.005	-0.002	0.000	-0.003	0.005
	(0.006)	(0.009)	(0.007)	(0.010)	(0.004)	(0.006)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Controls for cultural practices and their female interactions	Yes	Yes	Yes	Yes	Yes	Yes
Bandwidth	60	60	60	60	60	60
Order of polynomial function	1	2	1	2	1	2

Notes: Panels (a) and (b) report RD estimates of the impact of FPE on educational attainment, separately for ethnic communities with or without bride price practice, using the 2010 Census. Panel (c) tests whether the bride price practice differentially affects the impact of FPE by reporting RD estimates with interaction terms. Standard errors are clustered at the birth district level. Covariates are indicators for religion, birth district, and ethnicity. Additional cultural practice controls include matrilinearity, female participation in agriculture, and polygyny. Pre-FPE means of dependent variables are also exhibited. * Significant at the 10% level. ** Significant at the 5% level. *** Significant at the 1% level.

Figure 2: RD Estimates of FPE Effects on Educational Outcomes by Bride Price Practice



Notes: These figures display RD estimates of FPE effects on three educational outcomes, with 95% confidence intervals, separately by the presence of bride price in ethnic communities, using the 2010 Census. In each panel, light-colored estimates (left) correspond to non-bride-price groups, and dark-colored estimates (right) correspond to bride price groups. Estimates are based on a quadratic specification that includes conventional controls and additional cultural variables potentially related to bride price custom: matrilineality, traditional female participation in agriculture, and polygyny. Years of schooling are not available in the 2010 Census. Complete estimation results are presented in Table 6.

References

Akresh, R., Halim, D., & Kleemans, M. (2023). Long-Term and Intergenerational Effects of Education: Evidence from School Construction in Indonesia. *The Economic Journal*, *133*(650), 582–612.

Alesina, A., & Giuliano, P. (2015). Culture and Institutions [Publisher: American Economic Association]. *Journal of Economic Literature*, *53*(4), 898–944.

Alfano, M. (2017). Daughters, dowries, deliveries: The effect of marital payments on fertility choices in India. *Journal of Development Economics*, *125*, 89–104.

Almond, D., Li, H., & Zhang, S. (2019). Land Reform and Sex Selection in China [Publisher: The University of Chicago Press]. *Journal of Political Economy*, *127*(2), 560–585.

Al-Samarrai, S., & Zaman, H. (2007). Abolishing School Fees in Malawi: The Impact on Education Access and Equity 1 [Publisher: Routledge]. *Education Economics*, *15*(3), 359–375.

Anderson, S., & Genicot, G. (2015). Suicide and property rights in India. *Journal of Development Economics*, *114*, 64–78.

Ashraf, N., Bandiera, O., Minni, V., & Quintas-Martínez, V. (2024). Gender Gaps Across the Spectrum of Development: Local Talent and Firm Productivity. *SSRN Electronic Journal*.

Ashraf, N., Bau, N., Nunn, N., & Voena, A. (2020). Bride Price and Female Education [Publisher: The University of Chicago Press]. *Journal of Political Economy*, *128*(2), 591–641.

Baird, S., McIntosh, C., & Ozler, B. (2011). Cash or Condition? Evidence from a Cash Transfer Experiment. *The Quarterly Journal of Economics*, *126*(4), 1709–1753.

Banerjee, A. V. (2004). Educational policy and the economics of the family. *Journal of Development Economics*, *74*(1), 3–32.

Bau, N. (2021). Can Policy Change Culture? Government Pension Plans and Traditional Kinship Practices. *American Economic Review*, *111*(6), 1880–1917.

Bau, N., & Fernández, R. (2023). Culture and the family. In *Handbook of the Economics of the Family* (pp. 1–48, Vol. 1). Elsevier.

Bau, N., Lowes, S., & Montero, E. (2025). Culture, Policy, and Economic Development. *Working Paper*.

Bazzi, S., Hilmy, M., & Marx, B. (2025). Religion, Education, and the State.

Beaman, L., Chattopadhyay, R., Duflo, E., Pande, R., & Topalova, P. (2009). Powerful Women: Does Exposure Reduce Bias? [Publisher: Oxford University Press]. *The Quarterly Journal of Economics*, *124*(4), 1497–1540.

Becker, G. S., Murphy, K. M., & Spenkuch, J. L. (2016). The Manipulation of Children's Preferences, Old-Age Support, and Investment in Children's Human Capital [Publisher: The University of Chicago Press]. *Journal of Labor Economics*, *34*(S2), S3–S30.

Bedard, K., & Dhuey, E. (2006). The Persistence of Early Childhood Maturity: International Evidence of Long-Run Age Effects*. *The Quarterly Journal of Economics*, *121*(4), 1437–1472.

Benhassine, N., Devoto, F., Duflo, E., Dupas, P., & Pouliquen, V. (2015). Turning a Shove into a Nudge? A "Labeled Cash Transfer" for Education. *American Economic Journal: Economic Policy*, *7*(3), 86–125.

Bertrand, M., Mogstad, M., & Mountjoy, J. (2021). Improving Educational Pathways to Social Mobility: Evidence from Norway's Reform 94 [Publisher: The University of Chicago Press]. *Journal of Labor Economics*, *39*(4), 965–1010.

Bhalotra, S., Brulé, R., & Roy, S. (2020). Women's inheritance rights reform and the preference for sons in India. *Journal of Development Economics*, *146*, 102275.

Bhalotra, S., Chakravarty, A., & Gulesci, S. (2020). The price of gold: Dowry and death in India. *Journal of Development Economics*, *143*, 102413.

Bhalotra, S., Chakravarty, A., Mookherjee, D., & Pino, F. J. (2019). Property Rights and Gender Bias: Evidence from Land Reform in West Bengal [Publisher: American Economic Association]. *American Economic Journal: Applied Economics*, *11*(2), 205–237.

Bhalotra, S., Clarke, D., Gomes, J. F., & Venkataramani, A. (2023). Maternal Mortality and Women's Political Power. *Journal of the European Economic Association*, *21*(5), 2172–2208.

Boelmann, B., Raute, A., & Schönberg, U. (2025). Wind of Change? Cultural Determinants of Maternal Labor Supply. *American Economic Journal: Applied Economics*, *17*(2), 41–74.

Bold, T., Filmer, D., Martin, G., Molina, E., Stacy, B., Rockmore, C., Svensson, J., & Wane, W. (2017). Enrollment without Learning: Teacher Effort, Knowledge, and Skill in Primary Schools in Africa. *Journal of Economic Perspectives*, *31*(4), 185–204.

Bray, M. (1996). *Counting the full cost: Parental and community financing of education in East Asia* (1. print). The World Bank.

Breierova, L., & Duflo, E. (2004). The Impact of Education on Fertility and Child Mortality: Do Fathers Really Matter Less Than Mothers?

Brudevold-Newman, A. (2021). Expanding access to secondary education: Evidence from a fee reduction and capacity expansion policy in Kenya. *Economics of Education Review*, *83*, 102127.

Burde, D., & Linden, L. L. (2013). Bringing Education to Afghan Girls: A Randomized Controlled Trial of Village-Based Schools. *American Economic Journal: Applied Economics*, *5*(3), 27–40.

Calonico, S., Cattaneo, M. D., Farrell, M. H., & Titiunik, R. (2019). Regression Discontinuity Designs Using Covariates. *The Review of Economics and Statistics*, *101*(3), 442–451.

Calonico, S., Cattaneo, M. D., Farrell, M. H., & Titiunik, R. (2022). RDROBUST: Stata module to provide robust data-driven inference in the regression-discontinuity design [Publisher: Boston College Department of Economics].

Calvi, R., & Keskar, A. (2023). 'Til Dowry Do Us Part: Bargaining and Violence in Indian Families. *The Review of Economics and Statistics*, 1–45.

Campa, P., & Serafinelli, M. (2019). Politico-Economic Regimes and Attitudes: Female Workers Under State Socialism [Publisher: The MIT Press]. *The Review of Economics and Statistics*, *101*(2), 233–248.

Cattaneo, M. D., Jansson, M., & Ma, X. (2022). RDDENSITY: Stata module to perform Manipulation Testing Using Local Polynomial Density Estimation [Publisher: Boston College Department of Economics].

CBSI. (2010). 2010 Population Census.

Chari, A., Heath, R., Maertens, A., & Fatima, F. (2017). The causal effect of maternal age at marriage on child wellbeing: Evidence from India. *Journal of Development Economics*, *127*, 42–55.

Chen, Y.-C., Fan, E., Ho, Y.-H., Lee, M. Y.-H., & Liu, J.-T. (2025). The impact of female political leadership on gender attitudes: Evidence from Taiwan's local councils. *Journal of Development Economics*, *174*, 103451.

Chernichovsky, D., & Meesook, O. A. (1985). *School enrollment in Indonesia*. World Bank.

Chicoine, L. (2019). Schooling with learning: The effect of free primary education and mother tongue instruction reforms in Ethiopia. *Economics of Education Review*, *69*, 94–107.

Chicoine, L. (2021). Free Primary Education, Fertility, and Women's Access to the Labor Market: Evidence from Ethiopia. [Publisher: Oxford University Press / USA]. *World Bank Economic Review*, *35*(2), 480–498.

Chyi, H., & Zhou, B. (2014). The effects of tuition reforms on school enrollment in rural China. *Economics of Education Review*, *38*, 104–123.

Collier, P. (2017). Culture, Politics, and Economic Development [Publisher: Annual Reviews]. *Annual Review of Political Science*, *20*(Volume 20, 2017), 111–125.

Corno, L., Hildebrandt, N., & Voena, A. (2020). Age of Marriage, Weather Shocks, and the Direction of Marriage Payments. *Econometrica*, *88*(3), 879–915.

Corno, L., & Voena, A. (2023). Child marriage as informal insurance: Empirical evidence and policy simulations. *Journal of Development Economics*, *162*, 103047.

Dague, L. (2014). The effect of Medicaid premiums on enrollment: A regression discontinuity approach. *Journal of Health Economics*, *37*, 1–12.

Daroesman, R. (1971). Finance of Education Part 1. *Bulletin of Indonesian Economic Studies*, *7*(3), 61–95.

Deininger, K. (2003). Does cost of schooling affect enrollment by the poor? Universal primary education in Uganda. *Economics of Education Review*, *22*(3), 291–305.

Douven, R., van der Heijden, R., McGuire, T., & Schut, F. (2020). Premium levels and demand response in health insurance: Relative thinking and zero-price effects. *Journal of Economic Behavior & Organization*, *180*, 903–923.

Duflo, E. (2001). Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment [Publisher: American Economic Association]. *The American Economic Review*, *91*(4), 795–813.

Duflo, E. (2004). The medium run effects of educational expansion: Evidence from a large school construction program in Indonesia. *Journal of Development Economics*, *74*(1), 163–197.

Duflo, E. (2012). Women Empowerment and Economic Development. *Journal of Economic Literature*, *50*(4), 1051–1079.

Duflo, E., Dupas, P., & Kremer, M. (2015). Education, HIV, and Early Fertility: Experimental Evidence from Kenya. *American Economic Review*, *105*(9), 2757–2797.

Dupas, P., Duflo, E., & Kremer, M. (2021). The Impact of Free Secondary Education: Experimental Evidence from Ghana. *NBER Working Paper Series*.

Ebenstein, A. (2010). The "Missing Girls" of China and the Unintended Consequences of the One Child Policy [Publisher: University of Wisconsin Press Section: Articles]. *Journal of Human Resources*, *45*(1), 87–115.

Estudillo, J. P., Quisumbing, A. R., & Otsuka, K. (2001). Gender Differences in Land Inheritance and Schooling Investments in the Rural Philippines [Publisher: [Board of Regents of the University of Wisconsin System, University of Wisconsin Press]]. *Land Economics*, *77*(1), 130–143.

Filmer, D., & Schady, N. (2008). Getting Girls into School: Evidence from a Scholarship Program in Cambodia. *Economic Development and Cultural Change*, *56*(3), 581–617.

Giacobino, H., Huillery, E., Michel, B., & Sage, M. (2024). Schoolgirls, Not Brides: Education as a Shield against Child Marriage. *American Economic Journal: Applied Economics*, *16*(4), 109–143.

Glewwe, P., & Muralidharan, K. (2016). Improving Education Outcomes in Developing Countries. In *Handbook of the Economics of Education* (pp. 653–743, Vol. 5). Elsevier.

Glewwe, P. (1999). School Quality, Student Achievement, and Fertility in Developing Countries. In *Critical Perspectives on Schooling and Fertility in the Developing World*. National Academies Press.

Glewwe, P. (2002). Schools and Skills in Developing Countries: Education Policies and Socioeconomic Outcomes [Publisher: American Economic Association]. *Journal of Economic Literature*, *40*(2), 436–482.

Glewwe, P., & Kremer, M. (2006, January). Schools, Teachers, and Education Outcomes in Developing Countries. In E. Hanushek & F. Welch (Eds.), *Handbook of the Economics of Education* (pp. 945–1017, Vol. 2). Elsevier.

Grépin, K. A., & Bharadwaj, P. (2015). Maternal education and child mortality in Zimbabwe. *Journal of Health Economics*, *44*, 97–117.

Grogan, L. (2008). Universal Primary Education and School Entry in Uganda. *Journal of African Economies*, *18*(2), 183–211.

Hafidzi, A., Umar, M., Md Hani, M. H., & Rusdiyah, R. (2021). A Review on Cultural Customs of Marriage Traditions Among Banjar Ethnic Women in Banjarmasin Indonesia. *Potret Pemikiran*, *25*, 112.

Handa, S. (2002). Raising primary school enrolment in developing countries: The relative importance of supply and demand. *Journal of Development Economics*, *69*(1), 103–128.

Heath, R., Hidrobo, M., & Roy, S. (2020). Cash transfers, polygamy, and intimate partner violence: Experimental evidence from Mali. *Journal of Development Economics*, *143*, 102410.

Hertz, T., & Jayasundera, T. (2007). School Construction and Intergenerational Mobility in Indonesia.

Hsiao, A. (2024). Educational Investment in Spatial Equilibrium: Evidence from Indonesia. *Working Paper*.

Iizuka, T., & Shigeoka, H. (2022). Is Zero a Special Price? Evidence from Child Health Care. *American Economic Journal: Applied Economics*, *14*(4), 381–410.

Jayachandran, S., & Kuziemko, I. (2011). Why Do Mothers Breastfeed Girls Less than Boys? Evidence and Implications for Child Health in India*. *The Quarterly Journal of Economics*, *126*(3), 1485–1538.

Jayachandran, S., & Pande, R. (2017). Why Are Indian Children So Short? The Role of Birth Order and Son Preference. *American Economic Review*, *107*(9), 2600–2629.

JDIHN. (2020). Jaringan Dokumentasi dan Informasi Hukum Nasional (JDIHN) Kabupaten Lebong ”PERPRES-KEPPRES-INPRES (1947-1992)”.

Jensen, R., & Thornton, R. (2003). Early female marriage in the developing world. *Gender & Development*, *11*(2), 9–19.

Jones, G. W. (1977). Fertility Levels and Trends in Indonesia [Publisher: [Population Investigation Committee, Taylor & Francis, Ltd.]]. *Population Studies*, *31*(1), 29–41.

Jung, D., Bharati, T., & Chin, S. (2021). Does Education Affect Time Preference? Evidence from Indonesia. *Economic Development and Cultural Change*, *69*(4), 1451–1499.

Kazianga, H., Levy, D., Linden, L. L., & Sloan, M. (2013). The Effects of "Girl-Friendly" Schools: Evidence from the BRIGHT School Construction Program in Burkina Faso [Publisher: American Economic Association]. *American Economic Journal: Applied Economics*, *5*(3), 41–62.

Keats, A. (2018). Women's schooling, fertility, and child health outcomes: Evidence from Uganda's free primary education program. *Journal of Development Economics*, *135*, 142–159.

Khalifa, S. (2022). Female Genital Cutting and Bride Price. *Working Paper*.

Kodila-Tedika, O., & Otchia, C. S. (2022). The effects of free primary education in the Democratic Republic of Congo: A difference-in-differences approach. *Review of Development Economics*, *26*(4), 2109–2120.

La Ferrara, E., & Milazzo, A. (2017). Customary Norms, Inheritance, and Human Capital: Evidence from a Reform of the Matrilineal System in Ghana. *American Economic Journal: Applied Economics*, *9*(4), 166–185.

Lowes, S., Nunn, N., & UNU-WIDER. (2017). *Bride price and the well-being of women* (131st ed., Vol. 2017). UNU-WIDER.

Lucas, A. M., & Mbiti, I. M. (2012a). Access, Sorting, and Achievement: The Short-Run Effects of Free Primary Education in Kenya. *American Economic Journal: Applied Economics*, *4*(4), 226–253.

Lucas, A. M., & Mbiti, I. M. (2012b). Does Free Primary Education Narrow Gender Differences in Schooling? Evidence from Kenya†. *Journal of African Economies*, *21*(5), 691–722.

Martinez-Bravo, M. (2017). The Local Political Economy Effects of School Construction in Indonesia. *American Economic Journal: Applied Economics*, *9*(2), 256–289.

Mazumder, B., Rosales-Rueda, M., & Triyana, M. (2019). Intergenerational Human Capital Spillovers: Indonesia's School Construction and Its Effects on the Next Generation. *AEA Papers and Proceedings*, *109*, 243–249.

Mazumder, B., Rosales-Rueda, M. F., & Triyana, M. (2023). Social Interventions, Health, and Well-Being: The Long-Term and Intergenerational Effects of a School Construction Program [Publisher: University of Wisconsin Press Section: Articles]. *Journal of Human Resources*, *58*(4), 1097–1140.

Mertaugh, M., Dove, L., & Nazareth, A. (1989). *Indonesia—Basic Education Study*. World Bank.

Miqat, N., & Bakhtiar, H. (2017). Harmonization of "Uang Panaik" as Customary Term in Bugis-Makassar Ethnic Group and Dowry in Indonesian Marriage System. *Journal of Law, Policy and Globalization*, *67*, 41–46.

Moscona, J., & Seck, A. A. (2024). Age Set versus Kin: Culture and Financial Ties in east Africa. *American Economic Review*, *114*(9), 2748–2791.

Muralidharan, K., & Sheth, K. (2016). Bridging Education Gender Gaps in Developing Countries: The Role of Female Teachers. *Journal of Human Resources*, *51*(2), 269–297.

Muralidharan, K., & Sundararaman, V. (2015). The Aggregate Effect of School Choice: Evidence from a Two-Stage Experiment in India [Publisher: Oxford University Press]. *The Quarterly Journal of Economics*, *130*(3), 1011–1066.

Murdock, G. P. (1967). Ethnographic Atlas: A Summary. *Ethnology*, *6*(2), 109.

Nishimura, M., Yamano, T., & Sasaoka, Y. (2008). Impacts of the universal primary education policy on educational attainment and private costs in rural Uganda. *International Journal of Educational Development*, *28*(2), 161–175.

Osili, U. O., & Long, B. T. (2008). Does female schooling reduce fertility? Evidence from Nigeria. *Journal of Development Economics*, *87*(1), 57–75.

Parinduri, R. A. (2014). Do children spend too much time in schools? Evidence from a longer school year in Indonesia. *Economics of Education Review*, *41*, 89–104.

Raj, A. (2010). When the mother is a child: The impact of child marriage on the health and human rights of girls. *Archives of Disease in Childhood*, *95*(11), 931–935.

Rizal, M. F., Black, N., Johnston, D. W., & Sweeney, R. (2023). Long-term health effects of a school construction program. *Health Economics*, *32*(8), 1670–1688.

Rosenblum, D. (2015). Unintended Consequences of Women's Inheritance Rights on Female Mortality in India. *Economic Development and Cultural Change*, *63*(2), 223–248.

Rosser, A., & Joshi, A. (2013). From User Fees to Fee Free: The Politics of Realising Universal Free Basic Education in Indonesia. *Journal of Development Studies*, *49*(2), 175–189.

Rostiawati, J., & Khadijah, S. N. (2013). *Kekerasan Terhadap Perempuan Berbasis Budaya: Mas Kawin dan Uang Gengsi — Perpustakaan Komnas Perempuan* (1st ed.). Jakarta Indonesia : [Komnas Perempuan]., 2013.

Roy, S. (2015). Empowering women? Inheritance rights, female education and dowry payments in India. *Journal of Development Economics*, *114*, 233–251.

Samarakoon, S., & Parinduri, R. A. (2015). Does Education Empower Women? Evidence from Indonesia. *World Development*, *66*, 428–442.

Shampanier, K., Mazar, N., & Ariely, D. (2007). Zero as a Special Price: The True Value of Free Products [Publisher: INFORMS]. *Marketing Science*, *26*(6), 742–757.

Strauss, J., Witoelar, F., & Sikoki, B. (2016). *The Fifth Wave of the Indonesia Family Life Survey (IFLS5): Overview and Field Report* (tech. rep. No. WR-1143/1-NIA/NICHD). RAND Labor & Population.

Suryadarma, D., Suryahadi, A., Sumarto, S., & Rogers, F. H. (2006). Improving Student Performance in Public Primary Schools in Developing Countries: Evidence from Indonesia. *Education Economics*, *14*(4), 401–429.

Tabellini, G. (2010). Culture and Institutions: Economic Development in the Regions of Europe [Publisher: Oxford University Press]. *Journal of the European Economic Association*, *8*(4), 677–716.

Tempo. (1976). Karena SPP Dihapus. *PT TEMPO Inti Media*, *31/6*.

UNESCO. (1984). *Towards Universalization of Primary Education in Asia and the Pacific: Country Studies - Indonesia*.

UNICEF. (2022, June). Most countries have achieved gender parity in primary enrolment, but in many countries, disparities disadvantaging girls persist.

Walker, S., Grosjean, P., Cristia, A., & Delavande, A. (2024). HeforShe: Bargaining Power, Parental Beliefs, and Parental Investments. *CEPR*.

Wei, S.-J., & Zhang, X. (2011). The Competitive Saving Motive: Evidence from Rising Sex Ratios and Savings Rates in China. *Journal of Political Economy*, *119*(3), 511–564.

Wild, F., & Stadelmann, D. (2024). Heterogeneous Effects of Women's Schooling on Fertility, Literacy and Work: Evidence from Burundi's Free Primary Education Policy. *Journal of African Economies*, *33*(1), 67–91.

Yoneda, K. (1985). A Note on Income Distribution in Indonesia. *The Developing Economies*, *23*(4), 414–422.

Yusuf, A. M. (2008). *Presiden RI KE II Jenderal Besar H.M Soeharto Dalam Berita IV (1976- 1978)*. PT. Wigi Wijaya Praja.

Appendix A: Supplementary Materials on FPE's Impact

Table A1: Selected Literature on the Impacts of Tuition Reforms

	Identification strategy	Country	Experiment/Policy	Other campaigns	Sample	Schooling effect	Other effects
Barrera-Osorio et al., 2022	RCT	Pakistan	Opening of primary schools with tuition-free education in 2007	Gender-uniform and female-only subsidies; School leadership and teacher training; Free textbooks and other materials	Male and female	+31.7 ppts in primary school enrollment (T3, Col.4); +0.38 additional grades attained (T3, Col.5); +0.63 standard deviations in test scores (T4, Col.5)	Improved educational and career aspirations
Brudevold-Newman, 2021	DiD	Kenya	Tuition reduction in secondary education in 2008	Expansion of class sizes; School construction; Additional classes	Female	+0.75 years of schooling (T3, with mean intensity); +6 to 10 ppts in secondary school completion (T3, with mean intensity)	Delayed marriage and childbirth; Increased likelihood of skilled employment
Lucas and Mbiti, 2012a	DiD	Kenya	Free primary education introduced in 2003	Grants for physical facilities and textbooks	Male and female	+7.4 test takers (T2, with mean intensity); Only a slight decrease in test scores (T7)	Increased private schools; Sorting across schools
Chicoine, 2019	DiD	Ethiopia	Free primary education introduced in 1994	Mother tongue instruction	Male and female	+0.7 years of schooling (T5); +6.4 to 9.5 ppts in literacy rates (T7)	Improved health-related knowledge
Chyi and Zhou, 2013	DiD and DDD	China	Tuition reforms for poor rural families between 2000 and 2006	Free textbooks and living stipends for low-income families	Male and female	+13.8 ppts in female primary school enrollment (T8)	–
Osili and Long, 2008	DiD	Nigeria	Free primary education implemented from 1976 to 1981	Additional classrooms; More teacher-training institutions	Female	+1.54 years of schooling (T4, Col.3)	Fewer early births
Keats, 2018	RDD and DDD	Uganda	Free primary education introduced in 1997	Provision of classrooms and desks; Additional teacher training; Curriculum revision and updating	Female	+0.72 years of schooling (T2); +5.7 ppts in primary school completion (T2); +2.8 ppts in secondary school completion (T2); +3.9 ppts in literacy rates (T2)	Delayed marriage and childbirth; Improved child health outcomes
Grépin and Bharadwaj, 2015	RDD	Zimbabwe	Free and compulsory primary education introduced around 1980	Admission of over-age children into school; Automatic progression from primary to secondary; Facilitated enrollment in formerly segregated schools	Female	+1.68 years of schooling (T2); +25.2 ppts in secondary school enrollment (T2)	Lower child mortality rates

Table A2: Household-Reported Reasons for Children Being Out of School

	Ages 7-12				Ages 13-15			
	Java		Outer Islands		Java		Outer Islands	
Reason for not attending school:	Male	Female	Male	Female	Male	Female	Male	Female
Had sufficient schooling	1.9	8.4	0	5.3	5	4.9	5.6	7.8
No funds	48.1	49.1	49.3	43.9	51.5	47.7	56.9	55.8
Too difficult	12.5	20.4	16.4	17.9	13.1	12.4	14.5	11.6
School too far away	9.6	2.4	0	0	7	8.4	4.5	1.1
Other	27.9	19.8	34.2	33	23.4	26	18.6	23.7

Notes: This table summarizes reasons reported by households for children being out of school. The sample is classified by child's gender (households with a male or female child out of school) and by location (Java Island versus outer islands).
Source: Mertaugh et al. (1989, Table 7), based on the 1978 national SUSENAS household survey conducted by Statistics Indonesia (Biro Pusat Statistik). The sample consists of approximately 6,000 households (Mertaugh et al., 1989, p.3).

Table A3: Dropout Rates Before and After the Introduction of FPE

	1975/76-76/77	1985/86-86/87
Grade:	Dropout rate (%)	Dropout rate (%)
Primary Grade		
1	3.3	2.8
2	4.6	3
3	8.1	4.8
4	10.2	5.1
5	9.2	5.3
6	6.9	3.3
Lower-secondary Grade		
1	7.3	3.2
2	4.7	2.2
3	7.2	0.5

Notes: This table reports dropout rates for primary and lower-secondary grades during 1975/76–1976/77 (before or upon FPE) and 1985/86–1986/87 (after FPE).
Source: Mertaugh et al. (1989, Table 1.11), based on summary education statistics (Rangkuman Statistik Persekolahan) from 1976 and 1986/87 compiled by the Ministry of Education and Culture (Kementerian Pendidikan dan Kebudayaan).

Figure A1: Coverage Limitations of Secondary Datasets

(a) Coverage of the 1995 Intercensus (IPUMS subsample)

(b) Coverage of IFLS 5

Notes: Regencies included in each dataset are shown in red. Maps were created using mapchart.net.

Table A4: Descriptive Statistics

(a) 2010 Census Sample

Data: 2010 Census	Primary school enrolment	Primary education completion	Lower-secondary education completion	Upper-secondary education completion	University education completion	Literate	Bride price (ethnicity-based)	Bride price (language-based)
				Female sample				
				Pre-FPE				
Mean	0.885	0.773	0.311	0.204	0.046	0.889	0.115	0.347
Standard deviation	0.319	0.419	0.463	0.403	0.210	0.314	0.319	0.476
Median	1.000	1.000	0.000	0.000	0.000	1.000	0.000	0.000
Observations	710874	710874	710874	710874	710874	710874	710874	710874
				Post-FPE				
Mean	0.921	0.843	0.432	0.290	0.054	0.926	0.123	0.373
Standard deviation	0.270	0.363	0.495	0.454	0.226	0.262	0.329	0.484
Median	1.000	1.000	0.000	0.000	0.000	1.000	0.000	0.000
Observations	820896	820896	820896	820896	820896	820896	820896	820896
				Male sample				
				Pre-FPE				
Mean	0.936	0.853	0.449	0.316	0.076	0.945	0.116	0.359
Standard deviation	0.244	0.354	0.497	0.465	0.264	0.229	0.321	0.480
Median	1.000	1.000	0.000	0.000	0.000	1.000	0.000	0.000
Observations	709741	709741	709741	709741	709741	709741	709741	709741
				Post-FPE				
Mean	0.957	0.902	0.562	0.389	0.073	0.963	0.124	0.383
Standard deviation	0.203	0.298	0.496	0.488	0.260	0.189	0.329	0.486
Median	1.000	1.000	1.000	0.000	0.000	1.000	0.000	0.000
Observations	835623	835623	835623	835623	835623	835623	835623	835623

(b) 1995 Intercensus Sample

Data: 1995 Intercensus	Primary school enrolment	Primary education completion	Lower-secondary education completion	Literate	Years of schooling	High INPRES intensity	Bride price (language-based)
				Female sample			
				Pre-FPE			
Mean	0.928	0.720	0.375	0.916	7.300	0.495	0.149
Standard deviation	0.259	0.449	0.484	0.277	4.057	0.500	0.356
Median	1.000	1.000	0.000	1.000	6.000	0.000	0.000
Observations	22956	22956	22956	22956	22956	22956	22956
				Post-FPE			
Mean	0.956	0.813	0.495	0.950	8.345	0.500	0.148
Standard deviation	0.205	0.390	0.500	0.219	3.964	0.500	0.355
Median	1.000	1.000	0.000	1.000	9.000	1.000	0.000
Observations	26859	26859	26859	26859	26857	26859	26859
				Male sample			
				Pre-FPE			
Mean	0.966	0.818	0.518	0.960	8.615	0.496	0.146
Standard deviation	0.182	0.385	0.500	0.196	4.034	0.500	0.353
Median	1.000	1.000	1.000	1.000	9.000	0.000	0.000
Observations	22291	22291	22291	22291	22289	22291	22291
				Post-FPE			
Mean	0.978	0.888	0.618	0.977	9.359	0.502	0.144
Standard deviation	0.147	0.315	0.486	0.151	3.719	0.500	0.351
Median	1.000	1.000	1.000	1.000	9.000	1.000	0.000
Observations	25079	25079	25079	25079	25077	25079	25079

Notes: Panels (a) and (b) report descriptive statistics for female and male cohorts born between 1961 and 1970, based on data from the 2010 Census and 1995 Intercensus. Individuals born in January 1966 or later are classified as post-FPE, while those born earlier are classified as pre-FPE. Years of schooling are measured by highest educational attainment and do not adjust for grade repetition or the half-year increase resulting from the 1978–79 academic calendar reform. Primary school entry ages are calculated after excluding the top 1% and bottom 1% outliers (younger than five or older than eleven).

(c) 1990 Census and IFLS 5 Sample

Data:	1990 Census			IFLS5			
	Primary education completion	Lower-secondary education completion	Literate	Primary education completion	Lower-secondary education completion	Years of schooling	Primary school entry age
				Female sample			
				Pre-FPE			
Mean	0.695	0.341	0.976	0.577	0.319	6.547	6.940
Standard deviation	0.460	0.474	0.153	0.494	0.466	4.526	0.928
Median	1.000	0.000	1.000	1.000	0.000	6.000	7.000
Observations	28760	28760	28760	1088	1088	1085	1035
				Post-FPE			
Mean	0.812	0.473	0.987	0.755	0.489	8.265	6.859
Standard deviation	0.390	0.499	0.111	0.431	0.500	4.416	0.762
Median	1.000	0.000	1.000	1.000	0.000	8.000	7.000
Observations	33428	33428	33428	1218	1218	1206	1190
				Male sample			
				Pre-FPE			
Mean	0.787	0.470	0.989	0.663	0.458	7.890	7.127
Standard deviation	0.409	0.499	0.106	0.473	0.499	4.756	1.073
Median	1.000	0.000	1.000	1.000	0.000	7.000	7.000
Observations	28285	28285	28285	1019	1019	994	959
				Post-FPE			
Mean	0.874	0.594	0.993	0.829	0.630	9.524	6.997
Standard deviation	0.332	0.491	0.086	0.376	0.483	4.246	0.938
Median	1.000	1.000	1.000	1.000	1.000	11.000	7.000
Observations	31241	31241	31241	1325	1325	1299	1267

Notes: Panel (c) reports descriptive statistics for female and male cohorts born between 1961 and 1970, based on secondary data from the 1990 Census and IFLS 5. Individuals born in January 1966 or later are classified as post-FPE, while those born earlier are classified as pre-FPE. Years of schooling are measured by highest educational attainment and do not adjust for grade repetition or the half-year increase resulting from the 1978–79 academic calendar reform. Primary school entry ages are calculated after excluding the top 1% and bottom 1% outliers (younger than five or older than eleven).

Table A4: Descriptive statistics

(d) Female Sample (2010 Census and 1995 Intercensus)

Data:	2010 Census								1995 Intercensus				
	Primary school enrolment	Primary education completion	Lower-secondary education completion	Upper-secondary education completion	University education completion	Literate	Bride price (ethnicity-based)	Bride price (language-based)	Primary school enrolment	Primary education completion	Lower-secondary education completion	Literate	Years of schooling
	Female bride price (ethnicity-based definition)								Female high INPRES intensity				
	Pre-FPE								Pre-FPE				
Mean	0.892	0.778	0.427	0.299	0.069	0.890	1.000	0.992	0.891	0.652	0.321	0.878	6.675
Standard deviation	0.310	0.416	0.495	0.458	0.254	0.313	0.000	0.090	0.312	0.476	0.467	0.328	4.125
Median	1.000	1.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	6.000
Observations	81740	81740	81740	81740	81740	81740	81740	81740	11354	11354	11354	11354	11354
	Post-FPE								Post-FPE				
Mean	0.923	0.838	0.544	0.396	0.078	0.922	1.000	0.991	0.932	0.760	0.431	0.924	7.703
Standard deviation	0.267	0.368	0.498	0.489	0.269	0.268	0.000	0.092	0.252	0.427	0.495	0.266	4.036
Median	1.000	1.000	1.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	6.000
Observations	101213	101213	101213	101213	101213	101213	101213	101213	13434	13434	13434	13434	13433
	Female no bride price (ethnicity-based definition)								Female low INPRES intensity				
	Pre-FPE								Pre-FPE				
Mean	0.884	0.773	0.296	0.192	0.043	0.889	0.000	0.263	0.964	0.787	0.428	0.954	7.913
Standard deviation	0.321	0.419	0.456	0.394	0.204	0.315	0.000	0.440	0.187	0.409	0.495	0.210	3.892
Median	1.000	1.000	0.000	0.000	0.000	1.000	0.000	0.000	1.000	1.000	0.000	1.000	6.000
Observations	629134	629134	629134	629134	629134	629134	629134	629134	11602	11602	11602	11602	11602
	Post-FPE								Post-FPE				
Mean	0.921	0.844	0.416	0.275	0.051	0.927	0.000	0.286	0.981	0.867	0.560	0.975	8.988
Standard deviation	0.270	0.363	0.493	0.446	0.219	0.261	0.000	0.452	0.138	0.339	0.496	0.155	3.784
Median	1.000	1.000	0.000	0.000	0.000	1.000	0.000	0.000	1.000	1.000	1.000	1.000	9.000
Observations	719683	719683	719683	719683	719683	719683	719683	719683	13425	13425	13425	13425	13424
	Female bride price (language-based definition)								Female bride price (language-based definition)				
	Pre-FPE								Pre-FPE				
Mean	0.923	0.823	0.471	0.332	0.074	0.924	0.329	1.000	0.828	0.614	0.304	0.820	6.282
Standard deviation	0.266	0.382	0.499	0.471	0.262	0.265	0.470	0.000	0.377	0.487	0.460	0.384	4.256
Median	1.000	1.000	0.000	0.000	0.000	1.000	0.000	1.000	1.000	1.000	0.000	1.000	6.000
Observations	246100	246100	246100	246100	246100	246100	246100	246100	3424	3424	3424	3424	3424
	Post-FPE								Post-FPE				
Mean	0.946	0.875	0.590	0.433	0.086	0.947	0.329	1.000	0.862	0.689	0.405	0.857	7.146
Standard deviation	0.226	0.331	0.492	0.495	0.281	0.223	0.470	0.000	0.345	0.463	0.491	0.350	4.319
Median	1.000	1.000	1.000	0.000	0.000	1.000	0.000	1.000	1.000	1.000	0.000	1.000	6.000
Observations	305346	305346	305346	305346	305346	305346	305346	305346	3977	3977	3977	3977	3976
	Female no bride price (language-based definition)								Female no bride price (language-based definition)				
	Pre-FPE								Pre-FPE				
Mean	0.864	0.747	0.226	0.136	0.032	0.870	0.001	0.000	0.945	0.739	0.388	0.933	7.479
Standard deviation	0.343	0.435	0.418	0.343	0.175	0.336	0.038	0.000	0.228	0.439	0.487	0.250	3.994
Median	1.000	1.000	0.000	0.000	0.000	1.000	0.000	0.000	1.000	1.000	0.000	1.000	6.000
Observations	464774	464774	464774	464774	464774	464774	464774	464774	19532	19532	19532	19532	19532
	Post-FPE								Post-FPE				
Mean	0.906	0.825	0.338	0.205	0.035	0.913	0.002	0.000	0.972	0.835	0.511	0.966	8.554
Standard deviation	0.291	0.380	0.473	0.404	0.183	0.281	0.042	0.000	0.164	0.371	0.500	0.182	3.862
Median	1.000	1.000	0.000	0.000	0.000	1.000	0.000	0.000	1.000	1.000	1.000	1.000	9.000
Observations	515550	515550	515550	515550	515550	515550	515550	515550	22882	22882	22882	22882	22881

Notes: Panel (d) presents: (1) descriptive statistics for female cohorts born between 1961 and 1970 who were born in regencies with high or low INPRES intensity; and (2) descriptive statistics for female cohorts practicing bride price. Regencies are classified as high INPRES intensity if the number of INPRES schools per 1,000 children exceeds the median value of 1.7603. Bride price status is determined based on either ethnicity or language. While the main analysis uses the ethnicity-based definition, statistics for groups defined by language are also reported.

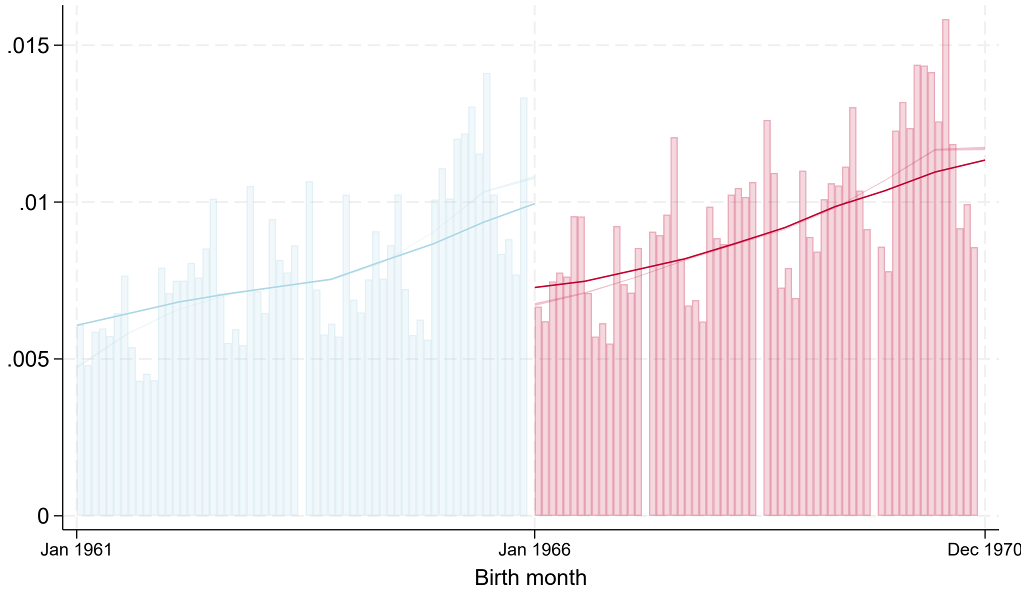
Table A4: Descriptive statistics

(e) Male Sample (2010 Census and 1995 Intercensus)

Data:	2010 Census								1995 Intercensus				
	Primary school enrolment	Primary education completion	Lower-secondary education completion	Upper-secondary education completion	University education completion	Literate	Bride price (ethnicity-based)	Bride price (language-based)	Primary school enrolment	Primary education completion	Lower-secondary education completion	Literate	Years of schooling
	Male bride price (ethnicity-based definition)								Male high INPRES intensity				
	Pre-FPE								Pre-FPE				
Mean	0.931	0.836	0.545	0.402	0.107	0.932	1.000	0.990	0.947	0.774	0.462	0.943	8.079
Standard deviation	0.254	0.371	0.498	0.490	0.309	0.252	0.000	0.100	0.224	0.418	0.499	0.232	4.127
Median	1.000	1.000	1.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	1.000	6.000
Observations	82588	82588	82588	82588	82588	82588	82588	82588	11060	11060	11060	11060	11058
	Post-FPE								Post-FPE				
Mean	0.952	0.881	0.634	0.467	0.100	0.951	1.000	0.990	0.967	0.856	0.561	0.966	8.834
Standard deviation	0.214	0.324	0.482	0.499	0.300	0.215	0.000	0.099	0.178	0.351	0.496	0.182	3.785
Median	1.000	1.000	1.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	9.000
Observations	103338	103338	103338	103338	103338	103338	103338	103338	12586	12586	12586	12586	12585
	Male no bride price (ethnicity-based definition)								Male low INPRES intensity				
	Pre-FPE								Pre-FPE				
Mean	0.937	0.855	0.436	0.305	0.071	0.946	0.000	0.276	0.984	0.862	0.573	0.977	9.143
Standard deviation	0.243	0.352	0.496	0.460	0.258	0.226	0.000	0.447	0.127	0.345	0.495	0.150	3.870
Median	1.000	1.000	0.000	0.000	0.000	1.000	0.000	0.000	1.000	1.000	1.000	1.000	9.000
Observations	627153	627153	627153	627153	627153	627153	627153	627153	11231	11231	11231	11231	11231
	Post-FPE								Post-FPE				
Mean	0.958	0.904	0.552	0.378	0.069	0.964	0.000	0.298	0.989	0.920	0.676	0.988	9.887
Standard deviation	0.201	0.294	0.497	0.485	0.254	0.185	0.000	0.457	0.105	0.271	0.468	0.111	3.575
Median	1.000	1.000	1.000	0.000	0.000	1.000	0.000	0.000	1.000	1.000	1.000	1.000	12.000
Observations	732285	732285	732285	732285	732285	732285	732285	732285	12493	12493	12493	12493	12492
	Male bride price (language-based definition)								Male bride price (language-based definition)				
	Pre-FPE								Pre-FPE				
Mean	0.956	0.882	0.611	0.467	0.121	0.960	0.322	1.000	0.894	0.737	0.461	0.887	7.795
Standard deviation	0.204	0.322	0.488	0.499	0.327	0.195	0.467	0.000	0.308	0.440	0.499	0.316	4.399
Median	1.000	1.000	1.000	0.000	0.000	1.000	0.000	1.000	1.000	1.000	0.000	1.000	6.000
Observations	254192	254192	254192	254192	254192	254192	254192	254192	3252	3252	3252	3252	3251
	Post-FPE								Post-FPE				
Mean	0.970	0.918	0.701	0.535	0.117	0.972	0.321	1.000	0.921	0.787	0.541	0.918	8.370
Standard deviation	0.171	0.274	0.458	0.499	0.321	0.165	0.467	0.000	0.270	0.409	0.498	0.275	4.099
Median	1.000	1.000	1.000	1.000	0.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	9.000
Observations	319085	319085	319085	319085	319085	319085	319085	319085	3604	3604	3604	3604	3604
	Male no bride price (language-based definition)								Male no bride price (language-based definition)				
	Pre-FPE								Pre-FPE				
Mean	0.925	0.837	0.358	0.232	0.050	0.936	0.002	0.000	0.978	0.832	0.527	0.972	8.755
Standard deviation	0.263	0.370	0.480	0.422	0.218	0.245	0.043	0.000	0.147	0.374	0.499	0.164	3.952
Median	1.000	1.000	0.000	0.000	0.000	1.000	0.000	0.000	1.000	1.000	1.000	1.000	9.000
Observations	455549	455549	455549	455549	455549	455549	455549	455549	19039	19039	19039	19039	19038
	Post-FPE								Post-FPE				
Mean	0.949	0.891	0.477	0.299	0.046	0.957	0.002	0.000	0.988	0.905	0.631	0.986	9.525
Standard deviation	0.220	0.311	0.499	0.458	0.210	0.203	0.045	0.000	0.111	0.293	0.483	0.116	3.625
Median	1.000	1.000	0.000	0.000	0.000	1.000	0.000	0.000	1.000	1.000	1.000	1.000	9.000
Observations	516538	516538	516538	516538	516538	516538	516538	516538	21475	21475	21475	21475	21473

Notes: Panel (e) presents: (1) descriptive statistics for male cohorts born between 1961 and 1970 who were born in regencies with high or low INPRES intensity; and (2) descriptive statistics for male cohorts practicing bride price. Regencies are classified as high INPRES intensity if the number of INPRES schools per 1,000 children exceeds the median value of 1.7603. Bride price status is determined based on either ethnicity or language. While the main analysis uses the ethnicity-based definition, statistics for groups defined by language are also reported.

Figure A2: RD Density Plot Across Birth Months



Notes: The figure displays birth-month density estimates, with 95% confidence bands shaded in light red and blue and point estimates shown in dark red and blue Some point estimates lie outside the confidence intervals due to large density fluctuations within certain ranges.

Table A5: Manipulation Test and Pre-FPE Covariate Balance Check

(a) Manipulation Test

	Female				Male			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable: School entry age	0.0689	0.190	0.0533	0.161	-0.139	-0.286**	-0.151*	-0.300**
Data: IFLS 5	(0.0865)	(0.124)	(0.0733)	(0.117)	(0.0932)	(0.143)	(0.0862)	(0.137)
	Mean: 6.940				Mean: 7.127			
Dependent variable: Primary education enrollment	0.00923	0.00601	0.0159***	0.0159**	0.00587	0.00399	0.00686*	0.00409
Data: 1995 Intercensus	(0.0104)	(0.0116)	(0.00525)	(0.00691)	(0.00623)	(0.00700)	(0.00368)	(0.00529)
	Mean: 0.928				Mean: 0.966			
Dependent variable: Primary education enrollment	0.0287***	0.0307***	0.0228***	0.0256***	0.0187***	0.0191***	0.0148***	0.0155***
Data: 2010 Census	(0.00954)	(0.00953)	(0.00569)	(0.00576)	(0.00534)	(0.00545)	(0.00302)	(0.00305)
	Mean: 0.885				Mean: 0.936			
Covariates	No	No	Yes	Yes	No	No	Yes	Yes
Observations for IFLS 5	1,016 | 1,175		1,013 | 1,173		906 | 1,200		906 | 1,198	
Observations for 1995 Intercensus	22,956 | 26,859		22,956 | 26,859		22,291 | 25,079		22,291 | 25,079	
Observations for 2010 Census	710,874 | 820,896		710,445 | 820,387		709,741 | 835,623		709,276 | 835,069	
Bandwidth	60	60	60	60	60	60	60	60
Order of polynomial function	1	2	1	2	1	2	1	2

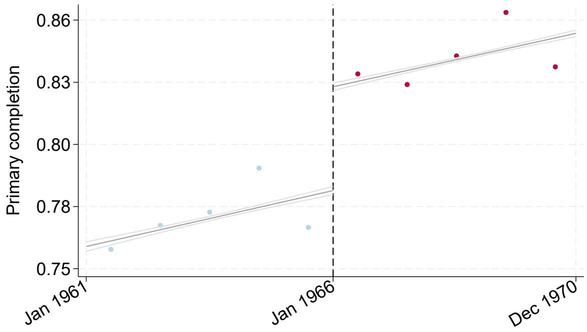
(b) Pre-FPE Covariate Balance Check

Data: 2010 Census	Female		Male	
	(1)	(2)	(3)	(4)
Dependent variable: Bride-price ethnic group	0.00361	0.00102	-0.000526	-0.00174
	(0.0199)	(0.0197)	(0.0201)	(0.0201)
	Mean: 0.115		Mean: 0.116	
Dependent variable: Born in Java island	0.0176	0.0227	0.0201	0.0259
	(0.0432)	(0.0434)	(0.0435)	(0.0437)
	Mean: 0.643		Mean: 0.641	
Dependent variable: Born in Jakarta	0.00712	0.00655	0.00812	0.00871
	(0.0197)	(0.0188)	(0.0203)	(0.0200)
	Mean: 0.0304		Mean: 0.0298	
Covariates	No	No	No	No
Observations for 2010 Census	710,874 | 820,896		709,741 | 835,623	
Bandwidth	60	60	60	60
Order of polynomial function	1	2	1	2

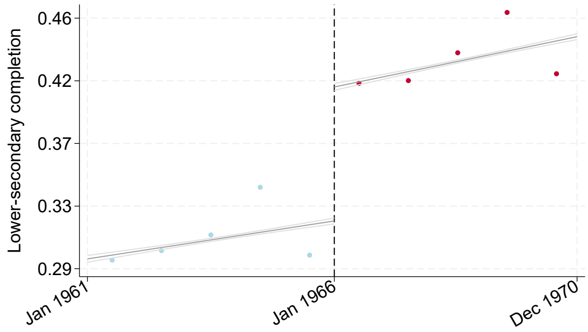
Notes: This table checks for discontinuities at the cutoff in school entry age, enrollment, and pre-FPE covariates. Standard errors are clustered at the ethnicity level (IFLS 5 and 2010 Census) or the birth regency level (1995 Intercensus). Covariates include indicators for religion and additional characteristics that vary by dataset: ethnicity indicators (IFLS 5), birth regency and language indicators (1995 Intercensus), or birth province and ethnicity indicators (2010 Census). Pre-FPE means of the dependent variables are reported. * Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level.

Figure A3: RD Plots by Different Binning Strategies or Datasets (Female Sample)

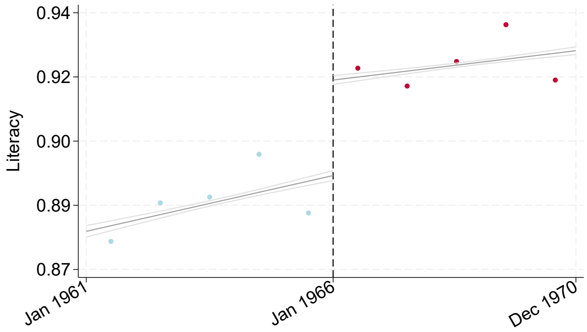
(a) Female Primary (Yearly Bins)



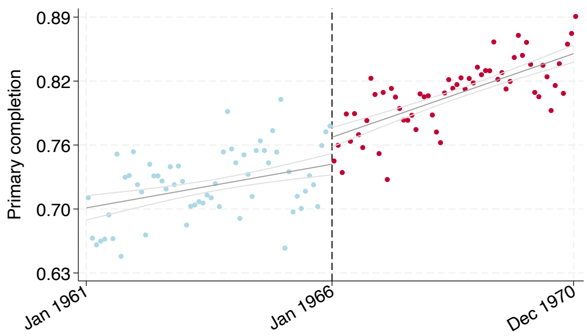
(b) Female Lower Secondary (Yearly Bins)



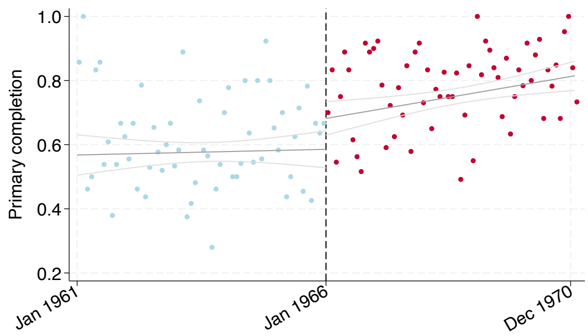
(c) Female Literacy (Yearly Bins)



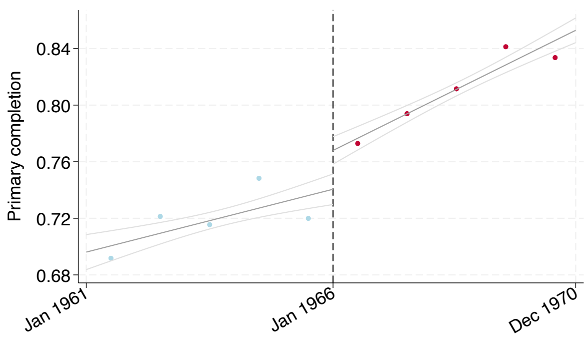
(d) Female Primary (1995 Intercensus)



(e) Female Primary (IFLS 5)



(f) Female Primary (1995 IC, Yearly)

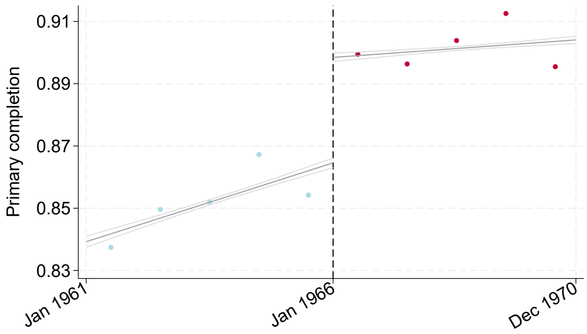


(g) Female Primary (IFLS 5, Yearly)

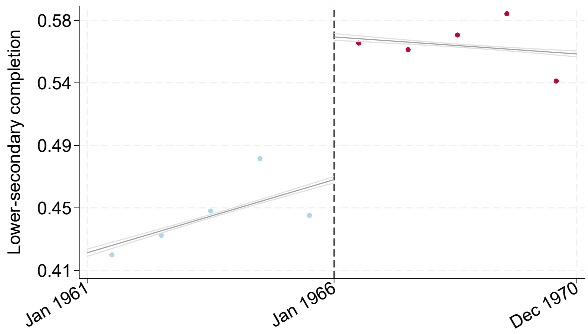
Notes: The figures plot educational attainment outcomes across birth months for women. Fitted lines are shown with 95% confidence intervals.

Figure A4: RD Plots by Different Binning Strategies or Datasets (Male Sample)

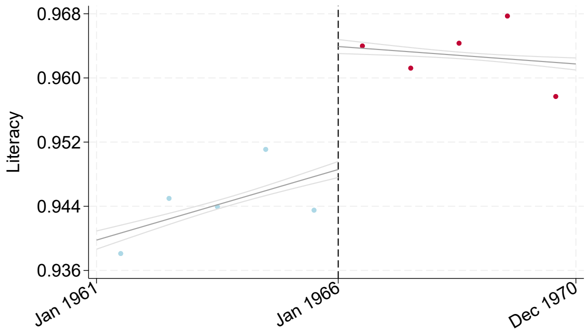
(a) Male Primary (Yearly Bins)



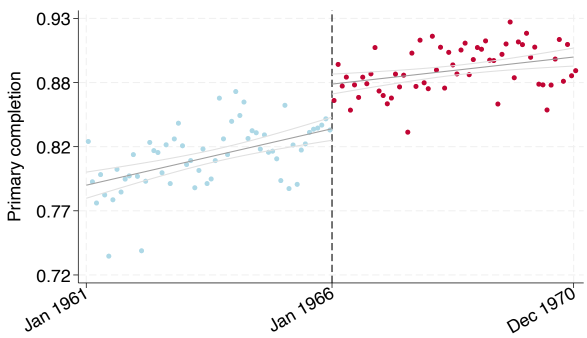
(b) Male Lower Secondary (Yearly Bins)



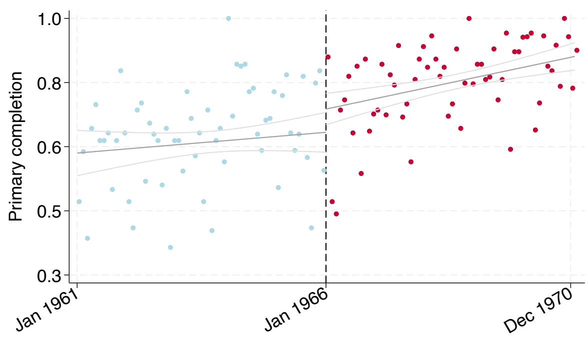
(c) Male Literacy (Yearly Bins)



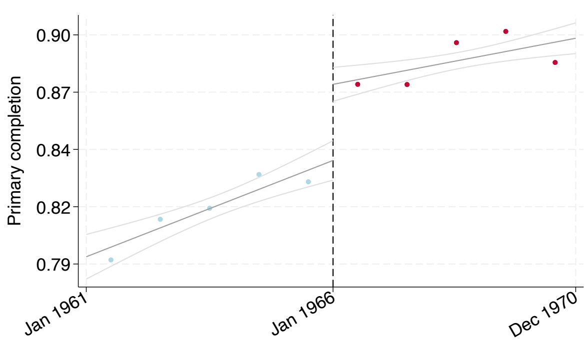
(d) Male Primary (1995 Intercensus)



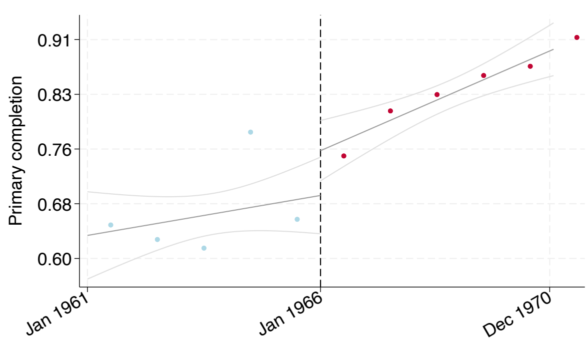
(e) Male Primary (IFLS 5)



(f) Male Primary (1995 IC, Yearly)



(g) Male Primary (IFLS 5, Yearly)



Notes: The figures plot educational attainment outcomes across birth months for men. Fitted lines are shown with 95% confidence intervals.

Table A6: Replication Using Different Datasets

(a) Replication Using 1990 Census

Data: 1990 Census	(1)	(2)	(3)	(4)	(5)	(6)
	Female		Male		Gender difference terms from interaction models	
Dependent variable: Complete primary education	0.0554***	0.0511***	0.0447***	0.0553***	0.011	-0.004
	(0.00695)	(0.0117)	(0.00433)	(0.00746)	(0.008)	(0.014)
	Mean: 0.695		Mean: 0.787			
Dependent variable: Complete lower secondary education	0.0761***	0.0638***	0.0874***	0.0872***	-0.011	-0.023
	(0.00579)	(0.00958)	(0.0101)	(0.0130)	(0.012)	(0.016)
	Mean: 0.341		Mean: 0.470			
Dependent variable: Be literate	0.00568***	0.00378	0.00273**	0.00472***	0.003	-0.001
	(0.00166)	(0.00301)	(0.00107)	(0.00143)	(0.002)	(0.002)
	Mean: 0.976		Mean: 0.989			
Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Observations	28,607 | 33,246		28,114 | 31,045		121012	
Bandwidth	60	60	60	60	60	60
Order of polynomial function	1	2	1	2	1	2

(b) Replication Using IFLS 5

Data: IFLS 5	(1)	(2)	(3)	(4)	(5)	(6)
	Female		Male		Gender difference terms from interaction models	
Dependent variable: Complete primary education	0.0954**	0.113*	0.0524*	0.0784	0.043	0.034
	(0.0413)	(0.0642)	(0.0270)	(0.0557)	(0.062)	(0.115)
	Mean: 0.577		Mean: 0.663			
Dependent variable: Complete lower secondary education	0.0896**	0.160***	0.103***	0.118**	-0.013	0.042
	(0.0365)	(0.0483)	(0.0342)	(0.0592)	(0.042)	(0.094)
	Mean: 0.319		Mean: 0.458			
Dependent variable: Years of schooling	0.800**	1.221**	1.009***	1.252**	-0.210	-0.031
	(0.345)	(0.535)	(0.335)	(0.619)	(0.467)	(1.027)
	Mean: 6.547		Mean: 0.450			
Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Observations for attainment	1,056 | 1,195		942 | 1,238		4431	
Observations for years of schooling	1,054 | 1,184		922 | 1,215		4375	
Bandwidth	60	60	60	60	60	60
Order of polynomial function	1	2	1	2	1	2

Notes: This table reports estimates of the impact of FPE on educational outcomes, using secondary datasets. Standard errors are clustered at the language (1990 Census) or ethnicity (IFLS 5) level, due to the limited availability of birthplace identifiers at the district or regency level. Covariates include indicators for religion and additional characteristics that vary by dataset: birth province and language indicators (1990 Census) or ethnicity indicators (IFLS 5). Pre-FPE means of the dependent variables are reported. Years-of-schooling results are omitted for the 1990 Census because part of the RD sample (birth cohorts 1961–1970) may still have been enrolled in university and thus not have completed schooling. Literacy data are unavailable in IFLS 5. * Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level.

Table A7: Estimates Conditional on Primary School Enrollment

Data: 2010 Census	(1)	(2)	(3)	(4)	(5)	(6)
	Female		Male		Gender difference terms from interaction models	
Dependent variable: Complete primary education	0.0231***	0.0261***	0.0166***	0.0188***	0.006***	0.007***
	(0.00484)	(0.00500)	(0.00341)	(0.00349)	(0.001)	(0.002)
	Mean: 0.773		Mean: 0.853			
Dependent variable: Complete lower secondary education	0.0788***	0.0853***	0.0850***	0.0939***	-0.006**	-0.009**
	(0.0134)	(0.0134)	(0.0130)	(0.0131)	(0.003)	(0.004)
	Mean: 0.311		Mean: 0.449			
Dependent variable: Be literate	0.00675***	0.00805***	0.00227***	0.00260***	0.004***	0.005***
	(0.00119)	(0.00131)	(0.000551)	(0.000638)	(0.001)	(0.001)
	Mean: 0.889		Mean: 0.945			
Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Observations	628,685 | 755,828		664,368 | 799,560		2848441	
Bandwidth	60	60	60	60	60	60
Order of polynomial function	1	2	1	2	1	2

Notes: This table reports estimates of the impact of FPE on educational outcomes. The sample is restricted to individuals who enrolled in primary school. Standard errors are clustered at the birth district level. Covariates include religion, birth province, and ethnicity indicators. * Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level.

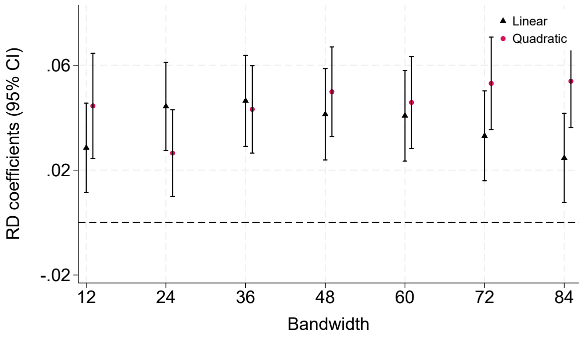
Table A8: RD Estimates Using MSE-Optimal Bandwidths

Data: 1995 Intercensus	Female		Male	
	(1)	(2)	(3)	(4)
	20557 | 23105	30826 | 36720	18601 | 19020	30109 | 33080
Dependent variable: Complete primary education	0.030	0.031	0.034	0.035
	[0.003, 0.059]	[-0.004, 0.057]	[0.012, 0.060]	[0.007, 0.060]
	<0.030>	<0.093>	<0.003>	<0.013>
	45.78	**60.16**	**41.94**	**61.01**
	18601 | 19500	22956 | 27242	16457 | 16390	22772 | 25791
Dependent variable: Complete lower secondary education	0.044	0.048	0.080	0.086
	[0.007, 0.075]	[0.015, 0.084]	[0.044, 0.118]	[0.044, 0.122]
	<0.018>	<0.005>	<0.000>	<0.000>
	50.44	**80.44**	**47.19**	**67.70**
	20046 | 21809	31192 | 37220	18602 | 19021	25499 | 28473
Dependent variable: Be literate	0.015	0.015	0.012	0.013
	[0.002, 0.031]	[-0.001, 0.031]	[0.003, 0.024]	[0.000, 0.025]
	<0.029>	<0.074>	<0.014>	<0.044>
	43.04	**63.98**	**40.85**	**58.09**
	17837 | 18551	24101 | 28703	16088 | 15897	21775 | 24680
Dependent variable: Years of schooling	0.398	0.447	0.584	0.678
	[0.100, 0.662]	[0.200, 0.774]	[0.293, 0.894]	[0.387, 0.986]
	<0.012>	<0.001>	<0.000>	<0.000>
	52.29	**79.28**	**47.59**	**78.55**
Covariates	Yes	Yes	Yes	Yes
Bandwidth	60	60	60	60
Order of polynomial function	1	2	1	2

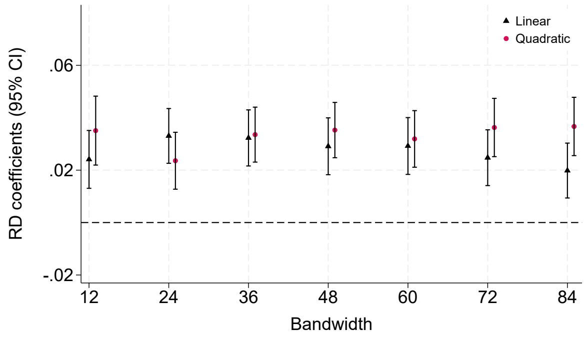
Notes: This table reports RD estimates of the impact of FPE on educational outcomes using MSE-optimal bandwidths, based on data from the 1995 Intercensus. Standard errors are clustered at the birth regency level. Covariates include religion indicators, birth regency indicators, and language indicators. Below each RD estimate, [robust inference 95% CI], <robust inference p-value>, **MSE-optimal bandwidth**, and the number of observations are reported. MSE-optimal bandwidths are covariate-adjusted following Calonico et al. (2019).

Figure A5: Sensitivity Analysis across Bandwidths

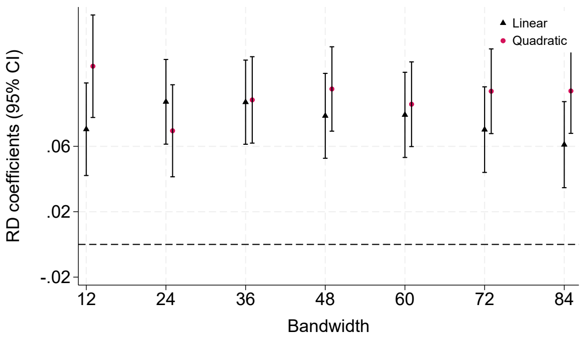
(a) Female Primary Completion Rate



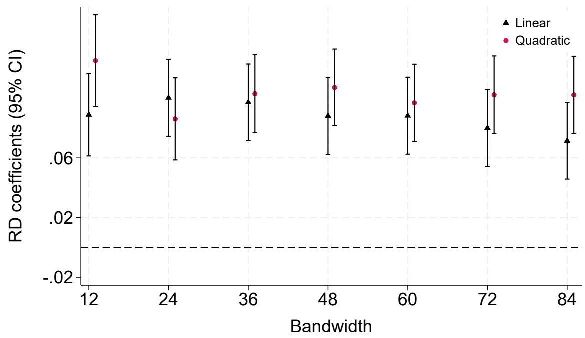
(b) Male Primary Completion Rate



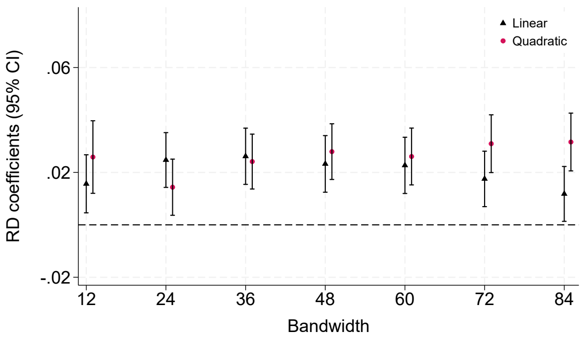
(c) Female Lower Secondary Completion Rate



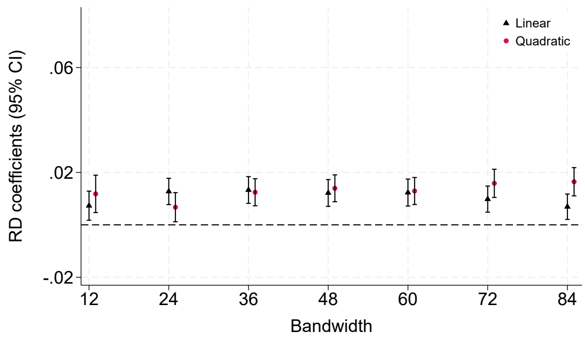
(d) Male Lower Secondary Completion Rate



(e) Female Literacy Rate



(f) Male Literacy Rate



Notes: This figure plots RD estimates across different bandwidths with 95% confidence intervals. Black and red markers indicate point estimates from linear and quadratic polynomial specifications, respectively.

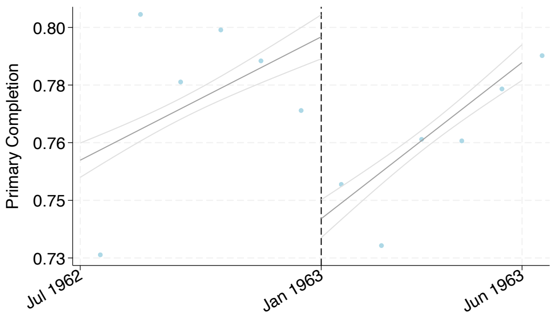
Table A9: Falsification Tests Using Placebo Cutoffs

Data: 1995 Intercensus	Female		Male	
Dependent variable: Complete primary education	(1)	(2)	(3)	(4)
False cutoff: January 1963	-0.0147	-0.0224	-0.00238	-0.0155
	(0.0132)	(0.0165)	(0.00971)	(0.0130)
	20,786 | 24,683		21,258 | 23,596	
False cutoff: January 1964	-0.0153	0.00227	-0.0116	0.00235
	(0.0123)	(0.0156)	(0.00969)	(0.0123)
	21,621 | 25,435		21,821 | 24,063	
False cutoff: January 1965	-0.0436***	-0.0599***	-0.0142	-0.00756
	(0.0119)	(0.0149)	(0.00943)	(0.0128)
	21,945 | 26,761		21,848 | 25,243	
True cutoff: January 1966	0.0308***	0.0304**	0.0330***	0.0351***
	(0.0115)	(0.0140)	(0.00909)	(0.0118)
	22,956 | 26,859		22,291 | 25,079	
False cutoff: January 1967	0.0148	-0.00712	0.00883	-0.0206*
	(0.0113)	(0.0144)	(0.00772)	(0.0106)
	23,970 | 27,851		22,956 | 25,713	
False cutoff: January 1968	0.00122	-0.00791	0.00972	0.0123
	(0.0108)	(0.0141)	(0.00726)	(0.00967)
	24,683 | 29,140		23,596 | 26,327	
False cutoff: January 1969	-0.00156	0.00788	-0.0113*	0.00337
	(0.00971)	(0.0121)	(0.00664)	(0.00896)
	25,435 | 29,535		24,063 | 26,461	
Covariates	Yes	Yes	Yes	Yes
Bandwidth	60	60	60	60
Order of polynomial function	1	2	1	2

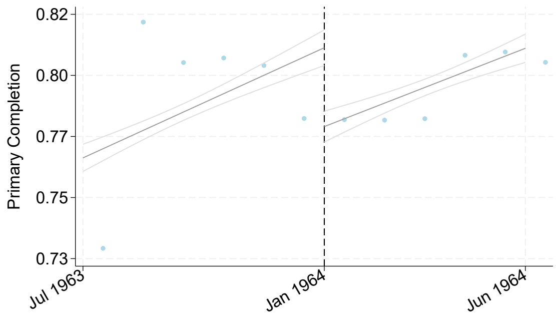
Notes: This table reports RD estimates of the impact of FPE on primary education completion at placebo cutoffs, based on data from the 1995 Intercensus. Standard errors are clustered at the birth regency level. Covariates include indicators for religion, birth regency, and language. The number observations is reported. * Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level.

Figure A6: Primary School Completion Rates by Control and Treatment Windows

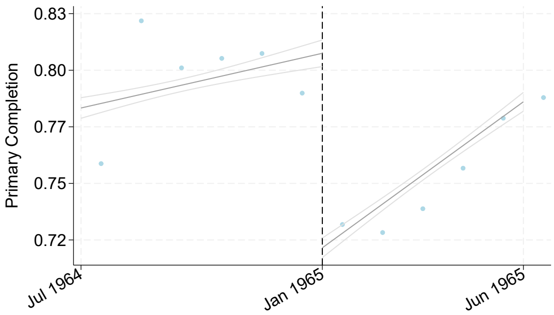
(a) 1962/63 Control Window (Female)



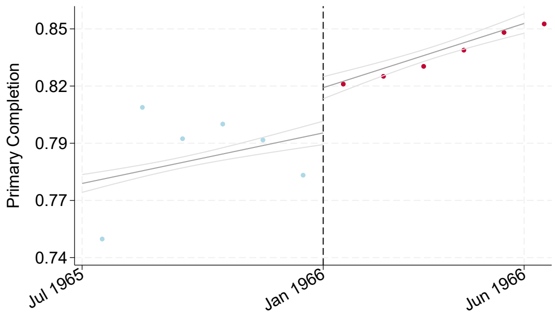
(b) 1963/64 Control Window (Female)



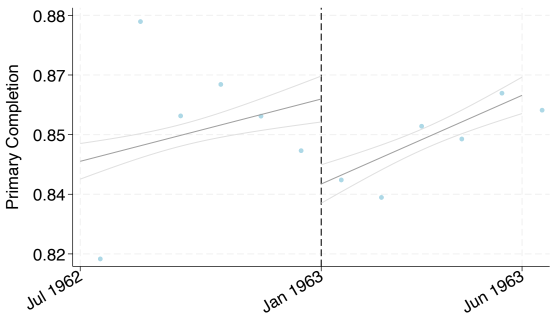
(c) 1964/65 Control Window (Female)



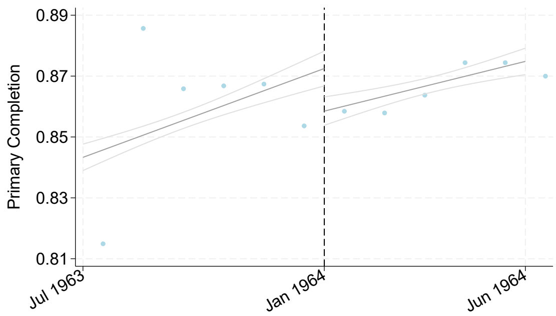
(d) 1965/66 Treatment Window (Female)



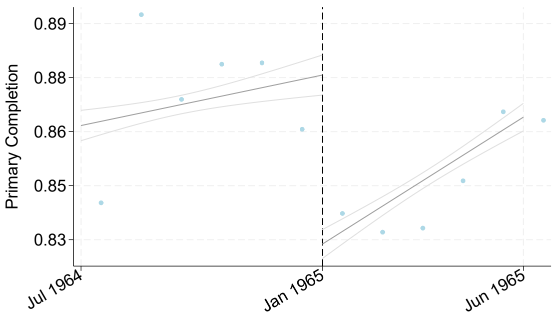
(e) 1962/63 Control Window (Male)



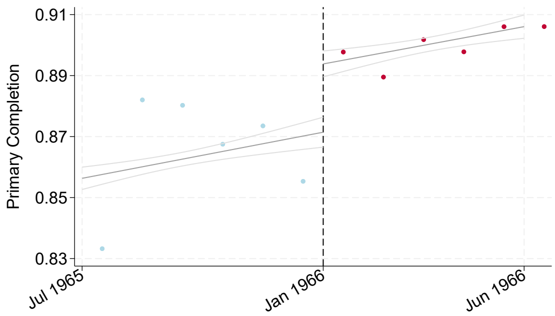
(f) 1963/64 Control Window (Male)



(g) 1964/65 Control Window (Male)



(h) 1965/66 Treatment Window (Male)



Notes: The figures plot primary education completion rates across birth months separately by gender and cohort window. Fitted lines are shown with 95% confidence intervals.

Appendix B: Supplementary Materials on Bride Price

I. Tables and Figures

Table B1: Classifications of Communities Practicing Bride Price

(a) Ethnicity-Based Definition

Ethnographic-Atlas-based definition (Murdock, 1967; Ashraf et al., 2020)	
No bride price	***Bride price***
Balinese	Alorese (1)
Cham	Ambonese (2)
Dani	Banggai (3)
Enggano	Batak (4)
Iban	Belu (5)
Javanese	Bungku (6)
Kenyah-Kayan-Kajang	Dawan (7)
Keraki	Gorontalo (8)
Kubu	Ili-Mandiri (9)
Marindani	Kei (10)
Mentaweia	Macassare (11)
Mimika	Malays (12)
Minangkab	Manobo (13)
Rejang	Minahasans (14)
Sasak	Muju (15)
Soromadja	Muna (16)
Sumbanese	Niasans (17)
Sumbawane	Pantar (18)
Sundanese	Rotinese (19)
Suvanese	Sugbuhano (20)
Waropen	Tobelores (21)
	Tomini (22)
	Toradja (23)
	Dusun (24)
	Tanimbarese (25)

Ethnicity-based definition in the 2010 census data (by the author)	
Bride price	
Batak Angkola (4)	Palu/Parigi/Sigi/Tamungkolowi/Tokaili/Toraja Barat (23)
Batak Karo (4)	Raranggonau/Sibalaya/Sidondo/Toraja (23)
Batak Mandailing (4)	Tomenui/Tomini (22)
Batak Pakpak Dairi (4)	Bugis (Bugis)
Batak Simalungun (4)	Luwu (Luwu)
Batak Tapanuli (4)	Makassar (11)
Batak Toba (4)	Mekongga/Tolaki/Wiwirano (Tolaki)
Nias (17)	Muna (16)
Alor/Belagar/Kelong/Manete/Mauta/Seboda/Wersin (1)	Tolaki mekongga (Tolaki)
Atanfui/Atani/Atoni/Atoni Meto/Dawan (7)	Gorontalo (8)
Belu (5)	Ambon (2)
Flores (9)	Kei (10)
Pantar (18)	Tanimbar (25)
Rote/Roti (19)	Tobelo (21)
Dayak Dosan/Dayak Dusun (24)	
Banjar Kuala/Batang Banyu/Pahuluan (Banjar)	
Bugis Pagatan (Bugis)	
Dusun Deyah (24)	
Mandar (Mandar)	
Banjar (Banjar)	
Minahasa (14)	
Bajao/Bajau/Bajo/Bayo/Wajo (Bajo)	
Banggai/Mian Banggai/Mian Sea-Sea (3)	
Bungku/Tobungku (6)	

Notes 1: These tables present alternative classifications of bride price communities. The left part of Table (a) corresponds to Table A1 in Ashraf et al. (2020), assigning bride price status to ethnic groups in the 1995 Intercensus using ethnographic data from the *Ethnographic Atlas* (Murdock, 1967). This version differs slightly from Table A1 in Ashraf et al. (2020) by including the Dusun and Tanimbarese ethnic groups, which are also associated with a bride price custom according to Murdock (1967, p.202).

Notes 2: The right part of Table (a) defines bride price status based on detailed ethnic classifications in the 2010 Census, mapped to the broader categories used in the top-left table. Numbers in parentheses indicate the corresponding category from the *Ethnographic Atlas* classification. Several groups, such as Malays (12), Manobo (13), Sugbuhano (20), and Muju (15), have no matches because they represent communities based outside Indonesia, including in the Southern Philippines and West New Guinea. These groups lack Indonesia-specific indices (e.g., 'Ib' or 'Ic') in Murdock (1967), and no equivalent ethnic categories appear in the 2010 Census. In addition to the categories aligned with the *Ethnographic Atlas*, I include Bugis, Banjar, Mandar, Luwu, Bajo, and Tolaki as bride price groups, based on ethnographic evidence of their practices (Rostiawati and Khadijah, 2013; Miqat and Bakhtiar, 2017; Hafidzi et al., 2021). Parentheses after ethnicity names include these additional groups to indicate how the 2010 Census categories are matched.

Table B1: Classifications of Communities Practicing Bride Price (Continued)

(b) Language-Based Definition from Ashraf et al. (2020)

Language-based definition in the 1995 intercensus data (Ashraf et al., 2020)				
Bride price				
Aceh Kluet	Blitung	Toli-toli/Dondo	Bunak	Galela
Aceh Simeuleu Tengah	Mentok	Buol	Makasai	Lembah Delapan
Aceh Simeuleu Barat	Talang Mamak	Gorontalo	Pataluku/Maku'a	Musi
Gayo	Betawi/Melayu Jakarta	Minahasa	Melayu Kupang	Helong
Alas	Banjar	Bola'ang-Mongondow	Tobelo/Galela	Kemak
Batak Karo	Mbalok	Sangir/Talaud	Ternate	Kaur
Batak Dairi	Daya Taman	Pitu Uluna Salo	Tidore	Lintang
Batak Pak-pak	Toraja	Melayu Manado	Buli/Maba/Patani	Palembang
Batak Toba	Bugis	Lombleu	Makian	Rembah
Batak Simalungun	Makassar	Pantar	Melayu Ambon	Rengot
Batak Angkola	Mandar	Alor	Buru	Semendo
Batak Mandailing	Mamuju	Sikka	Manusela/Wemale	Serawai
Batak Pesisir	Seko/Sagdan	Lamaholot	Geser/Gorom	Letri Lagona
Batak Samosir	Muna/Buton	Kedang	OK	Wetan/Babar
Kerinci	Bungku/Laki	Woisika	Aru	Nabi
Melayu Riau	Mekongka	Rote	Kei	Loncong
Melayu Tengah	Pamona	Kisar/Oirata	Literi Lagona	Kao
Melayu	Kaili	Damar	Ambelan	Pekal
Nias	Banggai	Timor	Leti	Sakai
Simeuleu	Kasimbar/Dampelasa	Timor Barat	Goram	Wersin
Banyu Asin	Petapa	Timor Timur	Dawan	

Notes: Table (b) defines bride price status using mother tongue in the 1995 Intercensus, consistent with the methodology in Ashraf et al. (2020). For the 2010 Census, bride price status is similarly defined based on the language spoken at home. The full list of bride price-associated languages in the 2010 Census is omitted due to its size (approximately 400 languages). The primary analysis in this paper adopts the ethnicity-based definition from the right part of Table (a), which more closely reflects the *Ethnographic Atlas* classification, where individuals are grouped by ethnicity rather than language. The language-based definition is used in robustness checks.

Table B2: Correlations Between Bride Price and Key Variables

(**a**) Positive and Increasing Bride Price Returns to Education

Data: IFLS 5	(1)	(2)	(3)	(4)
Dependent variable:	log (bride price amount)			
Primary education completed	0.0747	0.0746	-0.0321	-0.2208
	(0.1135)	(0.1133)	(0.1128)	(0.1397)
Lower-secondary school completed	0.3084***	0.3100***	0.2119**	0.2755**
	(0.0912)	(0.0914)	(0.0916)	(0.1076)
Upper-secondary school completed	0.6403***	0.6372***	0.4292***	0.3247***
	(0.0760)	(0.0761)	(0.0799)	(0.0903)
University completed	0.8604***	0.8595***	0.4945***	0.3455***
	(0.0929)	(0.0929)	(0.1008)	(0.1091)
Observations	3,817	3,817	3,817	2,544
R-squared	0.3479	0.3483	0.3667	0.3162
Ethnicity and age covariates	Yes	Yes	Yes	Yes
Wife's marriage age covariates	No	Yes	Yes	Yes
Husband's education covariates	No	No	Yes	Yes
Wife's premarital wealth, Muslim indicator, polygyny indicator	No	No	No	Yes

Notes: This table examines the relationship between educational attainment and bride price. Robust standard errors are reported. Standard errors and covariates follow the specification in Table 4 of Ashraf et al. (2020). Age controls include age and age squared. Husband's education is captured by indicators for completion of primary, lower-secondary, upper-secondary, and university education. Bride price and pre-marital wealth are measured in log(Indonesian Rupiah). 2SLS estimation is infeasible for IFLS 5 due to limited sample size. * Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level.

(**b**) Bride Price Practices Uniquely Increase Education Levels for Women

Data: 2010 Census	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable: Completion of …	Primary education		Lower-secondary education		Upper-secondary education		University education	
Panel A: INPRES sample with ethnicity-based bride price definition								
Bride price indicator x Female indicator	0.0125*	0.0128**	0.0334***	0.0369***	0.0388***	0.0427***	0.00599***	0.00655***
	(0.00687)	(0.00647)	(0.00916)	(0.00888)	(0.0101)	(0.00992)	(0.00179)	(0.00183)
Bride price indicator	-0.0326*	0.00110	0.00269	0.00919	0.0443	0.0258*	0.0117*	0.00259
	(0.0172)	(0.00584)	(0.0457)	(0.0146)	(0.0421)	(0.0140)	(0.00617)	(0.00822)
Female indicator	-0.00762**	-0.00652**	-0.0396***	-0.0385***	-0.0391***	-0.0383***	0.00133	0.00140
	(0.00376)	(0.00306)	(0.00562)	(0.00512)	(0.00475)	(0.00475)	(0.00137)	(0.00137)
Observations	7,154,432	7,154,432	7,154,432	7,154,432	7,154,432	7,154,432	7,154,432	7,154,432
R-squared	0.004	0.106	0.019	0.145	0.012	0.153	0.007	0.046
Panel B: FPE sample with ethnicity-based bride price definition								
Bride price indicator x Female indicator	0.0216*	0.0259**	0.0360***	0.0439***	0.0234**	0.0305***	-0.00592*	-0.00437
	(0.0126)	(0.0120)	(0.0126)	(0.0123)	(0.00920)	(0.00899)	(0.00349)	(0.00347)
Bride price indicator	-0.0221	-0.00145	0.0938**	0.0326**	0.0924**	0.0440***	0.0329***	0.0221***
	(0.0267)	(0.00749)	(0.0472)	(0.0157)	(0.0400)	(0.0170)	(0.00898)	(0.00753)
Female indicator	-0.0706***	-0.0714***	-0.138***	-0.140***	-0.108***	-0.110***	-0.0231***	-0.0236***
	(0.00741)	(0.00681)	(0.00609)	(0.00606)	(0.00553)	(0.00548)	(0.00160)	(0.00153)
Observations	3,077,134	3,077,134	3,077,134	3,077,134	3,077,134	3,077,134	3,077,134	3,077,134
R-squared	0.017	0.127	0.037	0.176	0.025	0.157	0.004	0.038
Age controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Covariates	No	Yes	No	Yes	No	Yes	No	Yes

Notes: This table examines the relationship between bride price practices and educational attainment separately by gender. Standard errors are clustered at the ethnicity level. This panel compares results across alternative bride price definitions and two samples: the INPRES sample (birth cohorts 1968–1985) from Ashraf et al. (2020) and the FPE sample (birth cohorts 1961–1970) used in this study. Covariates follow the specifications in Tables 5 and 8 of Ashraf et al. (2020). Age controls include age and age squared. Covariates include indicators for Muslim status, matrilineality, female agricultural engagement, and polygyny. * Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level.

Table B2: Correlations Between Bride Price and Key Variables (Continued)

(**c**) Bride Price, Other Cultural Practices and Religion

Data: 2010 Census	(1)	(2)	(3)	(4)
Dependent variable:	Bride price indicator (ethnicity-based)			
Matrilineal indicator	-0.0973			-0.0967
	(0.0720)			(0.0720)
Female agriculture engagement indicator		0.167		0.164
		(0.177)		(0.178)
Polygyny indicator			0.0617	0.0639
			(0.0716)	(0.0738)
Observations	3,077,134			
R-squared	0.003	0.001	0.061	0.138
Covariates	No	No	No	No

Notes: This table examines the relationship between bride price and other cultural practices. Standard errors are clustered at the ethnicity level. The dependent variables and specification follow Table 2 of Ashraf et al. (2020), while the individual-level sample is used here. * Significant at the 10% level. ** Significant at the 5% level. *** Significant at the 1% level.

(**d**) Bride Price, Rurality, and Economic Disadvantage

Data: 2010 Census	(1)	(2)	(3)	(4)
Dependent variable:	Bride price indicator (ethnicity-based)			
Rural birth place indicator	0.108**		0.0878*	0.0400
	(0.0490)		(0.0506)	(0.0740)
Economic disadvantage indicator		0.105***	0.0488**	0.000369
		(0.0284)	(0.0193)	(0.00219)
Observations	3,077,134			
R-squared	0.028	0.017	0.030	0.748
Covariates	No	No	No	Yes

Notes: This table examines the relationship between bride price practice, rural/urban residence, and household economic status. Standard errors are clustered at the ethnicity level. The economic disadvantage indicator equals one if the individual was born into a landless household in a rural area. Covariates include birth district and religion indicators. Ethnicity indicators are excluded due to multicollinearity, as they are used to construct the bride price classification. * Significant at the 10% level. ** Significant at the 5% level. *** Significant at the 1% level.

Table B2: Correlations Between Bride Price and Key Variables (continued)

(**e**) Bride Price and Household Demographics

Data: 2010 Census (mother sample)	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	Number of child		Male ratio among born children		Male ratio among surviving children	
Bride price indicator (ethnicity-based)	0.383***	0.0971***	0.00164	0.00351**	0.000986	0.00350**
	(0.0610)	(0.0274)	(0.00101)	(0.00167)	(0.00109)	(0.00172)
Observations	1,531,770		1,430,234		1,426,815	
R-squared	0.013	0.094	0.000	0.001	0.000	0.001
Mean	2.785		0.520		0.518	
Covariates	No	Yes	No	Yes	No	Yes
Cultural practice controls	No	Yes	No	Yes	No	Yes

Notes: This table examines the relationship between bride price practices and household size and composition. Standard errors are clustered at the birth district level. Covariates include birth district and religion indicators. Following Ashraf et al. (2020), columns (2), (4), and (6) additionally control for other cultural practices, namely matrilinearity, female participation in agriculture, and polygyny. Ethnicity indicators are omitted due to multicollinearity, as they are used to define the bride price classification. * Significant at the 10% level. ** Significant at the 5% level. *** Significant at the 1% level.

(**f**) Bride Price and Labor Force Participation

Data: 2010 Census	(1)	(2)	(3)
Dependent variable:	No Labor Force Participation		
Bride price indicator (ethnicity-based) x Female indicator	-0.0145	-0.0143	-0.0143
	(0.0165)	(0.0166)	(0.0166)
Bride price indicator (ethnicity-based)	0.00246**	-0.00935	-0.00982
	(0.00104)	(0.00875)	(0.00878)
Female indicator	0.333***	0.334***	0.334***
	(0.0106)	(0.0107)	(0.0107)
Observations	3,077,134		
R-squared	0.182	0.216	0.217
Female mean	0.351		
Male mean	0.0201		
Age controls	Yes	Yes	Yes
Covariates	No	Yes	Yes
Cultural practice controls	No	No	Yes

Notes: This table examines the relationship between bride price practices and labor force participation by gender. Standard errors are clustered at the birth district level. Covariates include birth district and religion indicators. Following Ashraf et al. (2020), column (3) additionally controls for other cultural practices, namely matrilinearity, female participation in agriculture, and polygyny. Ethnicity indicators are omitted due to multicollinearity, as they are used to define the bride price classification. * Significant at the 10% level. ** Significant at the 5% level. *** Significant at the 1% level.

II. Comparison with Ashraf et al. (2020) on Data and Bride Price Definition

Following Ashraf et al. (2020), I link cultural practice data from the *Ethnographic Atlas* (Murdock, 1967) to ethnic groups. However, this paper differs from Ashraf et al. (2020) in both data source and classification strategy. I define bride price communities using ethnicity, directly matching Atlas groups (Table B1) to roughly 960 ethnic categories in the 2010 Census. In contrast, Ashraf et al. (2020) rely on a language-based proxy, mapping Atlas classifications to 130 mother tongue variables in the 1995 Intercensus, which lacks ethnicity identifiers.

Regarding data, the 2010 Census is preferred for this study, as it records ethnicity and offers broader geographic coverage. In contrast, the 1995 Intercensus (IPUMS subsample) is geographically limited and potentially subject to sampling bias (Figure A1). Table B3 (a) documents stark differences in the geographic distribution of bride price groups across datasets. For example, under the language-based definition, East Nusa Tenggara and East Timor are overrepresented in the 1995 Intercensus relative to the more nationally representative 2010 Census.

Regarding definitions, Table B3 (a)-(b) compare the geographic and ethnic distribution of bride price communities across the two definitions and suggest potential misclassification under the language-based measure. In the 2010 Census, the ethnicity-based definition includes more individuals from Northern Sumatra, whereas the language-based one concentrates in Jakarta. Ethnic composition also differs: Javanese — classified as a non–bride price group in the *Ethnographic Atlas* — are disproportionately included under the language-based definition, likely due to mismatches between language and ethnic identifiers.

Reflecting these differences, the ethnicity-based definition used in this paper is more conservative, classifying about 12% of the sample as bride price communities, compared to 35% under the language-based approach (Table A4 (a)). The large share under the language-based measure likely stems from the additional step of matching linguistic and ethnic groups in Ashraf et al. (2020), which may have inadvertently included ethnic groups without a traditional bride price practice.

To mitigate misclassification, this paper adopts the more direct ethnicity-based definition as the preferred approach. Crucially, the finding that FPE effectiveness does not vary with the bride price custom is not driven by differences in data or classification. As presented in Table B4, even when replicating the Ashraf et al. (2020) setting using the language-based definition and the 1995 Intercensus, there is no evidence of differential impacts by bride price status.

Table B3: Comparing data and definitions, and robustness of FPE results

(**a**) Geographic Distribution of Bride Price Groups Across Datasets and Definitions

	Number of observations (% in each category)					
	Data: 2010 Census				Data: 1995 Intercensus	
	Bride price (ethnicity-based definition)		Bride price (language-based definition)		Bride price (language-based definition)	
	Bride price	No bride price	Bride price	No bride price	Bride price	No bride price
Special Region of Aceh	1,666 (0.5%)	49,020 (1.8%)	16,024 (1.4%)	34,662 (1.8%)	477 (3.3%)	2,459 (3.0%)
North Sumatra	102,021 (27.7%)	85,193 (3.1%)	166,559 (14.8%)	20,655 (1.1%)	3,508 (24.6%)	5,235 (6.3%)
West Sumatra	2,720 (0.7%)	70,772 (2.6%)	19,122 (1.7%)	54,370 (2.8%)	127 (0.9%)	4,557 (5.5%)
Riau and Kepulauan Riau	4,916 (1.3%)	37,613 (1.4%)	37,894 (3.4%)	4,635 (0.2%)	1,256 (8.8%)	1,105 (1.3%)
Jambi	2,170 (0.6%)	22,891 (0.8%)	22,246 (2.0%)	2,815 (0.1%)	1,076 (7.5%)	639 (0.8%)
South Sumatra and Bangka Belitung	753 (0.2%)	94,413 (3.5%)	81,234 (7.2%)	13,932 (0.7%)	1,880 (13.2%)	2,255 (2.7%)
Bengkulu	55 (0.0%)	14,964 (0.6%)	9,962 (0.9%)	5,057 (0.3%)	381 (2.7%)	515 (0.6%)
Lampung	242 (0.1%)	72,633 (2.7%)	20,361 (1.8%)	52,514 (2.7%)	76 (0.5%)	1,870 (2.3%)
Special Capital Region of Jakarta	3,119 (0.8%)	95,278 (3.5%)	92,792 (8.3%)	5,605 (0.3%)	266 (1.9%)	9,100 (11.0%)
West Java and Banten	1,068 (0.3%)	587,392 (21.7%)	106,737 (9.5%)	481,723 (24.7%)	88 (0.6%)	13,542 (16.3%)
Central Java	309 (0.1%)	574,179 (21.2%)	77,009 (6.8%)	497,479 (25.5%)	32 (0.2%)	18,990 (22.9%)
Special Region of Jogyakarta	76 (0.0%)	63,090 (2.3%)	10,999 (1.0%)	52,167 (2.7%)	4 (0.0%)	2,203 (2.7%)
East Java	1,800 (0.5%)	621,200 (22.9%)	52,551 (4.7%)	570,449 (29.2%)	28 (0.2%)	14,570 (17.6%)
Bali	215 (0.1%)	55,043 (2.0%)	4,202 (0.4%)	51,056 (2.6%)	9 (0.1%)	1,659 (2.0%)
West Nusa Tenggara	611 (0.2%)	53,042 (2.0%)	12,961 (1.2%)	40,692 (2.1%)	7 (0.0%)	1,268 (1.5%)
East Nusa Tenggara	19,737 (5.4%)	32,844 (1.2%)	47,238 (4.2%)	5,343 (0.3%)	1,936 (13.6%)	2,282 (2.8%)
West Kalimantan	2,049 (0.6%)	47,725 (1.8%)	31,838 (2.8%)	17,936 (0.9%)	15 (0.1%)	130 (0.2%)
Central Kalimantan	4,270 (1.2%)	13,533 (0.5%)	7,600 (0.7%)	10,203 (0.5%)	3 (0.0%)	13 (0.0%)
South Kalimantan	40,680 (11.0%)	3,523 (0.1%)	42,382 (3.8%)	1,821 (0.1%)	9 (0.1%)	52 (0.1%)
East Kalimantan	6,435 (1.7%)	12,623 (0.5%)	15,072 (1.3%)	3,986 (0.2%)	5 (0.0%)	34 (0.0%)
North Sulawesi and Gorontalo	29,241 (7.9%)	17,189 (0.6%)	45,719 (4.1%)	711 (0.0%)	39 (0.3%)	80 (0.1%)
Central Sulawesi	7,258 (2.0%)	16,250 (0.6%)	22,106 (2.0%)	1,402 (0.1%)	3 (0.0%)	8 (0.0%)
South Sulawesi and West Sulawesi	117,840 (31.9%)	12,143 (0.4%)	128,438 (11.4%)	1,545 (0.1%)	173 (1.2%)	144 (0.2%)
Southeast Sulawesi	10,168 (2.8%)	7,451 (0.3%)	17,512 (1.6%)	107 (0.0%)	19 (0.1%)	10 (0.0%)
Maluku and North Maluku	8,888 (2.4%)	18,352 (0.7%)	26,112 (2.3%)	1,128 (0.1%)	24 (0.2%)	37 (0.0%)
Papua and West Papua	572 (0.2%)	29,899 (1.1%)	10,053 (0.9%)	20,418 (1.0%)	0 (0.0%)	23 (0.0%)
East Timor	-	-	-	-	2,816 (19.8%)	148 (0.2%)
Total	368,879	2,708,255	1,124,723	1,952,411	14,257	82,928

(**b**) Ethnic Composition of Bride Price Groups Across Definitions

Ten largest ethnic groups traditionally practicing bride price (Data: 2010 Census)			
Bride price (ethnicity-based definition)		Bride price (language-based definition)	
Ethnicity	Number of observations (% in bride price group)	Ethnicity	Number of observations (% in bride price group)
Bugis	77,763 (21.1%)	Jawa	225,374 (20.0%)
Banjar	52,642 (14.3%)	Betawi	85,167 (7.6%)
Batak Toba	42,929 (11.6%)	Bugis	77,406 (6.9%)
Makassar	32,324 (8.8%)	Sunda	66,169 (5.9%)
Batak Mandailing	19,799 (5.4%)	Banjar	52,221 (4.6%)
Batak Karo	16,181 (4.4%)	Batak Toba	42,709 (3.8%)
Gorontalo	15,716 (4.3%)	Melayu	35,757 (3.2%)
Minahasa	15,220 (4.1%)	Chinese	32,270 (2.9%)
Raranggonau/Sibalaya/Sidondo/Toraja	10,802 (2.9%)	Makassar	32,266 (2.9%)
Atanfui/Atani/Atoni/Atoni Meto/Dawan	10,442 (2.8%)	Minangkabau	22,492 (2.0%)

Notes 1: Panel (a) shows the distribution of the bride price sample across birth provinces. Bride price status based on language follows the classification in Ashraf et al. (2020).

Notes 2: Panel (b) shows the ethnic composition of the bride price sample, focusing on the ten largest ethnic groups identified with a bride price tradition. The language-based definition is again based on Ashraf et al. (2020).

Table B4: Robustness Across Bride Price Definitions and Data Sources

(**a**) Estimates Using Ashraf et al. (2020)'s Definition and Sample

Data: 1995 Intercensus	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Female				Male			
	Bride price		No bride price		Bride price		No bride price	
Dependent variable: Complete primary education	0.0244	0.0189	0.0318**	0.0325**	-0.000988	-0.00104	0.0388***	0.0415***
	(0.0220)	(0.0299)	(0.0125)	(0.0154)	(0.0199)	(0.0280)	(0.00994)	(0.0129)
	Mean: 0.614		Mean: 0.739		Mean: 0.737		Mean: 0.832	
Dependent variable: Complete lower secondary education	0.0208	0.0104	0.0520***	0.0472**	0.0442	0.0519	0.0868***	0.0863***
	(0.0247)	(0.0313)	(0.0158)	(0.0190)	(0.0269)	(0.0373)	(0.0162)	(0.0202)
	Mean: 0.304		Mean: 0.388		Mean: 0.461		Mean: 0.527	
Dependent variable: Be literate	0.00690	-0.00475	0.0155***	0.0189**	0.0210	0.0195	0.0109***	0.0123**
	(0.0177)	(0.0219)	(0.00579)	(0.00782)	(0.0152)	(0.0216)	(0.00330)	(0.00492)
	Mean: 0.820		Mean: 0.933		Mean: 0.887		Mean: 0.972	
Dependent variable: Years of schooling	0.225	0.0912	0.452***	0.435***	0.334	0.445	0.647***	0.606***
	(0.210)	(0.269)	(0.135)	(0.158)	(0.226)	(0.318)	(0.133)	(0.160)
	Mean: 6.282		Mean: 7.479		Mean: 7.795		Mean: 8.755	
Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls for other cultural practices	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations for attainment and literacy	3,424 | 3,977		19,532 | 22,882		3,252 | 3,604		19,039 | 21,475	
Observations for years of schooling	3,424 | 3,976		19,532 | 22,881		3,251 | 3,604		19,038 | 21,473	
Bandwidth	60	60	60	60	60	60	60	60
Order of polynomial function	1	2	1	2	1	2	1	2

(**b**) Analogous Estimation Results with Interaction Terms

Data: 1995 Intercensus	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable:	Complete primary education		Complete lower secondary education		Be literate		Years of schooling	
RD cutoff	0.0388***	0.0415***	0.0868***	0.0863***	0.0109***	0.0123***	0.6468***	0.6062***
	(0.0084)	(0.0116)	(0.0117)	(0.0174)	(0.0030)	(0.0047)	(0.0917)	(0.1363)
RD cutoff x Bride price (language definition)	-0.0397*	-0.0425	-0.0426	-0.0344	0.0101	0.0072	-0.3128	-0.1610
	(0.0210)	(0.0298)	(0.0261)	(0.0410)	(0.0130)	(0.0197)	(0.2075)	(0.3132)
RD cutoff x Female	-0.0070	-0.0090	-0.0348**	-0.0390*	0.0046	0.0065	-0.1943	-0.1712
	(0.0123)	(0.0164)	(0.0157)	(0.0232)	(0.0052)	(0.0077)	(0.1179)	(0.1726)
RD cutoff x Bride price (language definition) x Female	0.0324	0.0289	0.0114	-0.0024	-0.0187	-0.0308	0.0849	-0.1828
	(0.0329)	(0.0438)	(0.0367)	(0.0558)	(0.0179)	(0.0247)	(0.2587)	(0.4000)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls for cultural practices and their female interactions	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bandwidth	60	60	60	60	60	60	60	60
Order of polynomial function	1	2	1	2	1	2	1	2

Notes: This table reports estimates using the language-based definition of bride price and the 1995 Intercensus, to ensure consistency with Ashraf et al. (2020). Standard errors are clustered at the birth regency level. Covariates include religion, birth regency, and ethnicity indicators. I additionally control for other cultural practices, namely matrilinearity, female participation in agriculture, and polygyny. * Significant at the 10% level. ** Significant at the 5% level. *** Significant at the 1% level.

III. Derivation of Theoretical Framework

1. Baseline Model

I build on the two-period model of parental schooling choice in developing countries proposed by Glewwe (2002), in which education occurs in the first period, and the child enters the labor market in the second period. I extend this model for allowing parents to consider two different types of education costs associated with each policy: direct costs or tuition (p), which FPE reduces, and opportunity costs associated with commuting to distant schools (τ), which INPRES mitigates. The baseline model without bride price is as follows:

$$\max U = C_1 + \delta C_2 + \sigma A$$
$$\text{s.t. } \begin{cases} C_1 = Y_1 - pS + (1 - S - \tau \mathbb{1}[S > 0])Y_H \\ C_2 = Y_2 + kY_c \\ 0 \leq S \leq 1 - \tau \end{cases}$$

Let $Y_t > 0$ represent exogenous parental income in period $t \in \{1, 2\}$, and $C_t \geq 0$ denote consumption in period t. The child's schooling is given by $S \in [0, 1]$, which represents the fraction of time spent in school during period 1. The price of schooling, or tuition, is $p \geq 0$, while $\tau \in (0, 1]$ denotes school commuting time, representing access to the nearest primary school. The child's contribution to housework is $Y_H > 0$, and future labor market earnings in period 2 are given by $Y_c = \pi A \geq 0$, where $\pi > 0$ is the parameter for labor market returns to education. The child's cognitive skills are represented as $A = \alpha f(S) \geq 0$, where $f(S)$ increases with S but exhibits diminishing returns ($f'(S) > 0$ and $f''(S) < 0$ for $S \in [0, 1 - \tau]$). The parameter $\alpha > 0$ denotes the child's learning efficiency. The fraction of the child's income remitted to the parents is given by $k \in (0, 1]$, while $\delta \in (0, 1]$ represents the discount factor for period 2 consumption. Finally, $\sigma > 0$ governs parental tastes for education.

Parents allocate their income over two periods, balancing consumption and investment in their child's education. In period 1, they face a trade-off between personal consumption and educational expenditures. Schooling entails direct costs ($-pS < 0$ for $S > 0$) and opportunity costs, partly driven by commuting time, which reduces the child's contribution to housework ($-(S + \tau)Y_H < 0$ for $S > 0$), potentially lowering parental consumption. However, education generates benefits: it increases parental utility directly ($\sigma A = \sigma \alpha f(S)$, increasing in S) and indirectly through raising the child's future income contribution ($kY_c = k\pi\alpha f(S)$, also increasing in S) in period 2. The decision on schooling is subject to a supply-side constraint, as commuting time τ and schooling time S must not exceed the total time endowment, which is normalized to one ($S \leq 1 - \tau$).

In the absence of savings, utility-maximizing parents exhaust their period-1 budget, allowing C_1 to be expressed as a function of S. In period 2, the entire budget is devoted to consumption, as the child has completed his/her education. Thus, unless the schooling price p or the child's housework contribution Y_H is extremely high,[41] the problem reduces to maximizing parental utility with respect to the child's years of schooling S in period 1:

$$\max_{0<S\leq 1-\tau} U = Y_1 + \delta Y_2 - pS + Y_H(1 - S - \tau) + \alpha f(S)(\delta k\pi + \sigma)$$

I solve the model following the approach of Glewwe (1999). Acknowledging that $f'(S) > 0$ and $f''(S) < 0$ for $S \in [0, 1 - \tau]$, the optimal years of schooling S^* must satisfy the following first- and second-order conditions:

$$\frac{\partial U}{\partial S} = -p - Y_H + \alpha f'(S)(\delta k\pi + \sigma) = 0 \tag{FOC}$$

$$\frac{\partial^2 U}{\partial S^2} = \alpha f''(S)(\delta k\pi + \sigma) < 0 \tag{SOC}$$

By totally differentiating the first-order condition, I obtain:

$$\begin{aligned}
&[\alpha f''(S)(\delta k\pi + \sigma)]dS \\
&= dp + dY_H \\
&- d\delta(k\pi\alpha f'(S)) - dk(\delta\pi\alpha f'(S)) - d\pi(\delta k\alpha f'(S)) \\
&- d\sigma(\alpha f'(S)) - d\alpha((\delta k\pi + \sigma)f'(S))
\end{aligned}$$

which determines the sign of the impact of a change in tuition p on the optimal schooling choice:

$$\frac{dS^*}{dp} = \frac{1}{\alpha f''(S^*)(\delta k\pi + \sigma)} < 0$$

Similarly, other comparative statics are obtained as follows:

$$\frac{dS^*}{dY_H} < 0;$$

$$\frac{dS^*}{d\tau} = 0;$$

$$\frac{dS^*}{d\delta}, \frac{dS^*}{dk}, \frac{dS^*}{d\pi}, \frac{dS^*}{d\sigma}, \frac{dS^*}{d\alpha} > 0$$

[41] A high schooling price (p) or a large child's housework contribution (Y_H) can make zero educational investment ($S = 0$) optimal. To ensure that parents do not optimally choose zero schooling, I assume that neither the schooling price p nor the child's housework contribution Y_H is excessively high. This assumption guarantees that the following condition holds:

$$\left.\frac{\partial U}{\partial S}\right|_{S=0} = -p - Y_H + \alpha f'(0)(\delta k\pi + \sigma) > 0$$

Specifically, the exercise yields three key results: (1) the optimal schooling S^* decreases with the price of schooling p; (2) S^* is unaffected by school commuting time τ; and (3) S^* increases with the parental discount factor for future consumption δ, the child's income contribution share k, the labor market returns to education π, parental tastes for education σ, and the child's learning efficiency α.

The comparative statics from the baseline model also yield the same predictions:

Prediction 1: Cost reduction improves education unless the supply-side constraint is binding.

Prediction 2: Supply-side interventions improve education only when demand is sufficiently high for the supply-side constraint to bind.

2. Model with Bride Price Customs

Here, I outline the derivation of the cross-partial, which informs how FPE effects are mediated by bride price. First, define

$$D \;\equiv\; \alpha f''(S)\,(\delta k\pi + \sigma) \;+\; \delta k\, C^{BP}\, \bar{f}''(S),$$

so that the comparative statics with respect to p and C^{BP} can be written as

$$S_p \equiv \frac{\partial S}{\partial p} = \frac{1}{D} \;<\; 0, \qquad S_C \equiv \frac{\partial S}{\partial C^{BP}} = \frac{-\delta k\, \bar{f}'(S)}{D} \;>\; 0.$$

Next, using $S_p = 1/D$ and acknowledging $S = S(C^{BP})$,

$$\frac{\partial}{\partial C^{BP}}(S_p) = -\frac{D_C}{D^2}, \quad \text{where} \quad D_C \equiv \frac{\partial D}{\partial C^{BP}} \;=\; \delta k\, \bar{f}''(S) \;+\; \big(\alpha(\delta k\pi + \sigma) f'''(S) + \delta k\, C^{BP}\, \bar{f}'''(S)\big)\, S_C.$$

Finally, substituting $S_C = -\delta k\, \bar{f}'(S)/D$ at $S = S^*$ yields

$$\frac{\partial^2 S^*}{\partial p\, \partial C^{BP}} = -\frac{\delta k\, \bar{f}''(S^*)}{D^{*2}} + \frac{\big(\alpha(\delta k\pi + \sigma) f'''(S^*) + \delta k\, C^{BP}\, \bar{f}'''(S^*)\big)\, \delta k\, \bar{f}'(S^*)}{D^{*3}}$$

with $D^* = \alpha f''(S^*)(\delta k\pi + \sigma) + \delta k\, C^{BP}\, \bar{f}''(S^*)$.

Appendix C: Cost-Benefit Analysis

Table C1: Cost-Benefit Analysis

(a) Cost-benefit Analysis on the FPE Program

Costs	Total SBPP (in million Rp)	The number of primary school students	Average SBPP (in Rp)
1977	7000	17,265,291	405.438
1978	12650	19,074,819	663.178
1979	23400	21,165,724	1105.561
1980	35870	22,551,870	1590.555
1981	46600	23,862,488	1952.856
1982	55,687.5	24,743,598	2250.582

Average SBPP (in Rp, 1977-82)	1328.028
Six-year average SBPP (in Rp)	**7968.170**

Benefits	Female with linear specification	Female with quadratic specification	Male with linear specification	Male with quadratic specification
LFPR	50.374	50.374	97.553	97.553
Mthly Wages	186349.0	186349.0	219393.8	219393.8
RtE	10.69	14.43	4.96	10.97
YoS	0.423	0.390	0.600	0.586
Tax rates	0.1	0.1	0.1	0.1
Experience	40	40	40	40

Average tax revenue gains (in Rp)	**203749.324**	**253576.523**	**305731.706**	**660407.196**

(b) Costs of the INPRES School Construction

Costs	Total INPRES budget (in million Rp)	The number of primary school students	Average INPRES budget (in Rp)
1976	53,877.0	15,550,124	3464.731
1977	82,550.0	17,265,291	4781.269
1978	108,552.5	19,074,819	5690.880
1979	130,721.0	21,165,724	6176.070
1980	242,149.8	22,551,870	10737.460
1981	364,503.3	23,862,488	15275.159
1982	560,241.1	24,743,598	22641.861

Average INPRES budget (in Rp, 1976-82)	10883.783
Six-year average INPRES budget (in Rp)	**65302.699**

Using wage return estimates, this section provides a back-of-the-envelope calculation of the costs and benefits of the FPE program, focusing on the post-FPE sample in the RD analysis. Table C1 (a) presents relevant statistics. On the cost side, documentation of education policies in 1970s Indonesia indicates that a central government subsidy, known as Subsidi Bantuan-Pemerintah untuk Pendidikan (SBPP), was introduced in 1977 to replace primary school fee revenues (Mertaugh et al., 1989, p.79; UNESCO, 1984, p.7). Based on relevant statistics (UNESCO, 1984, p.20), the average SBPP allocation per pupil over six years amounted to 7,968 Indonesian Rupiah, equivalent to the forgone tuition fees per pupil following the FPE program's implementation.

On the benefit side, using estimates of the returns to education and the FPE program's effect on years of schooling under a quadratic specification, the approximate lifetime tax revenue gains for the average female/male, assuming a 40-year working life and a 10% income tax rate, are 253,577/660,407 Indonesian Rupiah. This calculation is based on the following information:

- The average labor force participation rates (LFPR) (using the 1995 Intercensus main sample): 50.374% for women; 97.553% for men
- The average monthly wages (Mthly Wages) in Indonesian Rupiah (using the 1995 Intercensus main sample): 186349.0 IDR for women; 219393.8 IDR for men
- The estimated returns to education (RtE) in % per schooling year (Table 4 (b), columns (3)-(4)): 10.69 - 14.43 % for women; 4.96 - 10.97 % for men
- The estimated gains in years of schooling (YoS) from the FPE program (Table 2, columns (5)-(6), the 1995 Intercensus): 0.423 - 0.390 years for women; 0.600 - 0.586 years for men

One caveat is that using the 1995 Intercensus main sample of individuals born between 1961 and 1970 fixes the average labor force participation rates and hourly wages at an average age of 29, projecting these statistics onto the entire lifetime career path. While this assumption may be conservative and does not fully capture the real trajectory of labor market outcomes (e.g., an upward-sloping income path rather than a flat one), the exercise suggests significant tax revenue gains. The estimated benefits substantially exceed the SBPP contributions necessitated by the FPE program.

While there is criticism that SBPP funding was insufficient (Mertaugh et al., 1989, p.79), the estimated tax revenue gain far surpasses the regular funding levels for education policies in 1970s Indonesia. To illustrate this, Table C1 (b) presents the annual budgets for implementing the INPRES program (UNESCO, 1984, p.20). Despite requiring greater financial resources, the average lifetime tax revenue gains can cover the average cost of the INPRES program per student for six years.