Economic Opportunity Costs: Banking Access and Educational (Dis)Investment

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Abstract

While financial development is widely celebrated for promoting economic growth, we document its adverse effects on human capital formation (in rural India). Analyzing enrollment data from over 300,000 schools in around 160,000 villages, we find that when banks enter previously unbanked villages, secondary school attendance declines substantially while primary enrollment rises modestly. This pattern reflects household optimization: banking services stimulate local enterprise growth, raising the opportunity cost of education for adolescents. For households near subsistence thresholds, the substitution effect dominates as older children's labor market value increases. The effect is most pronounced in communities with low literacy rates, where immediate economic gains outweigh perceived returns to continued education. Our findings highlight an important mechanism through which financial development may hinder human capital accumulation despite generating economic growth.

Keywords: financial development, access to banking, economic opportunity, human capital investment, school enrollment

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1 Introduction

Financial development has long been heralded as a catalyst for economic growth and poverty reduction in developing countries (Greenwood and Jovanovic, 1990; King and Levine, 1993; Beck, Levine and Loayza, 2000; Burgess and Pande, 2005; Karlan and Zinman, 2010; Bruhn and Love, 2014; Berg, Fuster and Puri, 2022). However, its impact on human capital formation—particularly for economically vulnerable households remains complex and potentially contradictory. The expansion of financial services introduces competing economic mechanisms that may either facilitate or discourage educational investments, creating a tension that is especially consequential for families operating near subsistence thresholds. Understanding how financial market expansion affects educational investment decisions at the lower end of the income distribution offers important insights into the broader welfare implications of financial inclusion policies and the channels through which financial development influences long-term economic outcomes.

These competing mechanisms operate through distinct economic channels: as banking services expand into rural communities, they typically stimulate local economic activity, increase household income, and reduce financial constraints—factors that should theoretically enable greater investment in children's education. However, these same economic improvements can simultaneously raise the opportunity cost of education, particularly for older children who become valuable labor resources as local enterprise expands. When banks enter previously unbanked areas, this creates both an income effect (increased household resources for education) and a substitution effect (higher returns to immediate labor participation versus schooling). Previous theoretical work has posited an inverse U-shaped relationship between household wealth and child labor, where modest economic improvements may actually pull children from education into the workforce (Basu, Das and Dutta, 2010)[1]. Our study examines this tension empirically, exploring

[1] Basu and Van (1998) establish the "luxury axiom" that families send children to work only when household income from non-child labor sources drops below a critical subsistence level; Baland and Robinson

how the expansion of formal banking services in previously unbanked rural villages in India affects educational trajectories across different age groups, family backgrounds, and school types.

Our research explores the multifaceted relationship between financial access and educational outcomes through a quasi-experimental framework in rural India. Utilizing comprehensive data from the District Information System of Education (DISE) covering over 305,000 schools across nearly 160,000 unbanked rural villages, we examine detailed enrollment patterns by grade level, gender, caste, and school type between 2011 and 2017. We exploit a unique policy change implemented by the Reserve Bank of India (RBI) in July 2013 that required Regional Rural Banks (RRBs) to allocate at least 25 percent of their newly opened branches to unbanked rural villages—specifically tier 5 and tier 6 villages without any existing bank branch. The phased implementation of this policy across villages between 2014 and 2017 provides temporal variation that allows us to examine the dynamic effects of financial access on educational outcomes. Our setting offers two key advantages for identifying causal effects. First, unlike previous banking policies that targeted districts with limited financial access,[2] this initiative focused exclusively on completely unbanked villages,[3] providing a cleaner identification of first-order effects from introducing formal financial services. Second, RRBs are mandated to serve rural populations with branch expansion driven primarily by policy priorities rather than market incentives, mitigating endogenous selection concerns. We address remaining identification challenges through village-specific time trends, baseline characteristic interactions, and alternative control group specifications.

(2000) and Ranjan (2001) show that credit-market frictions force families into using child labor; Bhalotra and Heady (2003) document the empirical "wealth paradox" where land-rich households use more child labor; Basu, Das and Dutta (2010) first presents the theoretical inverse U-shaped relationship between land wealth and child labor. They further test it using Indian household survey data.

[2]See recent studies such as Chakraborty, Javadekar and Ramcharan (2021), Cramer (2021), Chang and Ravindran (2023), Kulkarni, Mahajan and Ritadhi (2023), and Jiao and Mo (2023).

[3]See "RRBs asked to open at least 25 pc branches in unbanked areas", The Economic Times, November 6, 2012. Accessed August 30, 2025. https://economictimes.indiatimes.com/news/economy/finance/rrbs-asked-to-open-at-least-25-pc-branches-in-unbanked-areas/articleshow/17119134.cms

Our empirical strategy leverages this staggered implementation of bank branch expansion across unbanked rural villages to identify causal effects on educational outcomes. Following the policy design, our sample consists exclusively of tier 5 and tier 6 villages (populations below 10,000) that had no existing bank branches before the 2013 policy change. Our baseline specification includes several critical fixed effects and controls to address potential confounders. School fixed effects remove time-invariant school characteristics that might influence enrollment trends, ensuring identification comes from within-school changes over time. District-by-year fixed effects compare schools within the same district in each year, controlling for broader district-specific economic cycles, policy changes, and other time-varying shocks that might affect all schools in a district similarly. We further include village-specific linear time trends to account for unobserved village-level characteristics that might evolve gradually over time (Burlig and Preonas, 2024). This comprehensive approach isolates the impact of bank branch entry. To validate our identification strategy, we conduct several robustness checks, including tests for parallel pre-trends, alternative control group definitions, and recently developed methodologies that address potential biases in staggered difference-in-differences designs (De Chaisemartin and d'Haultfoeuille, 2020; Sun and Abraham, 2021; Callaway and Sant'Anna, 2021).

Using this empirical design, we have three main results. Our first key finding reveals divergent effects of financial development across different age groups. Bank branch entry increases primary school enrollment by 3.1% but simultaneously reduces secondary and higher secondary enrollment by 13.4%. This pattern is most pronounced in grades 1-5 (3.4% increase) with effects gradually reversing and intensifying as children progress to upper primary (grades 6-8, 2.9% decrease) and secondary education (grades 9-10, 10.6% decrease). This age-specific pattern is consistent with the theoretical inverse U-shaped relationship between household economic opportunity and educational investment. When financial constraints are relaxed through improved banking access, households can afford

to send younger children to school, particularly when primary education is subsidized under India's Right to Education Act. However, as children grow older, their potential contribution to household income rises substantially, especially when local economic opportunities expand. This creates a powerful substitution effect that dominates the income effect for older children[4], leading families to withdraw them from secondary education in favor of immediate labor market participation. The magnitude of this effect—with secondary enrollment declining by 13.4%, representing approximately 21 fewer students per treated school—underscores the significant opportunity cost that expanding economic activity imposes on human capital investment decisions for adolescents.

Our second finding examines heterogeneity across multiple dimensions to understand which factors mitigate or exacerbate the substitution effect on education. We first investigate whether local educational culture moderates the impact of economic opportunities on schooling decisions. In villages with high literacy rates, primary enrollment increases significantly (6.9%) while secondary enrollment shows a smaller, non-significant decline (8.5%). In contrast, villages with low literacy rates experience dramatic secondary enrollment decreases (22.8%). This suggests that stronger educational norms and values can partially counterbalance the pull of economic opportunities for older students.

Next, we examine how household economic vulnerability influences responses to financial access. In villages with high proportions of marginal workers, secondary enrollment drops substantially (28.1%), nearly twice the decline observed in medium-vulnerability villages. This pronounced effect indicates that financially precarious households face more acute trade-offs between immediate income and long-term human capital investment. We also test for gender-based differences to assess whether households make discriminatory educational investments following financial development. Interestingly, we find similar enrollment patterns for both boys and girls, suggesting gender-neutral

[4]Shah and Steinberg (2017) find that in positive rainfall years, school-aged children perform worse on tests and report a lower attendance rate. Our results are consistent with theirs, but focus on long-term local economic growth through access to finance, which is beyond the short-term rainfall shock.

decision-making in this context.

We also analyze school-type heterogeneity and discover that enrollment gains for younger children concentrate in private schools (5.8% increase), while enrollment losses in secondary grades primarily occur in public schools (11.6% decrease). This reveals how households reallocate educational resources—improving primary education quality while reducing overall investment in secondary education—when financial constraints are relaxed and economic opportunities expand. Overall, these heterogeneity analyses reveal that economic vulnerability and weak educational norms significantly amplify the negative effects of financial development on secondary education, suggesting that complementary interventions may be necessary to ensure that economic growth translates into broader human capital accumulation.

Our third set of results identifies the mechanisms underlying the divergent educational responses to financial development. Banking access stimulates local economic activity—firm entry increases by 8.3% while exits decrease by 8.4% —- creating a dual effect on educational choices. For younger children, improved household finances and childcare needs drive increased primary enrollment, particularly in high-deposit villages where the income effect dominates. As adults intensify participation in expanded economic opportunities, schools serve a valuable supervision function for children too young to contribute productively to household income. For older children, however, the opportunity cost mechanism prevails—their potential economic contribution becomes increasingly valuable as local enterprises grow, pulling them from secondary education into the workforce. This interpretation is reinforced by our finding that secondary enrollment declines more severely in villages with lower deposit growth (19.3% versus 9.8%), suggesting that immediate income needs outweigh educational aspirations when financial gains are modest.

Supply-side adjustments further amplify these patterns: the shift from public to private schooling (0.156 fewer public schools and 0.186 more private schools) reflects how

financial development enables educational market segmentation, with quality improvements for younger students occurring alongside reduced investment in secondary education. These mechanisms coherently explain why economically vulnerable households in communities with weaker educational norms experience the strongest substitution effects—they face the highest marginal utility from immediate income relative to uncertain returns from continued education.

We validate our findings through several robustness checks. First, event studies confirm parallel pre-trends between treatment and control villages before branch entry, with divergence occurring precisely after banking access expands. Second, the opposing directional effects we observe across age groups—increases in primary enrollment alongside decreases in secondary enrollment—alleviate concerns about village-specific confounders or selection driving our results, as any such factor would likely affect all education levels similarly rather than producing these sharply contrasting patterns. Third, alternative specifications addressing potential selection in branch placement—including village-characteristic interactions with year fixed effects and matched control groups—yield consistently similar estimates. Fourth, applying newer econometric methods designed for staggered difference-in-differences settings (De Chaisemartin and d'Haultfoeuille, 2020; Sun and Abraham, 2021; Callaway and Sant'Anna, 2021) produces results aligned with our baseline estimates. Fifth, placebo tests randomly assigning treatment years to unbanked villages reveal null effects, supporting our causal interpretation. Finally, redefining control groups to mitigate potential spillovers and using block-level fixed effects instead of district-year fixed effects does not materially change our conclusions. These consistent results across multiple specifications and methodological approaches strengthen our confidence that financial development indeed causes the observed divergent effects on educational investment across different age groups.

Our study contributes to several strands of the literature. First, this paper provides novel evidence to the emerging literature on financial development and human capital

formation[5]. Few prior studies document only the positive effect of increased financial access on households' educational investment for their children[6]. Studies by Sun and Yannelis (2016), Stein and Yannelis (2020), and Chang and Ravindran (2023) find that bank branch entry significantly improve children's enrollment, graduation rates, and test scores[7]. Additionally, providing households with free savings accounts, via randomized controlled trials, increases educational spending and school attendance for girls (Prina, 2015; Chiapa, Prina and Parker, 2016)[8]. Utilizing staggered bank branch expansion in rural India, we show that access to finance leads to a significantly and economically large negative impact on students' enrollment. This is consistent with the theoretical inverse-U-shaped relationship between household income and child labor by focusing on the left-hand (ascending) side of the curve, where families are at the bottom of the income distribution.

Second, we contribute directly to the literature on the determinants of human capital investment. In Becker (1962) human capital framework, household income constraints and opportunity costs create a fundamental trade-off in schooling decisions. Recent studies exploit variation from infrastructure construction (e.g., Adukia, Asher and Novosad, 2020), rainfall shocks (e.g., Shah and Steinberg, 2017; Bau et al., 2020), and agricultural input prices (e.g., Sviatschi, 2022) to evaluate income-versus-substitution effects. However,

[5]While prior studies typically rely on household surveys or samples of school-age children to measure educational outcomes, we use a comprehensive administrative dataset covering all registered schools across both rural and urban areas, spanning all grades and detailed facility characteristics. See Burlig and Preonas (2024) for recent DISE study and data descriptions.

[6]See Ajefu and Massacky (2022) for a recent example of the fintech adoption.

[7]Sun and Yannelis (2016) examine the impact of increased credit supply on college enrollment, leveraging the staggered state-level bank branching deregulation in the U.S. from the 1970s to the early 1990s (See also Reilly (2020*a*,*b*), which implements the same policy shock and documents positive effects on high school graduation). Similarly, Stein and Yannelis (2020) study the impact of Freedman's Savings Bank branches (1865-1870), which primarily served recently freed African Americans, finding that families with bank accounts were significantly more likely to have children enrolled in school, though they do not account for children's age. Chang and Ravindran (2023) utilize the Reserve Bank of India's 2005 branch authorization policy to provide evidence of bank branch expansion in underbanked districts.

[8]Prina (2015) and Chiapa, Prina and Parker (2016) utilize the same randomized controlled trial from 2010 to 2011 in Nepal that provided no-fee savings accounts to female-headed households in largely unbanked communities, and find increased educational expenditures and schooling level for girls aged 11-16 years.

these shocks on schooling decisions could be limited or partially identified due to transitory fluctuations and the indirect effect on local families. Instead, we complement this literature by exploiting the bank branch expansion, a long-run access to formal finance that directly reduces households' financial constraints and stimulates local economic growth.

Third, we contribute to the important literature that links the impact of bank branch expansion to the real economic outcomes in emerging countries. Prior studies show that access to formal financial services reduces wage inequality (Fonseca and Matray, 2024), improves income and employment (Ji, Teng and Townsend, 2023), boosts household savings (Agarwal et al., 2017), and alleviates poverty (Burgess and Pande, 2005; Burgess, Pande and Wong, 2005). To the best of our knowledge, our paper is the first to identify the intergenerational human-capital choices, documenting a "dual effect" of financial access on enrollment: modest positive impact for younger children, but large negative effect for older cohorts, highlighting an age-specific trade-off overlooked in earlier studies.

The rest of the paper proceeds as follows. Section 2, and 3 describe the policy background and the data. Section 4 outlines the empirical specification. Section 5 presents results, and Section 6 discusses underlying mechanisms. Section 7 concludes.

2 Background of the Branch Licensing Policy

To understand the impact of access to finance on children's educational opportunities, we focus on a new bank branching policy introduced by the Reserve Bank of India (RBI) in 2013. This policy targets regional rural banks (RRBs), a major and understudied government-owned institution expanding into previously unbanked areas.[9] Unlike government-owned public sector banks, which operate under broader commercial orientation and could ex-

[9]Prior studies examine branch expansion by private banks (e.g., retail-integrated banks in Bruhn and Love (2014)), state-owned banks (Agarwal et al., 2017), general government-owned banks (e.g., Fonseca and Matray (2024)), and mixed commercial banks (e.g., scheduled commercial banks in Burgess and Pande (2005) and Cramer (2021)), however, rural branch expansion (e.g., India's Regional Rural Banks) receives little attention.

pand in more profitable markets, RRBs are mandated to serve financially excluded populations, including small farmers, agricultural laborers, artisans, and small entrepreneurs,[10] under their regulatory mission to support rural economies. This focus is crucial given the significant financial exclusion in India, where, as in 2011, only 35% of adults held a bank account[11], leaving approximately 557 million people unbanked. Taken together, examining a less-studied yet critical financial institution expanding in bank desert regions highlights the unique contribution of our paper.

RRB branches operate under Section 23 of the Banking Regulation Act, 1949. It requires RRBs to seek RBI approval for any new branch opening, conditional on fulfilling financial stability criteria[12]. In 2011, RBI first relaxed branch licensing requirements for RRBs. Under this policy, RRBs are permitted to open new branches without prior approval from RBI if they met certain performance-based requirements in their most recent inspection report. These conditions include maintaining a capital to risk weighted assets ratio (CRAR) of at least 9%, net non-performing asset (NPA) below 5%, no default in CRAR or statutory liquidity ratio (SLR) for the last year, net profit in the last financial year, and core banking solutions (CBS) compliant.[13]

More importantly, to meet the objective of banking penetration and financial inclusion rapidly in unbanked rural villages, the RBI announced a separate mandate in 2013 requiring every RRB to open branches in underbanked areas.[14] Specifically, this policy[15] (still in force now) requires each RRB allocate at least 25 percent of their newly opened branches each year to unbanked rural villages — tier 5 or tier 6[16] villages that do not have

[10]RRBs are required to allocate 75% of their total loans to priority sectors. See RBI details here.

[11]See "India has second largest unbanked population in the world", The Times of India, Jun 15, 2018. Accessed August 31, 2025. https://timesofindia.indiatimes.com/business/india-has-second-largest-unbanked-population-in-the-world/articleshow/64570254.cms

[12]Details are in Master Circular on Branch Licensing - Regional Rural Banks (RRBs).

[13]See RBI Circular: Branch Licensing Relaxation for further details.

[14]This requirement is independent of previous financial or eligibility flexibility regarding branch openings with or without RBI approval.

[15]More policy details are here.

[16]RBI classifies villages into 6 categories based on 2001 census data: Tier 1 villages have a population above 100,000; tier 2 villages have 99,999–50,000 people; tier 3 villages have 49,999–20,000 people; Tier

a physical branch of any scheduled commercial bank.[17]

Figure 1 illustrates the expansion of RRB branches in our sample of 159,628 underbanked rural villages from 2013 to 2017. Following the policy, there is a sharp increase in new branch openings. As shown in Panel B of Figure 1, 292 of these villages received new branches after 2013. This expansion is the number of branches is associated with an increase in credit allocation in the villages (Figure 2).

To our knowledge, this is the first paper to exploit a branching policy targeted explicitly at rural villages that previously do not have any bank branches. Few prior studies use other branch authorization policies to investigate the effects of banking expansion on credit allocation (Chakraborty, Javadekar and Ramcharan, 2021), health outcomes (Cramer, 2021), economic growth (Young, 2018), firm investment (Kulkarni, Mahajan and Ritadhi, 2023), and firm-level employment shifts (Jiao and Mo, 2023). The work most closely related to this paper is Chang and Ravindran (2023) which, like Young (2018), Cramer (2021), Kulkarni, Mahajan and Ritadhi (2023), and Jiao and Mo (2023), employs the policy reform of 2005 to boost bank branches in "underbanked district" with a population-to-branch ratio higher than the national average. But these policies focus on aggregate district-level variation, emphasize scheduled commercial banks excluding RRBs, and target areas with limited — but not absent — financial access.

In our setting, we examine RRBs branch expansion at a more granular village level. RRBs are mandated to serve rural populations and frequently represent the only source of formal banking in unbanked villages. Since their branch expansion is largely shaped by policy priorities rather than market-driven incentives, this context helps alleviate concerns about endogenous branch placement and supports a clearer identification of causal

4 villages have 19,999–10,000 people; tier 5 villages have 9,999–5,000; tier 6 villages have less than 5,000 people.

[17] According to the RBI, scheduled commercial banks are commercial banks listed in the Second Schedule of the RBI Act, 1934. It includes public sector banks, private sector banks, foreign banks, regional rural banks, scheduled payments banks, scheduled small finance banks, and scheduled co-operative banks. As of end-March 2024, India's commercial banking sector has 141 institutions, of which 137 are scheduled banks under the Second Schedule of the Reserve Bank of India Act.

effects. We further address potential selection concerns in our identification strategy in section 4, and provide supporting robustness tests in subsection 5.3.

3 Data

3.1 Data

School Data: We obtain large and comprehensive educational statistics from the District Information System of Education (DISE). DISE includes information on both elementary and secondary schools, covering 28 states and 8 union territories in India for the years between 2011 and 2017.[18] The data provides a wide range of school-level variables, including school characteristics (e.g., location, or school type (public or private schools)), enrollment[19] (across gender and caste), facility conditions, teacher information, and students' exam performances. With the unique school identifiers, we are able to observe the changes over time and across dimensions for each school. The location of each school is crucial for us to identify schools in villages with new bank branches opening and those without.

Bank Branch Data: Bank branch entry data is from the Directory of Bank Officials published by the Reserve Bank of India (RBI). The data is used as a directory for all banks in India. For each bank branch, we observe its location, open date, and bank type (e.g., RRBs in our setting).

Bank Branch Financial Performance: Branch level financial performance is from RBI and is widely used in the literature (e.g., Sen and De, 2018). The data consists of two parts: Basic Statistical Return (BSR) 1 for outstanding credits and BSR 2 for savings. We use the growth of deposit amounts and the number of new deposit accounts to proxy

[18] Data reflects the statistics of September 30th (Jagnani and Khanna (2020)) for each school year, which starts in June or July.

[19] Enrollment data of grades nine and above is available only from 2013 onward.

local economic development and household income.

Indian 2001 Census: Village-level population data (2001 Census) is available on the official Indian census website. Using the Village Directory series, we are able to identify our sample of rural villages — tier 5 and 6 villages. We combine this with the Bank Branch Data to identify the unbanked rural villages, as defined by the RBI's 2013 financial inclusion policy.

Indian 2011 Census: For village baseline demographic data and information on local amenities, we rely on the 2011 Census of India. We obtain data from the Socioeconomic High-resolution Rural-Urban Geographic Platform for India (SHRUG) (Asher et al., 2021). SHRUG's identifiers of location allow us to track and link villages across 2001 and 2011 censuses. Table 1 and Table A.1 show the village characteristics used in our study.

Firm Activity: We obtain firm registration data from the Ministry of Corporate Affairs (MCA), which includes all registered private sector firms from 2011 to 2017. The data covers firm registration code, incorporation date, and location (Pincodes). It also provides information on firm status, allowing us to classify firms into two categories: entry and exit.[20] This data helps us to evaluate changes in the local business environment before and after the opening of new bank branches.

Nightlight: We use nightlight intensity data from Visible Infrared Imaging Radiometer Suite (VIIRS) for 2012-2017, which measures night light detected at the pixel level. We obtain village-year level aggregated nightlight data from SHRUG. This data helps us evaluate overall changes in economic activity and infrastructure development in villages before and after the entry of bank branches.

[20]Firm entry includes entities classified as "Active." Firm exit includes those with statuses such as "Dissolved," "Strike Off," "Under Process of Striking Off," "Under Liquidation," "Liquidated," and "Converted to LLP and Dissolved".

3.2 Sample

Data is at the school-village-district-year level from 2011 to 2017. Following the policy design, we focus on unbanked rural villages — tier 5 and 6 villages (as per 2001 census) without any existing bank branches. Within this sample, some villages received the phased entry of new RRBs branches after 2013.

Our final sample includes 305,531 schools in 159,628 rural villages,[21] of which 292 villages receive new bank branches between 2014 to 2017. The geographical distribution of the treated and control villages, and the distribution of treatment years is in Figure 1.

Table 1 presents the summary statistics for variables used in our main analysis. In panel A, the average enrollment for Primary & Upper primary (Grades 1-8, age 6-14) is 104 for the years 2011-2017, while the average enrollment for Secondary & Higher secondary (Grades 9-12, age 14-18) is 158 from 2013 to 2017. Panel B shows that public schools dominate rural village education, with an average of 1.58 public schools per village-year compared to 0.21 for private schools. The average nightlight intensity and minimum nightlight intensity is 0.49 and 0.12, respectively. Panel C shows that the average firm entry is 0.96 and the average firm exit is 0.5, with high standard deviations indicating uneven economic dynamics in rural areas. Panel D reports the total treatment intensity across all new branches during the post period for treated villages, measured both intensively and extensively, for 259 treated villages (limited by BSR data available only up to 2016). On average, the total deposit amount increases by 48,111.48 thousand rupees, and newly opened deposit accounts increase by 4,795.12. The average baseline literacy and marginal worker ratios are 0.57 and 0.29, respectively, which we use in heterogeneity tests.

[21] To identify the policy impact of RRBs expansions and alleviate the potential effects from other types of bank branch openings (e.g., public or private sector branching policies), we restrict the sample to villages where only RRB branches expand after 2013. Also, villages with the entry of other types of bank branches only account for less than 1% of the total villages in our sample.

4 Empirical Design

To understand the impact of financial development on households' educational investment, we estimate how school-level educational outcomes respond to the introduction of new bank branches. Our baseline model leverages the staggered timing of branch opening in unbanked rural villages, and compares changes in enrollment between the treated schools in villages with new branches and control schools in villages without and those yet to receive branches:

$$Y_{s,v,d,t} = \beta_0 + \beta_1 \text{Post Branching}_{v,d,t} + \alpha X_{s,v,d,t} + \mu_s + \gamma_{d,t} + \lambda_v t + \epsilon_{s,v,d,t} \quad (1)$$

Here, s denotes school, v denotes village, d denotes district, and t denotes year. The main dependent variable $Y_{s,v,d,t}$ is the enrollment — Primary & Upper Primary or Secondary & Higher Secondary grades - of school s in village v, district d, at year t. We use log enrollment plus one in our analysis. Post Branching$_{v,d,t}$ is an indicator variable equal to 1 for years after the school, in village v, district d, receives new bank branch(es) after 2013. $X_{s,v,d,t}$ is control variable for school size characteristics, including log-transformed age and log-transformed total expenditures[22] plus one. μ_s, and $\gamma_{d,t}$ are school fixed effects, and district-by-year fixed effects, which control for time-invariant school characteristics, and unobserved factors that affect all schools in villages within the same district d - year t bracket. We also include village-specific linear time trends, $\lambda_v t$, to account for unobserved village-level characteristics that change linearly over time (Burlig and Preonas, 2024). Standard errors are clustered at the village level.

The coefficient of interest is β_1 in Equation 1, which measures the impact of village-level bank branching on school-level outcomes. The identification assumption is that, in the absence of bank branch entry, school enrollment in the treated villages would have

[22] Total expenditure is defined as the summation of all funds spent, including the Teachers Grant, School Maintenance Grant, School Development Grant, and expenditures from other funding sources.

followed the same trends over time as those in control villages. District-by-year fixed effects help mitigate concerns that certain districts may prioritize financial inclusion and actively encourage banks to open branches. These fixed effects also account for district-level shocks or trends in school enrollment that might be correlated with bank branch expansion. Additionally, village-specific linear trends control for time-varying changes within villages that could potentially confound the relationship between bank branch entry and school enrollment.

To analyze the dynamic response of banking access on enrollment over time, we estimate the following distributed lag/lead model:

$$Y_{s,v,d,t} = \beta_0 + \sum_{w=-4}^{w=3} \beta_w \text{Relative Year}_{v,d,w} + \alpha X_{s,v,d,t} + \mu_s + \gamma_{d,t} + \lambda_v t + \epsilon_{s,v,d,t} \tag{2}$$

Here, $\text{Relative Year}_{v,d,w}$ is an indicator variable for each village v of district d, the relative year w before or after the entry of new bank branches. The coefficients β_w capture the impact of bank branch opening on the school outcome at each relative year w. Following Equation 1, we include school fixed effect (μ_s), district-by-year fixed effect ($\gamma_{d,t}$), and village specific linear trend ($\lambda_v t$).[23]

5 Results

5.1 Average Response

Following Equation 1, Table 2 presents our baseline results of the average impact of bank branching on student enrollment, across two age groups: primary & upper primary (grades 1-8), and secondary & higher secondary (grades 9-12) students.[24] For students in primary & upper primary (grades 1-8), column (1) shows a 3.06% increase in enroll-

[23] We bin the 4 years before the branch opening to $w = -4$ and use the one year before the bank branch entry ($w = -1$) as our benchmark period.

[24] We follow the classification used in the DISE data.

ment. This corresponds to approximately 3 additional students relative to the average number prior to the bank branch entry. However, for older students in secondary & higher secondary (grades 9-12), column (2) indicates a significant and large 13.4% drop in enrollment after bank branch entry. This translates into roughly 21 fewer students relative to the pre-treatment average enrollments in secondary grades. This magnitude is substantially larger than the modest enrollment gains among younger cohorts in column (1).

Why do we observe an opposing effect on enrollment? One plausible explanation is that access to banking services stimulates local economic activity, and thus boosts household income. On the one hand, as parental income increases, families can afford to send younger children to school, especially for government subsidized primary schooling (e.g., 2009 Right to Education Act[25]). On the other hand, however, as children grow older, the return to immediate employment opportunities may outweigh the future benefits of continued schooling, especially when the local employment opportunities increase. As a result, substitution effect dominates income effect, and parents may withdraw older kids from secondary grades to join the workforce and support household income. More discussions are in section 6.

In Table 3, we further split grades into three subgroups[26] — column (1) primary (grades 1-5), column (2) upper primary (grades 6-8), and column (3) secondary (grades 9-10) — to investigate the nuances behind the overall enrollment changes. Columns (1) and (2) show opposite effects of bank branching on enrollment. Specifically, we observe a significant 3.42% increase in enrollment for grades 1-5 in column (1) and a 2.9% decrease in enrollment for grades 6-8 in column (2). These findings imply that a) the positive impact on enrollment (Table 2 column (1)) is driven by grades 1–5, and b) initial gains of enrollment in lower grades do not persist as some marginal students benefiting from the

[25]Right to Education (RTE) Act in India mandates free and compulsory education for children in grades 1–8.

[26]Classification follows DISE definitions.

bank branching eventually drop out. Column (3) further shows a 10.6% decrease in enrollment at the secondary level (grades 9-10), corresponding to 13 fewer students relative to the pre-treatment average number. Combined with Table 2 column (2), around 9 out of the total 21 fewer students dropping out in grades 9-12 are from grades 11-12.[27] Overall, this table highlights the intensification of attrition as students progress to higher grade levels after the bank branch entry.

In Figure 5,[28] we present grade-specific evidence on enrollment changes, and observe that the largest increase occurs at grade 4, followed by a nearly monotonic decline in higher grades. This trend is consistent with economic theories of education and labor supply. As children grow older, their opportunity cost of schooling rises — particularly in our setting, where bank branching could stimulate local economic activity, thereby expanding opportunities for children to contribute to household income through labor. Therefore, higher attrition rates observed in later grades likely reflect the increasing trade-off between continued education and participation in the labor market.

To deepen our understanding of dropout patterns, we further examine exam performance in primary and upper primary grades before and after bank branch entry. For upper primary students, where enrollment declines (Table 3 column (2)), Table A.4 columns (4)–(6) show a significant 9% increase in the number of students taking and passing the upper primary exams, and an 11% increase among those passing with merit. This suggests that lower-performing students are more likely to drop out. For primary grades where enrollment rises (Table 3 column (1)), we do not find significant changes in the number of students appearing for, passing, or passing with merit in primary-level exams. This implies that the newly enrolled students, or the marginal students returning to school, do not perform better in the exams and are more likely to drop out in subsequent

[27] We do not report results for grades 11 and 12 separately due to limited statistical power: only 3% of schools in the sample offer instruction for grades 11 and above.

[28] For completeness, we report average estimates for grades 11 and 12. Large standard errors are due to the small number of observations.

grades.

Overall, the age-specific average responses of enrollment to bank branch expansion is consistent with the theoretical inverse U-shaped relationship between household economic opportunity and educational investment.

5.2 Dynamic Response

In addition to evaluating the average impact of bank branching on enrollment, we use Equation 2 to understand how enrollment responses evolve from 4 years before to 3 years after the new bank branch entry.

Figure 3 shows the path of enrollment changes for two age categories: primary & upper primary (grades 1-8), and secondary & higher secondary (grades 9-12) students. Before the branch expansion, the enrollment change differences between treated schools and control schools are insignificant both statistically and economically, supporting the parallel trends assumption in our difference-in-differences design[29]. We observe that enrollment begins to respond immediately after the establishment of the new bank branch. Figure 3 (a) shows that primary & upper primary grades experience a persistent increase in enrollment — from approximately 2.5% to 6% — since the year of entry to 3 years thereafter. However, as shown in Figure 3 (b), we observe secondary & higher secondary grades a persistent drop of enrollment — from about 6% to 23% over the same window.

Figure 4 further split the ages into three subgroups — (a) primary (grades 1–5), (b) upper primary (grades 6–8), and (c) secondary (grades 9–10). Consistent with the average effect reported in Table 3, these results show a persistent increase (decrease) in primary (secondary) grades, and no effect is observed in upper primary grades.

Following Agarwal and Qian (2014), we also estimate the cumulative impact of bank

[29]Following Agarwal and Qian (2014), we also define a binary variable, "pre-branching", equal to one from 2 to 7 years before the shock, to test the validity of difference-in-differences design. As shown in Table A.3, the coefficient of "pre-branching" variable is statistically indistinguishable from zero.

branching on enrollment for two age groups (Figure A.1), and three age subgroups (Figure A.2). In line with the marginal effect in Figure 3 and Figure 4, the cumulative enrollment change differences between treated and control schools remain insignificant both statistically and economically before the event, but start to diverge afterward. By the end of 3 years after the shock, the cumulative increase for primary & upper primary grades reaches 13% relative to the benchmark, while secondary & higher secondary grades experience a 69% decrease. In total, these cumulative impacts translate into an additional 3,942 students ($292 \times 103.8342 \times 0.13$) in lower grades, but a reduction of nearly 31,720 students ($292 \times 157.4371 \times 0.69$) in higher grades across 292 treated villages with bank branch expansion.

5.3 Robustness

First, in Table 4, we evaluate our baseline specification using alternative definitions of control and treatment groups. In Panel A, we consider block-by-year fixed effects to compare treated and control schools within the same block-year bracket. This is to alleviate the concern that block-level differences might correlate with village-level treatment assignment. Next, to mitigate potential contamination when control villages are exposed to treatment — especially those neighboring villages with new bank branches — Panels B and C redefine control and treated villages as the following. Panel B restricts the control villages to those only in blocks different from the treated villages, and Panel C aggregates the treatment at the block level, and a block is being treated if at least one village within that block receives new bank branch(es).

Second, a major challenge in our design is the potential selection issue in our sample of unbanked tier 5 and tier 6 villages. Although our main specification in Equation 1 includes village-specific linear time trends to account for unobserved differential trends across villages, Table 5 presents two alternative specifications designed to compare

treated and control units with similar baseline characteristics[30]. In panel A, we introduce year interactions of baseline village characteristics to control for village differences in demographic structure and infrastructure dimensions[31]. This accounts for the possibility that villages with different baseline characteristics may exhibit different trends in outcomes over time. In panel B, we implement a similar set of interactions using baseline school characteristics to account for differences in initial enrollment, academic inputs and school facilities.[32]. In both panels, the estimates remain closely aligned with our baseline results in Table 2, columns (1) and (2): showing a 2.6% to 3.1% increase in enrollment for primary & upper primary grades and a 12.1% to 14.3% decrease for secondary & higher secondary enrollment. Taken together, the robustness tests in Table 5 help mitigate bias in the estimated treatment effects arising from non-random branch placement driven by observable village- or school-level characteristics[33].

Third, to address estimation bias in the staggered difference-in-differences setting, we employ several alternative methods in Table A.2. Panel A reports the diagnostic test proposed by De Chaisemartin and d'Haultfoeuille (2020). Panels B and C present the average enrollment estimates using the approaches of Sun and Abraham (2021) and Callaway and Sant'Anna (2021), respectively. Again, these estimates are closely aligned with our baseline results in Table 2.

Fourth, we perform three additional tests to validate the robustness of our main findings. First, Table 6 shows the results of a placebo test: we randomly assign pseudo-treatment years to 292 villages in non-tier5 or tier 6 villages. Second, in Figure A.3

[30]We follow the method used in prior literature; see, for example, Agarwal, Chia and Ghosh (2024).

[31]Village baseline characteristics include population size, share of main workers, share of scheduled caste/tribe population, access to black-topped roads, power supply, mobile coverage, post offices, and number of primary health centers reported in India Census 2011.

[32]School baseline characteristics include total enrollment, student-teacher ratio, access to toilets, libraries, medical check-ups, playgrounds, drinking water, functional electricity, and boundary walls based on school statistics as of 2011

[33]As shown in Table 1 Panel B, the average number of schools per village-year is 1.82, suggesting that most villages have only one or two schools, or there is substantial overlap between village- and school-level characteristics. Including both sets of interactions simultaneously would be overly restrictive. Therefore, we present the two approaches separately.

Panel A, we randomly select 292 control villages as being "treated", assign them pseudo-treatment years, and re-estimate Equation 1. Third, Figure A.3 Panel B repeats this procedure by assigning pseudo-treatment years within the 292 actual treated villages.

5.4 Heterogeneity

5.4.1 Village characteristics

Table 7 reports our heterogeneous enrollment effects using two village-level baseline characteristics: the local educational environment and the extent of household financial constraints. In this section, we aim to understand how village characteristics moderate the income and substitution effects on children's schooling decisions.

In Panel A, we classify villages by their baseline literacy rate, using a tercile cut, to proxy local educational culture. In villages with high literacy rates, we find a statistically significant increase in primary enrollment, 6.86% in column (1), however, for secondary grade students, we observe a non-significant and small decline, 8.5% in column (2). In villages with medium literacy rates, we observe significant changes in both groups: primary enrollment increases by 3.45% (column (3)), and secondary enrollment drops by 11.6% (column (4)). Instead, villages with low literacy rates experience an insignificant and small increase in primary enrollments by 3.21% (column (5)), but a dramatic secondary enrollment decrease by 22.8% (column (6)). Taken together, these results suggest that stronger educational norms and values can mitigate, to some extent, the draw of economic opportunities among older students.

In Panel B, we focus on households' financial vulnerability, measured by the share of marginal workers in a village. Similarly, we divide villages into three groups using a tercile cut. In villages with high proportions of marginal workers, secondary enrollment declines substantially, by 28.1% in column (2), which is almost twice the drop observed in the medium financial vulnerability villages, 14.5% in column (4). Most importantly, in

the low-vulnerability villages, where stable employment alleviates financial pressures for households, estimated coefficients are positive across both age groups (columns (5) and (6)), particularly for older cohorts in grades 9–12. This implies that alleviating household economic stress could help students remain in school longer.

Overall, Table 7 highlights the moderation role of both educational culture and household financial constraints on children's schooling decisions. In particular, reducing economic pressures appears especially important for mitigating dropouts among older students. When families face lower financial burdens, parents might be more willing to send children to school long enough to realize the long-term benefits of continued education.

5.4.2 Student gender, caste, and school type

Table 8 Panel A indicates that, in primary & upper primary grades, enrollment increases for both boys and girls (columns (1) and (3)). For secondary and higher secondary grades, enrollment also drops simultaneously for both genders (columns (2) and (4)). Our results suggest gender-neutral decision-making, where parents weigh labor market opportunities better and withdraw older children—regardless of gender—to enter the labor force to support household income.

In India, caste-based discrimination remains a significant barrier to education and further labor market participation. Thus, next, we investigate whether bank branch expansions affect school enrollment across caste groups differently. Table 8 Panel B classifies students into general and backward castes. For primary & upper primary grades, expansions significantly increase enrollment by 3.53%, column (3), among backward-caste students, suggesting that improved financial services access helps alleviate resource constraints for these households. However, for secondary and higher secondary grades, enrollment declines by 13.3% to 14.3% (columns (2) and (4)) for both general and backward castes. This pattern is in line with the gender-neutral enrollment findings in Panel A that parents from different backgrounds are willing to withdraw older children from school

once expansions bring in labor market opportunities.

We also show heterogeneous effects by school type: public and private schools. Table 8 Panel C shows that significant enrollment gains for grades 1-8 are in private school (a 5.78% increase in column (3)), while the dropping out for older students in grades 9-12 is significant in public schools (a 11.6% decrease in column (2)). A potential explanation is that although families who send their children to private schools tend to be wealthier, they may still be constrained "at the margin" and cannot always finance tuition or other school expenses. When bank branch expansions alleviate these constraints, these families are more able — and perhaps more inclined — to keep younger children in private schools. In contrast, parents whose children attend public schools would face tighter resource constraints and respond more strongly to new labor market opportunities, prompting them to withdraw older children to support household income. Hence, the observed positive enrollment effect for lower grades is most pronounced in private schools, whereas the decline for older grades is driven by students in public schools.

6 Mechanism

In this section, we discuss three potential mechanisms through which bank branching influences school enrollment. The central argument is that access to banking services stimulates local economic opportunities, thus relaxing household financial stress. First, we evaluate whether local bank branching boosts economic growth by analyzing firm entry and exit, as well as nightlight intensity (subsection 6.1). Second, we examine whether the resulting economic benefits translate into more stable household income and improved financial conditions by using the branch-level deposit data (subsection 6.2). Following our discussion in subsection 5.1, as income rises, families can afford to send younger kids attend school, especially when primary education is subsidized. At the same time, once children grow older, their potential earnings might make parents withdraw them from

secondary school in favor of immediate income. Finally, we show whether the easing of household financial constraints ultimately increases the demand for school supply (subsection 6.3).

6.1 Business Expansion and Economic Activities

First, we evaluate whether bank branching stimulates local economic activity in Table 9. We focus on two proxies: a) private sector firm entry and exit in Panel A, and b) nightlight intensity for overall economic activities in Panel B.

Panel A shows that new bank branch entry increases firm entry by 8.3% (column (1)) and decreases firm exit by 8.4% (column (2)). In Panel B, although average nightlight intensity does not change significantly in column (1), bank branch expansion raises the minimum nightlight intensity by 1.2% in column (2), indicating that the economic gains are concentrated in the least-developed areas.

Table 9 implies that business expansion — brought by new branches — is able to create additional job opportunities and potentially enhance household incomes. Overall, our results emphasize that newly opened bank branches not only encourage private sector growth but also enhance broader improvements in labor markets and the economic opportunities.

To further validate the enterprise credit channel as the key mechanism driving our results, we examine whether villages with higher levels of business lending experienced the strongest educational effects. Table 10 stratifies treated villages based on enterprise credit flows from newly opened RRB branches, testing whether locations with greater business credit allocation—and presumably higher levels of stimulated firm activity—exhibit more pronounced enrollment changes. Villages where banks extended substantial enterprise credit demonstrate the full magnitude of effects observed in our baseline results: primary enrollment increases by 4.3% while secondary enrollment declines dramatically by 15.9%.

Meanwhile, villages where bank branches provided minimal enterprise credit show substantially muted responses.

This heterogeneity confirms that enterprise credit allocation serves as the critical transmission mechanism linking bank expansion to educational outcomes. Areas with robust business lending experienced the economic stimulation necessary to create employment opportunities that pull older children from school, while villages with limited enterprise credit saw minimal changes in local labor market conditions and correspondingly weaker effects on schooling decisions. These findings reinforce our central thesis that bank expansion affects education primarily through its impact on local economic activity rather than through direct household financial access alone.

6.2 Household Saving

Following the previous discussion, next, we turn to branch-level deposit data to evaluate whether these economic benefits translate into higher savings and, in turn, broader improvements in local households' financial conditions.

As shown in Table 11, we present intensive (Panel A) and extensive (Panel B) measures of deposit growth. Specifically, for each treated village, we first sum up the deposit increases across newly opened branches over all post-expansion years. We then split the treated villages into high- and low-intensity groups based on the median cutoffs, using both the deposit level growth and the number of new accounts. Finally, we compare changes in school enrollment for high- and low-intensity groups against school enrollment in unbanked control villages.

Panel A shows that significant gains in enrollment for grades 1–8 (columns (1) and (3)) appear only in villages with high deposit amount growth. Meanwhile, the significant drop in enrollment for grades 9–12 occurs in both the high- and low-intensity groups, although it is more pronounced in the low-intensity group (19.3%, column (4)) compared

to the high-intensity group (9.8%, column (2)). Panel B presents the results at the extensive margin using the number of new accounts and shows a consistent trend.

Overall, these results confirm our earlier conclusion: when business expansion drives higher incomes, it also leads to measurable increases in savings, indicating reduced financial constraints for local households.

6.3 School Supply

Lastly, we examine whether bank branching leads to changes in school supply, using a village-year panel. Table 12 shows the overall school changes (column (1)), and the number of public and private schools (columns (2) and (3)). Column (1) indicates no significant increase in the total number of schools, but in columns (2) and (3), we observe 0.156 fewer public schools and 0.186 more private schools in the treated villages relative to the unbanked control villages. This suggests school supplies shift from public to private establishments.

Table 12 suggests that bank branching induces a shift away from public schools and toward private schools. This effect is plausibly driven by increased demand for private education, as households facing relaxed financial constraints can more easily finance tuition and related costs for private schools. Although the magnitude of this shift is modest —given our rural context—it highlights the potential for improved financial access to reshape schooling choices, even in relatively economically disadvantaged villages in rural India.

7 Concluding Remarks

This study provides compelling evidence that financial development can have unintended consequences for human capital formation, challenging the conventional wisdom that fi-

nancial inclusion uniformly enhances welfare outcomes. Through analysis of comprehensive enrollment data from over 305,000 schools across 160,000 villages in rural India, we document that bank branch expansion creates divergent effects on educational investment that vary systematically by age group and socioeconomic status. Bank branch entry increases primary school enrollment by 3.1% while simultaneously reducing secondary and higher secondary enrollment by 13.4%, with the substitution effect—-where expanding economic opportunities pull older children from education into the workforce—dominating income effects particularly among economically vulnerable households. Villages with low literacy rates and high proportions of marginal workers experience the largest declines in secondary enrollment, with reductions reaching 22.8% and 28.1% respectively, as bank branching stimulates local economic activity and raises the opportunity cost of continued schooling for adolescents whose labor becomes increasingly valuable in expanding local enterprises.

The central takeaway from our research is that financial inclusion policies, while successful in promoting economic growth, may inadvertently undermine human capital accumulation among adolescents in economically vulnerable communities. This finding has profound implications for development policy, suggesting that the same mechanisms that generate short-term economic gains may reduce long-term development prospects by limiting educational attainment precisely among those who would benefit most from continued schooling. Our results highlight the inverse U-shaped relationship between economic opportunity and educational investment predicted by theory, demonstrating that modest economic improvements can actually pull children from education into the workforce among households at the bottom of the income distribution. This effect is particularly concerning given that these families constitute a substantial portion of the population in developing economies and are often the primary targets of financial inclusion initiatives.

These findings suggest that financial inclusion policies should be designed with com-

plementary interventions to protect educational investments, particularly for secondary school-aged children in economically vulnerable households. Policymakers should consider conditional cash transfer programs, enhanced educational subsidies for older children, or other mechanisms to offset the increased opportunity costs of schooling that accompany economic development. Furthermore, our research indicates that the timing and design of financial inclusion initiatives matter critically for their ultimate welfare effects. While expanding access to financial services generates important economic benefits, these gains may come at the cost of reduced human capital formation if not carefully managed, especially in communities with weak educational norms where immediate economic gains often outweigh perceived returns to continued education.

This study contributes to the growing literature questioning whether financial development always serves as an unambiguous catalyst for long-term welfare improvements. By focusing on one of the most economically marginalized populations—households in previously unbanked rural villages—we demonstrate that the benefits of financial inclusion are not automatically shared equally across all segments of society or all dimensions of development. Our findings underscore the importance of taking a nuanced, multidimensional approach to evaluating development interventions and highlight that financial development, rather than being a panacea for development challenges, represents one tool among many that must be carefully calibrated and complemented with other interventions to achieve broad-based improvements in human welfare. As policymakers continue to expand financial inclusion globally, our findings serve as an important reminder that the ultimate success of these efforts depends not just on increasing access to financial services, but on ensuring that such access translates into sustainable improvements across all dimensions of human development.

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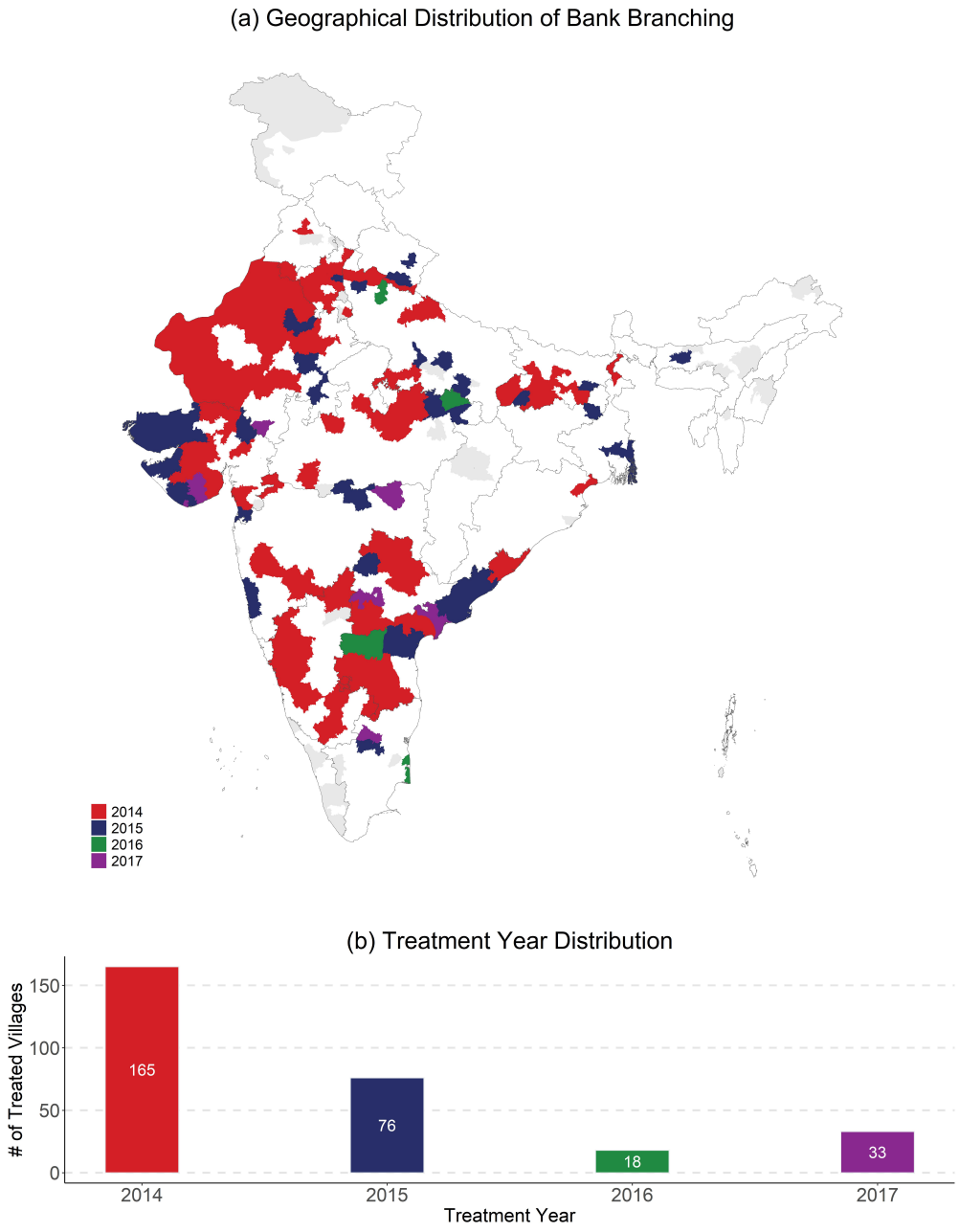
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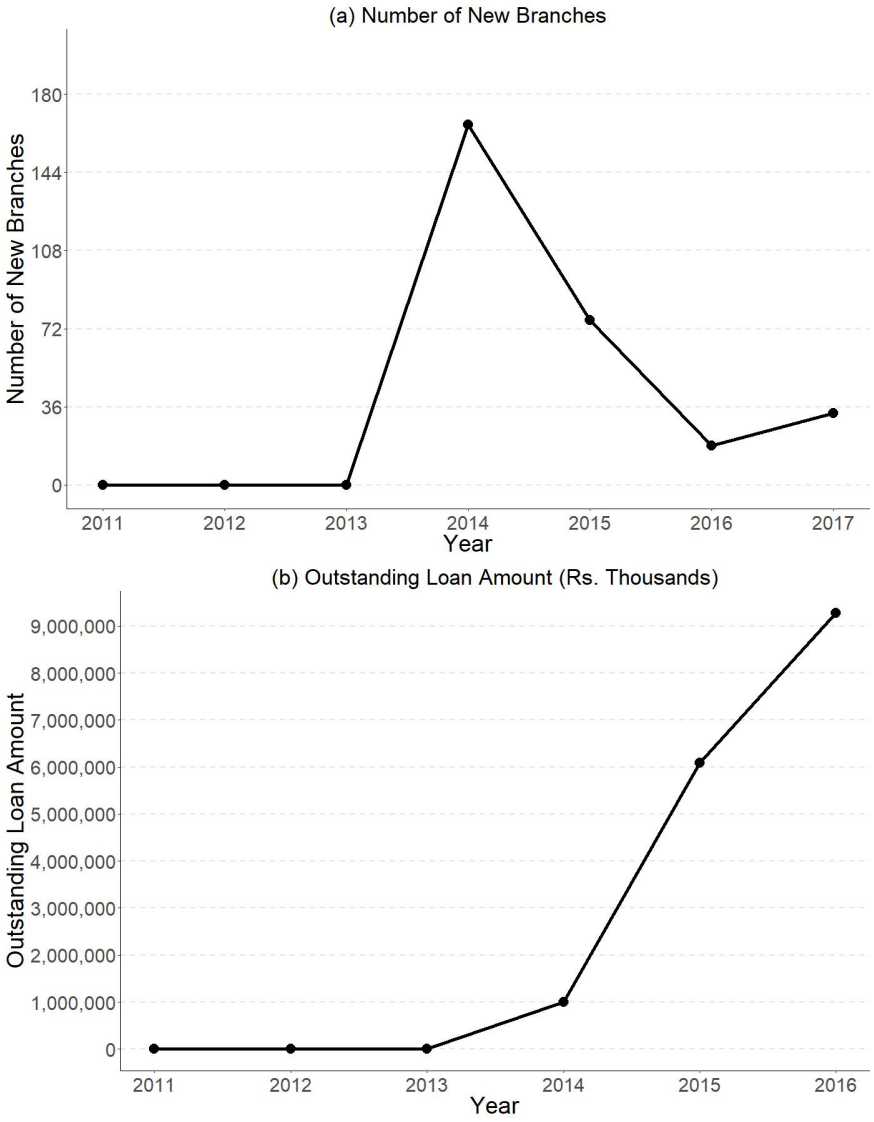
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Figure 1: Distribution of Bank Branching



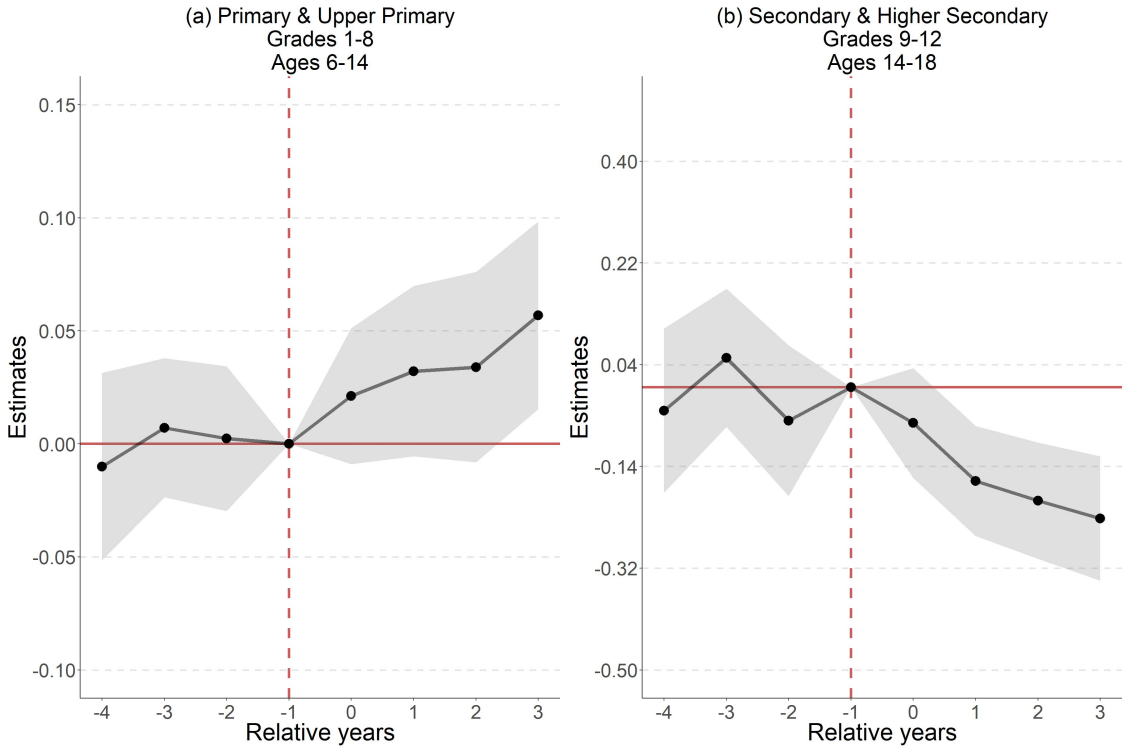
This figure illustrates the geographical and year distribution of places receiving new Regional Rural Bank (RRB) branches between 2014 and 2016. We start with a sample of unbanked tier 5 (population 5,000–9,999 as in Census 2001) and tier 6 villages (population below 5,000 as in Census 2001). Unbanked rural (tier 5 and 6) villages are places without any scheduled commercial bank branches. In July 2013, the Reserve Bank of India (RBI) required RRBs to allocate at least 25% of their new branches to these unbanked rural villages. Panel (a) shows geographical treatment distribution at the district level, and highlights districts with at least one unbanked rural village receiving new RRB branch(es) after 2013. White districts indicate areas with at least one unbanked rural village, while colored districts (red/dark blue/green/purple) represent the earliest treatment year of the unbanked rural villages within that district. Gray districts are areas without any unbanked rural villages in our sample. Panel (b) shows the distribution of event years for 292 treated rural (tier 5 or 6) villages. The number in the middle of each bar indicates the number of rural villages that received new RRB branches in that year.

Figure 2: Bank Branching Over Time



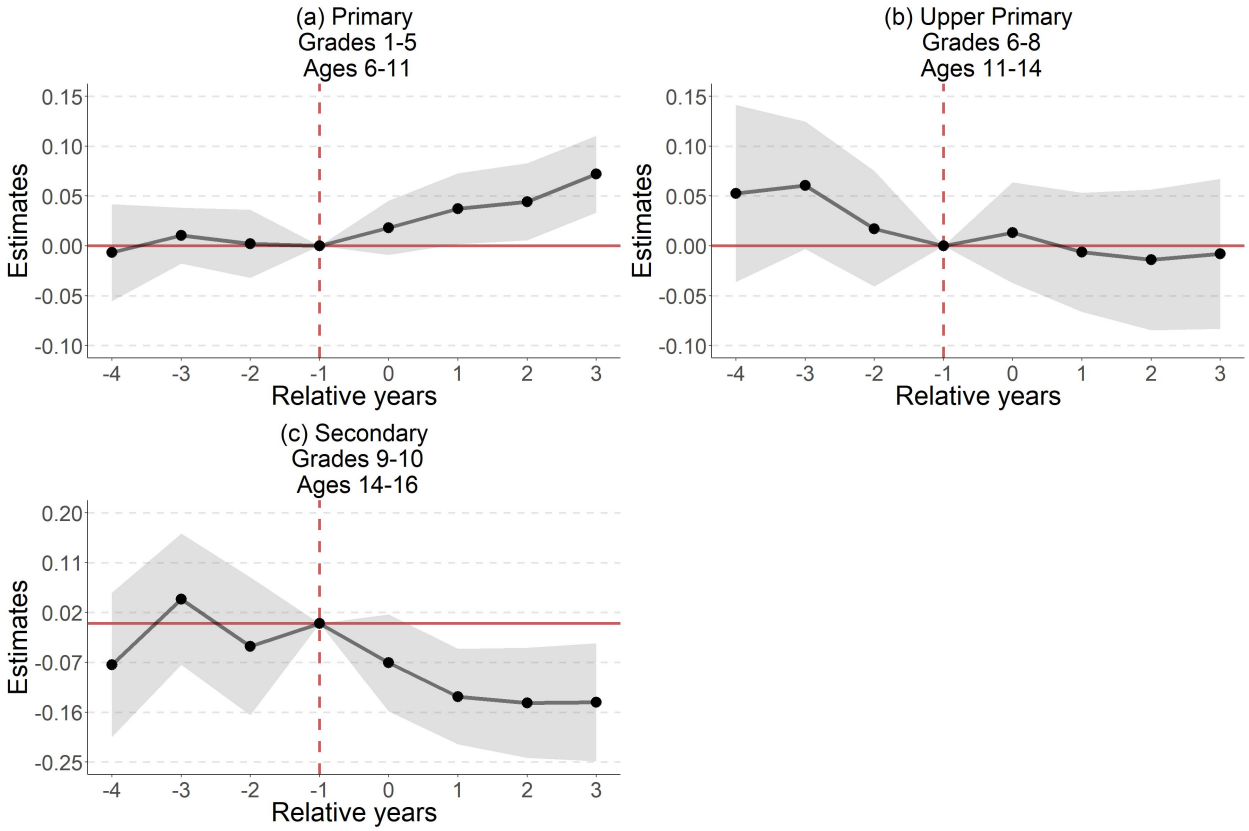
This figure shows the number of new RRBs branches opened (Panel (a)) and the sum of outstanding loan amount (Panel (b)) in the treated rural villages during our sample period. Bank branch entry data is from the Directory of Bank Officials published by the Reserve Bank of India (RBI). Branch-level outstanding loan amount is from the RBI Basic Statistical Return (BSR) 1 (only up to 2016).

Figure 3: Dynamic Response of Bank Branching on Enrollment



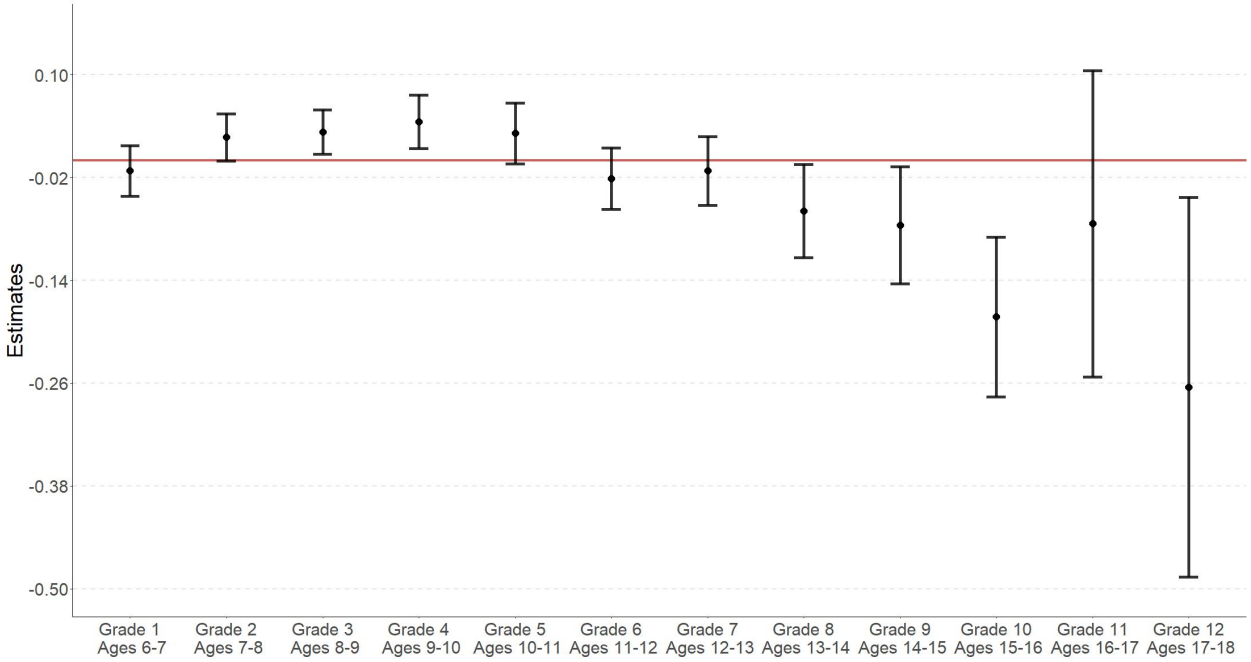
This figure illustrates dynamic enrollment changes before and after new bank branch entries, based on Equation 2. The dependent variable is the log enrollment plus one. Schools are treated if new bank branch(es) open in the village after 2013. The regressions include school fixed effect, district-by-year fixed effect, and village-specific linear time trends to account for unobserved village characteristics that trend linearly over time. The regressions also control for time-varying school characteristics: age and total expenditures, to capture school size. Panel (a) reports results for primary and upper-primary grades (ages 6–14), while Panel (b) shows estimates for secondary and higher-secondary grades (ages 14–18). The shaded gray area represents the 95% confidence interval. The benchmark period is one year before the new bank branch entry.

Figure 4: Heterogeneous Response of Bank Branching on Enrollment by Education Level



This figure shows the heterogeneous dynamic changes in enrollment around new bank branch entries by three educational levels: primary grades (ages 6-11) in (a), upper primary grades (ages 11-14) in (b), and secondary grades (ages 14-16) in (c). The dependent variable is the log enrollment plus one. Schools are treated if new bank branch(es) open in the village after 2013. The regressions include school fixed effect, district-by-year fixed effect, and village-specific linear time trends to account for unobserved village characteristics that trend linearly over time. The regressions also control for time-varying school characteristics: age and total expenditures, to capture school size. The shaded gray area represents the 95% confidence interval. The benchmark period is one year before the new bank branch entry.

Figure 5: Heterogeneous Response of Bank Branching on Enrollment by Grade



This figure shows the heterogeneous average changes in enrollment by grade before and after the bank branching from 2011 to 2017. The dependent variable is the log enrollment plus one. Schools are treated if new bank branch(es) open in the village after 2013. The regressions include school fixed effect, district-by-year fixed effect, and village-specific linear time trends to account for unobserved village characteristics that trend linearly over time. The regressions also control for time-varying school characteristics: age and total expenditures, to capture school size.

Table 1: Summary Statistics

	Mean	Standard Deviation	Observation
Panel A School-Year Panel			
Enrollment - Primary & Upper Primary	103.91	110.61	1,860,872
Enrollment - Primary	80.55	72.86	1,646,623
Enrollment - Upper Primary	87.08	85.39	706,192
Enrollment - Secondary & Higher Secondary	157.42	177.56	117,483
Enrollment - Secondary	118.11	103.78	117,403
Enrollment - Higher Secondary	135.18	139.63	34,454
School Age	37.34	26.09	1,865,613
School Funds Expenditure (Rs.)	10,902.27	25,697.57	1,856,908
Is public school	1	0	1,838,399
Panel B Village-Year Panel			
# of Schools	1.82	1.45	1,026,799
# of Public Schools	1.58	1.17	1,026,799
# of Private Schools	0.21	0.62	1,026,799
Nightlight Intensity - Average	0.49	0.63	855,112
Nightlight Intensity - Minimum	0.12	0.32	855,089
Panel C Pincode-Year Panel			
# of Firms - Entry	0.96	8.00	67,764
# of Firms - Exit	0.50	4.26	67,764
Panel D Village Summary			
Total Treatment Intensity - Deposit Level (Rs. Thousands)	48,111.48	65,049.41	259
Total Treatment Intensity - # of New Deposit Accounts	4,795.12	16,787.07	259
Baseline Literacy Rate	0.57	0.14	153,394
Baseline Marginal Worker Ratio	0.29	0.27	153,393

This table summarizes key variables in our sample of tier 5 and 6 villages. We start with a sample of unbanked tier 5 (population 5,000–9,999 as in Census 2001) and tier 6 villages (population below 5,000 as in Census 2001). Unbanked rural (tier 5 and 6) villages are places without any scheduled commercial bank branches. Following 2013, some rural villages receive new bank branches. Schools are treated if new bank branch(es) open in the village after 2013. Panel A reports school-year statistics for 2011–2017 from the District Information System for Education (DISE) data. It includes school enrollments (winsorized at top and bottom 1%), control variables (age & expenditure to proxy size), and school type (public or private). School funds include Teachers Grant, School Maintenance Grant, School Development Grant, and other funds in the DISE data. Panel B presents the statistics of the number of schools and schools by category for 2011-2017 from DISE. Panel B also shows the summary of nightlight intensity (average and minimum) from the Visible Infrared Imaging Radiometer Suite (VIIRS) for 2012-2017, aggregated at the village level. Variables are winsorized at the top and bottom 1%. Panel C summarizes the private firm activities for 2011-2017. The data is at the Pincode-date level from the Ministry of Corporate Affairs (MCA). Panel D reports the total new deposit level and account numbers across all post-treatment years and new branches for each treated village for 2011-2016. The data is from the Reserve Bank of India (RBI) Basic Statistical Return (BSR) 2. Panel D also reports two village baseline characteristics from the 2011 Indian Census. The literacy rate is the proportion of literate individuals to the total village population to proxy village education environment. The marginal labor ratio is the proportion of marginal workers to the total working population in a village, measuring households' economic burden.

Table 2: Average Response of Bank Branching on Enrollment

	log(Enrollment+1)	
	Primary & Upper Primary Grades 1-8 Age 6-14	Secondary & Higher Secondary Grades 9-12 Age 14-18
	(1)	(2)
Post Branching	0.0306**	-0.134***
	(0.0139)	(0.0383)
School Controls	Yes	Yes
School FE	Yes	Yes
District-Year FE	Yes	Yes
Village Time Trend	Yes	Yes
# Obs	1,842,772	112,216
R-Square	0.9146	0.8523
Pre-treatment average number	103.8342	157.4371

This table shows the average enrollment responses before and after the bank branching (Equation 1). The table reports the change in students' education opportunities for primary & upper primary grades (ages 6–14) in column (1) and secondary & higher secondary grades (ages 14–18) in column (2). The dependent variable is the log enrollment plus one. Post Branching is an indicator variable equal to 1 for years in which the school is in a village that receives new bank branch(es) after 2013. The regressions include school fixed effect, district-by-year fixed effect, and village-specific linear time trends to account for unobserved village characteristics that trend linearly over time. The regressions also control for time-varying school size characteristics: age and total expenditures. Standard errors are clustered at the village level and reported in brackets. The pre-treatment average is calculated as the mean outcome for treated schools prior to the shock and for control schools over the full sample period. ***, **, and * denote significance at 1%, 5%, and 10% level (two-sided), respectively.

Table 3: Average Response of Bank Branching on Enrollment by Education Level

	log(Enrollment+1)		
	Primary Grades 1-5 Age 6-11	Upper Primary Grades 6-8 Age 11-14	Secondary Grades 9-10 Age 14-16
	(1)	(2)	(3)
Post Branching	0.0342**	-0.0288	-0.106***
	(0.0135)	(0.0215)	(0.0358)
School Controls	Yes	Yes	Yes
School FE	Yes	Yes	Yes
District-Year FE	Yes	Yes	Yes
Village Time Trend	Yes	Yes	Yes
# Obs	1,630,050	695,644	112,142
R-Square	0.9022	0.8654	0.8204
Pre-treatment average number	72.8392	85.3879	118.2106

This table shows the average enrollment responses before and after the bank branching by education level. The table reports the change in students' education opportunities for three groups: primary grades (ages 6-11) in column (1), upper primary grades (ages 11-14) in column (2), and secondary grades (ages 14-16) in column (3). The dependent variable is the log enrollment plus one. Post Branching is an indicator variable equal to 1 for years in which the school is in a village that receives new bank branch(es) after 2013. The regressions include school fixed effect, district-by-year fixed effect, and village-specific linear time trends to account for unobserved village characteristics that trend linearly over time. The regressions also control for time-varying school size characteristics: age and total expenditures. Standard errors are clustered at the village level and reported in brackets. The pre-treatment average is calculated as the mean outcome for treated schools prior to the shock and for control schools over the full sample period. ***, **, and * denote significance at 1%, 5%, and 10% level (two-sided), respectively.

Table 4: Robustness Tests: Alternative Control and Treatment

	log(Enrollment+1)	
	Primary & Upper Primary Grades 1-8 Age 6-14	Secondary & Higher Secondary Grades 9-12 Age 14-18
	(1)	(2)
	Panel A Block-Year Fixed Effects	
Post Branching	0.0265*	-0.121***
	(0.0144)	(0.0399)
School Controls	Yes	Yes
School FE	Yes	Yes
Block-Year FE	Yes	Yes
Village Time Trend	Yes	Yes
# Obs	1,842,278	109,629
R-Square	0.9172	0.8799
	Panel B Keep Control Villages in Different Blocks	
Post Branching	0.0307**	-0.143***
	(0.0143)	(0.0396)
School Controls	Yes	Yes
School FE	Yes	Yes
District-Year FE	Yes	Yes
Village Time Trend	Yes	Yes
# Obs	1,707,651	101,020
R-Square	0.9153	0.8530
	Panel C Define Treatment at the Block Level	
Post Branching	0.00754	-0.0238*
	(0.0051)	(0.0141)
School Controls	Yes	Yes
School FE	Yes	Yes
District-Year FE	Yes	Yes
Village Time Trend	Yes	Yes
# Obs	1,842,772	112,216
R-Square	0.9146	0.8523

This table presents robustness tests for Table 2 using alternative control villages and different treatment level. Panel A compares treated and control schools within the same block year bracket. Panel B removes neighboring control villages within the same block as treated villages. Panel C aggregates the treatment level at the block, and the treatment year is the earliest year if any village in the block receives new bank branches. The dependent variable is the log enrollment plus one. Post Branching is an indicator variable equal to 1 for years in which the school is in a village that receives new bank branch(es) after 2013. Regressions include school fixed effect, village-specific linear time trends, and district-by-year fixed effect (block-by-year fixed effects) in Panels B & C (Panel A). The regressions also control for school size characteristics: age and total expenditures. Standard errors are clustered at the village level and reported in brackets. ***, **, and * denote significance at 1%, 5%, and 10% level (two-sided), respectively.

Table 5: Robustness Tests: Alternative Specification

	log(Enrollment+1)	
	Primary & Upper Primary Grades 1-8 Age 6-14	Secondary & Higher Secondary Grades 9-12 Age 14-18
	(1)	(2)
	Panel A Control Differences in Village Baseline Characteristics	
Post Branching	0.0253*	-0.132***
	(0.0148)	(0.0406)
School Controls	Yes	Yes
School FE	Yes	Yes
District-Year FE	Yes	Yes
Village Time Trend	Yes	Yes
Village Baseline Characteristics × Year Dummies	Yes	Yes
# Obs	1,756,745	106,002
R-Square	0.9164	0.8509
	Panel B Control Differences in School Baseline Characteristics	
Post Branching	0.0307**	-0.143***
	(0.0143)	(0.0396)
School Controls	Yes	Yes
School FE	Yes	Yes
District-Year FE	Yes	Yes
Village Time Trend	Yes	Yes
School Baseline Characteristics × Year Dummies	Yes	Yes
# Obs	1,711,177	95,672
R-Square	0.9267	0.8640

This table shows robustness tests for Table 2 to alleviate the concern that treated and control villages (or schools) with different baseline characteristics may evolve differently over time. In panel A, we have a set of village baseline characteristics interacted with year fixed effects to compare treated and control schools among villages with similar baseline characteristics. Village baseline characteristics include population size, share of main workers, share of scheduled caste/tribe population, access to black-topped roads, power supply, mobile coverage, post offices, and number of primary health centers reported in India Census 2011. The summary statistics of these variables are in Table A.1. Panel B directly compares treated and control schools with similar characteristics by including a set of school baseline characteristics interacted with year fixed effects. School baseline characteristics include total enrollment, student-teacher ratio, access to toilets, libraries, medical check-ups, playgrounds, drinking water, functional electricity, and boundary walls based on school statistics as of 2011. The dependent variable is the log enrollment plus one. Post Branching is an indicator variable equal to 1 for years in which the school is in a village that receives new bank branch(es) after 2013. All Regressions include school fixed effect, village-specific linear time trends, and district-by-year fixed effect. The regressions also control for school size characteristics. Standard errors are clustered at the village level and reported in brackets. ***, **, and * denote significance at 1%, 5%, and 10% level (two-sided), respectively.

Table 6: Placebo Test: Average Impact of Pseudo Bank Branching on School Enrollment (Non-Tier 5/6 Villages)

	log(Enrollment+1)	
	Primary & Upper Primary Grades 1-8 Age 6-14	Secondary & Higher Secondary Grades 9-12 Age 14-18
	(1)	(2)
Post Branching	0.0134	-0.0000583
	(0.0142)	(0.0326)
School Controls	Yes	Yes
School FE	Yes	Yes
District-Year FE	Yes	Yes
Village Time Trend	Yes	Yes
# Obs	54,798	6,831
R-Square	0.8972	0.9261

This table shows the average enrollment responses before and after the pseudo-bank branching treatment for schools in non-tier 5 or 6 villages. Pseudo-treatment years (2014/2015/2016/2017) are randomly assigned to 165/76/18/33 villages in other tiers, following the treatment year distribution in Figure 1 Panel (b). The dependent variable is the log enrollment plus one. Post Branching is an indicator variable equal to 1 for years in which the school is in a village that receives new bank branch(es) after 2013 (pseudo treatment). The regressions include school fixed effect, district-by-year fixed effect, and village-specific linear time trends. The regressions also control for time-varying school size characteristics. Standard errors are clustered at the village level and reported in brackets. ***, **, and * denote significance at 1%, 5%, and 10% level (two-sided), respectively.

Table 7: Heterogeneous Response of Bank Branching on Enrollment by Education Environment and Households' Economic Burden

	log(Enrollment+1)					
	Primary & Upper Primary Grades 1-8 Age 6-14	Secondary & Higher Secondary Grades 9-12 Age 14-18	Primary & Upper Primary Grades 1-8 Age 6-14	Secondary & Higher Secondary Grades 9-12 Age 14-18	Primary & Upper Primary Grades 1-8 Age 6-14	Secondary & Higher Secondary Grades 9-12 Age 14-18
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A Education Environment - Literacy Rate					
	High		**Medium**		**Low**	
Post Branching	0.0686**	-0.0849	0.0345*	-0.116**	0.0321	-0.228***
	(0.0314)	(0.0781)	(0.0196)	(0.0560)	(0.0277)	(0.0538)
School controls	Yes	Yes	Yes	Yes	Yes	Yes
School FE	Yes	Yes	Yes	Yes	Yes	Yes
District-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Village Time Trend	Yes	Yes	Yes	Yes	Yes	Yes
# Obs	595,373	50,795	599,518	35,101	566,270	19,266
R-Square	0.9207	0.9025	0.9102	0.8454	0.9162	0.7829
	Panel B Households' Economic Burden - Marginal Labor Ratio					
	High		**Medium**		**Low**	
Post Branching	-0.0103	-0.281***	0.0544***	-0.145***	0.0331	0.00760
	(0.0319)	(0.0745)	(0.0176)	(0.0458)	(0.0332)	(0.1037)
School controls	Yes	Yes	Yes	Yes	Yes	Yes
School FE	Yes	Yes	Yes	Yes	Yes	Yes
District-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Village Time Trend	Yes	Yes	Yes	Yes	Yes	Yes
# Obs	564,629	26,892	656,079	44,685	540,528	33,727
R-Square	0.9140	0.8139	0.9100	0.8719	0.9259	0.8936

This table presents the heterogeneous average enrollment responses based on village baseline characteristics from the 2011 Indian Census. In Panel A, the literacy rate - calculated as the proportion of literate individuals to the total village population — serves as a proxy for educational culture before the shock. Villages are grouped into High, Medium, and Low categories using a tercile split, with the cutoff values of the literacy ratio being 0.52 and 0.64. Panel B shows the marginal labor ratio, defined as the proportion of marginal workers to the total working population in a village, as a measure of household economic burden. Similarly, villages are divided into High, Medium, and Low groups based on a tercile split, with the cutoff values being 0.1 and 0.38. The dependent variable is the log enrollment plus one. Post Branching is an indicator variable equal to 1 for years in which the school is in a village that receives new bank branch(es) after 2013. All regressions include school fixed effect, district-by-year fixed effect, and village-specific linear time trends, along with school size controls. Standard errors are clustered at the village level and reported in brackets. ***, **, and * denote significance at 1%, 5%, and 10% level (two-sided), respectively.

Table 8: Heterogeneous Response of Bank Branching on Enrollment by Students' Gender, Caste and School Type

	log(Enrollment+1)			
	Primary & Upper Primary Grades 1-8 Age 6-14	Secondary & Higher Secondary Grades 9-12 Age 14-18	Primary & Upper Primary Grades 1-8 Age 6-14	Secondary & Higher Secondary Grades 9-12 Age 14-18
	(1)	(2)	(3)	(4)
	Panel A Student Gender			
	Boys		**Girls**	
Post Branching	0.0348**	-0.130***	0.0708***	-0.100***
	(0.0146)	(0.0388)	(0.0192)	(0.0355)
School Controls	Yes	Yes	Yes	Yes
School FE	Yes	Yes	Yes	Yes
District-Year FE	Yes	Yes	Yes	Yes
Village Time Trend	Yes	Yes	Yes	Yes
# Obs	1,842,772	112,216	1,842,772	112,216
R-Square	0.9197	0.9027	0.9088	0.8788
	Panel B Student Caste			
	General Caste		**Backward Caste**	
Post Branching	-0.00262	-0.133***	0.0353**	-0.143***
	(0.0234)	(0.0445)	(0.0162)	(0.0496)
School Controls	Yes	Yes	Yes	Yes
School FE	Yes	Yes	Yes	Yes
District-Year FE	Yes	Yes	Yes	Yes
Village Time Trend	Yes	Yes	Yes	Yes
# Obs	1,840,747	112,182	1,840,747	112,182
R-Square	0.9070	0.9127	0.9066	0.8503
	Panel C School Type			
	Public Schools		**Private Schools**	
Post Branching	0.0277	-0.116***	0.0578*	-0.0786
	(0.0171)	(0.0304)	(0.0344)	(0.0806)
School Controls	Yes	Yes	Yes	Yes
School FE	Yes	Yes	Yes	Yes
District-Year FE	Yes	Yes	Yes	Yes
Village Time Trend	Yes	Yes	Yes	Yes
# Obs	1,606,678	58,929	1,840,747	51,077
R-Square	0.9375	0.8669	0.9066	0.8698

This table presents the heterogeneous enrollment responses by students' gender (Panel A), caste (Panel B), and school type (Panel C). The dependent variable is the log enrollment plus one. Post Branching is an indicator variable equal to 1 for years in which the school is in a village that receives new bank branch(es) after 2013. All regressions include school fixed effect, district-by-year fixed effect, and village-specific linear time trends, along with school size controls. Standard errors are clustered at the village level and reported in brackets. ***, **, and * denote significance at 1%, 5%, and 10% level (two-sided), respectively.

Table 9: Average Response of Bank Branching on Local Economic Activity

	(1)	(2)
	Panel A Firm Activity	
	log(Number of Firms+1)	
	Entry	Exit
Post branching	0.0829***	-0.0837***
	(0.0225)	(0.0219)
Pincode FE	Yes	Yes
District-Year FE	Yes	Yes
Pincode Time Trend	Yes	Yes
# Obs	67,438	67,438
R-Square	0.7912	0.7109
	Panel B Nightlight	
	log(Intensity+1)	
	Average	Minimum
Post branching	0.00378	0.0123*
	(0.0062)	(0.0063)
Village FE	Yes	Yes
District-Year FE	Yes	Yes
Village Time Trend	Yes	Yes
# Obs	854,295	854,271
R-Square	0.9548	0.8722

This table presents the average changes in economic activities before and after bank branch entry. Panel A uses private firm data from the Ministry of Corporate Affairs (MCA) at the Pincode-date level between 2011 and 2017. Treatment is then aggregated to the Pincode level, and the event year is the earliest year a village in the Pincode receives new bank branches. Firm entries and exits include firms classified as "Active" or under statuses like "Dissolved", "Strike Off", "Under Process of Striking Off", "Under Liquidation", "Liquidated" and "Converted to LLP and Dissolved". The dependent variable is the log number of firm entry/exit plus one. Post Branching is an indicator variable equal to 1 for years in which the Pincode receives new bank branch(es) after 2013. Regressions include Pincode fixed effect, district-by-year fixed effect, and Pincode-specific linear time trends. Standard errors are clustered at the Pincode level and reported in brackets. Panel B uses nightlight data from VIIRS between 2012 and 2017, and aggregates the intensity measures at the village level. The dependent variable is log intensity plus one. Post Branching is an indicator variable equal to 1 for years in which a village receives new bank branch(es) after 2013. Regressions include village fixed effect, district-by-year fixed effect, and village-specific linear time trends. Standard errors are clustered at the village level and reported in brackets. ***, **, and * denote significance at 1%, 5%, and 10% level (two-sided), respectively.

Table 10: Average Response of Bank Branching on Enrollment by Enterprise Credit Supply

	log(Enrollment +1)			
	Primary & Upper Primary Grades 1-8 Age 6-14	Secondary & Higher Secondary Grades 9-12 Age 14-18	Primary & Upper Primary Grades 1-8 Age 6-14	Secondary & Higher Secondary Grades 9-12 Age 14-18
	(1)	(2)	(3)	(4)
	With Enterprise Credit Flow		**Without Enterprise Credit Flow**	
Post branching	0.0426**	-0.159***	0.0106	-0.0468
	(0.0172)	(0.0443)	(0.0261)	(0.1095)
School controls	Yes	Yes	Yes	Yes
School FE	Yes	Yes	Yes	Yes
District-Year FE	Yes	Yes	Yes	Yes
Village Time Trend	Yes	Yes	Yes	Yes
# Obs	1,840,160	111,883	1,836,157	111,107
R-Square	0.9146	0.8523	0.9148	0.8527

This table shows the heterogeneous responses of enrollment by enterprise credit supply. The outstanding loan data is from the RBI BSR 1 up to 2016. The enterprise credit flows for each treated village are based on the total credit increase for enterprise borrowers' accounts over all new RRB branches across post years. In each intensity group, we compare schools in treated villages with schools in the control villages without any bank branch expansion. The dependent variable is log enrollment plus one. Post Branching is an indicator variable equal to 1 for years in which the school is in a village that receives new bank branch(es) after 2013. All regressions include school fixed effects, district-by-year fixed effects, and village-specific linear time trends, along with school size controls. Standard errors are clustered at the village level and reported in brackets. ***, **, and * denote significance at 1%, 5%, and 10% level (two-sided), respectively.

Table 11: Average Response of Bank Branching on Enrollment by Deposit Growth

	log(Enrollment+1)			
	Primary & Upper Primary Grades 1-8 Age 6-14	Secondary & Higher Secondary Grades 9-12 Age 14-18	Primary & Upper Primary Grades 1-8 Age 6-14	Secondary & Higher Secondary Grades 9-12 Age 14-18
	(1)	(2)	(3)	(4)
	Panel A Intensive Growth - Deposit Level			
	High		**Low**	
Post Branching	0.0363*	-0.0984*	0.0345	-0.193***
	(0.0200)	(0.0574)	(0.0211)	(0.0541)
School Controls	Yes	Yes	Yes	Yes
School FE	Yes	Yes	Yes	Yes
District-Year FE	Yes	Yes	Yes	Yes
Village Time Trend	Yes	Yes	Yes	Yes
# Obs	1,838,783	111,640	1,837,534	111,350
R-Square	0.9146	0.8523	0.9148	0.8527
	Panel B Extensive Growth - # of New Deposit Accounts			
	High		**Low**	
Post Branching	0.0378*	-0.0859	0.0325	-0.209***
	(0.0194)	(0.0564)	(0.0220)	(0.0533)
School Controls	Yes	Yes	Yes	Yes
School FE	Yes	Yes	Yes	Yes
District-Year FE	Yes	Yes	Yes	Yes
Village Time Trend	Yes	Yes	Yes	Yes
# Obs	1,838,776	111,645	1,837,541	111,345
R-Square	0.9147	0.8522	0.9148	0.8527

This table shows the heterogeneous responses of enrollment by treatment intensity - deposit growth. The deposit data is from the RBI BSR 2 up to 2016. The intensive (Panel A) and extensive (Panel B) growth proxies for each treated village are based on the total deposit increase and the number of deposit accounts over all new RRB branches across post years. High and Low intensity are based on whether this number is above or below the median value (48,111.48 (Rs. Thousands) in Panel A /4,795.12 in Panel B) of the distribution. In each intensity group, we compare schools in treated villages with schools in the control villages without any bank branch expansion. The dependent variable is log enrollment plus one. Post Branching is an indicator variable equal to 1 for years in which the school is in a village that receives new bank branch(es) after 2013. All regressions include school fixed effect, district-by-year fixed effect, and village-specific linear time trends, along with school size controls. Standard errors are clustered at the village level and reported in brackets. ***, **, and * denote significance at 1%, 5%, and 10% level (two-sided), respectively.

Table 12: Average Response of Bank Branching on School Supply

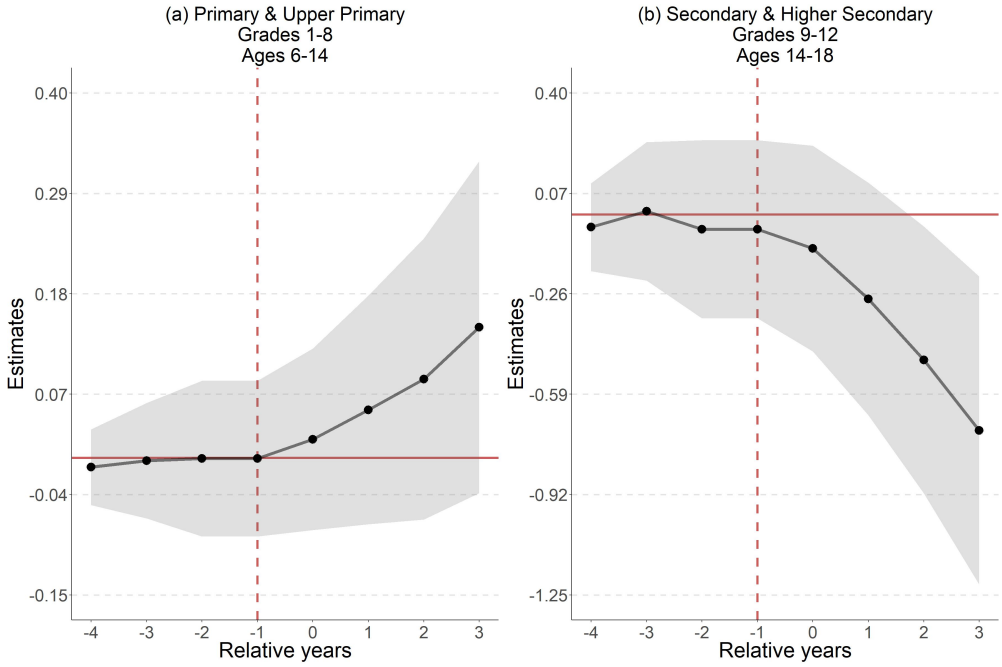
	Number of Schools		
	Total	Public	Private
	(1)	(2)	(3)
Post Branching	0.0241	-0.156***	0.186***
	(0.0568)	(0.0386)	(0.0394)
Village FE	Yes	Yes	Yes
District-Year FE	Yes	Yes	Yes
Village Time Trend	Yes	Yes	Yes
# Obs	1,023,752	1,023,752	1,023,752
R-Square	0.9729	0.9718	0.9131

This table shows average changes in school supply before and after bank branching using a village-year panel. The data is from DISE between 2011 and 2017. The dependent variable is the number of total schools and schools by type (public/private). Post Branching is an indicator variable equal to 1 for years in which a village receives new bank branch(es) after 2013. Regressions include village fixed effect, district-by-year fixed effect, and village-specific linear time trends. Standard errors are clustered at the village level and reported in brackets. ***, **, and * denote significance at 1%, 5%, and 10% level (two-sided), respectively.

Internet Appendix for "Economic Opportunity Costs: Banking Access and Educational (Dis)Investment"

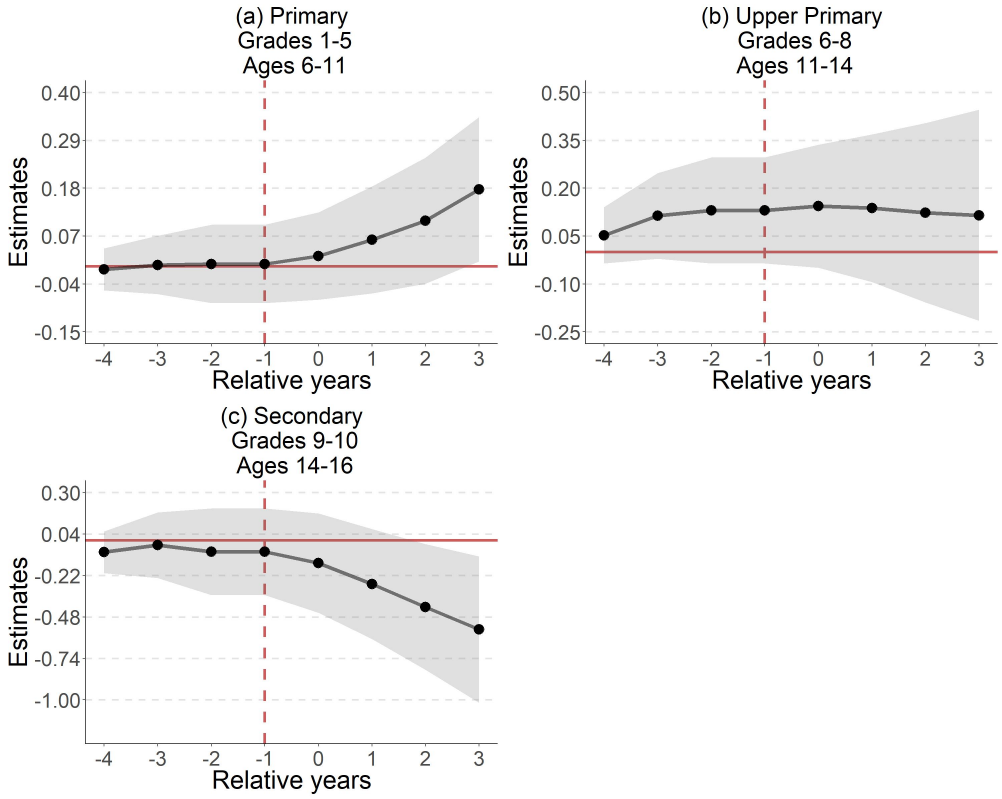
Intended for online publication only

Figure A.1: Cumulative Effect of Bank Branching on Enrollment



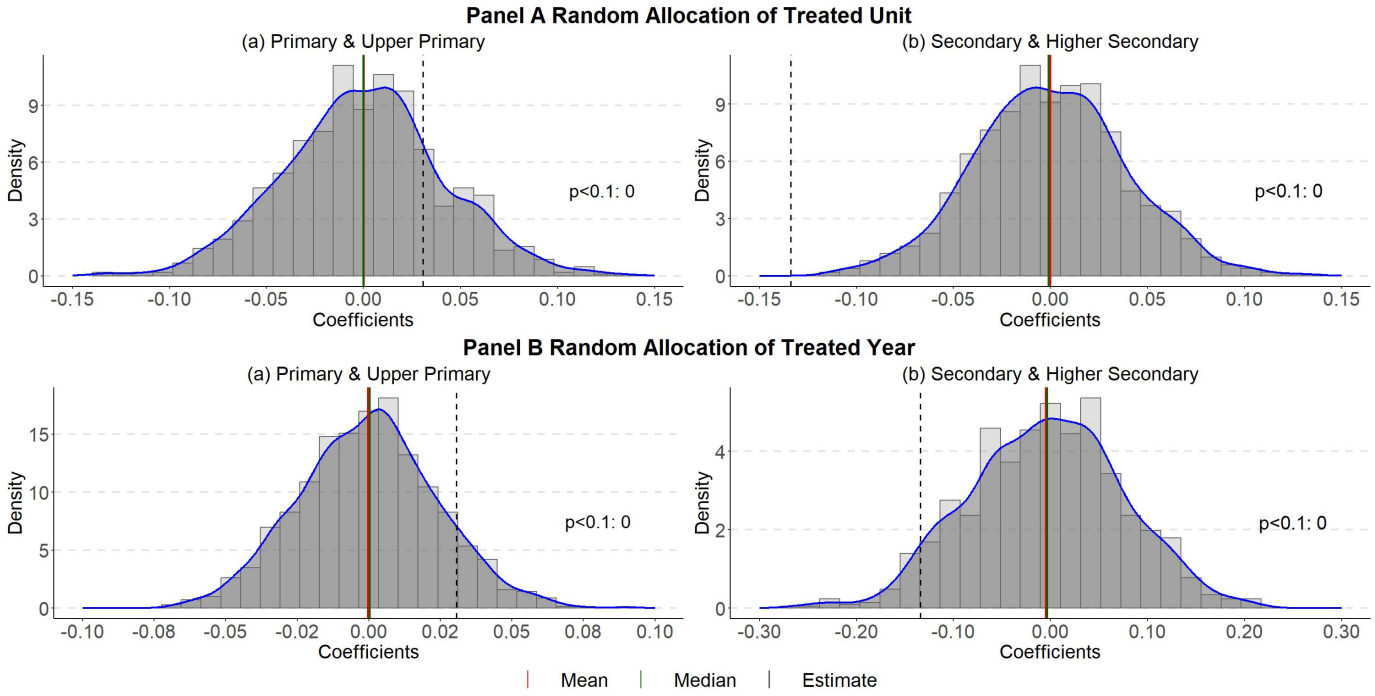
This figure shows the cumulative changes in enrollment around new bank branch entries. The dependent variable is the log enrollment plus one. Panel (a) presents results for primary and upper primary grades (ages 6–14), while Panel (b) focuses on secondary and higher secondary grades (ages 14–18). Schools are treated if new bank branch(es) open in the village after 2013. The regressions include school fixed effect, district-by-year fixed effect, and village-specific linear time trends, along with school size controls. The shaded gray area represents the 95% confidence interval. The benchmark period is one year before the new bank branch entry.

Figure A.2: Cumulative Effect of Bank Branching on Enrollment by Education Levels



This figure shows the heterogeneous cumulative changes in enrollment around new bank branch entries by three educational levels: primary grades (ages 6-11) in (a), upper primary grades (ages 11-14) in (b), and secondary grades (ages 14-16) in (c). The dependent variable is the log enrollment plus one. Schools are treated if new bank branch(es) open in the village after 2013. The regressions include school fixed effect, district-by-year fixed effect, and village-specific linear time trends, along with school size controls. The shaded gray area represents the 95% confidence interval. The benchmark period is one year before the new bank branch entry.

Figure A.3: Placebo Test: Randomization Treated Unit and Year



This figure shows the density distribution of estimated coefficients for "Post Branching" from our placebo test. In Panel A, we randomly select 292 treated rural villages from the control sample, assign pseudo-treatment years (2011-2017), and estimate Equation 1. In Panel B, we randomly assign pseudo-treatment years (2011-2017) within the 292 treated villages and estimate Equation 1.The randomization is repeated 1000 times, and the kernel density plots are shown for students in a) primary & upper primary grades, and b) secondary & higher secondary grades. The red vertical line represents the mean, the green line denotes the median, and black lines shows the estimates from Table 2.

Table A.1: Village-level Balance Test

	(1)	(2)	(3)
	Panel A Balance Test of Village Characteristics		
	Treated Villages	Control Villages	Mean Differences: (1)-(2)
Population Size	3876.4596	1472.4055	2259.7484***
Main Workers (% of Population)	0.3262	0.3319	-0.0119
Scheduled Caste and Scheduled Tribe (% of Population)	0.2498	0.3748	-0.0471***
Access to Black Topped Road	0.9191	0.7090	0.2363***
Access to Power Supply (All Users)	0.8382	0.6275	0.1003***
Access to Mobile Phone Coverage	0.9007	0.8039	0.0335
Access to Post Office	0.2537	0.1021	0.1694***
No. of Primary Health Centre	0.2206	1.4577	0.1808
	Panel B Mean Differences After Matching		
	1-Nearest Neighbor	Coarsened Exact Matching	Mahalanobis Matching
# of Treated Villages	262	251	254
# of Control Villages	250	9,427	251
Population Size	1177.6130 ***	1582.3780 ***	564.7394 **
Main Workers (% of Population)	0.0014	-0.0021	0.0021
Scheduled Caste and Scheduled Tribe (% of Population)	0.0030	0.0248 ***	0.0043
Access to Black Topped Road	-0.0032	-0.0234**	0.0110
Access to Power Supply (All Users)	0.0099	-0.0248**	-0.0072
Access to Mobile Phone Coverage	0.0005	-0.0219**	0.0399
Access to Post Office	-0.0393	0.1068	-0.0160
No. of Primary Health Centre	0.0083	0.1528	0.1140 ***

This table presents the balance test for village baseline characteristics from the Indian 2011 Census. Panel A reports the means for treated and control villages (columns 1 and 2) and mean differences between the treated and control villages within the same block (column 3). Panel B shows the mean differences between treated and control villages after three matching methods: 1-nearest neighbor (column 1), coarsened exact matching (column 2), and mahalanobis matching (column 3). ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively (two-sided).

Table A.2: Robustness Test: Estimates in Staggered Treatment Effect

	log(Enrollment+1)	
	Primary & Upper Primary Grades 1-8 Age 6-14	Secondary & Higher Secondary Grades 9-12 Age 14-18
	(1)	(2)
	Panel A Negative Weight Test (Chaisemartin & D'Haultfoeuille 2020)	
% ATTs with negative weights	3%	4%
Sum of negative weights	-0.0001	-0.0001
	Panel B Sun and Abraham 2021	
Post Branching	0.0349**	-0.1467***
	(0.0167)	(0.0432)
R-Square	0.9150	0.8624
	Panel C Callaway and Sant'Anna 2021	
Post Branching	0.0294***	-0.1402***
	(0.0167)	(0.0432)
# Obs	1,851,403	116,003
School Controls	Yes	Yes
School FE	Yes	Yes
District-Year FE	Yes	Yes
Village-specific linear time trend	Yes	Yes

This table shows the results of diagnostic tests and alternative approaches to address concerns of bias estimates in staggered difference-in-differences. Panel A reports the results of the Diagnostic Test from Chaisemartin and D'Haultfœuille (2020), Panels B and C show the average enrollment estimates using two alternative methods from Sun and Abraham (2021), and Callaway and Sant'Anna (2021). The dependent variable is log enrollment plus one. Post Branching is an indicator variable equal to 1 for years in which the school is in a village that receives new bank branch(es) after 2013. The regressions include school fixed effect, district-by-year fixed effect, and village-specific linear time trends, along with school size controls. Standard errors are clustered at the village level and reported in brackets. ***, **, and * denote significance at 1%, 5%, and 10% level (two-sided), respectively.

Table A.3: Robustness Test: Average Pre-Treatment Effect

	log(Enrollment+1)	
	Primary & Upper Primary Grades 1-8 Age 6-14	Secondary & Higher Secondary Grades 9-12 Age 14-18
	(1)	(2)
Pre Branching	0.00220	-0.0537
	(0.0142)	(0.0524)
Post Branching	0.0321**	-0.148***
	(0.0156)	(0.0408)
School Controls	Yes	Yes
School FE	Yes	Yes
District-Year FE	Yes	Yes
Village Time Trend	Yes	Yes
# Obs	1,842,772	112,216
R-Square	0.9146	0.8523

This table shows average enrollment responses before and after the bank branching, including a Pre Branching estimator. Pre-branching is an indicator variable equal to 1 for two years before a rural village receives new bank branch(es). Post Branching is an indicator variable equal to 1 for years in which the school is in a village that receives new bank branch(es) after 2013. Regressions include school fixed effect, district-by-year fixed effect, and village-specific linear time trends, along with school size controls. Standard errors are clustered at the village level and reported in brackets. ***, **, and * denote significance at 1%, 5%, and 10% level (two-sided), respectively.

Table A.4: Average Response of Bank Branching on Exam Performance of Students Remaining in Schools

	log(Number of Students+1)					
	Primary Level Examination			Upper Primary Level Examination		
	Appear	Pass	Pass with Merit	Appear	Pass	Pass with Merit
	(1)	(2)	(3)	(4)	(5)	(6)
Post Branching	0.0554	0.0566	0.0569	0.0873*	0.0868*	0.113**
	(0.0461)	(0.0456)	(0.0438)	(0.0498)	(0.0486)	(0.0493)
School Controls	Yes	Yes	Yes	Yes	Yes	Yes
School FE	Yes	Yes	Yes	Yes	Yes	Yes
District-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Village Time Trend	Yes	Yes	Yes	Yes	Yes	Yes
# Obs	1,244,666	1,244,583	1,238,393	473,536	473,509	471,911
R-Square	0.6619	0.6617	0.6354	0.6978	0.6969	0.6599

This table reports students' exam performance before and after bank branching for students who are still in schools. Columns (1) to (3) present changes in primary-level exams (Grades 4 or 5), while columns (4) to (6) show the changes of exam performance in upper primary-level exams (Grades 7 or 8). The dependent variable is log number of students appearing/passing/passing with merit plus one. Post Branching is an indicator variable equal to 1 for years in which the school is in a village that receives new bank branch(es) after 2013. R-egressions include school fixed effect, district-by-year fixed effect, and village-specific linear time trends, along with school size controls. Standard errors are clustered at the village level and reported in brackets. ***, **, and * denote significance at 1%, 5%, and 10% level (two-sided), respectively.