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Banking the Underbanked: Capital Investment and Credit-Constrained Firms

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Abstract

Inadequate banking infrastructure can exacerbate inequalities across firms. We exploit a place-based policy at scale – India's nationwide bank expansion policy in 2005 that incentivized banks to open branches in "underbanked" districts – and extend a regression discontinuity design to identify substantial increases in capital expenditures and credit growth of manufacturing establishments post-intervention. We find that establishments most likely to be credit constrained i.e., small, young and those not publicly listed drive these effects. Using novel regulatory data we find evidence in support of two mechanisms – increased hiring of bank officers and physical proximity of lenders to small, informationally opaque borrowers that explain the uptick in capital spending by small firms.

Keywords: Bank Branch Expansions, Credit Constraints, Small and Micro-Enterprises

JEL Classification: G21, D22, D24, O16

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1 Introduction

Small and medium enterprises (SMEs) constitute a key part of the economy, accounting for over half of formal employment in developing countries (Ayyagari et al., 2014). SME growth is also positively associated with higher GDP growth (Beck et al., 2005a). SMEs however are more likely to be credit constrained (Beck et al., 2005b; De Mel et al., 2008; Campello et al., 2010; Banerjee and Duflo, 2014; Chodorow-Reich, 2014), particularly in developing countries where institutional frictions such as weak investor protection and inadequate banking infrastructure combine with high screening costs and low collateral to serve as barriers to formal credit (Banerjee and Duflo, 2010; Gutierrez et al., 2023). There is however limited evidence on policies at-scale to ease credit constraints for SMEs. Our paper exploits a unique banking expansion in India to examine whether improved access to banking institutions affected capital investment and credit for SMEs.

A priori, the effect of banking expansions on borrowing and investment by small firms is ambiguous: if small firms' barriers to credit remain unabated, gains from banking expansion would mostly accrue to large firms. To this effect, our study differentiates from the existing literature by examining whether SMEs gain from banking expansions, and documenting the specific frictions which are alleviated through financial deepening. Exploiting novel regulatory data and a quasi-exogenous expansion in private banks, our paper shows that the superior collection of soft information facilitates capital investment and credit growth for SMEs. This is achieved through a reduction in lenders' physical distance from borrowers, and the hiring of loan officers by entrant banks.

India forms an ideal context of study. Micro and small enterprises comprise 80% of registered manufacturing establishments and 74% of these report financing constraints (World Bank Enterprise Surveys). The financial system is also largely bank-dependent.[1] Against this background, we examine the Branch Authorisation Policy (BAP) of 2005: a place-based policy which incentivised banks to expand operations in under-served regions. Under the BAP, India's

[1] Between 2001 and 2011, less than 15% of registered manufacturing establishments were owned by publicly listed corporations.

central bank – the Reserve Bank of India (RBI) – made its approval of banks' annual expansion plans contingent on their financial intermediation in "underbanked" districts. A district was deemed underbanked if its bank branch density in 2005 was less than the national average. There is no evidence of manipulation in districts' assignment to underbanked ("treatment") status and the McCrary (2008) test formally rules out any selective sorting of districts into treatment. Pre-treatment establishment, bank and district observables are also "balanced" within a narrow neighbourhood of the policy threshold.

For causal identification, we exploit the arbitrary national average threshold in the spirit of a regression discontinuity (RD) design. Exploiting the time-variation in the onset of the BAP, we combine a sharp RD with a Differences-in-Difference (DD) design. Our empirical strategy compares establishment (banking) outcomes across underbanked and non-underbanked districts, before and after the policy intervention, for establishments (banks) located in districts within a narrow neighbourhood of the discontinuity threshold. We verify that the policy increased financial intermediation in underbanked districts, driven by private banks. Underbanked districts witnessed a 50% increase in private bank branches following the BAP. This is accompanied by an increase in private bank manufacturing credit, a third of which was loans to micro and small enterprises. There was however no corresponding increase in state-owned bank branches or credit.[2] The disproportionate response by private banks is unsurprising when considering that 60% of underbanked districts (45% of districts overall) had no private banks prior to 2005.

We identify whether the expansion in private banks affected capital investment using data from the Annual Survey of Industries (ASI) – a nationally representative survey of registered manufacturing establishments in India. The ASI provides annual data on establishment fixed assets, credit, output, workers hired, and wages. We construct an 11 year establishment-level panel (2001-2011) with treatment status determined by the establishment's location in an underbanked district. Importantly, while the ASI covers only registered establishments, two-thirds of establishments hired less than 20 employees, allowing us to identify the distributional

[2] State-owned banks dominate India's banking landscape, accounting for over 60% of the credit disbursed and the majority of bank branches.

effects of banking expansions across micro and small enterprises.

Focusing on investments in plant and machinery, we identify a 6 percentage point (ppt.) increase in capital spending (equivalent to INR 1.8 million) for establishments in underbanked districts, relative to observationally equivalent establishments in non-underbanked districts. An event-study specification documents the absence of differential pre-treatment trends, but a sharp uptick in capital spending following the BAP. Establishment credit growth also showed a significant increase (INR 3.3 million). The results are robust to alternate functional forms, bandwidths, and controlling for other contemporaenous policy interventions.

We explore the distributional implications of financial deepening to assess whether higher manufacturing investment in underbanked districts was driven by enterprises most likely to be credit-constrained. A large literature has shown credit constraints to bind for smaller firms (Clark et al., 2004; Galindo and Micco, 2007; Beck et al., 2008; Campello et al., 2010). Consistent with this, we find the increase in capital spending and credit growth to be driven by establishments employing under 25 workers. The treatment effects are strongest for small *and* young establishments; relative to comparable establishments in control districts, these establishments witnessed 12 (30) ppt. higher capital spending (credit growth) following the BAP. The positive treatment effects are concentrated among establishments satisfying the administrative classification of small-scale industries and not owned by publicly listed corporations – indicative of the presence of credit constraints. Importantly, establishments' lack of collateral did not dampen capital investment and credit growth in underbanked areas. In the absence of significant changes in regulatory structures, creditor rights, or interest rates, this points to a reduction in information asymmetry in under-served areas.

As screening costs are increasing in distance, we first examine whether the BAP-induced entry of private banks resulted in the reduction of bank-firm distances. Since the ASI lacks granular establishment location identifiers, we use location identifiers from the Economic Census – an enumeration of business establishments in India. We combine this with a mapping of bank branches to pincodes and find that the minimum distance of establishments to private banks declined by 5 kilometres (33 percent) in underbanked areas. In line with the rise in capital spending, the reduction in distance is visible only for smaller manufacturing establishments. Aggregating the minimum distance to private banks to the district, we find the increase in capital spending and credit growth to be driven by underbanked districts where the distance to private banks was relatively small.

In the absence of "hard information", the collection of "soft information" becomes critical for effective lending to smaller borrowers (Liberti and Petersen, 2019). Agarwal and Hauswald (2010) and Chen et al. (2022) in particular show that loan officers are critical to the collection of subjective information for informationally opaque borrowers. Consequently, we explore whether increased lending by private banks to small borrowers was accompanied by increased hiring of loan officers. Using novel proprietary data on branch-level officers and employees, we identify 35 (50) additional private bank officers (employees) in underbanked districts. Importantly, the share of private bank officers in under-served areas also increased by 6 ppt. (over a 44 percent base), with no corresponding change for state-owned banks. Officers are skilled employees responsible for processing loan applications and overall branch management. As two-thirds of the expansion in banking staff comprised of officers, it indicates that private banks were investing in skilled human capital, necessary for transacting with small and young borrowers. We verify that the increase in capital spending was also concentrated in underbanked districts with a relatively high share of private bank officers.

We explore three additional channels which could account for higher capital spending in response to banking expansions. First, exploiting proprietary data on banks' lending portfolios, we find the increase in capital investment to be limited to districts witnessing entry by private banks transacting with a relatively high (above median) share of small manufacturing borrowers. This highlights the role of lenders' comparative advantage in transacting with small borrowers. Second, we use data on establishment interest payments, and proprietary data on branch lending rates to rule out any reduction in interest rates following the BAP. Finally, we show that the increase in capital investment in underbanked districts was undertaken by establishments in both tradable and non-tradable industries. If financial deepening boosted local demand and spurred manufacturing investment, we would have expected the treatment effects to be driven exclusively by establishments producing non-tradables (Mian and Sufi, 2014).

Lastly, we examine whether higher capital investments affected establishment output and employment. We identify positive effects of financial deepening on manufacturing output per worker for small establishments, and establishments which were both small and young. While the coefficients are statistically significant at the 10 percent level, they point to a 50 percent increase in output per worker. There is however no impact on establishments' hiring of workers, indicating that capital was used to invest in labor saving technology. Aggregating to the district, we find the BAP to have positively affected the number of establishments operating in underbanked areas, pointing to the positive impact of financial deepening on firm entry. Consequently, we also find an aggregate increase in manufacturing workers in these districts.

Our study contributes to four broad stands of literature. First, we directly extend the literature on financial development, credit growth, and economic outcomes (see for instance Jayaratne and Strahan (1996), Bai et al. (2018)), which is largely based in advanced economies.[3] We focus on the role of financial development in alleviating firm-level credit constraints in an emerging market, where credit constraints are likely to bind for a greater number of firms. We distinguish ourselves from prior studies by focusing on the distributional effects of financial development, the role played by the physical proximity of lenders to SMEs, and the hiring of officers in gathering soft information for small firms with low collateral. These factors continue to be relevant: while consumer lending in emerging markets has transformed rapidly owing to digitization, SME lending has mostly been untouched by this innovation (Alok et al., 2024).

In the context of emerging markets, while Gutierrez et al. (2023) used shift-share instruments to construct quasi-exogenous shocks to the supply of bank credit in Mexico, our paper exploits a quasi-exogenous increase in bank branches. Relatedly, Fonseca and Matray (2022) study the entry of state-owned banks and wage inequality in Brazil. We distinguish ourselves along three aspects: first, we study private bank-led financial deepening. Unlike state-owned banks, private banks are more aligned with market forces, have profit-maximizing motives, superior

[3] Both papers exploit branching deregulation in the U.S., and point to the efficiency-enhancing role of enhanced lender competition.

corporate governance, and are less susceptible to political capture (La Porta et al., 2002). We show private banks can be incentivized to engage in financial intermediation in under-served areas. Moreover, private bank-led credit expansions to small and young enterprises are not necessarily accompanied by higher interest rates, or a deterioration in credit quality: two downsides from excessive risk-taking by private lenders.[4] Second, we study banking expansions in an environment with limited banking competition, but not banking deserts. The uptake of credit following private bank entry in underbanked areas point to latent demand unmet by state-owned banks. Third, by highlighting the role of physical proximity to informationally opaque borrowers and lenders' investments in skilled human capital, we underscore the role of information asymmetries, as opposed to inadequate collateral, as the principal friction afflicting credit access for SMEs in emerging markets.

With the increase in capital investment and credit growth being driven by small and young establishments, and those not publicly listed, we add to the literature on how access to finance alleviates credit constraints. Larrain and Stumpner (2017) study this in the context of capital market liberalization in Eastern Europe, while Fafchamps and Schündeln (2013) uses the pre-existing stock of banks in Moroccan sub-regions. Our paper, on the other hand, exploits a quasi-exogenous expansion in local banking infrastructure. It additionally offers evidence that physical proximity and skilled human capital in the form of loan officers can alleviate credit market frictions for small borrowers.[5] Detailing these mechanisms also distinguishes us from Bruhn and Love (2014), which examines how the unanticipated expansion of a single bank affected self-employment in Mexico.[6]

The emphasis on physical distance between lenders and small informationally opaque

[4] Our focus on private banks and credit constraints also serves as the point of distinction from Chakraborty et al. (2021) who study a later banking reform in smaller urban centres, and shows how lender competition disciplines state-owned banks.

[5] Qin and Kong (2022) show that increased loan access through branches of a single bank which specialized in SME income businesses in China increased entrepreneurship in regions with a larger number of branches. Since the bank specialized in lending to smaller firms, the evidence cannot be generalized to general bank expansions.

[6] Bruhn and Love (2014) study this question primarily from a labor market perspective and identify how access to finance affects business ownership, wage employment, and earnings. The primary channel in their study is banks' access to borrowers' credit histories, through their partnership with a large retail store.

borrowers relates our paper to the literature documenting the local nature of credit markets (Petersen and Rajan, 1994; Berger and Udell, 1995; Agarwal and Hauswald, 2010; Chen et al., 2015; Greenwood et al., 2010; Ji et al., 2021; Nguyen, 2019). While Nguyen (2019) studies how bank closures affected small business loans, our paper identifies the impact of quasi-exogenous banking expansions on investment and credit growth for small firms. Overall, our findings resonate with Petersen and Rajan (2002), who posit an alleviation of credit market frictions when financial institutions are proximate to borrowers.[7] To the best of our knowledge, ours is the first study to bring together the above three strands of literature by explicitly documenting that quasi-exogenous reductions in the physical distance of small firms to banks can increase capital spending and credit growth, notwithstanding low collateral. This is enabled by improved information gathering through lenders' complementary investments in loan officers.

In the Indian context, we join a growing body of work studying the economic impacts of the BAP (Young, 2017; Khanna and Mukherjee, 2021; Cramer, 2022). We focus on the distributional aspects of financial deepening across firms, and the mechanisms through which it affects manufacturing investment.[8] Burgess and Pande (2005), Kochar (2011) and Gupta and Dehejia (2021) studied how the massive expansion of state-owned banks in the 1980s affected poverty, income distribution and labor markets. Our paper differs by exploring how private bank expansions affect manufacturing investment for credit constrained firms, and highlights information asymmetry as the key barrier precluding such firms' access to formal credit markets.

The remainder of our paper is organised as follows: Section 2 outlines the Branch Authorisation Policy; Section 3 details our empirical strategy and data sources; Section 4 presents our key findings; Section 5 explores potential mechanisms, and Section 6 concludes.

[7] Recent work by Gilje et al. (2016), Hollander and Verriest (2016), Liberti and Petersen (2019), Chen et al. (2022) and Chernenko et al. (2022) also show the cost of information acquisition to be increasing in distance, and impeding resource allocation for financially constrained firms (Giroud and Mueller, 2015).

[8] Young (2017) showed that the BAP-induced increase in private bank branches positively affected farm credit and economic activity. The same policy intervention is used by Khanna and Mukherjee (2021) to show how bank branches allowed districts to better adjust to an aggregate negative shock to cash supply. Cramer (2022) uses the same policy intervention to show the impact of financial deepening on health outcomes.

2 Background: Policy Intervention

The "social banking" period between 1970 and 1991 witnessed a massive state-directed expansion of state-owned banks in India.[9] With the onset of economic liberalization in 1991, the central bank formally abandoned the rule-based branching policy in 1993 and allowed commercial banks to open branches as determined by market forces. In 2005, the RBI revisited its stance and unveiled the Branch Authorisation Policy (BAP) to expand financial infrastructure in under-served areas.

2.1 Branch Authorisation Policy, 2005

The "liberalised" Branch Authorisation Policy of 2005 simplified the process for opening new branches, while according greater weightage to branches opened in hitherto "underbanked" areas (RBI, 2005). Unlike the social banking era, no explicit rules were framed on the number of new branch openings. Instead, the RBI used an incentive-based design, where banks were directed to submit annual expansion plans, detailing the branches they intended to open in the coming year. For every branch proposed, banks had to furnish details on the location, the number of bank branches presently operating in that area, and the volume of deposits and loans expected in the first year of operation. The RBI committed to meeting bank officials within 4 weeks of the bank submitting its annual expansion plan. Subject to approval, banks had one year to establish the proposed branches (RBI, 2005).

In the absence of specific targets, the implicit nudge in the BAP was that banks' expansion plans would be favorably received, conditional on banks expanding their operations in underbanked areas. Banks' incentive for compliance was increased market access in (arguably) profitable locations. The policy stated that while evaluating proposals for branch expansions, weightage would be accorded to "the nature and scope of banking facilities provided by banks to common persons, particularly in underbanked areas", and the "actual credit flow to the priority

[9] The branch expansion was enabled by the large-scale nationalization of existing private banks, such as the one in 1969. Under social banking, banks were required to open 4 additional branches in "unbanked" locations, for every branch opened in a "banked" location.

sector" (RBI, 2007).[10] No directive however was provided about the type of enterprises to be targeted for credit.

To classify regions as "underbanked", the RBI followed a simple rule based on districts' bank branch density in 2005. For each district, the RBI computed branches per capita using the district's population from the 2001 Census, and the number of commercial bank branches in operation on March 31, 2005. This was compared to "national" branches per capita for the country, with districts being classified as "underbanked" if their branches per capita was smaller than the national average. Formally,

$$Underbanked_d = \mathbb{1}(BranchPC_d < \overline{BranchPC}) \tag{1}$$

where $BranchPC_d$ is the number of bank branches in district d, scaled by the district's population. $\overline{BranchPC}$ denotes total bank branches in India, scaled by the national population. Using this rule, the RBI published in September 2005 a list of 386 "underbanked" districts, which remained fixed over subsequent years.[11] As data prior to 2005 was used to determine whether a district was underbanked, districts could not plausibly select into "underbanked" status. Empirically, Figure 1 confirms using the McCrary test (McCrary, 2008) the absence of any selective sorting of districts into treatment and control status around the national average threshold. This allows us to use the national average bank branch density – $\overline{BranchPC}$ – as an arbitrary threshold in the spirit of a regression discontinuity design for causal identification.

With $\overline{BranchPC}$ serving as the discontinuity threshold for a district's underbanked status,

[10] For instance, annual branch expansion plans of banks now had to be accompanied by a statement depicting the distribution of operational bank branches in underbanked districts, as well as semi-urban and rural centres (RBI, 2007).

[11] While the rule for classifying districts as underbanked was followed for the vast majority of districts, the RBI amended this rule 9 districts in 2006. Thus, 6 districts were classified as underbanked, even though their branch density exceeded the national average; 3 districts were not classified as underbanked, even though their branch density fell below the national average. For addition details, see RBI's master circular on branch authorisation, issued on August 3, 2005 (RBI circular).

the running variable of interest – $Runvar_d$ – is defined as:

$$Runvar_d = BranchPC_d - \overline{BranchPC} \quad (2)$$

Consequently, districts are underbanked if $Runvar_d < 0$. Appendix Figure B1 shows the distribution of $Runvar_d$, with a significant mass of districts around the threshold 0.[12] The presence of a large set of districts around the discontinuity threshold provides both statistical power to detect treatment effects, and also limits external validity concerns. Appendix Figure B2 shows that underbanked districts were geographically dispersed across the country.

While the policy applied to both state-owned and private banks, we expect private banks to be disproportionately affected owing to their limited operations in "underbanked" districts. In March 2005, 60% of underbanked districts had no operations by private banks but state-owned banks had branches across all districts. This made the BAP binding on private banks, which were also mandated by the policy to locate at least 25% of their branches in semi-urban or rural centres. Aggregate trends in Appendix Figure B3 point to higher private bank branch openings following the BAP: the median private bank branch density increased from 0.66 branches to 2.85 branches (per million population) between 2005 and 2010. The fraction of districts without a private bank branch also fell below 20% by 2010.

3 Data and Empirical Strategy

This section describes the primary datasets and empirical strategy used in the paper.

3.1 Data

We use data from three major sources: the Annual Survey of Industries, the Economic Census, and the Basic Statistical Returns.

[12] For instance, 304 districts (211 underbanked and 93 non-underbanked) fell within a bandwidth of 20 (bank branches per million population) around the discontinuity threshold. Reducing the bandwidth to 15 (10) results in 231 (156) districts lying within the neighbourhood of 0.

3.1.1 Manufacturing Establishment Data

We use data from the Annual Survey of Industries (ASI) to identify the impact of the BAP-induced bank branch expansion on manufacturing investment. The ASI is a nationally representative survey undertaken every year by the National Sample Survey Organisation (NSSO), covering registered manufacturing enterprises in India. The unit of observation is the manufacturing establishment (and not the firm).[13] The ASI has two components: a census component whereby establishments employing over 100 workers are covered every year, and a survey component, whereby the ASI uses a stratified random sample each year to survey establishments employing less than 100 workers (typically surveyed once every 3 years). The ASI pertains exclusively to registered establishments, as those not registered under either the Factories Act, 1948 or the Companies Act, 1956 are excluded by design.

The ASI offers rich data on fixed capital, plant and machinery, raw materials, output, workers employed and wages paid. Additional information on loans and interest payments are also provided, although there is no information on the source of credit. Establishment identifiers are available for all years but district identifiers are provided only between 1998 and 2007. We use these to determine whether an enterprise was located in an underbanked ("treated") district. We follow Martin et al. (2017) to construct our primary sample: a decade long unbalanced establishment-level panel between 2001 and 2011, covering over 10,000 unique manufacturing establishments. As the BAP was initiated in 2005, we use 4 years of data prior to the intervention, and 6 years post-intervention. We restrict the sample till 2011 as the RBI introduced a new branching policy that year, encouraging banks to expand to smaller urban centres.[14]

Our primary outcome of interest is capital expenditures, defined as the difference between

[13] India has a very small proportion of multi-establishment firms and hence this feature of the data is unlikely to affect our findings. Multi-plant establishments constitute only 5% of all manufacturing establishments having at least USD 30 million sales in India (Chakrabati and Tomar, 2022). This number is likely to be many times smaller for the entire universe of establishments since multi-establishment firms are generally bigger in size. Even in a country like Germany where average firm sizes are substantially larger, multi establishment firms form only 8% of all firms (Gumpert et al., 2022).

[14] See Chakraborty et al. (2021) for details on the new policy.

the closing and opening values of an establishment's plant and machinery in a year, scaled by the average value of the establishment's plant and machinery during the year. Specifically, for establishment i in year t, we define capital expenditures as:

$$Capex_{it} = \frac{Plant_{i,t} - Plant_{i,t-1}}{0.5 \times Plant_{i,t-1} + 0.5 \times Plant_{i,t}} \tag{3}$$

where $Plant_{i,t}$ is establishment i's value of plant and machinery in year t, net of depreciation. Equation (3) bounds $Capex_{it}$ between -2 and 2, reducing sensitivity to outliers (Berton et al., 2018). We opt to focus on plant and machinery as our primary measure of manufacturing capital as it captures an establishment's productive assets. However, we confirm robustness to using aggregate fixed assets (land and buildings, in addition to plant and machinery) as our measure of capital. In addition to capital investment, we also consider other outcomes such as credit growth, output, and workers employed. All growth variables are defined as per equation (3). All nominal (INR) values are deflated to 2011 values using the wholesale price index for manufacturing commodities, and top-coded at the 1% level.

Appendix Table C1 presents summary statistics from the ASI for establishments in districts within a narrow window around the discontinuity threshold. Akin to most firm-level data, there is a large right tail for multiple variables of interest. The average establishment has plant and machinery (fixed assets), net of depreciation, worth INR 34 (48) million, but the median establishment machinery (fixed assets) is INR 1.4 (3.7) million. Similarly, while the mean establishment size in terms of hired workers is 97, the median establishment size is 21.[15] Two-thirds of the establishments satisfied the administrative criterion of "micro" enterprises, while a quarter qualified as "small".[16] Around 80% of establishments satisfied the definition of small-scale

[15] In addition to hired workers, the ASI also provides information on contract workers and supervisors. Contract workers are manufacturing workers hired on contractual terms by the establishment, and ineligible for the benefits and job security available to hired workers. Supervisors are employees not directly involved in manufacturing tasks but responsible for overall management and supervision. The median (average) establishment hired 0 (30) contract workers, and 3 (11) supervisors.

[16] We use administrative definitions for classifying establishments as micro, small, medium and large enterprises. In 2005, establishments with plant and machinery less than INR 2.5 million were classified as micro-enterprises; between INR 2.5 and 5 million as small enterprises; between INR 5 and 10 million as medium enterprises; and exceeding INR 10 million as large enterprises. We use pre-treatment maximum values of plant and machinery to

industries, making them eligible for subsidized bank credit.[17] The median establishment age is 15 years, and 14 percent of establishments were owned by publicly listed corporations.

Average annual capital expenditures on machinery, net of depreciation, equaled -.001 during this period, signifying a net reduction in plant and machinery during the year. The 75th percentile value is 0.03, implying that the median establishment undertook no capital spending during the year to offset the depreciation in plant and machinery. We address this lumpiness in capital expenditures by defining a binary variable – $AnyCapex_{it}$ – to equal one if the closing value of plant and machinery exceeded the opening value ($Capex_{i,t} > Capex_{i,t-1}$). Only a fourth (third) of the establishments undertook investments in plant and machinery (fixed assets) in a given year.

While the ASI does not record the source of credit, it collects data on outstanding loans for establishments. Based on closing and opening values of outstanding establishment loans, we find annual loan growth to be 4 percent or INR 1.2 million.[18] The median establishment however saw no loan growth. Along the extensive margin, 38% of establishments had closing values of outstanding loans in excess of opening values, reflecting a net increase in outstanding credit. Despite being registered establishments, almost a fourth reported no outstanding credit during the year.[19] Entry into credit markets in a year was also limited, with 2.5% of establishments reporting no outstanding credit at the beginning of the accounting period, but a positive loan balance at the end of the accounting year (classified as new loans). Using interest payments undertaken by establishments during the year, the cost of credit for the median establishment was 14.5%, while the average cost of credit was 24.6%.[20]

classify establishments into these 4 categories.

[17] Small-scale enterprises are those whose investment in plant and machinery do not exceed INR 10 million.

[18] Average annual outstanding loans in this period equaled INR 31.7 million.

[19] We classify an establishment to have no outstanding credit if it reports no outstanding loans for both the opening and closing values in a year.

[20] We use the ASI data on annual interest expenses and scale it by opening value of outstanding loans to impute the rate of interest. As a point of comparison, the inflation rate over this period was 6 percent.

3.1.2 Economic Census

The Economic Census (EC) is an enumeration of all business establishments operating in India. It is typically conducted once every 8 years and covers all sectors of the economy. The two most recent ECs pertain to the years 2013 and 2005 respectively. While there is limited information on establishment performance and characteristics, the EC provides granular geographic identifiers for establishments, which can be mapped to Census tracts using the SHRUGS database constructed by Asher et al. (2021). As select rural Census tracts were also mapped to pincodes in the 2011 decennial Census, the EC permits the mapping of establishments to pincodes. We combine this information with bank branch addresses to map rural manufacturing establishments to the nearest private bank.

3.1.3 Basic Statistical Returns

We use data from the Basic Statistical Returns (BSR), hosted by the RBI, to assess the impact of the BAP on bank branches, loans, interest rates, non-performing assets, and staffing decisions. The publicly available BSR provides annual aggregates of district-level deposits and loans for commercial banks. The data is disaggregated by bank ownership and sectoral allocation of credit, allowing us to compare branch openings and credit disbursement across underbanked and non-underbanked districts, and also by bank group. Proprietary branch-level data on priority sector loans, interest rates, employment, and non-performing loans are aggregated to the district.

3.2 Empirical Strategy

The use of an arbitrary threshold – national average bank branch density – to classify districts as "underbanked" lends itself to causal identification using a RD design. We also exploit the inherent time-variation in the onset of the BAP to combine the RD design with a DiD design, and estimate a "differences-in-discontinuity" design, postulated in Grembi et al. (2016). Our empirical strategy exploits the panel structure of the ASI and flexibly partials out time-invariant unobserved establishment characteristics such as accounting standards, managerial quality or local networks, which can affect establishments' access to credit and investment choices. While such unobservables are likely to be "balanced" around the discontinuity threshold, the differences-in-discontinuity strategy explicitly accounts for them through establishment fixed effects.

Akin to a DiD design, we compare establishment outcomes before and after the policy intervention across underbanked and non-underbanked districts. In the spirit of a RD design, the comparison is restricted to establishments operating in districts within a narrow window around the discontinuity threshold. The primary estimating equation takes the form:

$$Y_{ijdt} = \alpha_i + \delta_{jt} + \beta Underbanked_d \times Post_t + f(Runvar_d)_t + \gamma \mathbf{X}_{ijdt} + \epsilon_{ijdt} \tag{4}$$

where Y is the outcome of interest for establishment i, operating in industry j, located in district d, and year t. α_i denotes establishment fixed effects, while δ_{jt} denotes industry-year fixed effects, corresponding to the 2-digit industry (j) in which the establishment operates. This restricts the comparison of establishment outcomes to the same broad industry category and year. $Underbanked_d$ is a dummy equaling 1 if establishment i is located in a district classified as "underbanked". Local variation in establishments' exposure to the treatment arises through variation in districts' underbanked status. $Post_t$ is a dummy equaling 1 for years after 2005, when the BAP comes into effect. Similar to the RD design, we include a linear polynomial in the running variable – $f(Runvar)$ – and its interaction with the post-treatment and underbanked indicators (Grembi et al., 2016; Cingano et al., 2016).[21] This ensures that the treatment effect (β) is estimated at the discontinuity threshold, where establishments in underbanked ("treatment") and non-underbanked ("control") districts are the most comparable. Standard errors are clustered by district, the level at which our treatment varies. $\mathbf{X}$ includes establishment and district time-varying covariates. The establishment covariates control for a quadratic in firm age, and flexibly account for establishment size by including five bins of

[21] Namely, we include $Runvar_d \times Post_t$ and $Runvar_d \times Underbanked_d \times Post_t$ in all our specifications. Establishment fixed effects results in the omission of $Runvar_d$ and its interaction with the underbanked indicator.

establishment size, interacted with year dummies. Pre-treatment district demographic and economic characteristics from 2004, interacted with a post-treatment indicator, are included as district covariates. While we show later that the establishment and district covariates are balanced, these controls allay concerns about convergence in outcomes over time across underbanked and other areas.[22] Regressions are weighted with establishment-specific weights provided by the ASI.[23]

To ensure the pre-treatment comparability of treatment and control units, our primary sample is restricted to establishments in districts located within a neighbourhood of 15 (bank branches per million persons) around the discontinuity threshold. The bandwidth is selected using the data-driven optimal bandwidth method of Calonico et al. (2020).[24] We also show robustness to a range of alternate bandwidths between 10 and 20 bank branches per capita.

A causal interpretation of β is subject to the standard identifying assumption in a DiD specification: enterprise outcomes across underbanked and non-underbanked districts (around the threshold) would have evolved comparably in the absence of the policy intervention. While the counterfactual is fundamentally untestable, we use an event-study framework to test whether outcomes of interest exhibited parallel trends across underbanked and non-underbanked districts prior to the BAP. Specifically, we estimate:

$$Y_{ijdt} = \alpha_i + \delta_{jt} + \sum_{k=-5}^{5} \beta_k Underbanked_d \times \mathbb{1}(Year_{2006+k}) + f(Runvar_d)_t + \gamma \mathbf{X}_{ijdt} + \epsilon_{ijdt} \quad (5)$$

[22] Establishment size is measured using the average number of workers hired between 2001 and 2005. Five establishment size bins are used: less than 10 workers, 10-25 workers, 25-50 workers, 50-100 workers and more than 100 workers. The district covariates considered are population density; labor force participation and unemployment rate; fraction of self-employed, salaried and causal workers; fraction of workers employed in farm, manufacturing, trade, construction and services sectors; fraction of adults with secondary or higher education; fraction of rural population; gender ratio; fraction of Muslim population; logged per capita household consumption. The covariates are sourced from the employment-unemployment surveys conducted by the National Sample Survey in 2004-05.

[23] The weights equal the inverse of the sampling probability. For establishments surveyed every year, the assigned weight is 1.

[24] In the absence of a prescribed method for computing the optimal bandwidth in differences-in-discontinuity specifications, we use the optimal MSERD bandwidth for the year 2011, using the method of Calonico et al. (2020). For the sake of comparison, the optimal bandwidth used by Young (2017) to study the same policy intervention is 13, while Khanna and Mukherjee (2021) uses an optimal bandwidth of 20.

Equation (5) estimates the treatment effect corresponding to each year in the sample, with 2005 ($k = -1$) – the year in which the BAP was announced – being the omitted reference period. If establishment outcomes were comparable across underbanked and non-underbanked districts prior to the BAP, we would be unable to reject the null of $\beta_k = 0 \ \forall \ k \in \{-5, ..., -2\}$.

3.3 Pre-Treatment Covariate Balance

The RD design yields causal estimates if units cannot select into treatment, and pre-treatment observables vary smoothly around the discontinuity threshold. Appendix Tables A1-A11 use linear polynomial regressions to verify pre-treatment balance of establishment and district characteristics across underbanked and non-underbanked areas.[25] Appendix Tables A1-A4 show pre-treatment (2001-2004) establishment outcomes such as capital expenditures, outstanding credit, output, employment, wages, ownership type and size were comparable across underbanked and non-underbanked areas. Appendix Tables A5-A8 show bank branches, deposits and sectoral credit to also be balanced in the year prior to the BAP (2004). Finally, Appendix Tables A9-A11 confirm balance across district demographic and economic characteristics in 2004-05.[26] Reassuringly, only 5 of the 82 balance tests undertaken yield a statistically significant difference. Importantly, pre-treatment manufacturing investment, credit growth, employment and output were comparable across underbanked and non-underbanked areas. This confirms that establishments in non-underbanked districts can serve as a valid counterfactual for establishments in underbanked districts. Additionally, total bank branches, private bank branches, aggregate credit and manufacturing credit from private banks were also statistically indistinguishable across treated and control districts in 2004.

[25] We regress each observable characteristic on the underbanked indicator, conditional on a linear polynomial in the running variable and state fixed effects. Establishment-level regressions also includes 2-digit industry fixed effects.

[26] The data used is the household employment-unemployment survey conducted by the National Sample Survey (NSS) in 2004-05.

4 Results

We first summarize the impact of the BAP on financial intermediation. Next, we identify the impact of the policy intervention on manufacturing investment. Subsequently, we explore the distributional implications of banking expansions.

4.1 Financial Deepening in Underbanked Districts

We use district-level data from the BSR and the differences-in-discontinuity design to identify the impact of the BAP on bank branches and financial intermediation in under-served regions. A brief summary of the key findings are provided (see Appendix B for details). Column (2) of Appendix Table B1 identifies an increase of 10 bank branches in underbanked districts. Column (4) shows this to be driven by private banks: relative to observationally equivalent non-underbanked districts, underbanked districts had 6 additional private bank branches (p-value .001) following the BAP – a 50 percent increase relative to the pre-BAP mean. Column (6) shows state-owned bank branches to be unaffected. Compared to the "social banking" era, a conservative back of the envelope calculation indicates that the BAP's impact was approximately a fourth of the state-driven push to expand banking infrastructure between 1970 and 1990.[27] Appendix Figure B4 presents an event-study plot which shows that the uptick in private bank branches in underbanked areas occurred only after the initiation of the BAP in 2005, with no evidence of pre-trends. The findings are robust to alternate bandwidths (Appendix Figure B5), and consistent with those of Young (2017), Khanna and Mukherjee (2021) and Cramer (2022).

Private bank expansion in underbanked areas following the BAP was accompanied by higher disbursement of manufacturing loans (column (2), Appendix Table B3). Private bank manufacturing credit increased along both the intensive and extensive margins; farm credit, credit to the service sector, and credit for personal loans were also significantly higher. Reassuringly,

[27] Burgess and Pande (2005) notes that around 30,000 bank branches were opened over a 20 year period between 1969 and 1990. This equates to approximately 84 new branches opened per district over 2 decades. The number needs to be interpreted with caution as a number of these districts were subsequently divided into smaller districts during the 1990s, so the aggregate average effects of the social banking program most likely reflect an upper bound.

event study plots show an uptick in credit only after the BAP (Appendix Figures B6 and B7). Neither state-owned bank credit, nor deposits were affected by the BAP (Appendix Tables B2 and B4). Since March 2013, the proprietary BSR data separately reports bank loans issued to micro and small manufacturing enterprises. Column (8) of Appendix Table B5 uses a cross-sectional sharp RD specification and identifies a significantly larger volume of loans disbursed by private banks to these enterprises in underbanked areas. Comparing the coefficients across columns (6) and (8), a third of the increase in private bank manufacturing credit can be attributed to small and micro-enterprise loans.

There are two possible explanations on why private banks alone responded to the BAP. First, 60% of underbanked districts lacked a private bank branch in 2005, while all underbanked districts had branches operated by state-owned banks. This made the BAP binding for private banks, but offered limited incentive for state-owned banks to expand in underbanked areas. Second, the profit-maximizing motives of private banks makes them more likely to respond to market incentives. If compliance with the BAP offered increased branching access to profitable non-underbanked areas, it would have been rational for private banks expand in underbanked locations.

While the BAP incentivized banks to expand operations in under-served regions, banks had full flexibility in terms of selecting underbanked districts in which to expand. In essence, banks could have chosen the "best" of the underbanked districts to expand operations. Appendix Figure B8 shows that the point estimates are stable to the sequential exclusion of districts located nearest to the discontinuity threshold. If the increase in private bank branches emanated from districts nearest to the threshold which most closely resembled non-underbanked areas, we would have expected the treatment effects to dissipate upon their exclusion. Additionally, Appendix Table B6 shows that local unobservables captured by sub-district or block fixed effects predict whether a pincode received a private bank following the BAP, as opposed to observable factors such as existing branches, population density, or the quality of local infrastructure.[28]

[28] Sub-district and blocks are granular administrative divisions below a district.

As all establishment regressions include establishment fixed effects, time-invariant local factors predicting the choice of branch locations would also be absorbed by these fixed effects. Appendix B.1.1 offers more details on the selection of private bank locations.

Finally, we examine whether the BAP pushed private banks to reallocate credit from non-underbanked to underbanked areas. The top row of Appendix Figure B9 shows an increase in aggregate private bank credit across both underbanked and non-underbanked districts, with a sharper increase in manufacturing credit in underbanked districts following the BAP. This partially limits concerns that credit expansions in underbanked regions came at the expense of non-underbanked areas. Further, Appendix Figure B10 offers suggestive evidence that while the private bank credit-deposit ratio was larger in underbanked districts, it did not exceed .71 between 2007 and 2013.[29] Thus, private banks could have financed the credit expansion in under-served areas entirely through local deposits.

In summary, private banks complied with the BAP by expanding bank branches in under-served areas, and also disbursing credit. In line with the directives of the BAP, a third of the increase in private bank manufacturing credit went to small and micro-enterprises which would qualify as priority sector loans. Consequently, we examine whether financial deepening by private banks and the higher disbursement of manufacturing loans in underbanked areas affected manufacturing investment.

4.2 Bank Branch Expansion and Manufacturing Investment

We combine a DiD approach with a sharp RD design to causally identify the impact of financial deepening on manufacturing investment (Equation 4). The primary outcome of interest is investment in plant and machinery, defined in equation (3). Unless otherwise specified, the sample is restricted to establishments located in districts within a bandwidth of 15 around the discontinuity threshold.

Column (1) of Table 1 shows a parsimonious specification including only establishment

[29] The credit-deposit ratio for private banks in non-underbanked districts between 2007 and 2013 was between 0.51 and 0.63. The largest point estimate is -.121 in 2010 (p-value .136).

and year fixed effects, and identifies a statistically significant 5 ppt. increase in manufacturing investment. Column (2) replaces the year fixed effects with 2-digit industry-year fixed effects, with little impact on the point estimate. The industry-year fixed effects absorb shocks common to all establishments operating within the broad industry category and year. This implies comparing manufacturing investment for enterprises operating in the same broad industry and year. Column (3) adds establishment-specific covariates, including a quadratic in establishment age, and dummies for establishment size, interacted with year dummies.[30] Column (4) adds district covariates, interacted with a post-treatment indicator. This increases the coefficient magnitude slightly. Column (5) replaces the quadratic in establishment age with age fixed effects, while column (6) replaces the 2-digit industry-year fixed effects with 3-digit industry-year fixed effects, limiting our comparison to an even smaller set of establishments in each year. The $Underbanked_d \times Post_t$ coefficient is stable in terms of both magnitude and statistical significance across all these specifications.

Our preferred specification in column (4) of Table 1 includes establishment, 2-digit industry-year, and establishment size-year fixed effects, along with establishment and district covariates. Relative to observationally equivalent manufacturing establishments in non-underbanked districts, manufacturing establishments in underbanked districts witnessed a 6 ppt. increase in capital expenditures following the BAP. Compared to the pre-treatment mean in control regions, this reflects an additional INR 1.8 million investment in plant and machinery, which is substantial when considering that the median value of establishment plant and machinery prior to 2005 was INR 0.9 million in non-underbanked districts.[31]

Appendix Table C2 considers alternate functional forms and outcomes of interest. Column (1) shows that our results are robust to measuring capital expenditures as the logged difference

[30] We include 5 dummies for establishment size, based on the pre-treatment average number of workers hired. We also consider the following establishment specific covariates: a dummy for whether the establishment is located in a rural area; a dummy for whether the establishment uses computers for accounting; and dummies for ownership type.

[31] In the pre-treatment period, the mean establishment value of plant and machinery (average of net opening and closing values) equaled INR 29.8 million for establishments in non-underbanked districts, located within a bandwidth of 15 around the discontinuity threshold. A 6 ppt. increase amounts to INR 1.82 million higher spending on plant and machinery.

between closing and opening values of net plant and machinery. Column (2) shows that the BAP increased establishments' likelihood of engaging in any positive capital spending ($AnyCapex_{it}$) by 5 ppt – a 20% increase, equivalent to 3 additional establishments investing in plant and machinery.[32] Columns (3)-(5) show comparable results if net fixed assets are used to measure capital spending. In line with higher capital spending, columns (6)-(7) also identify a positive impact on the use of raw materials.

Appendix Table C3 identifies the impact of the BAP on credit growth for manufacturing establishments. An important caveat is that the ASI reports outstanding loans, but does not separate credit across bank and non-bank sources, or by bank group. Consequently, we compare overall credit growth for establishments across underbanked and non-underbanked districts, before and after the BAP. We would expect higher credit growth in underbanked areas if private bank loans supplemented other credit sources and enabled establishments to undertake higher capital spending. Credit growth in column (1) is defined using equation (3), while column (2) measures credit growth as the logged difference in closing and opening values of outstanding loans during a year. We identify positive and statistically significant increases for both outcomes. Column (1) reports a 13 ppt. increase in credit growth for manufacturing establishments in underbanked districts – equivalent to INR 3.7 million – about twice the increase in capital spending.[33] Columns (3)-(5) show that the increase in credit is primarily along the intensive margin, with little impact of the treatment on entry into credit markets.[34] Column (6) finds no impact of the policy intervention on the aggregate cost of credit facing manufacturing establishments.

Event study plots in Figure 2 identify the average annual treatment effects for our key outcomes of interest: capital spending and credit growth. All specifications include establishment,

[32] The average non-underbanked district in the pre-treatment period had 57 manufacturing establishments.

[33] With 140 manufacturing establishments operating in the average underbanked district, the coefficient points to a INR 513 million increase in aggregate manufacturing credit. Section 4.1 identified a INR 278 increase in manufacturing credit from private banks. Consequently, the BAP induced increase in private bank manufacturing credit accounted for approximately 54 percent of the aggregate increase in manufacturing credit in under-served areas.

[34] The absence of data on loan applications disallows us from commenting on whether this was due to a lack of demand, or lenders' unwillingness to extend credit to such establishments.

2-digit industry-year and size-year fixed effects, as well as establishment and district-level controls. Standard errors are clustered by district and the sample is restricted to establishments located in districts within a bandwidth of 15 around the discontinuity threshold. The outcomes exhibit statistically indistinguishable trends across underbanked and non-underbanked districts prior to 2005. In the aftermath of the BAP, there is a visible jump in the point estimates. For capital expenditures (top-left panel), the coefficients are positive and statistically significant at the 5% level for the years 2007, 2008 and 2009, while they are statistically significant at the 10% level for the remaining post-treatment years. The increase in credit growth (top-right panel) begins in 2006 and is the largest for the years 2008-11, coinciding with the expansion in manufacturing credit from private banks in underbanked districts (Appendix Figure B6).

4.2.1 Robustness

We verify the robustness of our findings to alternate estimation methods, specifications and sampling choices in Appendix C.1. Appendix Figure C1 aggregates the establishment data over the pre and post-treatment periods and compares capital expenditures across establishments in underbanked and non-underbanked districts using a cross-sectional sharp RD specification. Appendix Figure C2 depicts coefficient plots from separately estimating cross-sectional RD specifications for each year between 2001 and 2011. Both figures identify higher manufacturing investment in underbanked areas following the BAP, and no evidence of a treatment effect prior to 2005.

Next, Figure 3 shows that our results are stable to alternate bandwidths between 10 and 20 bank branches per capita and Appendix Figure C3 confirms that the results are not driven by any single state or industry. Appendix Table C4 shows that our differences-in-discontinuity estimates are robust to the exclusion of establishment weights (column (1)); alternate levels of clustering (column (2)); inclusion of additional covariates which predict the location of private bank branches in underbanked areas (column (3)); dropping the 9 districts where the treatment assignment rule was violated (column (4)); and omitting establishments owned by listed corporations, which are more prone to being multi-establishments firms (column (5)).

Column (6) shows persistence in the impact of the BAP over the long-term (up to 10 years). Column (7) shows a null result from a placebo test where the sample is restricted to 2005.

India experienced rapid GDP growth between 2004 and 2008. A number of government policies were also introduced in this period to boost rural infrastructure and non-farm employment. Appendix Tables C5 and C6 confirm that the positive treatment effect on manufacturing investment does not emanate from heightened rural infrastructure development in these districts, or better implementation of a flagship rural workfare program launched in 2005. We also show that the positive treatment effect on manufacturing investment to be present, irrespective of the contemporaneous rate of local growth across districts. Appendix C.2 discusses these in detail.

4.3 Distributional Impacts of Bank Branch Expansion

Our baseline results show that districts witnessing an expansion in financial infrastructure saw higher capital investment and credit growth for registered manufacturing establishments. We now explore distributional implications to assess whether financial deepening also resulted in the alleviation of credit constraints. We begin by exploring treatment heterogeneity by establishment size. To avoid any contamination of establishment size by the BAP, we compute establishment size using the average number of workers hired between 2001 and 2004, and classify establishments as "large" or "small" based on the median pre-treatment establishment size (16 workers).[35] Using this classification, we estimate the triple-difference specification:

$$Y_{ijdt} = \alpha_i + \delta_{jt} + \pi_1 Underbanked_d \times Post_t + \pi_2 Underbanked_d \times Large_i \times Post_t + f(Runvar_d)_t + \gamma \mathbf{X}_{ijdt} + \epsilon_{ijdt} \quad (6)$$

The double-difference coefficient (π_1) in Equation (6) compares capital investments across underbanked and non-underbanked areas for smaller establishments. The triple difference coefficient (π_2) identifies the differential effect on capital spending within underbanked districts

[35] Specifically, we use the pre-treatment median establishment size for establishments located in non-underbanked districts and within a bandwidth of 15 around the discontinuity threshold.

for larger establishments.

Columns (1) and (5) of Table 2 estimate treatment heterogeneity in capital expenditures and credit growth across "large" establishments. We find positive and significant coefficients on the double-difference term (π_1). The triple interaction coefficient (π_2) is negative, albeit statistically significant only for credit growth. We cannot reject the null of $\pi_1 + \pi_2 = 0$ for credit growth, pointing to comparable growth in outstanding loans for large manufacturing establishments across underbanked and non-underbanked districts.

Columns (2) and (6) use disaggregated thresholds of 10, 25, 50 and 100 workers to identify treatment heterogeneity across establishment size bins. The double difference coefficient shows that establishments employing less than 10 workers in underbanked districts witnessed 8 (27) ppt. higher capital spending (credit growth) following the BAP, relative to those in non-underbanked districts. The triple interaction coefficients are all negative, albeit imprecisely estimated.[36] For capital expenditures, the sum of the double and triple interaction terms significantly differ from 0 for establishments employing between 10 and 25 workers (p-value: .068). Manufacturing credit growth in underbanked districts however is driven primarily by the smallest establishments employing less than 10 workers, followed by those employing between 10 and 25 workers. Taken together, columns (1)-(2) and (5)-(6) of Table 2 show that manufacturing investment and credit growth in underbanked districts was driven by relatively smaller establishments for whom credit constraints are also more likely to bind.

While firm size is widely used to capture credit-constraints, employment decisions are endogenous: firms can choose to remain small either because it is optimal, or in response to market distortions. This is particularly relevant in the Indian context as size thresholds have been extensively employed to determine firms' eligibility for subsidized credit (Banerjee and Duflo, 2014). To this effect, we consider heterogeneity across both establishment size and age (Hadlock and Pierce, 2010; Criscuolo et al., 2019). The intuition is that younger firms require

[36] The triple interaction coefficients estimating heterogeneity for establishments employing between 10 and 25, and 25 and 50 workers are attenuated towards 0 for capital expenditures, signifying no evidence of a differential effect.

time to scale up and are initially small due to operational and logistical constraints (including limited credit availability).

Columns (3) and (7) of Table 2 split our sample into four mutually exclusive groups: small and young (omitted category); small and old; large and young; and large and old. We use the pre-treatment median establishment size to classify establishments as small or large. Establishments are classified as young if their operations started after 1992.[37] Consistent with Criscuolo et al. (2019), columns (3) and (7) show that the positive treatment effects are driven by establishments which are small *and* young, with the triple interaction coefficients for both columns being negative.[38] Capital expenditures and credit growth for small and young establishments in underbanked districts were 13 and 31 ppt. higher in the post-treatment period, respectively.

Farre-Mensa and Ljungqvist (2016) study board meeting minutes and recommend using firms' listing status as a more appropriate signal for being financially constrained.[39] We construct the binary variable *Listed* if the establishment is owned by a corporation which is publicly listed. Columns (4) and (8) show that the positive treatment effects on capital investment and credit growth are driven entirely by establishments which are *not* publicly listed.

Columns (1)-(3) of Appendix Table C7 show comparable findings if pre-treatment establishment fixed assets are used to determine establishment size. In particular, columns (2) and (3) use administrative definitions based on the value of establishment plant and machinery and find the treatment effects to be concentrated among small establishments, and establishments qualifying as small-scale industries. The point estimates in column (3) confirm that such establishments in underbanked districts increased their capital investments by an additional INR 0.13 million after the BAP. Similar results are obtained in columns (1)-(3) of Appendix Table C8, where the outcome of interest is credit growth.

[37] We use this year as the cutoff as a major overhaul of the Indian economy was undertaken in 1991, encouraging private competition. Using this cutoff implies that establishments classified as young were at most 13 years old at the time of the policy intervention.

[38] When comparing the sum of the double and triple interaction coefficients, we identify a positive impact for capital spending (credit growth) for large and young (small and old) establishments.

[39] In Farre-Mensa and Ljungqvist (2016), being publicly unlisted is a necessary condition for being financially constrained, but not a sufficient condition.

High costs of screening and monitoring lead lenders to use borrowers' collateral to secure their loan (Banerjee and Duflo, 2010). As a corollary, a lessening of screening costs should permit lenders to extend credit to borrowers with low collateral (Fisman et al., 2017). In the absence of data on loan securitization, we test for heterogeneity by the value of land and buildings owned by the establishment. Column (4) of Appendix Table C7 identifies a null effect on the triple interaction term identifying treatment heterogeneity across establishments with high (above-median) pre-treatment land and buildings. The base coefficient corresponding to establishments with low physical assets remains positive and statistically significant at the 5% level. This signifies that the ability to offer collateral in the form of physical assets was not a necessary condition for undertaking capital investment in underbanked areas. Credit growth in underbanked districts was also driven by establishments with relatively low collateral (Appendix Table C8, column 4). Finally, column (5) of Appendix Tables C7 and C8 show the positive treatment effects on manufacturing investment and credit growth to be concentrated among individual proprietorships and family owned enterprises, which again are more likely to face binding credit constraints (Gutierrez et al., 2023).[40]

Collectively, we see that manufacturing investment and credit growth in underbanked districts was driven by smaller establishments – particularly, small and young establishments, and establishments not publicly listed. An extensive literature studying the finance-growth nexus document that these establishments face binding credit-constraints. Consequently, our results support the contention that the expansion in local financial infrastructure aided the alleviation of credit-constraints and allowed these enterprises to invest in productive capital. As small and young, and unlisted firms have limited "hard" information, credit extensions to these firms points to improvements in the collection of "soft information" and "subjective intelligence" in underbanked areas (Agarwal and Hauswald, 2010; Liberti and Petersen, 2019). This would also be consistent with higher credit growth for establishments with low collateral. We expand

[40] The ASI precludes the linking of establishments to parent firms but does provide broad ownership categories. We use individual proprietorships and family-owned enterprises as our benchmark category and explore treatment heterogeneity across establishments classified as partnerships, private limited companies, government-owned/aided enterprises and public limited (listed) companies.

on this discussion while exploring the mechanisms later.

4.4 Quality of Credit Intermediation

Our baseline results document higher disbursement of manufacturing credit from private banks in underbanked districts following the BAP. Relative to state-owned banks, private banks are considered to have superior loan officer incentives, corporate governance, and adhere to profit-maximizing motives (La Porta et al., 2002). They are also less susceptible to political capture (Cole, 2009; Carvalho, 2014). This leads us to examine how the expansion in private bank credit in under-served areas affected the quality of financial intermediation. While enhanced career incentives for loan officers and the lack of political interference can improve borrower quality through better screening and monitoring, increased appetite for risk-taking can also lead to higher loan delinquency.

Following Jayaratne and Strahan (1996), we use loan delinquency as a proxy for lending quality and compare non-performing loans (as a fraction of total loans) across underbanked and non-underbanked districts. As delinquency is often a function of time, we compare the share of non-performing loans in March 2016 – a decade after the policy intervention – using RBI's proprietary data on branch-level non-performing assets.[41] Using a cross-sectional RD specification, column (1) of Appendix Table B7 finds no difference in the share of non-performing loans across underbanked and non-underbanked districts.[42] While this does not point to an improvement in the quality of financial intermediation by private banks, it also rules out that the expansion in private bank credit was accompanied by a deterioration in lending quality.

Next, we use the ASI's establishment-level data to identify whether the increase in manufacturing investment was concentrated among productive establishments. A key role of banks is to shape resource allocation by selecting firms which receive financing (Bai et al., 2018). While we cannot distinguish across sources of credit, higher capital spending by creditworthy enterprises

[41] We aggregate the branch-specific share of non-performing loans to the district by computing loan-weighted averages of branch NPAs.

[42] We opt for a cross-sectional sharp RD specification as a number of districts had no private bank operations prior to 2005, which leads to the share of non-performing loans being undefined in such instances.

would be consistent with private banks' ability to effectively screen high quality borrowers. It would also be consistent with the overall findings of Table 1, as we would expect financial deepening to affect manufacturing investment only if firms had projects with net positive returns.

We use four pre-treatment measures of firm quality: namely pre-treatment interest rates, interest coverage ratio, marginal product of capital, and output per worker. The first two measures capture credit risk and overall delinquency, while the latter two proxy for establishment quality.[43] Appendix Table C9 broadly supports the explanation that private banks were effective financial intermediaries. Columns (1) and (2) identify negative triple interaction coefficients for establishments facing higher ex-ante interest rates, and whose interest coverage ratio was less than 1 at least once between 2001 and 2005. The $Underbanked \times Post$ coefficient in both columns is positive and statistically significant, signifying that the increase in manufacturing investment in underbanked districts was driven by establishments with low borrowing costs, and no prior record of delinquency. Moreover, the sum of the coefficients in column (2) is not statistically distinguishable from 0, implying that the treatment did not affect capital investment for establishments exhibiting delinquency at least once in the 4 years preceding 2005. This is consistent with the absence of any aggregate increase in non-performing loans for private banks in underbanked districts. We also identify a positive coefficient on the triple interaction term corresponding to establishments with a higher marginal product of capital. However, there is no evidence of treatment heterogeneity across establishments with relatively high pre-treatment output per worker (column 4). The triple interaction coefficient is negative, albeit statistically insignificant, and the double interaction coefficient suggests that capital spending was also undertaken by establishments with relatively low pre-treatment output per worker.[44]

[43] Interest coverage ratio (ICR) scales annual firm sales by annual interest payments. An ICR less than 1 implies that the firm revenues are unable to cover the servicing of annual interest payments.

[44] This could also be a manifestation of lower capital investment by larger establishments in underbanked districts as such establishments are also more likely to have higher labor productivity.

4.5 Output and Employment

This section examines the impact of the BAP on manufacturing output and employment. If capital investments are productivity enhancing, we would expect the BAP to also increase manufacturing output. As the increase in capital spending was concentrated among small and young establishments, we would expect manufacturing output to be most responsive to the BAP for this subset of establishments. The policy's impact on employment would however depend on whether capital and labor were complements or substitutes.

Appendix Table C10 reports the impact of the BAP on manufacturing output. The outcome of interest in columns (1)-(3) is the total value of manufacturing output; in columns (4)-(6), output per worker. We use an inverse hyperbolic sine transformation of the outcome variable to address establishments reporting zero output. Columns (1) and (4) identify a 29 percent increase in output (p-value .374) and a 36 percent increase in output per worker (p-value .149). While imprecisely estimated, the point estimates suggest that capital investments undertaken by manufacturing establishments were output-enhancing.

Considering heterogeneity by establishment age and size, columns (2)-(3) and (5)-(6) show that the increase in output is driven by smaller establishments. Column (5) reports a 52 percent (p-value .082) increase in output per worker for smaller establishments in underbanked districts, while column (6) identifies a 71 percent (p-value .065) increase in output per worker for small and young establishments. Relative to the pre-treatment control mean (INR 1.96 million), the point estimate in column (6) amounts to a INR 1.3 million increase in output per worker for small and young establishments. These positive effects are absent for larger and older establishments. The point estimates for output in columns (2)-(3) are similar in magnitude, but lack precision. Event study plots in Figure C4 provide no evidence of differential pre-treatment trends, but a noisy increase in output and output per worker following the BAP. The results are broadly consistent with Table 2 which showed that the BAP-induced increase in capital spending and credit growth in under-served areas emanated from small and young establishments.[45]

[45] A prior version of the paper used total output recorded in the establishment schedule by the ASI. This

Financial deepening left unaffected firms' labor demand (Appendix Table C11). If anything, the results (though insignificant) point to a reduction in the number of workers. While heterogeneity by establishment size is noisy, the negative effects for total employees and workers are the largest for smaller firms (Appendix Table C12). The lack of hiring in response to the BAP cannot be explained by higher wages in underbanked areas: instead, columns (5)-(8) of Appendix Table C13 suggest a decline in overall daily wages, driven by a 13 percent decline in the daily wages of contract workers (column (7)). Columns (5) and (6) of Appendix Table C14 show that the decline in contract worker wages emanates from small and young establishments which also exhibited higher capital spending and credit growth following the BAP. There are two possible explanations for this: first, capital and labor were substitutes for these establishments. Access to credit led to capital investments and reduced labor demand, resulting in lower wages for contract labor. Alternatively, bank credit was insufficient to cover the full costs of capital investment, and establishments reduced costs by cutting back on payments to contract workers.[46]

In the aggregate, we however find evidence indicative of higher manufacturing employment due to increased firm entry. Appendix Table C15 shows that aggregate manufacturing investment and credit growth were higher in underbanked districts following the BAP, accompanied by a significant increase in the number of registered manufacturing establishments. These results are discussed in detail in Appendix Section C.3.

included the factory value of products and by-products manufactured, receipts from non-industrial services rendered to others, work done for others on material supplied by them, the value of electricity produced and sold, the value of goods sold in the same conditions purchased, the stock of semi- finished goods, and the value of own construction. Using this broader definition we found positive effects on output in underbanked areas only in the long run. The measure of output used in the current version only captures the value of products manufactured in a given year. The former broader measure of output can potentially include measurement error since establishments in India have an incentive to under-report total output in order to avail subsidized credit and other preferential government contracts. As the value of goods manufactured is subject to taxation and input credit (hence verifiable), other heads included under the former output measure are more likely to be manipulated.

[46] Institutional features of Indian labor markets make it plausible that establishments selected contract workers as the first margin of adjustment for cost cutting, or substituting capital with labor. Unlike "hired workers" who have employment protection and can form unions, contractual workers have no employment protection, and are not unionized. This reduces the bargaining power of contract labor vis-a-vis firms.

5 Mechanisms

This section discusses plausible mechanisms explaining higher manufacturing investment and credit growth by smaller establishments in response to financial deepening. We highlight the role of the information channel by examining the physical proximity of entrant private banks to manufacturing establishments, and the hiring of skilled human capital by private banks. We also rule out two alternate channels: a reduction in lending rates, and higher aggregate demand.

5.1 Distance to Manufacturing Establishments

Screening and monitoring costs incurred by lenders are typically increasing in distance (Agarwal and Hauswald, 2010; Gilje et al., 2016; Hollander and Verriest, 2016; Chen et al., 2022; Chernenko et al., 2022). Physical proximity to borrowers aids in the collection of "soft" information which is not easily substitutable, and critical for small unlisted borrowers with limited "hard" information. Lower costs of information acquisition can improve both the volume, and the quality of information collected by lenders. Consequently, physical proximity can reduce the costs of financial intermediation, contributing to higher credit disbursement towards informationally opaque borrowers. We thereby test whether the BAP lowered the costs of information collection by reducing the distance between lenders and manufacturing establishments in underbanked districts. It is important to note though that banking expansions do not necessarily lower the average (or median) bank-firm distance. If entrant banks locate next to existing branches, it would increase bank branch density, but leave unchanged the distance to the nearest bank.[47]

The empirical challenge is that bank branch addresses are publicly listed but the ASI only mentions the district in which the establishment is located. This precludes a direct comparison of establishments' distance to private banks across underbanked and non-underbanked districts. We instead use the Economic Census (EC) to map rural business establishments to pincodes,

[47] Unlike the rule-based social banking policy of the 1980s which explicitly directed banks to locate in "unbanked" locations, the BAP had no such directive and only required banks to furnish information on the number of existing bank branches proximate to their preferred location. Moreoever, while bank entry in an unbanked location unambiguously reduces distance to lenders, underbanked districts were *not* "unbanked" districts due to existing operations by state-owned banks.

and combine this with the mapping of bank branches to pincodes.[48] Establishments' distance to banks is the minimum Euclidean (straight line) distance between these pincodes.

Using the 2013 EC, we first aggregate the establishment data to the district and compare the median establishment-private bank distance across underbanked and non-underbanked districts using a cross-sectional RD specification. As the ASI covers only registered manufacturing establishments and the EC provides no information on registration status, we exclude manufacturing establishments employing less than 5 workers.[49] Using our preferred bandwidth of 15, the left panel of Figure 4 shows a significant reduction in the median distance to private banks. The right panel shows no corresponding impact on distance to state-owned banks.

Next, we use establishment-level data from the EC to examine heterogeneity by establishment size. The cross-sectional RD specification is the following:

$$DistPvtBank_{ijds} = \alpha_s + \delta_j + \beta Underbanked_d + f(Runvar_d) + \gamma X_{id} + \epsilon_{ijds} \tag{7}$$

The unit of observation in Equation (7) is establishment i, located in district d of state s, and operating in industry j. The outcome of interest is the minimum distance to a private bank branch. We include state and industry fixed effects (α_s and δ_j) along with establishment ownership dummies and pre-treatment district covariates. The coefficient of interest (β) compares the minimum distance to private banks across manufacturing establishments in underbanked and non-underbanked districts. The sample is restricted to establishments employing at least one worker and located in districts within a neighbourhood of 15 around the discontinuity threshold. Standard errors are clustered by district.[50]

[48] The EC provides village and block identifiers of each establishment. The 2011 Population Census provides the pincode for villages. We use identifiers from the SHRUGS database to map villages across the Economic Census and the Population Census (Asher et al., 2021). We use the dataset compiled by Agarwal et al. (2021) to obtain pincodes of private bank branches in India. It provides physical addresses of over 120,000 bank branches operating in India in 2016. We use the pincodes of bank branches which began operation prior to 2012, and obtain the latitude and longitude of the centroid of each pincode, which is then used to compute the Euclidean distance between two pincodes.

[49] In the pre-treatment period, establishments employing less than 5 workers comprised the bottom decile of the ASI's distribution of workers.

[50] This effectively excludes establishments where the owner is the sole worker. As such establishments are also most likely to be unregistered, this sample restriction makes the EC more comparable to the ASI.

Column (1) of Table 3 shows a 4.6 km reduction in the minimum distance to a private bank branch in underbanked districts – a 30 percent decline relative to the control mean. Columns (2)-(4) show heterogeneity by establishment size. We find the decline in distance to be strongest for establishments employing between 5 and 25 workers (accounting for 40 percent of EC establishments). There is however no significant reduction in the distance to private banks for larger establishments hiring in excess of 25 workers (column 4), or establishments' distance to state-owned banks (columns 5-8).

Lastly, we use the differences-in-discontinuity specification in Equation (6) to confirm that the increase in capital spending and credit growth was driven by establishments located in districts where establishments were proximate to private banks. We define the dummy *High Dist. Pvt. Bank* to equal one if the within-district median establishment-private bank distance exceeded the sample median. Columns (1) and (4) of Table 4 show that the increase in capital spending and credit growth was driven by establishments operating in underbanked districts with below median establishment-private bank distances. The triple interaction coefficients (*High Dist. Pvt. Bank* $\times$ *Underbanked* $\times$ *Post*) are negative and large, and statistically significant for capital spending.

If information acquisition is a key friction for financial intermediation and physical proximity aids information gathering, then this channel would be most relevant for smaller firms with limited public information. In line with this hypothesis, columns (2) and (5) of Table 4 show higher manufacturing investment and credit growth for smaller establishments (less than 25 workers) in underbanked districts with a relatively low establishment-private bank distance. In contrast, columns (3) and (6) identify no impact of the BAP on either outcome for larger establishments (hiring more than 50 workers), irrespective of their location in districts with a low distance to private banks.

In summary, we find a significant reduction in establishments' distance to private bank branches in underbanked districts following the BAP. Suggestive evidence also shows the increase in manufacturing investment and credit growth to be driven by establishments in treated districts where the distance to private bank branches was relatively small.[51] This indicates that physical proximity to private banks aided credit growth and capital investment. This underlines the role of local credit markets in facilitating financial intermediation (Agarwal and Hauswald, 2010; Nguyen, 2019).

5.2 Increased Staffing by Banks

The BSR data separates bank employees into officers and clerks. The former comprises of skilled employees who are typically hired through competitive examinations and are responsible for overall branch management and lending decisions. We aggregate branch-level information on the number of officers and employees to the district and use a district-level specification (as for earlier banking outcomes) to identify the impact of the BAP on overall employees and officers of private and state-owned banks. If higher lending by private banks to small manufacturing establishments emanated from superior information gathering, we would expect to see an increase in private bank officers in under-served areas. It is worth noting that banking expansions does not imply a mechanical increase in the number of officers as banks can use low-skilled clerks to service basic branch operations.

Column (1) of Table 5 shows that private banks in underbanked areas had 35 additional officers following the BAP – a statistically significant 36 percent increase relative to the control group mean. Column (3) shows that in aggregate, private banks had 52 additional employees in underbanked districts – a 24 percent increase. The coefficients in columns (1) and (3) imply that 2 out of 3 additional employees engaged by private banks in underbanked districts were officers. Importantly, the share of officers in private banks increased by 6 ppt. (on a base of 44 percent) with an insignificant change in state-owned banks. While we cannot observe the actual processing of loan applications by banks, increased hiring of officers (absolute number

[51] Given the flexibility accorded to private banks to choose locations within the set of underbanked districts, the findings of Table 4 should be interpreted with caution. Moreover, we are only able to map rural establishments to bank branches. The *High Dist. Pvt. Bank* dummy would remain unaffected as long as the distance to private banks from urban establishments was not significantly larger in districts where the distance to private banks for rural establishments was relatively small.

and relative shares) point to human capital investments undertaken by private banks which would facilitate lending to small borrowers. Columns (2) and (4) show no impact of the BAP on the staffing levels of state-owned banks, either in terms of officers, or overall employees. The coefficients are a third in magnitude and statistically insignificant. This again underlines that private banks alone responded to the BAP. This was through expanding branches, disbursing credit, and staffing branches with relatively skilled employees (officers). If these officers engaged in the acquisition of "soft information" and monitoring of small manufacturing establishments, it would be consistent with higher credit growth and capital spending for these establishments.

Lastly, Table 6 tests whether higher manufacturing investment and credit growth emanated from the set of underbanked districts which saw increased staffing of private banks by officers. We use staffing data from 2011 and classify a district to have "high officers" (*High Officer Pvt. Bank* = 1) if the fraction of private bank officers (as a share of total employees) in the district exceeded the sample median. We then compare capital investment and credit growth across districts with high and low officers, conditional on being underbanked. As the share of private bank officers are measured 6 years after the onset of the BAP, the results should be interpreted as suggestive. Columns (1)-(3) of Table 6 show that capital spending significantly increased only in underbanked districts with a relatively high share of private bank officers. Columns (4)-(5) also show relatively larger credit growth in these districts; the triple interaction coefficients are large and positive, albeit imprecisely estimated.

While we cannot assign a causal interpretation to the triple interaction coefficients, they are broadly consistent with the explanation that the increased hiring of skilled employees in the form of officers facilitated capital spending for smaller establishments in underbanked areas. Taken together with higher credit growth and manufacturing investment for establishments with limited collateral, the results suggest that private banks' physical proximity, and their complementary investments in skilled human capital facilitated the collection of subjective intelligence for small borrowers. This is in line with the selection of creditworthy borrowers, and the absence of higher delinquency rates in the long-run.

5.3 Comparative Advantage of Lenders

We next explore whether specific attributes of entrant banks can explain the increase in manufacturing investment for credit-constrained firms. We examine three attributes: first, if the district witnessed entry by a small private bank; second, if the district witnessed entry by a private bank specializing in lending to small borrowers; and third, if the district witnessed entry by a private bank specializing in lending to small *manufacturing* borrowers. Each hypothesis essentially tests for the comparative advantage of entrant banks in small lender operations, with the first being motivated from studies showing small banks to possess informational advantages in lending to small borrowers (Berger et al., 2005; Bai et al., 2018; Liberti and Petersen, 2019).

We use proprietary bank lending data from the BSR between 2000 and 2005 to classify banks into these categories. "Small" banks are defined as those whose aggregate loan portfolio is less than the median loan portfolio during this period. Banks specializing in small loans are those where the average loan size is less than the median loan size across all banks.[52] Banks specializing in lending to small manufacturing enterprises are banks with a relatively high (above median) share of small borrowers within their manufacturing portfolio.

Column (1) of Table 7 offers weak evidence in support of the first hypothesis. While the triple interaction term corresponding to entry by small private banks is positive, it is statistically non-significant. We also find no evidence to support the second hypothesis (column 2): the triple interaction term for entry by private banks specializing in small loans is negative, large, and statistically significant. Finally, the triple interaction coefficient in column (3) is positive and statistically significant, indicating that the increase in capital spending was driven by establishments located in districts witnessing entry by banks with a relatively high share of small manufacturing loans. This is consistent with the hypothesis that manufacturing investment increased in districts witnessing entry by banks specializing in lending to small manufacturing establishments. Moreover, the double-difference coefficient in column (3) is attenuated towards 0 and not statistically significant. This affirms no difference in manufacturing investment across

[52] The average loan size is computed as total outstanding loans, divided by total loan accounts.

underbanked and non-underbanked districts, for the subset of districts not witnessing entry by a private bank specializing in lending to small manufacturing borrowers.

Given the flexibility accorded to banks to locate in underbanked districts, we cannot fully rule out the presence of unobservable local factors determining the entry of private banks in select districts. Nonetheless, columns (1) and (3) of Table 7 offer suggestive evidence consistent with the explanation that the specialization of banks' lending operations matter for capital investment by manufacturing establishments.

5.4 Cost of Credit

An expansion in bank branches can increase competition among financial institutions, which in turn can facilitate financial intermediation, both through incumbents' incentive to preserve market shares, and a reduction in the cost of credit (Carlson et al., 2022). Consequently, lender competition can increase capital investments by lowering the marginal cost of capital. If borrowing costs were higher for smaller informationally opaque firms, it is possible that these firms gained disproportionately from lower lending rates owing to heightened lender competition after the policy. We examine this channel using the proprietary BSR data and compare average lending rates across underbanked and non-underbanked districts in the post-treatment period (2011), using a cross-sectional sharp RD specification.[53]

Columns (3) and (4) of Appendix Table B7 offer no evidence of any significant reduction in lending rates of private or government banks across underbanked and non-underbanked districts. The absence of a change in district-level lending rates is also corroborated in the establishment-level data: column (6) of Appendix Table C3, and Appendix Table C16 offer no evidence of a decline in overall lending rates or those faced by small establishments. This makes it unlikely that the increase in manufacturing investment and credit growth in underbanked

[53] The administrative BSR data provides information on the weighted average lending rate charged by each bank branch. The average lending rate in the district is computed as the loan volume weighted mean across all branches. The choice of empirical strategy is driven by the absence of private banks in almost half of the districts prior to 2005, resulting in the interest rate being undefined.

districts emanted in response to lower borrowing costs.[54]

5.5 Aggregate Demand

The final channel examined is aggregate demand. Young (2017) showed that the BAP increased farm productivity and nightlights-based economic activity. This could have generated local demand through general equilibrium effects, leading to higher manufacturing investment. If smaller establishments cater to local demand, this can explain the increase in capital spending by small manufacturers in underbanked districts. We test this by exploring treatment heterogeneity across tradable and non-tradable industries. If the increase in manufacturing investment is solely an upshot of higher local demand, we would expect the treatment effects to be driven by establishments operating in non-tradable industries. We follow Mian and Sufi (2014) and use the geographic dispersion of industries to classify them as tradable and non-tradable.[55] The intuition is that industries with greater geographic dispersion engage in the production of non-tradables.

Appendix Table C17 fails to identify treatment heterogeneity across establishments in industries with relatively low geographic dispersion (tradables). In fact, the positive and statistically significant coefficients on the $Underbanked \times Post$ indicator in columns (2) and (5) show that the treatment effect on capital spending and credit for small manufacturing establishments emanated primarily from establishments operating in tradable industries. Thus, while we cannot rule out that part of the increase in capital spending was in response to higher local demand, the positive treatment effect on the triple interaction terms indicate that higher aggregate demand cannot be the sole explanation for our findings.

[54] As we are comparing lending rates in equilibrium, it is possible that lenders had initially lowered rates but increased competition for credit among borrowers had put upward pressure on bank interest rates, resulting in a null result.

[55] We use data from the Economic Census of 2005 for this exercise. The Economic Census provides total number of workers hired by every business establishment, irrespective of their registration status, allowing us to obtain aggregate estimates of employment at the industry-district level. We first compute the share of manufacturing workers for a specific industry within each district (as a share of total manufacturing employment for that industry). We next sum the square of these shares within industries to construct industry-specific measures of geographic dispersion.

6 Conclusion

Using firm level panel data from registered manufacturing sector enterprises in India and exploiting a bank branch expansion policy in 2005 that led to an increase in private bank branches and credit in underbanked districts, we find an increase in capital investment and credit growth by manufacturing firms located in the targeted regions. Importantly, we find that this expansion is led by small and young firms, which are more likely to be credit constrained. At the same time, we do not find a reduction in credit quality.

We test various mechanisms that can explain our findings and find evidence in support of two main channels. First, we find a reduction in physical distance between small borrowers and lenders in underbanked areas after the policy. This is accompanied by a relatively greater staffing of officers who are responsible for lending decisions in these bank branches. Given that small borrowers are also more likely to be informationally opaque, our results suggest that increased proximity to banks enabled gathering of soft information on these borrowers and better screening by private banks. Second, we find that the increase is driven by banks which specialize in lending to small manufacturing units. Taken together, these results show that a reduction in physical proximity to banking institutions can reduce frictions in the credit market, specifically for the credit constrained firms, by lowering information and monitoring costs. Thus, increased access to banking has distributional consequences with smaller firms, having higher returns to capital but low collateral, benefiting more from increased access. Importantly, this factor continues to remain important even as digitization has transformed the consumer lending space in India (Alok et al., 2024) but has largely left the SME segment untouched. In fact, many public and private sector banks in India have recently announced plans to further expand branches across the country.[56] Thus, distance continues to matter even in the digital age.

[56] In November 2024, India's largest bank announced the opening of 500 new branches. Economic Times, 2024

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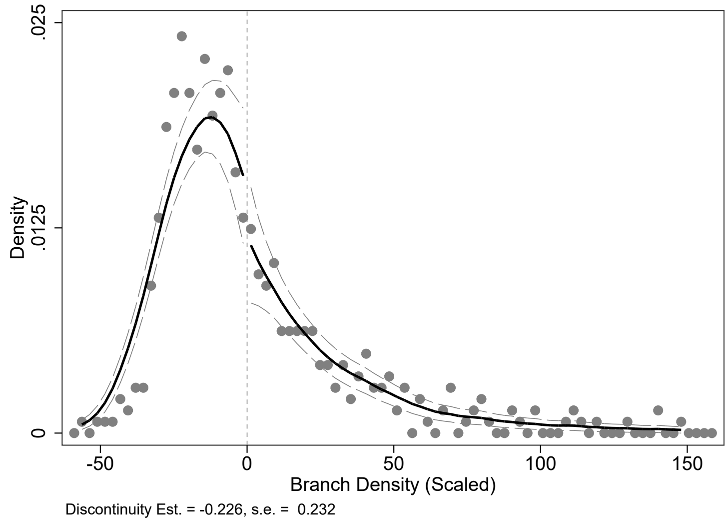
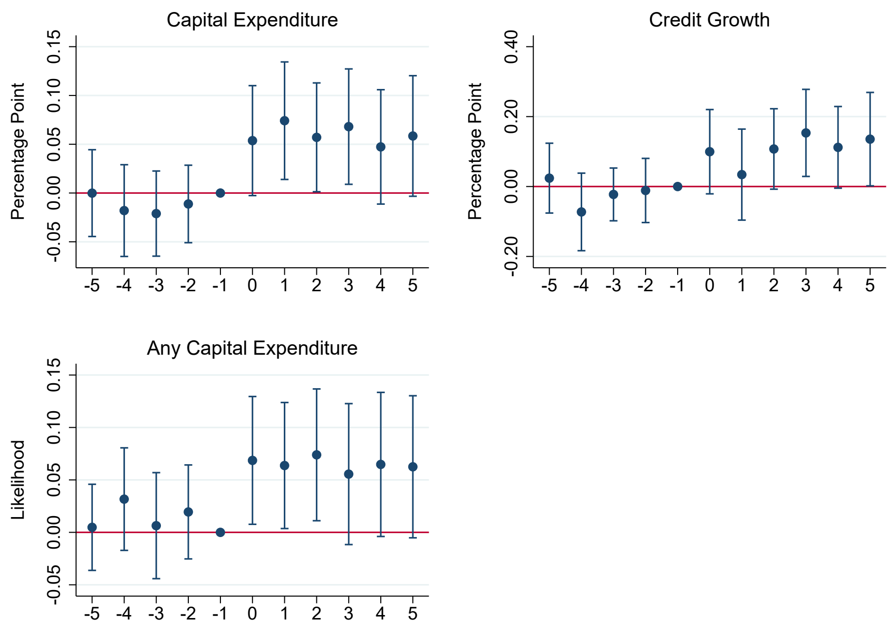
Figure 1: Selection of Districts Into Underbanked Status: McCrary Test



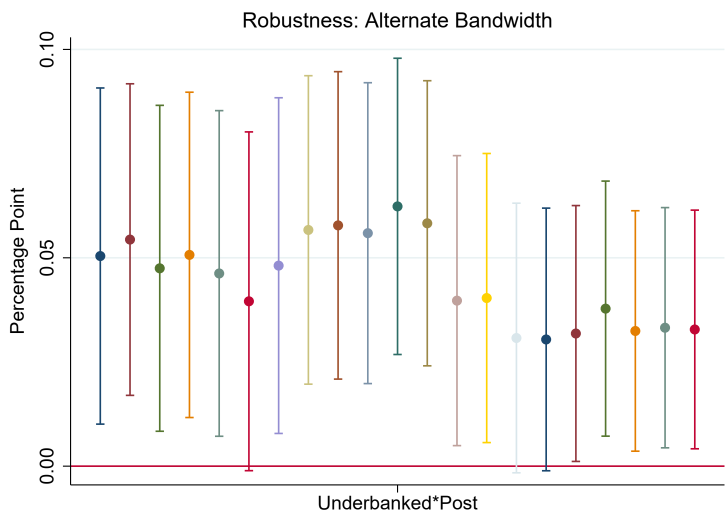
Notes: The above figure tests for bunching of the running variable around the threshold of 0 using the McCrary test (McCrary, 2008). The solid line shows the local polynomial estimate, while the dashed lines show the 95% confidence intervals. Based on the discontinuity estimate and corresponding standard error, we are unable to reject the null of no discontinuity at the threshold (p-value 0.331).

Figure 2: Capital Expenditures and Credit Growth in Underbanked Districts: Event-Study Plots



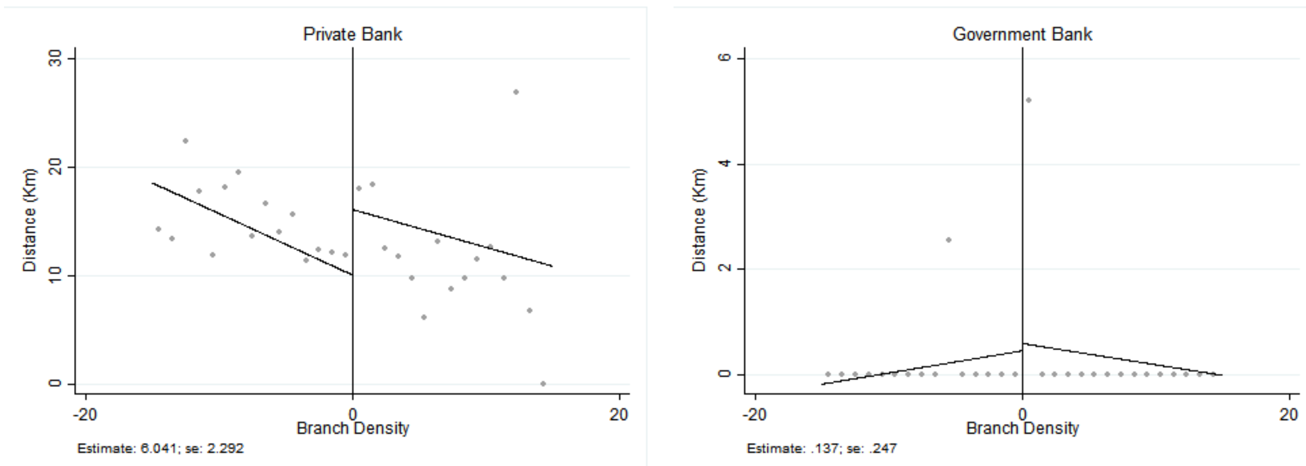
Notes: The above figure presents event-study plots estimating the effect of the BAP on capital expenditures (top left panel), any capital expenditures (bottom left panel), and credit growth (top right panel) in underbanked districts, using a differences-in-discontinuity design. The unit of observation is the manufacturing establishment. Capital expenditures refer to investment in plant and machinery. The solid line represents the average annual treatment effects, and the capped bars denote the 95% confidence intervals. The treatment effects are benchmarked to the year 2005 (omitted time period=-1) – the year in which the BAP is initiated. All specifications include establishment and industry-year fixed effects, a linear polynomial in the running variable interacted with the district underbanked indicator and a post-treatment indicator, establishment and district covariates. All specifications are weighted using establishment-specific weights. The sample in each instance is restricted to districts within a bandwidth of 15 around the discontinuity threshold. Standard errors are clustered by district.
Source: Annual Survey of Industries (2001-11).

Figure 3: Manufacturing Investment in Underbanked Districts: Robustness to Alternate Bandwidths



Notes: The above figure shows the robustness of the baseline results to alternate bandwidths. The unit of observation is the manufacturing establishment and the outcome of interest is capital expenditures (investment in plant and machinery). All specifications include establishment and industry-year fixed effects, a linear polynomial in the running variable interacted with the district underbanked indicator and a post-treatment indicator, establishment covariates, and district covariates. All specifications are weighted using establishment-specific weights. The sample in the first specification estimated is restricted to districts within a bandwidth of 10 around the discontinuity threshold; subsequent specifications sequentially increases the bandwidth by 0.5, till the final specification, which equals a bandwidth of 20 around the discontinuity threshold. The vertical lines denote the 95% confidence intervals. Standard errors are clustered by district.
Source: Annual Survey of Industries (2001-11).

Figure 4: Minimum Distance of Manufacturing Establishments to Bank Branches



Notes: The above figures compare the minimum distance of business establishments to bank branches across underbanked and non-underbanked districts. The unit of observation is the district. The minimum establishment distance to a bank branch is averaged across establishments in a given district. Establishment locations are based on the Economic Census of 2013. The sample is restricted to rural manufacturing establishments, hiring at least 5 workers. The left panel shows the minimum distance to private banks; the right panel shows the minimum distance to government-owned banks. The vertical line denotes the national average threshold for BAP. Districts to the left of the cutoff are classified as "underbanked". RD coefficients and standard errors, computed using the methodology of Calonico et al. (2020) are shown at the bottom of each figure. RD coefficients are estimated using a linear polynomial and weighted using a triangular kernel. All specifications include state fixed effects and the sample is restricted to districts within a bandwidth of 15 around the threshold.
Source: Economic Census (2013).

Table 1: Manufacturing Investment in Underbanked Districts

	(1)	(2)	(3)	(4)	(5)	(6)
			Capital Expenditures			
Underbanked × Post	.046**	.043**	.047**	.062***	.063***	.063***
	(.019)	(.020)	(.020)	(.022)	(.022)	(.022)
Observations	71542	71542	71542	71542	71536	71522
R^2	.37	.38	.38	.38	.38	.39
Control Mean	-.03	-.03	-.03	-.03	-.03	-.03
Firm FE	Y	Y	Y	Y	Y	Y
Year FE	Y	N	N	N	N	N
Size-Year FE	N	N	Y	Y	Y	Y
Industry-Year FE	N	Y	Y	Y	Y	Y
Firm Controls	N	N	Y	Y	Y	Y
District Controls	N	N	N	Y	Y	Y
Age FE	N	N	N	N	Y	N

Notes: This table estimates the treatment effect of the BAP on manufacturing investment. The unit of observation is the manufacturing establishment. The outcome of interest is capital expenditures, defined as in (3). Capital expenditures are restricted to capital expenditures in plant and machinery. All specifications include establishment fixed effects, and a linear polynomial in the running variable. Column (1) includes establishment and year fixed effects. Columns (2)-(5) replace year fixed effects with 2-digit industry-year fixed effects, while column (6) considers 3-digit industry year fixed effects. Size-year fixed effects are also included in columns (3)-(6). Size refers to pre-treatment establishment size, measured using the average number of workers hired by the establishment in the pre-treatment period. Column (3) includes establishment specific covariates while column (4) adds district covariates (pre-treatment district characteristics interacted with a post-treatment indicator). Column (5) replaces the quadratic in establishment age with age fixed effects. All specifications include establishment-specific weights and the sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Standard errors are in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1% .
Source: Annual Survey of Industries (2001-11).

Table 2: Manufacturing Investment and Credit Growth in Underbanked Districts: Heterogeneity by Establishment Size, Age and Listing Status

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Capital Expenditures				Credit Growth			
Underbanked × Post	.071**	.081**	.126***	.079***	.254***	.274***	.313***	.144***
	(.032)	(.041)	(.044)	(.023)	(.066)	(.082)	(.085)	(.047)
Underbanked × *Size* > Median × Post	-.019				-.215***			
	(.039)				(.079)			
Underbanked × 10 > *Size* ≤ 25 × Post		-.003				-.164		
		(.056)				(.112)		
Underbanked × 25 > *Size* ≤ 50 × Post		-.005				-.266*		
		(.064)				(.153)		
Underbanked × 50 > *Size* ≤ 100 × Post		-.061				-.115		
		(.061)				(.135)		
Underbanked × *Size* > 100 × Post		-.061				-.202**		
		(.051)				(.079)		
Underbanked × Large, Young × Post			-.019				-.279**	
			(.055)				(.117)	
Underbanked × Large, Old × Post			-.107**				-.269***	
			(.051)				(.089)	
Underbanked × Small, Old × Post			-.101**				-.103	
			(.050)				(.121)	
Underbanked × Listed × Post				-.137***				-.124
				(.037)				(.098)
Observations	71542	71542	71542	71542	53666	53666	53666	53666
R^2	.38	.38	.38	.38	.34	.34	.34	.34
Control Mean	-.03	-.03	-.03	-.03	.04	.04	.04	.04

Notes: This table estimates heterogeneity in the impact of the BAP on manufacturing investment and credit growth, across establishments which are most likely to be credit constrained. The unit of observation is the manufacturing establishment. The outcome of interest in columns (1)-(4) is manufacturing investment; in columns (5)-(8), credit growth. Growth variables are defined as in equation (3); manufacturing investment is restricted to investments in plant and machinery. All specifications include establishment and 2-digit industry-year fixed effects, a linear polynomial in the running variable, and establishment and district covariates. *Size* refers to establishment size in the pre-treatment period, defined as the number of workers hired; *Median* refers to the median establishment size; *Large* and *Small* refer to establishments with above and below median sizes. *Young* refers to establishments which started operations after 1992. *Listed* refers to establishments which are publicly listed. All specifications are weighted using establishment-specific weights. Standard errors are in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Annual Survey of Industries (2001-11).

Table 3: Minimum Distance of Manufacturing Establishments to Bank Branches

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Private Banks				Government Banks			
	Workers ≥ 1	Workers ≥ 5	5< Workers ≤ 25	Workers > 25	Workers ≥ 1	Workers ≥ 5	5< Workers ≤ 25	Workers > 25
Underbanked	-4.557***	-4.530**	-5.066***	-1.249	1.115***	1.008***	1.226***	-.697
	(1.386)	(1.766)	(1.753)	(1.636)	(.341)	(.350)	(.352)	(.532)
Observations	377694	71467	60691	10768	377694	71467	60691	10768
R^2	.36	.40	.41	.30	.07	.09	.09	.12
Control Mean	13.42	12.54	13.03	9.76	.93	.72	.73	.66

Notes: This table estimates the impact of the BAP on the minimum distance between a manufacturing establishment and a bank branch, using a cross-sectional RD design. The unit of observation is the manufacturing establishment. The outcome of interest is the minimum distance between the establishment and a private (government) bank branch in columns (1)-(4) ((5)-(8)). Columns (1) and (5) restrict the sample to establishments that hire at least one worker; columns (2) and (6) include establishments hiring at least 5 workers; columns (3) and (7) restrict the sample to establishments hiring between 5 and 25 workers; columns (4) and (8) include establishments hiring at least 25 workers. All specifications include state and industry fixed effects, establishment ownership dummies, as well as district-specific pre-treatment covariates. The sample is restricted to rural establishments located in districts within a neighbourhood of 15 around the discontinuity threshold. Standard errors are in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Economic Census (2013).

Table 4: Manufacturing Investment and Credit Growth in Underbanked Districts: Heterogeneity by Distance to Private Bank Branch

	(1)	(2)	(3)	(4)	(5)	(6)
	Capital Expenditures			Credit Growth		
	All	Small Est.	Large Est.	All	Small Est.	Large Est.
Underbanked × Post	.076***	.112***	-.003	.138***	.154**	.072
	(.019)	(.026)	(.035)	(.053)	(.067)	(.058)
Underbanked × High Dist. Pvt. Bank × Post	-.126**	-.138*	-.086	-.079	-.093	.072
	(.064)	(.080)	(.084)	(.105)	(.132)	(.153)
Observations	62556	27904	34608	46271	20441	25805
R^2	.38	.42	.29	.34	.41	.25
Control Mean	-.03	-.04	.00	.04	.05	.02

Notes: This table estimates heterogeneity in the impact of the BAP on manufacturing investment by distance to private banks. The unit of observation is the manufacturing establishment. The outcome of interest in columns (1)-(3) is manufacturing investment; in columns (4)-(6), credit growth. Growth variables are defined as in equation (3); manufacturing investment is restricted to investments in plant and machinery. All specifications include establishment and 2-digit industry-year fixed effects, a linear polynomial in the running variable, and establishment and district covariates. *High Dist. Pvt. Bank* refers to districts with high (above median) distance of manufacturing establishments to the nearest private bank branch. Columns (1) and (4) include all establishments; columns (2) and (5) restrict the sample to small establishments; columns (3) and (6) restrict the sample to large establishments. *Small* establishments refer to those hiring under 50 workers; *Large* establishments are those hiring in excess of 50 workers. All specifications are weighted using establishment-specific weights. Standard errors are in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Annual Survey of Industries (2001-11) for establishment outcomes and Economic Census (2013) for distance to private banks.

Table 5: Officers and Employees in Underbanked Districts

	(1)	(2)	(3)	(4)
	Officers		Employees	
	Private Banks	State-Owned Banks	Private Banks	State-Owned Banks
Underbanked × Post	35.571***	9.184	52.357***	18.417
	(13.467)	(14.297)	(16.465)	(28.601)
Observations	2505	2505	2505	2505
R^2	.81	.98	.89	.99
Control Mean	97.887	470.792	217.290	1764.064

Notes: This table estimates the impact of the BAP on staffing levels of private and state-owned banks. The unit of observation is the district. The outcome of interest in columns (1)-(2) is the number officers employed by banks in the district; in columns (3)-(4), the number of employees employed by banks in the district. Columns (1) and (3) refer to private banks; columns (2) and (4), state-owned banks. All specifications include district and year fixed effects, along with a linear polynomial in the running variable, and district covariates. The sample is restricted to districts within a neighbourhood of 15 around the discontinuity threshold. Standard errors are in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Basic Statistical Returns, Reserve Bank of India.

Table 6: Manufacturing Investment and Credit Growth in Underbanked Districts: Heterogeneity by Private Bank Officers

	(1)	(2)	(3)	(4)	(5)	(6)
	Capital Expenditures			Credit Growth		
	All	Small Est.	Large Est.	All	Small Est.	Large Est.
Underbanked × Post	.016	.026	-.024	.099**	.125**	.072
	(.028)	(.044)	(.030)	(.050)	(.062)	(.056)
Underbanked × High Officer Pvt. Bank × Post	.141***	.162***	.121**	.059	.073	.023
	(.039)	(.057)	(.047)	(.070)	(.094)	(.087)
Observations	70945	30935	39978	53309	22923	30365
R^2	.38	.42	.29	.34	.40	.25
Control Mean	-.03	-.04	.00	.04	.05	.02
P-val ($\beta_1 + \beta_2 = 0$)	.000	.000	.038	.013	.016	.254

Notes: This table estimates heterogeneity in the impact of the BAP on manufacturing investment across the share of private bank officers in the district. The unit of observation is the manufacturing establishment. The outcome of interest in columns (1)-(3) is manufacturing investment; in columns (4)-(6), credit growth. Growth variables are defined as in equation (3); manufacturing investment is restricted to investments in plant and machinery. All specifications include establishment and 2-digit industry-year fixed effects, a linear polynomial in the running variable, and establishment and district covariates. *High Officer Pvt. Bank* refers to districts with a high (above median) share of private bank officers in 2011. Columns (1) and (4) include all establishments; columns (2) and (5) restrict the sample to small establishments; columns (3) and (6) restrict the sample to large establishments. *Small* establishments refer to those hiring under 50 workers; *Large* establishments are those hiring in excess of 50 workers. All specifications are weighted using establishment-specific weights. Standard errors are in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Annual Survey of Industries (2001-11) for establishment outcomes and Basic Statistical Returns, RBI, for data on banking officers.

Table 7: Manufacturing Investment in Underbanked Districts: Heterogeneity by Private Bank Characteristics

	(1)	(2)	(3)
		Capital Expenditures	
Underbanked × Post	.048	.146***	.022
	(.035)	(.043)	(.028)
Underbanked × Small Bank × Post	.016		
	(.045)		
Underbanked × Small Loans × Post		-.101**	
		(.050)	
Underbanked × Small Mfg. × Post			.122***
			(.039)
Observations	71542	71542	71542
R^2	.38	.38	.38
Control Mean	-.03	-.03	-.03

Notes: This table estimates heterogeneity in the impact of the BAP on manufacturing investment across bank characteristics. The unit of observation is the manufacturing establishment. The outcome of interest is manufacturing investment, defined as in equation (3). Manufacturing investment is restricted to plant and machinery. All specifications include establishment, 2-digit industry-year fixed effects, a linear polynomial in the running variable, establishment and district specific covariates. *Small Bank* is a dummy equaling 1 if the district saw entry by a private bank whose total loan portfolio was relatively small (less than median); *Small Loan* is a dummy equaling 1 if the district saw entry by a private bank whose average loan size is relatively small (less than median); $Small\ Mfg$ is a dummy equaling 1 if the district saw entry by a private bank which had a relatively high (above median) share of small manufacturing borrowers; All specifications include establishment-specific weights and the sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Standard errors are in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Annual Survey of Industries (2001-11) for establishment outcomes and Basic Statistical Returns, RBI, for data on banking characteristics.

A Balance Tests

We present balance tests to affirm that manufacturing establishments in non-underbanked districts serve as a valid counterfactual to those in underbanked districts. All balance tests restrict the sample to districts located within a bandwidth of 15 (bank branches per capita) around the national average bank branch density discontinuity threshold.

Table A1: Covariate Balance: Pre-Treatment Establishment Characteristics

	(1) Capital Expenditure	(2) Credit Growth	(3) Any Capital Expenditure	(4) Any Credit Growth	(5) Plant Machinery (Log)	(6) Fixed Assets (Log)
Underbanked	.021	.027	.029	.011	.699	.625*
	(.194)	(.560)	(.196)	(.617)	(.492)	(.017)
Observations	14387	18089	18175	18168	18109	14414
Control Mean	14.344	30.333	126.070	156.764	2.136	.252

Notes: This table shows the pre-treatment covariate balance across establishment characteristics. The unit of observation is the manufacturing establishment. The sample is restricted to districts within a bandwidth of 15 on either side of the national average threshold. All specifications include a linear polynomial in the running variable and its interaction with a district's underbanked status, along with state and 2-digit industry fixed effects. Outcomes are average values between 2001 and 2004. Standard errors are clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Annual Survey of Industries (2001-04).

Table A2: Covariate Balance: Pre-Treatment Establishment Characteristics

	(1) Raw Materials (Log)	(2) Loans (Log)	(3) Inputs (Log)	(4) Output (Log)	(5) Output Per Worker (Log)	(6) Interest Rate
Underbanked	-.046	.205	.029	.203	.159	-.001
	(.194)	(.560)	(.196)	(.617)	(.492)	(.017)
Observations	14387	18089	18175	18168	18109	14414
Control Mean	14.344	30.333	126.070	156.764	2.136	.252

Notes: This table shows the pre-treatment covariate balance across establishment characteristics. The unit of observation is the manufacturing establishment. The sample is restricted to districts within a bandwidth of 15 on either side of the national average threshold. All specifications include a linear polynomial in the running variable and its interaction with a district's underbanked status, along with state and 2-digit industry fixed effects. Outcomes of are average values between 2001 and 2004. Standard errors are clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Annual Survey of Industries (2001-04).

Table A3: Covariate Balance: Pre-Treatment Establishment Characteristics

	(1) Hired Workers (Log)	(2) Contract Workers (Log)	(3) Supervisor (Log)	(4) Employee (Log)	(5) Hired Worker Wage (Log)	(6) Contract Worker Wage (Log)	(7) Supervisor Wage (Log)	(8) Employee Wage (Log)	(9) Share Supervisors
Underbanked	-.093	.158	.045	-.072	.057	-.139**	.009	.077	.014
	(.132)	(.122)	(.099)	(.123)	(.075)	(.067)	(.112)	(.093)	(.010)
Observations	18175	18140	18140	18175	18054	5256	14707	18121	18122
Dep Var Mean	105.867	33.782	9.994	127.573	149.759	134.788	485.454	189.335	.100

Notes: This table shows the pre-treatment covariate balance across establishment characteristics. The unit of observation is the manufacturing establishment. The sample is restricted to districts within a bandwidth of 15 on either side of the national average threshold. All specifications include a linear polynomial in the running variable and its interaction with a district's underbanked status, along with state and 2-digit industry fixed effects. Outcomes are average values between 2001 and 2004. *Share Supervisors* is the number of supervisors, scaled by the total number of employees. Standard errors are clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Annual Survey of Industries (2001-04).

Table A4: Covariate Balance: Pre-Treatment Establishment Characteristics

	(1) Importer	(2) Eligble MSME	(3) Any Computer	(4) Ever Publicly Listed	(5) Ever Privately Traded	(6) Individual Proprietor	(7) Partnership	(8) Govt. Aided	(9) Public Sector
Underbanked	.042	.022	-.007	.059	-.046	.005	-.056	.009	.009
	(.028)	(.018)	(.047)	(.036)	(.041)	(.054)	(.075)	(.009)	(.009)
Observations	18175	17525	18175	18175	18175	18175	18175	18175	18175
Dep Var Mean	.144	.106	.514	.178	.264	.318	.321	.028	.028

Notes: This table shows the pre-treatment covariate balance across establishment characteristics. The unit of observation is the manufacturing establishment. The sample is restricted to districts within a bandwidth of 15 on either side of the national average threshold. All specifications include a linear polynomial in the running variable and its interaction with a district's underbanked status, along with state and 2-digit industry fixed effects. *Importer* is a dummy equaling 1 if the establishment imported inputs between 2001 and 2004; *Eligible MSME* is a dummy equaling 1 if the establishment qualified to be a MSME according to the definition for MSME in 2006. *Any Computer*, *Ever Publicly Listed*, and *Ever Privately Traded* are dummies equaling 1 if the establishment used computers for accounting, was owned by a publicly traded corporation, or owned by a corporation which was privately traded between 2001 and 2004. Standard errors are clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Annual Survey of Industries (2001-04).

Table A5: Covariate Balance: Pre-Treatment Bank Branches

	(1) All Banks	(2) Private Banks	(3) State Owned Banks	(4) Regional Rural Banks
Underbanked	-5.048	4.728	-3.753	-6.023
	(13.407)	(3.532)	(11.876)	(4.807)
Observations	231	231	231	231
Dep Var Mean	144.398	16.173	104.922	23.303

Notes: This table shows the pre-treatment balance across variables capturing district financial infrastructure. The unit of observation is the district, in the year 2004. All specifications include a linear polynomial in the running variable and its interaction with a district's underbanked status. All specifications include state fixed effects and robust standard errors. The sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Significant levels: *10%, **5%, and ***1%.
Source: Basic Statistical Returns, RBI (2004).

Table A6: Covariate Balance: Pre-Treatment Bank Deposits and Credit

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	All Banks				Private Banks				State-Owned Banks			
	Dep. Act.	Dep. Amt.	Loan Act.	Loan Amt.	Dep. Act.	Dep. Amt.	Loan Act.	Loan Amt.	Dep. Act.	Dep. Amt.	Loan Act.	Loan Amt.
Underbanked	-.155	-.178	-.207	-.264	-1.332	-1.981	-.503	-1.105	-.237	-.243	-.334**	-.344
	(.170)	(.208)	(.151)	(.199)	(.907)	(1.230)	(.644)	(1.101)	(.189)	(.220)	(.164)	(.216)
Observations	231	231	231	231	231	231	231	231	231	231	231	231
Dep Var Mean	1126097.6	44.6	170510.5	27.3	106965.7	5.4	15335.3	3.2	906661.4	37.3	123606.6	23.0

Notes: This table shows the pre-treatment balance across variables capturing district financial intermediation. The unit of observation is the district, in the year 2004. The outcome of interest in the even-numbered columns is amounts; in the odd-numbered columns it is accounts. Columns (1)-(2), (5)-(6) and (9)-(10) pertain the deposits; the remaining pertain to outstanding loans. Columns (1)-(4) include all banks; columns (5)-(8) is restricted to private banks; columns (9)-(12), to state-owned banks. The outcome of interest in each column is inverse hyperbolic sine transformed. All specifications include a linear polynomial in the running variable and its interaction with a district's underbanked status. All specifications include state fixed effects and robust standard errors. The sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Significant levels: *10%, **5%, and ***1%.
Source: Basic Statistical Returns, RBI (2004).

Table A7: Covariate Balance: Pre-Treatment Private Bank Loan Accounts by Sector

	(1) Farm	(2) Manufacturing	(3) Trade	(4) Services	(5) Personal Loans	(6) Housing	(7) Durables
Underbanked	.183	-.023	.137	.311	.116	-.286	.763*
	(.472)	(.397)	(.453)	(.443)	(.670)	(.461)	(.424)
Observations	231	231	231	231	231	231	231
Dep Var Mean	5984.368	338.184	911.929	764.233	3837.555	408.507	278.303

Notes: This table shows the pre-treatment balance across district private bank loan accounts by sector. The unit of observation is the district, in the year 2004. The outcome of interest in each specification is inverse hyperbolic sine transformed. All specifications include a linear polynomial in the running variable and its interaction with a district's underbanked status. All specifications include state fixed effects and robust standard errors. The sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Significant levels: *10%, **5%, and ***1%.
Source: Basic Statistical Returns, RBI (2004).

Table A8: Covariate Balance: Pre-Treatment Private Bank Loan Amount by Sector

	(1) Farm	(2) Manufacturing	(3) Trade	(4) Services	(5) Personal Loans	(6) Housing	(7) Durables
Underbanked	-.562	.391	-.028	.755	-.338	-.604	.954
	(.894)	(.903)	(.944)	(.973)	(1.091)	(.955)	(.686)
Observations	231	231	231	231	231	231	231
Dep Var Mean	.643	.698	.430	.371	.345	.171	.025

Notes: This table shows the pre-treatment balance across district private bank amounts by sector. The unit of observation is the district, in the year 2004. The outcome of interest in each specification is inverse hyperbolic sine transformed. All specifications include a linear polynomial in the running variable and its interaction with a district's underbanked status. All specifications include state fixed effects and robust standard errors. The sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Significant levels: *10%, **5%, and ***1%.
Source: Basic Statistical Returns, RBI (2004).

Table A9: Covariate Balance: Pre-Treatment District Demographic Characteristics

	(1) Population	(2) Density	(3) Fraction Rural	(4) Fraction Muslim	(5) Fraction SC/ST	(6) Fraction OBC	(7) Fraction Female	(8) Fraction Literate	(9) Fraction Higher Educated
Underbanked	-182687.035	93.025	.040	.027	-.048	.002	.006	.062***	.017
	(257358.913)	(76.676)	(.032)	(.018)	(.036)	(.037)	(.007)	(.023)	(.022)
Observations	228	228	228	228	228	228	228	228	228
Dep Var Mean	2106053	543.412	.736	.109	.348	.381	.490	.649	.388

Notes: This table shows the pre-treatment balance across district demographic characteristics. The unit of observation is the district, in the year 2004-05. *Density* refers to population density. The outcome of interest in columns (3)-(9) are shares. All specifications include a linear polynomial in the running variable and its interaction with a district's underbanked status. All specifications include state fixed effects and robust standard errors. The sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Significant levels: *10%, **5%, and ***1%.
Source: National Sample Survey, Employment and Unemployment Round 2004-05.

Table A10: Covariate Balance: Pre-Treatment District Economic Characteristics

	(1) LFP	(2) Unemployed	(3) Self Employed	(4) Salaried Worker	(5) Casual Worker	(6) Public Sector	(7) Household Consumption
Underbanked	.000	.013	-.008	.006	-.004	.005	-2.299
	(.020)	(.009)	(.019)	(.020)	(.022)	(.009)	(39.010)
Observations	228	228	228	228	228	228	228
Dep Var Mean	.723	.024	.325	.150	.277	.064	752.723

Notes: This table shows the pre-treatment balance across district economic characteristics. The unit of observation is the district, in the year 2004-05. The outcome of interest in columns (1)-(6) is shares. The shares in columns (2)-(6) are computed conditional on participation in the labour force. All specifications include a linear polynomial in the running variable and its interaction with a district's underbanked status. All specifications include state fixed effects and robust standard errors. The sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Significant levels: *10%, **5%, and ***1%.
Source: National Sample Survey, Employment and Unemployment Round 2004-05.

Table A11: Covariate Balance: Pre-Treatment District Labour Force Characteristics

	(1) Farm	(2) Manufacturing	(3) Trade	(4) Services	(5) Construction
Underbanked	-.010	-.004	.002	.001	-.008
	(.030)	(.018)	(.010)	(.016)	(.009)
Observations	228	228	228	228	228
Dep Var Mean	.571	.112	.088	.144	.054

Notes: This table shows pre-treatment balance across district labour force characteristics (proportion of employed individuals in each sector among those employed). The unit of observation is the district, in the year 2004-05. The outcome of interest is measured as shares, computed conditional on participation in the labour force. All specifications include a linear polynomial in the running variable and its interaction with a district's underbanked status. All specifications include state fixed effects and robust standard errors. The sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Significant levels: *10%, **5%, and ***1%.
Source: National Sample Survey, Employment and Unemployment Round 2004-05.

B Branch Authorisation Policy and Banking Outcomes

We document the impact of the Branch Authorisation Policy (BAP) on banking outcomes using data from the Basic Statistical Returns (BSR), hosted by the central bank. As treatment is assigned at the level of district, we aggregate the proprietary branch-level data in the BSR to the district and estimate the differences-in-discontinuity specification outlined in equation (4). The unit of observation is the district, and we include district and year fixed effects. Unless specified, all specifications restrict the sample to a bandwidth of 15 (bank branches per million persons) around the discontinuity threshold; standard errors are clustered by district.

B.1 BAP and Bank Branches in Underbanked Areas

Appendix Table B1 compares bank branches operating across underbanked and non-underbanked districts, before and after the BAP. We use data from a twelve year panel between 2001 and 2012. Even-numbered columns present results conditioning on district covariates, while odd-numbered columns exclude all covariates with the exception of district and year fixed effects. The inclusion of covariates has little impact on the precision or magnitude of the point estimates. Column (2) points to an increase of 10 bank branches in underbanked districts following the policy intervention, albeit significant at 10% level. Column (4) shows this increase is driven by private banks. Relative to 12 private bank branches in non-underbanked areas prior to 2005, there were 6 additional private bank branches in underbanked districts following the BAP (p-value .001) – a 47 percent increase. State-owned bank branches and branches of regional rural banks remained unaffected by the BAP. While the coefficient of interest for state-owned banks in column (6) is positive, it is statistically insignificant. As regional rural banks were exempted from the policy, it is not unsurprising that the point estimates in columns (7) and (8) are attenuated towards 0.

Appendix Figure B4 presents the event-study plot corresponding to column (4) of Appendix Table B1. We see a sharp uptick in the number of private bank branches after 2005, corresponding to the onset of the BAP. This persists through the end of the sample period in March 2012. The immediate rise in the number of private bank branches would be consistent with the framework of the BAP, which offered banks a short 1 year window to open the branches proposed in their annual expansion plans. Persistence in the number of branches over the medium-term alleviates concerns that banks closed down branches in underbanked areas in later years. If underbanked districts represented non-profitable banking environments and private banks complied with the BAP solely to expand their networks in relatively more profitable non-underbanked districts, we would have expected the treatment effect to diminish over the medium-term due to closure of non-profitable branches. Importantly, akin to Figure 2, there is limited evidence of differential pre-treatment trends in the number of private bank branches across underbanked and non-underbanked districts prior to 2005.

Both the difference-in-discontinuity estimates in Appendix Table B1, and the event-study plot in Appendix Figure B4 restricts the sample to our preferred bandwidth of 15 (bank branches per capita). Similar to Figure 3, Appendix Figure B5 shows that the impact of the BAP on private bank branches is stable across a range of alternate bandwidths between 10 and 20.

B.1.1 Selection of Underbanked Districts

The BAP incentivized banks to expand in under-served areas, but banks were free to choose locations in any of the 376 underbanked districts. This leads to the question of whether banks were strategically choosing select underbanked districts to expand operations, or selecting specific locations within underbanked areas to open new branches. For instance, if underbanked districts had low profitability, we would expect banks to select districts which were closest to the discontinuity threshold, as they would most closely resemble non-underbanked areas. We verify if this was the case by re-estimating our differences-in-discontinuity specification, but sequentially exclude districts nearest to the national average bank branch density threshold.

Appendix Figure B8 shows the results from this exercise. The first coefficient excludes districts falling within a bandwidth of 0.5 around the discontinuity threshold.[1] The second expands this set to districts falling within a bandwidth of 1 around the discontinuity threshold,

[1] The largest sample is restricted to districts falling within the bandwidth [-15,0.5) and (0.5, 15] around the national average bank branch density threshold; the bandwidth for the smallest sample is [-15,5) and (5, 15].

and we continue similarly till the last coefficient which excludes districts falling within a bandwidth of 5 around discontinuity threshold. The point estimates however are very stable to these alternate bandwidths, limiting concerns that private banks were strategically selecting underbanked districts nearest to the discontinuity threshold.

The second question is whether banks were choosing select locations within underbanked areas to expand operations. The BAP specifically directed private banks to maintain at least 25% of their operations in rural areas, but there were no other directives in terms of bank location. Consequently, private banks could have selected areas within underbanked districts offering high growth opportunities. We examine this by testing whether pre-BAP observables predicted the location of private banks. Using data on bank branch addresses, we first obtain pincodes for private bank branches. The 2011 population census provided pincodes for rural villages. Using publicly available village identifiers from the SHRUGS database, we link villages across the 2011 and 2001 population Censuses. This allows us to map pre-treatment village characteristics from the 2001 Census to pincodes. We then estimate the following cross-sectional regression:

$$Pr(PvtBank = 1)_{pds} = \alpha + \beta X_{pds} + \epsilon_{pds} \tag{B1}$$

The unit of observation in Equation (B1) is the pincode p, located in district d and state s. We include a number of pincode characteristics such as whether the pincode has a secondary school, hospital, banks, credit societies, drinking water, electricity, minimum distance to the nearest town, population density, the share of marginalized communities and so forth.[2] We restrict the sample to underbanked districts located within a bandwidth of 15 around the bank branch density threshold, and cluster errors by district.

Appendix Table B6 shows the results from this exercise. Column (1) includes only the pincode covariates and no fixed effects, while columns (2)-(4) sequentially add state, district, sub-district and block fixed effects. The most restrictive specification with block fixed effects

[2] We aggregate village characteristics to the pincode level.

in column (4) limits the comparison to pincodes located in the same block. Conditional on partialling out characteristics common to all pincodes within a block, column (4) shows that only 4 factors significantly predict whether a pincode in an underbanked district received a private bank branch between 2006 and 2010: a) distance to the nearest town (negative); b) presence of an agricultural credit society within 5 kilometres (positive); c) share of farm land (positive); d) a village with a handpump or tubewell (negative). Thus, there is no systematic pattern in terms of banks locating in relatively well off or economically better off areas. Reassuringly, there is no evidence that pincodes with an existing bank branch were more likely to receive a private bank. This points to a diversification of bank branches in underbanked areas. As the BAP required banks to mention the number of existing branches in the areas in which it desired to open new branches, the RBI possibly used this information to push banks to locate in areas with limited banking competition.

Upon the inclusion of sub-district or block fixed effects, the R^2 in Appendix Table B6 rises sharply from .13 in column (2) to .33 and .39 in columns (3) and (4). This points to the presence of local unobservables influencing bank locations. As all our establishment-level specifications include establishment fixed effects, it flexibly partials out local time-invariant factors affecting capital investment and credit growth. Thus, as long as local factors predicting bank locations were time-invariant, our differences-in-discontinuity specifications would control for them through establishment fixed effects.

B.2 Branch Authorisation Policy and Banking Outcomes

We next identify whether private bank expansion in underbanked areas led to higher deposit mobilization or increased loan disbursement. Recall that the BAP clearly stated that compliance with the policy would be assessed from the provision of financial services and the volume of financial intermediation undertaken, and not just the opening of bank branches. Appendix Table B2 examines how aggregate bank deposits and credit evolved in response to the BAP, using the differences-in-discontinuity specification. The outcome of interest in Panel A is deposit or loan amounts; in Panel B, accounts. All outcomes are inverse-hyperbolic sine transformed to address large values and a mass of zeroes prior to 2005. Overall, the results are noisy but indicative of higher disbursement of private bank credit in underbanked areas. While overall bank credit is unaffected (column 4), there is a 150 percent increase in private bank credit (column 5). Similarly, there is a 6 percent increase in the number of deposit accounts in underbanked areas (p-val .120) in Panel B, column (1), and a 9 percent increase in the number of private bank loan accounts (p-val .092) in Panel B, column (3). Financial intermediation by state-owned banks, both in terms of deposits and credit remains unaffected by the BAP.

Focusing on sectoral credit disbursement by private banks, Appendix Table B3 identifies large increases along both the intensive and extensive margins for farm, and manufacturing credit. Credit to the service sector, as well as personal loans, are also significantly higher in underbanked areas following the policy intervention. The point estimates are statistically significant at conventional levels of significance,[3] and large in magnitude, possibly due to the lack of operations by private banks in underbanked areas prior to 2005.[4] Event study plots in Appendix Figures B6 and B7 corresponding to Appendix Table B3 show a sharp uptick in overall private bank loans, and lending to the farm, manufacturing, trade, service sectors after 2005. There is no evidence of differential pre-treatment trends across underbanked and non-underbanked areas. Appendix Table B4 shows that the BAP left unaffected sectoral credit disbursement by state-owned banks. This alleviates concerns that increased credit disbursement by private banks emanated from a secular expansion of bank lending in these districts.

The BAP specifically mentioned that banks should extend credit to the priority sector in underbanked areas. This includes farm loans, as well as loans to micro and small enterprises in both manufacturing and service industries. The BSR data does not separately report priority sector credit. However, since March 2013, the proprietary data offers details on credit disbursed

[3] We can reject the null hypothesis at the 5% level for manufacturing credit amount, services credit amount, farm credit accounts, and personal loan accounts; the null hypothesis can be rejected at the 10% level for the number of manufacturing and service loan accounts, and the volume of farm loans disbursed.

[4] The presence of zeroes forms the rationale behind using an inverse hyperbolic sine transformation of the outcome variable.

to micro and small manufacturing units. As there is no corresponding detailed break-up of sectoral credit prior to 2005, we use a cross-sectional sharp RD specification to compare sectoral credit disbursement by private banks across underbanked and non-underbanked districts in 2013. We are unable to include district fixed effects, but condition on state fixed effects and pre-treatment district covariates. The sample is restricted to 227 districts located within a bandwidth of 15 around the discontinuity threshold, and we use a triangular kernel as recommended by Calonico et al. (2020).

The results are shown in Appendix Table B5. Odd-numbered columns refer to credit accounts; even-numbered columns to credit amounts. All outcome variables are inverse hyperbolic sine transformed. Columns (1)-(4) confirm the results obtained using the differences-in-discontinuity specification: relative to observationally equivalent non-underbanked districts, aggregate private bank credit and manufacturing credit along both the intensive, and extensive margins are significantly higher in underbanked areas.[5] The point estimates are large and comparable in magnitude to the differences-in-discontinuity estimates. The coefficients indicate that the average underbanked districts had INR 6 billion additional outstanding loans from private sector banks, out of which INR 1.8 billion was accounted for by credit to the manufacturing sector. Combining both farm loans and non-farm credit to micro and small enterprises, we identify significantly higher private sector credit along the extensive margin (loan accounts) in underbanked districts, but no impact on credit amounts. Columns (7) and (8) focus exclusively on credit to micro and small manufacturing enterprises. While there is no impact on the number of loan accounts, outstanding private bank loans in underbanked areas was significantly higher. Relative to average private bank credit to micro and small manufacturing enterprises in non-underbanked areas, private banks reported an additional INR 0.6 billion loans to these enterprises in underbanked areas. Consequently a third of the increase in private bank manufacturing credit in underbanked areas emanated through lending to small and micro enterprises.

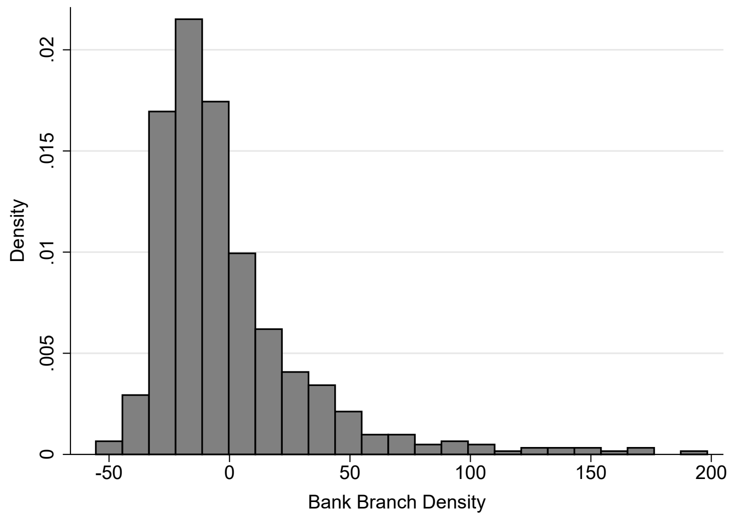
Collectively, the results in this section show that private banks complied with the BAP, not

[5] As underbanked districts are those whose 2005 bank branch density was less than the national average bank branch density, negative point estimates point to increased credit disbursement in underbanked areas.

just by expanding bank branches in under-served areas, but also through higher disbursement of credit. The increased disbursement of credit was primarily for farm and manufacturing activities, and a third of manufacturing loans was accounted by small and micro-enterprises, which comprised the priority sector.

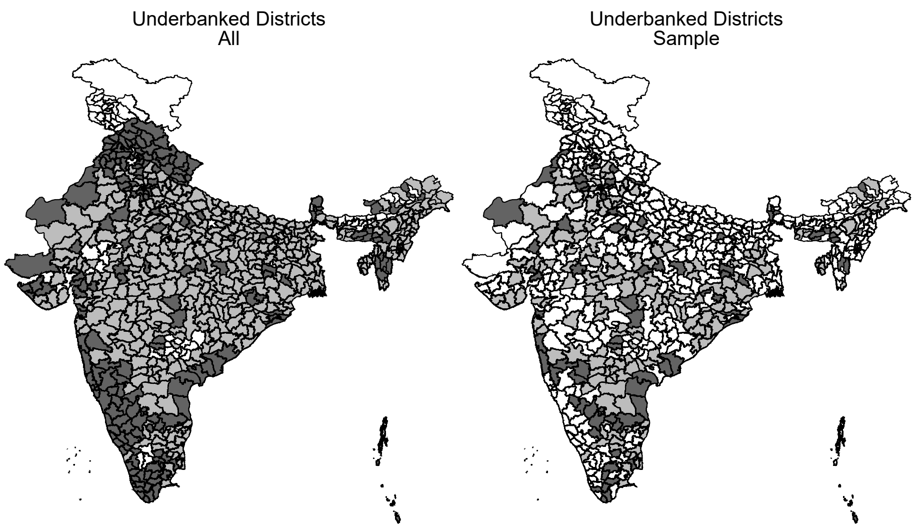
B.3 Figures and Tables

Figure B1: Distribution of Running Variable



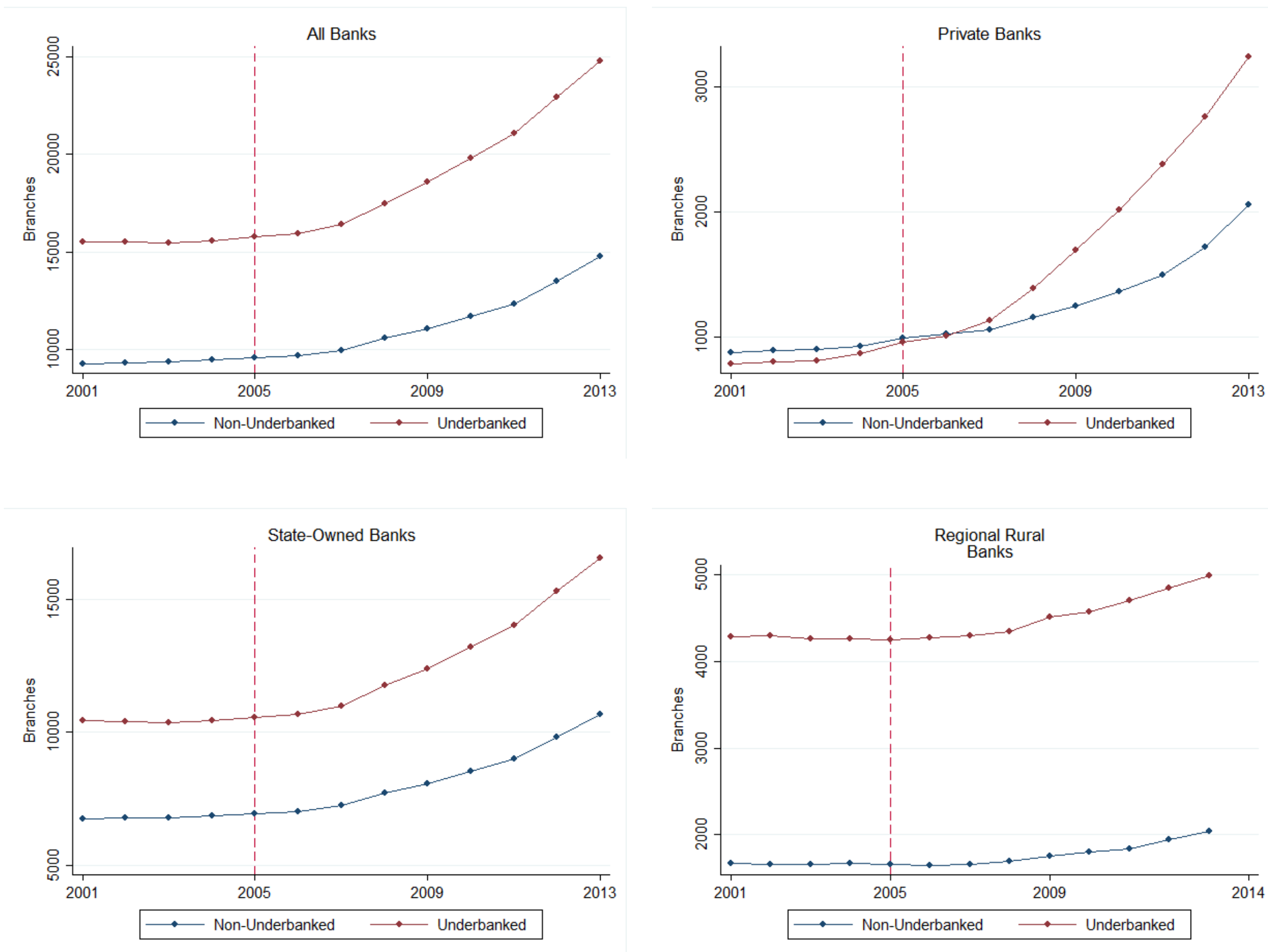
Notes: This figure shows the distribution of the running variable where the running variable is defined at the district level as $Runvar_d = BranchPC_d - \overline{BranchPC}$. $BranchPC$ refers to the bank branch density in district d in 2005, while $\overline{BranchPC}$ is the national average bank branch density in 2005. Districts are classified as "underbanked" if $Runvar_d < 0$, and are located to the left of the threshold 0.

Figure B2: Geographical Distribution of Underbanked Districts



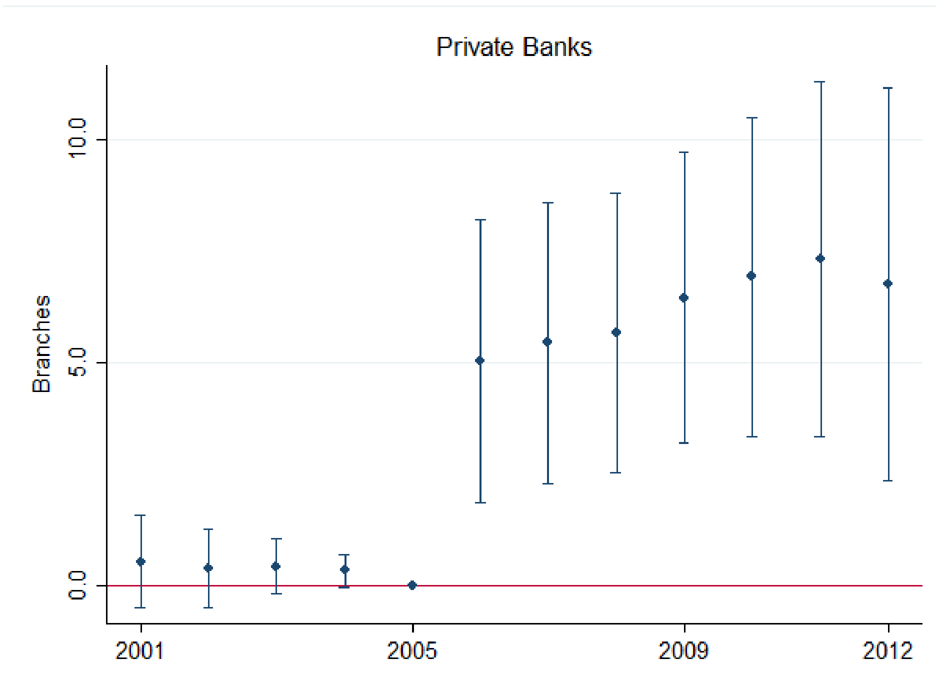
Notes: This figure shows the geographical distribution of underbanked districts. The left-panel shows all districts; the right panel shows districts which form our primary sample, which are located within a bandwidth of 15 bank branches per capita from the discontinuity threshold. The darker shades depict underbanked districts; lighter shades depict non-underbanked districts. Districts in white are excluded from the sample.

Figure B3: Evolution of Bank Branches Across Underbanked and Non-Underbanked Districts: Unconditional Aggregate Trends



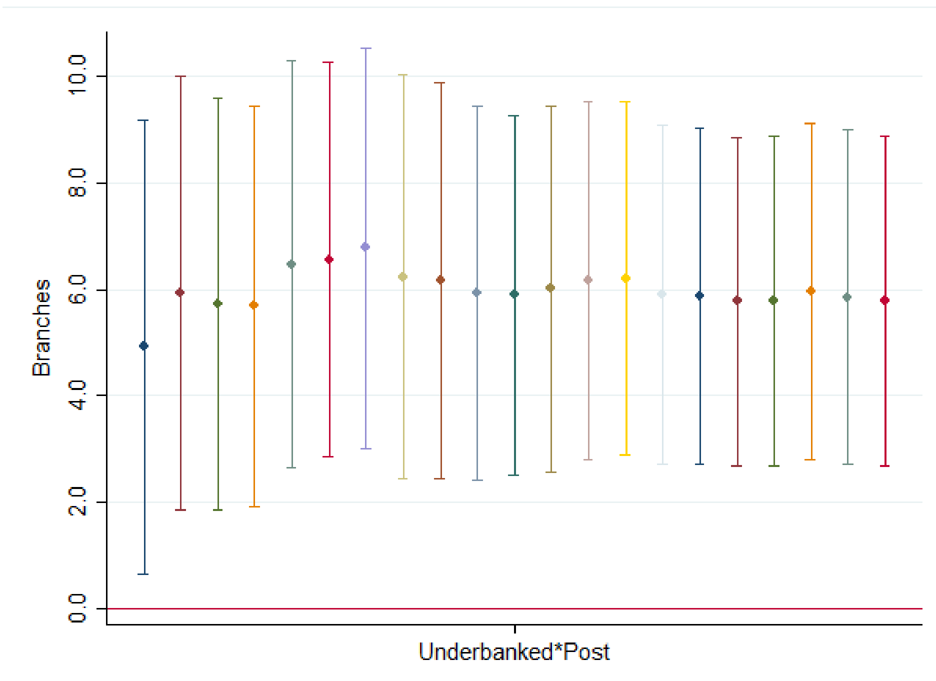
Notes: The above figure presents unconditional trends in the number of bank branches across underbanked and non-underbanked districts between 2001 and 2013. The sample is restricted to districts within a bandwidth of 15 around the discontinuity threshold. The red vertical line corresponds to the year 2005. The top-left panel shows all bank branches; the top-right panel shows private bank branches; the bottom-left panel, state-owned bank branches; the bottom-right panel, regional rural banks.
Source: Basic Statistical Returns, RBI (2001-13).

Figure B4: Private Bank Branches in Underbanked Districts: Event-Study Plots



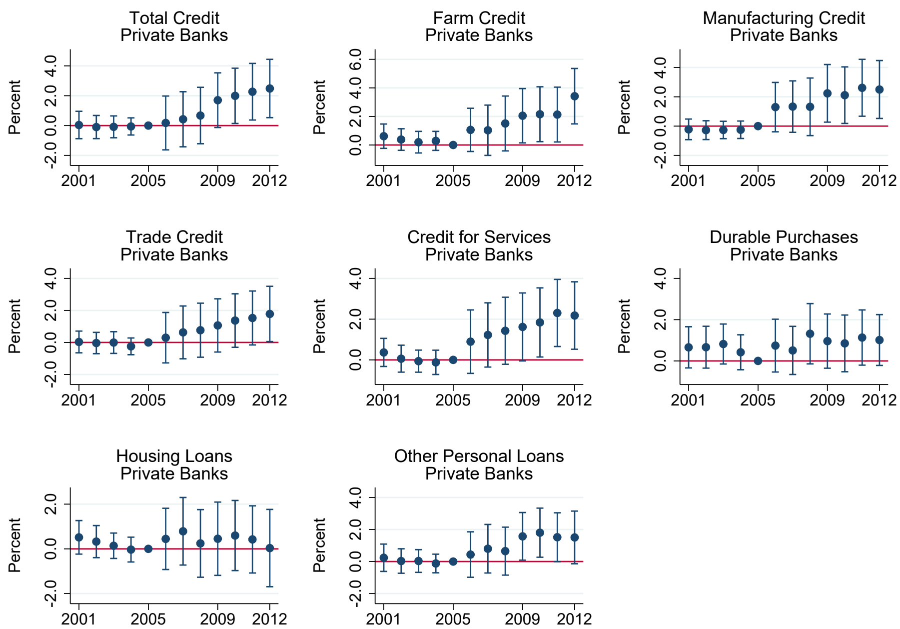
Notes: The above figures shows event-study plots comparing private bank branches across underbanked and non-underbanked districts, before and after the BAP. The unit of observation is the district. The year 2005, in which the BAP was introduced, is omitted and forms the reference period. The vertical lines correspond to 95% confidence intervals. All specifications include district and year fixed effects, in addition to district covariates. The sample is restricted to a bandwidth of 15 around the discontinuity threshold. Standard errors are clustered by district.
Source: Basic Statistical Returns, RBI (2001-12).

Figure B5: Private Bank Branches in Underbanked Districts: Robustness to Alternate Bandwidths



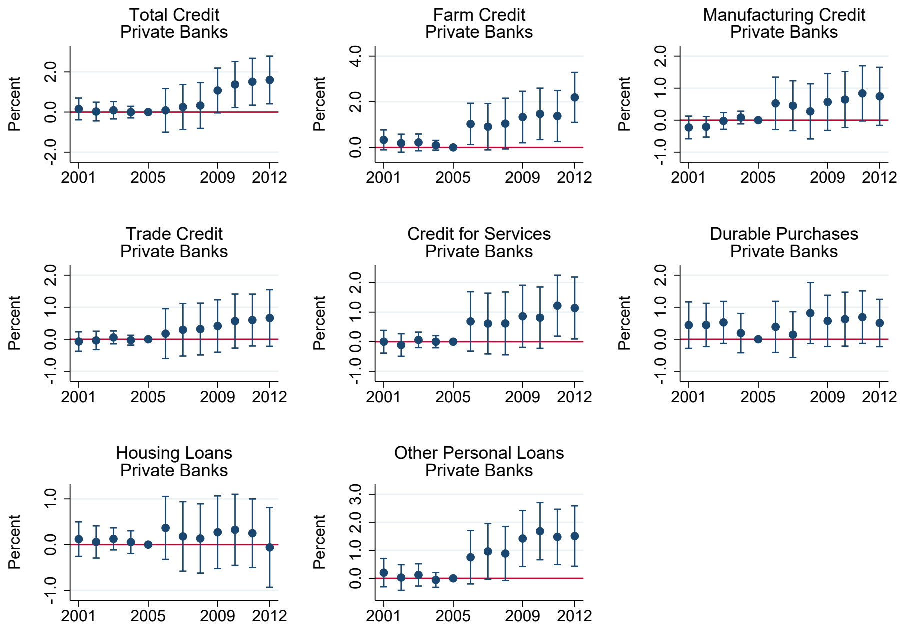
Notes: The above figures shows robustness of the BAP's impact on private bank branches across alternate bandwidths. The specification estimated corresponds to column (4) of Appendix Table B1. The outcome of interest is private bank branches The vertical lines reflect 95% confidence intervals. The first coefficient plot is estimated using a bandwidth of 10. Subsequently, the bandwidth is increased by 0.5. The final coefficient plot is estimated for a bandwidth of 20. All specifications include district and year fixed effects and district covariates. Standard errors are clustered by district.
Source: Basic Statistical Returns, RBI (2001-12).

Figure B6: Private Bank Credit Amounts in Underbanked Districts: Event-Study Plots



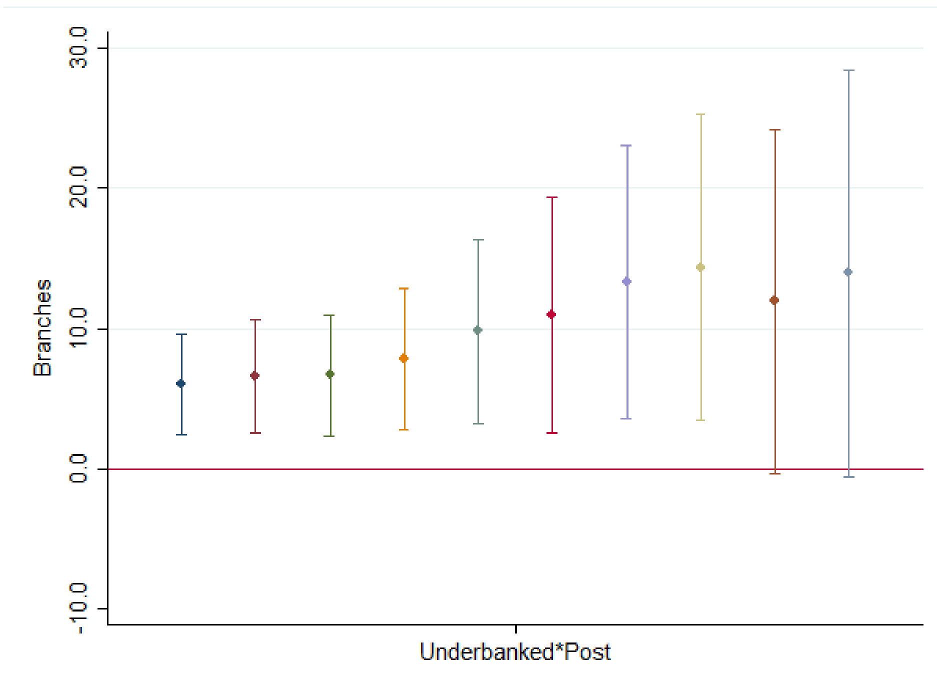
Notes: The above figures shows event-study plots comparing financial intermediation by private banks across underbanked and non-underbanked districts, before and after the BAP. The unit of observation is the district. The outcome of interest is outstanding private bank loan amounts for the categories mentioned. The outcome of interest is inverse hyperbolic sine transformed. The year 2005, in which the BAP was introduced, is omitted and forms the reference period. The vertical lines correspond to 95% confidence intervals. All specifications include district and year fixed effects, in addition to district covariates. The sample is restricted to a bandwidth of 15 around the discontinuity threshold. Standard errors are clustered by district.
Source: Basic Statistical Returns, RBI (2001-12).

Figure B7: Private Bank Credit Accounts in Underbanked Districts: Event-Study Plots



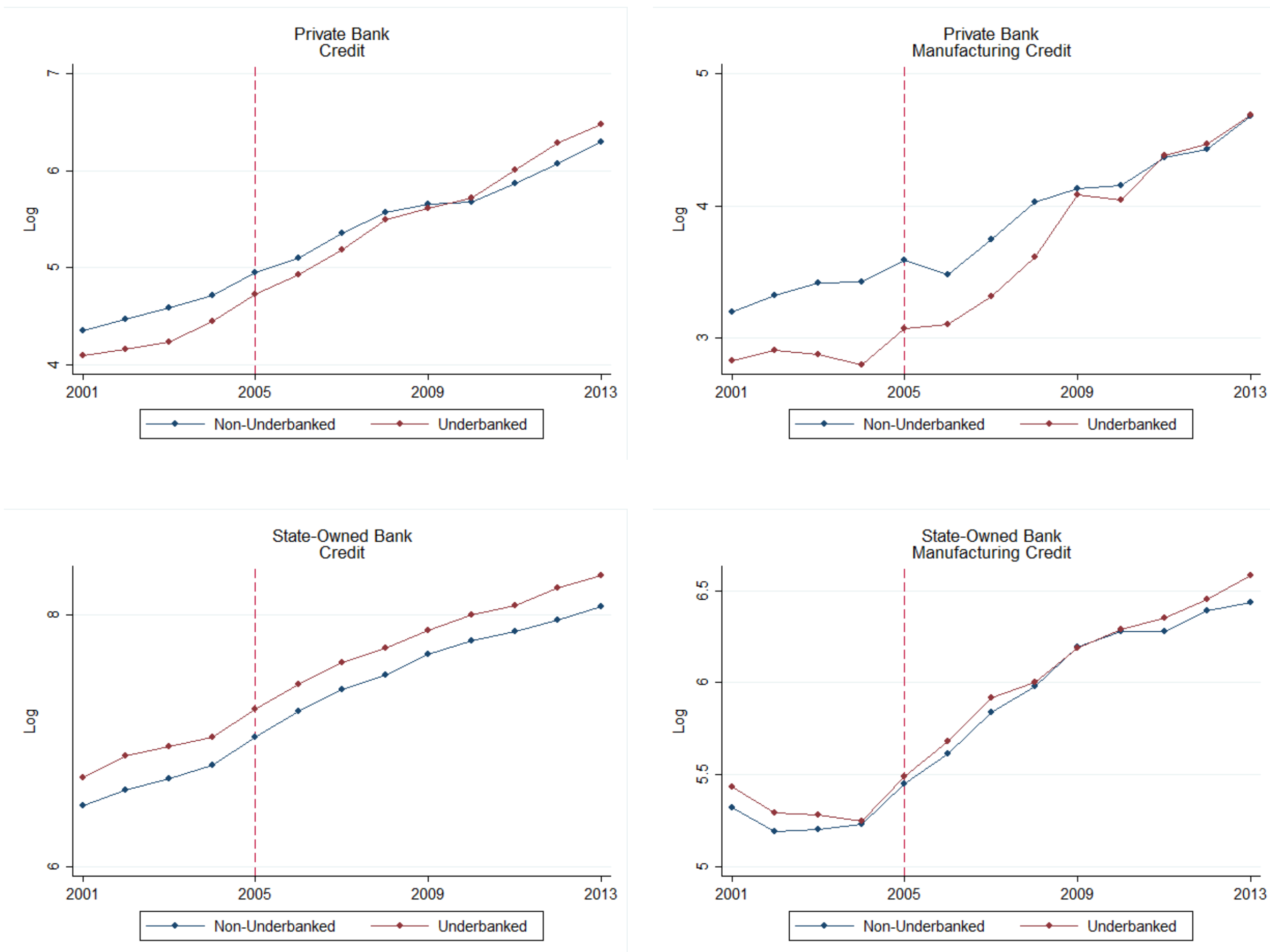
Notes: The above figures shows event-study plots comparing financial intermediation by private banks across underbanked and non-underbanked districts, before and after the BAP. The unit of observation is the district. The outcome of interest is private bank loan accounts for the categories mentioned. The outcome of interest is inverse hyperbolic sine transformed. The year 2005, in which the BAP was introduced, is omitted and forms the reference period. The vertical lines correspond to 95% confidence intervals. All specifications include district and year fixed effects, in addition to district covariates. The sample is restricted to a bandwidth of 15 around the discontinuity threshold. Standard errors are clustered by district.
Source: Basic Statistical Returns, RBI (2001-12).

Figure B8: Private Bank Branches in Underbanked Districts: Robustness to Excluding Districts Around the Discontinuity Threshold



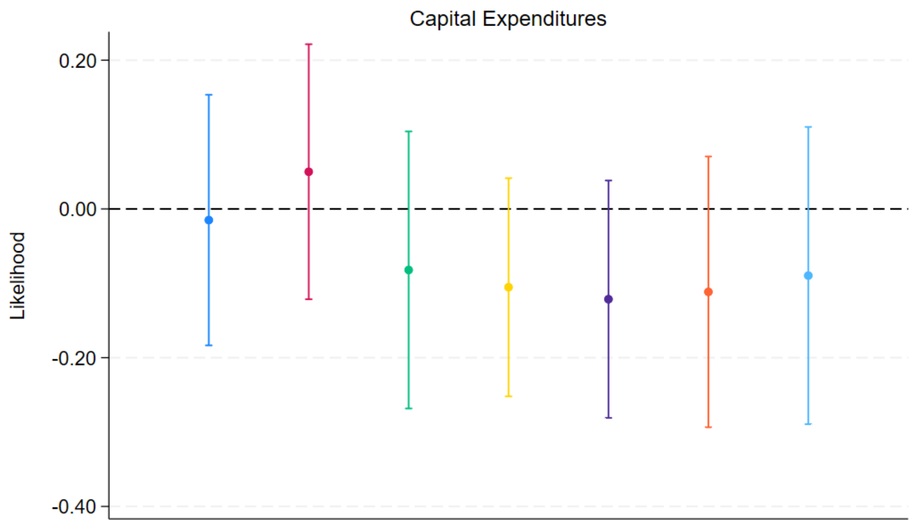
Notes: The above figures shows robustness of the BAP's impact on private bank branches to excluding districts located near the discontinuity threshold. The specification estimated corresponds to column (4) of Appendix Table B1. The outcome of interest is private bank branches. The vertical lines reflect 95% confidence intervals. The first coefficient plot excludes districts located within 0.5 (bank branches per capita) around the discontinuity threshold of 0. Subsequently, the excluded bandiwdht is incremented by 0.5. The final coefficient plot is estimated after excluding districts located within a bandwidth of 5 around the discontinuity threshold. All specifications include district and year fixed effects and district covariates. Standard errors are clustered by district.
Source: Basic Statistical Returns, RBI (2001-12).

Figure B9: Aggregate Bank Credit Across Underbanked and Non-Underbanked Districts: Unconditional Trends



Notes: The above figure presents unconditional trends in aggregate outstanding bank loans across underbanked and non-underbanked districts between 2001 and 2013. The sample is restricted to districts within a bandwidth of 15 around the discontinuity threshold. The red vertical line corresponds to the year 2005. The top-left panel shows overall private bank loans; the top-right panel, private bank loans to the manufacturing sector; the bottom-left panel shows overall loans from state-owned banks; the bottom-right panel, loans from state-owned banks to the manufacturing sector.
Source: Basic Statistical Returns, RBI (2001-13).

Figure B10: Private Bank Credit-Deposit Ratio in Underbanked Districts



Notes: The above figures shows coefficient plots comparing the credit-deposit ratio across underbanked and non-underbanked districts for each year between 2005 and 2013. The unit of observation is the district and a cross-sectional RD specification is used. All specifications include state fixed effects, in addition to district covariates.The vertical lines correspond to 95% confidence intervals. The sample is restricted to a bandwidth of 15 around the discontinuity threshold.
Source: Basic Statistical Returns, RBI (2001-12).

Table B1: Bank Branches in Underbanked Districts

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All Banks		Private Banks		State-Owned Banks		Regional Rural Banks	
Underbanked × Post	8.264	9.555*	5.644***	5.894***	2.522	3.486	.098	.175
	(6.936)	(5.780)	(1.924)	(1.635)	(5.053)	(4.228)	(.855)	(.810)
Observations	2721	2721	2721	2721	2721	2721	2721	2721
R^2	.95	.96	.87	.90	.96	.97	.98	.99
Control Mean	126.005	126.005	12.338	12.338	91.399	91.399	22.268	22.268
Covariates	N	Y	N	Y	N	Y	N	Y

Notes: This table compares average bank branches across underbanked and non-underbanked districts. The unit of observation is the district. Columns (1) and (2) estimate the treatment effect for all commercial banks branches; columns (3)-(4) estimate the treatment effect for private banks; columns (5)-(6), for state-owned banks; columns (7)-(8), for regional rural banks. All specifications include district and year fixed effects, in addition to a linear polynomial in the running variable. Even-numbered columns also include district covariates. The sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Standard errors are in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%

Source: Basic Statistical Returns, RBI (2001-12).

Table B2: Deposits and Credit in Underbanked Districts by Bank Type

Panel A: Amounts

	(1)	(2)	(3)	(4)	(5)	(6)
	Deposits			Credit		
	All	Private Banks	State Owned Banks	All	Private Banks	State Owned Banks
Underbanked × Post	.024	.782	-.012	.008	1.428	-.060
	(.046)	(1.073)	(.052)	(.061)	(.959)	(.072)
Observations	2721	2721	2721	2721	2721	2721
R^2	.99	.81	.99	.99	.85	.99
Control Mean	28.733	3.267	24.168	13.527	1.381	11.360

Panel B: Accounts

	(1)	(2)	(3)	(4)	(5)	(6)
	Deposits			Credit		
	All	Private Banks	State Owned Banks	All	Private Banks	State Owned Banks
Underbanked × Post	.056	.662	.054	.091*	.956*	.008
	(.037)	(.772)	(.044)	(.052)	(.577)	(.066)
Observations	2721	2721	2721	2721	2721	2721
R^2	.99	.84	.99	.99	.88	.99
Control Mean	820788.212	78590.453	665337.736	121582.115	8245.863	91650.485

Notes: This table shows credit disbursement across underbanked and non-underbanked districts in the post-treatment period. The unit of observation is the district. The outcome variables in Panel A are amounts; in Panel B, accounts. Columns (1)-(3) refer to bank deposits; columns (4)-(6), bank credit. Outcome variables are transformed using an inverse hyperbolic sine transformation. All specifications include district and year fixed effects, in addition to a linear polynomial in the running variable and district covariates. The sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Control variable means for outstanding loan amounts are in millions. Standard errors in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Basic Statistical Returns, RBI (2001-12).

Table B3: Sectoral Credit Disbursement in Underbanked Districts by Private Banks

Panel A: Loan Amount

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Farm	Manufacturing	Trade	Services	Durables	Housing	Personal Loans
Underbanked × Post	1.611*	2.117**	1.112	1.592**	.236	.419	1.147
	(.837)	(.904)	(.825)	(.763)	(.701)	(.461)	(.751)
Observations	2721	2721	2721	2721	2721	2721	2721
R^2	.85	.84	.85	.85	.87	.80	.86
Control Mean	.193	.403	.209	.116	.067	.019	.170

Panel B: Loan Accounts

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Farm	Manufacturing	Trade	Services	Durables	Housing	Personal Loans
Underbanked × Post	1.288**	.657*	.465	.884*	.055	.201	1.223**
	(.504)	(.389)	(.383)	(.482)	(.338)	(.268)	(.501)
Observations	2721	2721	2721	2721	2721	2721	2721
R^2	.89	.88	.90	.86	.88	.81	.87
Control Mean	2769.271	329.834	662.949	333.799	236.590	370.158	2303.040

Notes: This table shows credit disbursement across underbanked and non-underbanked districts by private banks. The unit of observation is the district. Panel A considers loan amounts; panel B, loan accounts. Outcome variables are transformed using an inverse hyperbolic sine transformation. The sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. All specifications include district and year fixed effects, in addition to a linear polynomial in the running variable and district covariates. Control variable means for outstanding loan amounts are in millions. Standard errors in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Basic Statistical Returns, RBI (2001-12).

Table B4: Sectoral Credit Disbursement in Underbanked Districts by State-Owned Banks

Panel A: Loan Amount

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Farm	Manufacturing	Trade	Services	Durables	Housing	Personal Loans
Underbanked × Post	-.083	-.028	.043	.034	-.065	.189	-.017
	(.095)	(.196)	(.115)	(.136)	(.117)	(.230)	(.077)
Observations	2721	2721	2721	2721	2721	2721	2721
R^2	.98	.95	.96	.92	.96	.87	.97
Control Mean	2.403	2.637	1.317	.526	1.341	.080	1.522

Panel B: Loan Accounts

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Farm	Manufacturing	Trade	Services	Durables	Housing	Personal Loans
Underbanked × Post	.053	-.221*	.013	.111	-.022	.160	.014
	(.091)	(.133)	(.063)	(.104)	(.115)	(.200)	(.073)
Observations	2721	2721	2721	2721	2721	2721	2721
R^2	.98	.92	.95	.94	.96	.88	.97
Control Mean	40781.067	3671.397	7304.327	3075.729	4444.794	1569.815	20780.029

Notes: This table shows credit disbursement across underbanked and non-underbanked districts by private banks. The unit of observation is the district. Panel A considers loan amounts; panel B, loan accounts. Outcome variables are transformed using an inverse hyperbolic sine transformation. The sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. All specifications include district and year fixed effects, in addition to a linear polynomial in the running variable and district covariates. Control variable means for outstanding loan amounts are in millions. Standard errors in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Basic Statistical Returns, RBI (2001-12).

Table B5: Credit to Micro and Small Manufacturing Enterprises by Private Banks in Underbanked Districts

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Total Credit		Manufacturing		Priority Sector		Priority Sector Manufacturing	
	Accounts	Amount	Accounts	Amount	Accounts	Amount	Accounts	Amount
Underbanked	1.086***	1.778***	0.680*	2.188***	.992**	.172	.361	2.071***
	(.406)	(.569)	(.367)	(.732)	(.413)	(.163)	(.358)	(.705)
Observations	227	227	227	227	227	227	227	227
Dep Var Mean	25907.320	7.653	455.773	1.519	17110.267	3.090	233.067	.563

Notes: This table compares private bank credit to small and micro enterprises across underbanked and non-underbanked districts for the year 2013. The unit of observation is the district. The outcome variable in the odd-numbered columns is loan accounts; in the even-numbered columns, loan amounts. The outcome variable is inverse hyperbolic sine transformed. All specifications are estimated using a sharp RD. All specifications include state fixed effects and district covariates. A triangular kernel also used. The sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Significant levels: *10%, **5%, and ***1%.
Source: Basic Statistical Returns, RBI (2013).

Table B6: Predicting Private Bank Branch Locations with Census 2001 Characteristics

	(1)	(2)	(3)	(4)
	Pr(Any Pvt. Bank Branch = 1)			
Any Bank	-.058**	-.060**	-.063	-.065
	(.025)	(.027)	(.043)	(.048)
Any Co-Operative	.018	.011	.016	.011
	(.012)	(.012)	(.022)	(.022)
Any Ag Society	-.029	.030	.057	.072
	(.027)	(.041)	(.055)	(.060)
Any Non-Ag Society	.020*	.024**	.024	.035*
	(.012)	(.011)	(.017)	(.019)
Distance to Nearest Town	-.002***	-.002***	-.004***	-.004***
	(.000)	(.001)	(.001)	(.001)
Population Density	.003	.001	.003	.003
	(.002)	(.002)	(.002)	(.002)
Gender Ratio	-.566	-1.198	-.779	-.932
	(.533)	(.893)	(1.390)	(1.642)
Share SC/ST	-.011	.031	.074	.094
	(.027)	(.042)	(.079)	(.092)
Any Manufacturing	.005	.000	.013	.009
	(.011)	(.011)	(.019)	(.022)
Share Farm Area	.003***	.004***	.004***	.004***
	(.000)	(.000)	(.000)	(.001)
Phone Density	.224	.093	-.025	-.080
	(.155)	(.142)	(.168)	(.188)
Any Tap Water	.019	-.003	-.016	-.017
	(.015)	(.013)	(.022)	(.021)
Any Tube Well	-.001	-.025*	-.044*	-.046**
	(.013)	(.015)	(.023)	(.023)
Any Handpump	.020	.013	.027	.015
	(.025)	(.036)	(.037)	(.038)
Any Electricity	.088***	.074*	.011	.001
	(.026)	(.042)	(.086)	(.102)
Any Household Electricity	-.035*	-.000	-.001	.004
	(.018)	(.018)	(.030)	(.036)
Any Farm Electricity	-.001	.006	.004	.012
	(.015)	(.014)	(.020)	(.024)
Government Irrigation	-.028	-.007	-.011	-.011
	(.018)	(.017)	(.031)	(.032)
Any College	.048*	.057*	.070	.049
	(.027)	(.031)	(.044)	(.038)
Any Industrial Training Institute	.064***	.033*	.046*	.038
	(.020)	(.018)	(.023)	(.024)

Table B6 (Continued): Predicting Private Bank Branch Locations with Census 2001 Characteristics

	(1)	(2)	(3)	(4)
	Pr(Any Pvt. Bank Branch = 1)			
Any Industrial Training Institute	.064***	.033*	.046*	.038
	(.020)	(.018)	(.023)	(.024)
Any Middle School	-.010	-.068*	-.046	-.029
	(.020)	(.039)	(.057)	(.062)
Any High School	-.038**	-.037**	-.032	-.034
	(.018)	(.018)	(.026)	(.029)
Any College	.009	.005	-.008	.011
	(.030)	(.032)	(.047)	(.041)
Any Hospital	-.010	-.000	.016	.027
	(.019)	(.016)	(.023)	(.024)
Any Dispensary	-.008	-.013	-.022	-.020
	(.012)	(.011)	(.018)	(.019)
Any Child Maternity Centre	.000	.001	.006	.007
	(.013)	(.013)	(.019)	(.020)
Any Primary Health Centre	-.014	-.027**	-.024	-.021
	(.012)	(.013)	(.017)	(.017)
Any Nursing Home	.005	-.015	-.014	-.023
	(.021)	(.016)	(.026)	(.026)
Any Doctor	.017	.011	.008	.008
	(.011)	(.009)	(.015)	(.016)
Any Health Worker	.011	.008	-.008	-.013
	(.013)	(.019)	(.029)	(.032)
Observations	3324	3324	3324	3324
R^2	.05	.13	.35	.39
District FE	N	Y	Y	Y
Sub-District FE	N	N	Y	Y
Block FE	N	N	N	Y

Notes: This table shows the predictors of whether a pincode has a private bank branch. The unit of observation is the pincode. Column (1) includes no fixed effects; column (2) includes district fixed effects; column (3) includes sub-district fixed effects; column (4) includes block fixed effects. The sample is restricted to underbanked districts located within a bandwidth of 15 around the discontinuity threshold. Standard errors are clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Pincode characteristics from Census 2001.

Table B7: Bank Branch Expansion, Delinquency and Cost of Credit

	(1)	(2)	(3)	(4)
	Non-Performing Loans		Interest Rates	
	Private Banks	State Owned Banks	Private Banks	State Owned Banks
Underbanked	-.005	-.003	.004***	.003**
	(.001)	(.001)	(.004)	(.007)
Observations	226	226	202	227
Dep Var Mean	.016	.055	.124	.117

Notes: This table identifies the impact of the BAP on district-level bank lending rates and non-performing assets in 2013. The unit of observation is the district. District bank lending (delinquency) rates are computed by aggregating branch lending (delinquency) rates to the district, weighted by the outstanding loans of each branch. All specifications include state fixed effects, a linear polynomial in the running variable, and district covariates. Robust standard errors are in parentheses. Significant levels: *10%, **5%, and ***1%.
Source: RBI's proprietary data on branch-level non-performing assets, March 2016.

C Other Results

C.1 Robustness to Alternate Estimation Methods, Sample Selection and Functional Forms

Cross-sectional RD: We use a differences-in-discontinuity specification to combine the time-variation in the initiation of the BAP, and the cross-sectional variation in districts' underbanked specification. The key advantage with the differences-in-discontinuity specification is that it allows us to partial out time-invariant establishment characteristics using establishment fixed effects. In this section, we show that our findings are robust to using cross-sectional sharp RD specifications.

Appendix Figure C1 compares capital investment across underbanked and non-underbanked districts before and after the BAP using a cross-sectional RD specification. We first aggregate the establishment-level data to the district level by computing capital spending over the pre and post-treatment periods. Instead of using the closing and opening values of establishment plant and machinery in each year as in equation (3), we use the average value of establishment plant and machinery in the first and last year an establishment is observed in the data. This allows us to compute capital investment for each establishment between 2001 and 2005, and between 2006 and 2011. Appendix Figure C1 compares aggregate capital investment in post and pre-treatment periods using a sharp RD cross-sectional specification. Each specification uses the data-driven outcome-specific MSERD optimal bandwidth as recommended by Calonico et al. (2020) and includes state and 2-digit industry fixed effects. The standard errors are clustered by district. The first figure in the top row identifies an 8 ppt. increase in manufacturing investment for establishments in underbanked areas (p-value .113). The middle figure shows that the positive treatment effect is driven by small establishments (hiring less than 25 workers in the pre-treatment period) which saw a 24 ppt. increase in capital spending (p-value .006). Capital spending for larger establishments remained comparable across underbanked and non-underbanked areas in the post-treatment period (last figure, top row). It is worth noting that the data-driven MSERD optimal bandwidths is 12.8 for the full sample and 14.5 for smaller establishments, which is very comparable to our preferred bandwidth of 15. Finally, the bottom row shows the absence of any treatment effect on capital spending in the pre-treatment period, either for the full sample, or the sub-sample of large or small establishments.

Next, Appendix Figure C2 plots the coefficients from estimating annual cross-sectional RD specifications between 2001 and 2011. Again, we use optimal MSERD data-driven bandwidths suggested by Calonico et al. (2020) along with state and industry fixed effects, as well as district covariates. The largest MSERD bandwidth in Appendix Figure C2 is 14.359; the smallest, 6.590.[6] Even for the smallest MSERD bandwidth (in 2008), we identify a 3 ppt. increase in capital spending for manufacturing establishments in underbanked districts (p-value 0.16). Consistent with the event-study plot in Figure 2, the increase in capital spending for manufacturing establishments in underbanked districts is evident only after 2005, after the BAP comes into effect. 5 out of 6 post-treatment coefficients are positive and comparable in magnitude to the coefficients obtained in Figure 2, with 4 being statistically significant at the 5% margin or better.

Alternative samples, bandwidths and time periods: Appendix Figure C3 shows that our findings are not driven by any single state or industry. We establish this by re-estimating our baseline specification after dropping one state/industry at a time. The coefficients are not sensitive to the exclusion of any single state or industry – all the coefficient estimates remain positive, centred around 0.06, and statistically significant at the 10% level or better. This reassures us that the positive treatment effect on manufacturing investment was not driven by some confounding state or industry-specific place-based policy, the timing of which also coincided with the policy intervention of interest.

We subject our baseline results to a number of robustness checks. Our preferred specification uses a bandwidth of 15 (bank branches per million persons) around the discontinuity threshold.

[6] The cross-sectional RD specifications are weighted using a triangular kernel and establishment-specific weights. Standard errors are clustered by district.

We choose this using the data-based optimal bandwidth selection methods recommended by Calonico et al. (2020).[7] Figure 3 shows that our findings are invariant to alternate bandwidth choices between 10 and 20.[8] The most conservative bandwidth of 10 identifies a significant 5 ppt. increase in manufacturing investment in underbanked districts. Appendix Figure C3 shows that our findings are not driven by any single state or industry.

Finally, Appendix Table C4, column (7) uses data till 2014, and shows that the impact of the BAP on manufacturing investment persisted over the long-term. Column (8) undertakes a placebo test by restricting the sample to 2005 – the year of introduction of the BAP – and defines the post-treatment period as starting from 2002.[9] The point-estimate obtained is attenuated towards 0, assuaging any concern that an overall positive trend in manufacturing investment drives our main findings.

Multi-establishment firms: The sampling unit in the ASI is the establishment and no identifiers are provided to link establishments to parent firms. This disallows us from identifying multi-establishment firms, which might be able to access bank loans in underbanked areas, but use internal channels to reallocate credit to establishments in non-underbanked areas, dampening the estimated treatment effect. While Rotemberg (2019) and Chakrabati and Tomar (2022) suggest that multi-establishment firms comprise only a very small proportion of the sample, we undertake a robustness check by excluded establishments owned by publicly listed corporations, which are significantly larger and more likely to be multi-establishment firms. Column (6) of Appendix Table C4 shows that our results if anything are larger upon excluding these establishments.

[7] The optimal MSERD bandwidth using a cross-sectional RD specification for the year 2012 is 14.359. The outcome of interest is capital expenditures in plant and machinery, and the RD specification controls for 3-digit industry fixed effects, state fixed effects, establishment and district covariates. Standard errors are clustered by district.

[8] The first coefficient in Figure 3 is estimated using a bandwidth of 10. Subsequent specifications are re-estimated after incrementally increasing the bandwidth by 0.5. The last specification uses a bandwidth of 20.

[9] This provides us with 4 years of pre-treatment data, and 3 years of post-treatment data.

C.2 Accounting for Other Contemporaneous Interventions

Our period of analysis coincides with the period which saw India achieve its fastest rate of GDP growth. A number of government schemes were also adopted over this period to improve both urban and rural infrastructure. While none of these schemes used the discontinuity threshold exploited by the BAP to assign districts to underbanked status, we examine whether there might have been any spurious spatial correlation between the BAP and other contemporaneous policies, which might lead us to misattribute the impact of these policies to the expansion in private banks.

We first consider the *Bharat Nirman Yojana*: a comprehensive set of policies to improve rural infrastructure in the form of access to piped water, electricity, and all weather rural roads. We also consider the *National Rural Health Mission* which aimed to boost rural health infrastructure. Using the database on village infrastructure from the 2011 population Census, we obtain district-level estimates on the fraction of villages in each district with access to piped water, electricity connections, an all weather road, and a primary health care centre. We also construct an index of rural infrastructure by combining these variables as the sum of standardized indices. Appendix Table C5 compares rural infrastructure across underbanked and non-underbanked areas using a cross-sectional sharp RD design.[10] Reassuringly, there is no evidence that these policies were better implemented in underbanked districts, which could have generated additional demand for manufactured commodities. The point estimates in each of the 5 regressions are small and statistically insignificant. Additionally, column (1) of Appendix Table C6 estimates the impact of the policy on capital expenditures of establishments using the differences-in-discontinuity specification after including the pre-period levels of these variables (from Census 2001) interacted with a linear time-trend as a control. The $Underbanked \times Post$ point estimate remains unaffected by the inclusion of these controls. This allays any concern that convergence across districts based on the initial stick of infrastructure drives our firm level estimates.

[10] The specifications control for state fixed effects.

The other major policy intervention during this period was the National Rural Employment Guarantee Scheme (NREGS), which was the largest workfare scheme in the world. The NREGS was implemented in phases, with the policy being rolled out to 250 of the most backward districts in 2005, before being sequentially extended to the remaining districts over 2006 and 2007. Column (2) of Appendix Table C6 includes time-trends for each NREGS implementation phase and re-estimates the baseline specification. Our coefficient of interest remains unchanged upon the inclusion of these covariates as well.

Finally, columns (3) and (4) of Appendix Table C6 interact overall district growth with the $Underbanked \times Post$ indicator to identify whether the treatment effects were concentrated in areas of high growth. We use nightlights as a contemporaneous measure of economic growth.[11] As Young (2017) showed overall growth to have been affected by the intervention, the interaction terms do not offer a causal interpretation. Instead, the exercise is to assess whether increase in manufacturing investment in underbanked districts following the policy intervention occurred only in areas experiencing high growth. Column (3) yields a statistically significant coefficient on our differences-in-discontinuity estimate which is very similar in magnitude to the baseline coefficient. The interaction of $Underbanked \times Post$ with local economic growth is however not statistically significant. Column (4) interacts the $Underbanked \times Post$ indicator with a dummy for high (above median) growth during this period, and also uncovers a statistically insignificant coefficient. Thus, manufacturing investment in underbanked areas following the BAP was orthogonal to whether these districts witnessed higher economic growth. This negates concerns that higher manufacturing investment in underbanked districts was simply in response to overall economic growth, and independent of the policy of interest.

C.3 Aggregate Effects of Bank Branch Expansion

In this section, we estimate the aggregate effects of financial deepening due to the BAP. This allows us to identify the impact of bank branch expansions on firm entry, closures, and aggregate

[11] Specifically, we use the logged difference in the mean level of night lights between 2 years in a district to measure growth.

employment. Section 3.1.1 mentions that our primary sample only includes establishments which were observed at least once before, and after the policy intervention. This limits our ability to identify whether the bank branch expansion affected the entry or exit of establishments. For instance, if bank entry also facilitated the entry of new establishments, resulting in higher capital spending, the current results would be an under-estimate of the true impact of financial deepening on manufacturing investment.

We examine this by aggregating the establishment-level data to the district-industry (3-digit) level and use the following specification:

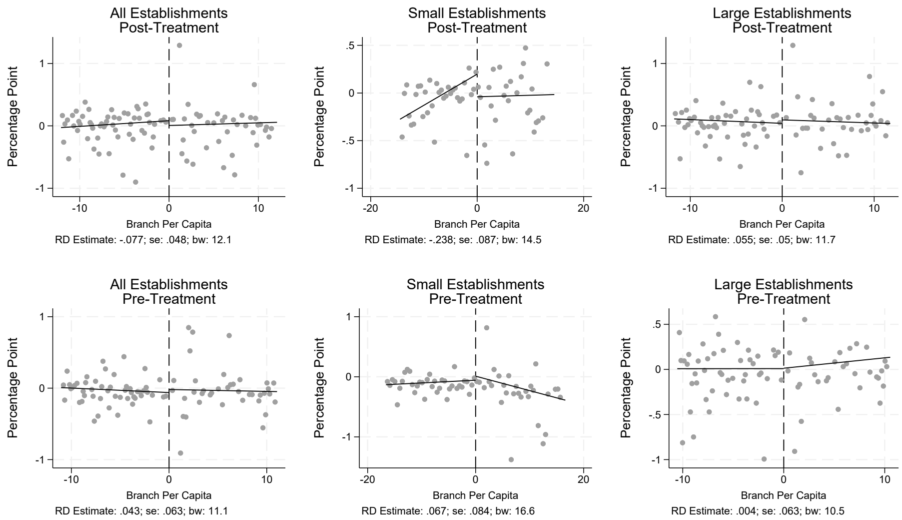
$$Y_{jdt} = \alpha_d + \delta_{jt} + \beta Underbanked_d \times Post_t + f(Runvar_d)_t + \gamma \mathbf{X}_{dt} + \epsilon_{jdt} \tag{C2}$$

The unit of observation in Equation (C2) is the district-industry (3 digit-level) pair (dj), observed in year t. We continue to use our difference-in-discontinuity specification and include district fixed effects (α_d) to absorb district-specific time-invariant factors affecting the outcomes of interest. We include industry-year fixed effects (3-digit industry), limiting our comparison to outcomes within similar industry groups in the same year, with the identifying variation arising from changes in districts' underbanked status. The sample is restricted to districts within a bandwidth of 15 from the discontinuity threshold; standard errors are clustered by district.

We find an increase at the district-level in the three main outcomes of our interest – capital expenditures (plant and machinery), fraction of establishments undertaking any positive capital spending, and credit growth (columns (1)-(3) of Appendix Table C15). The aggregate district-level findings are consistent with the establishment-level results: there is a 5.4 ppt. increase in capital investments, and a 3.3 ppt. increase in the fraction of establishments engaging in capital spending. This corresponds to an aggregate INR 18 million increase in capital investments for establishments in underbanked districts (in the average 3-digit industry) in the post-treatment period. Credit growth too increases by 10 ppt., signifying an increase in outstanding loans in underbanked districts equivalent to INR 33 million.

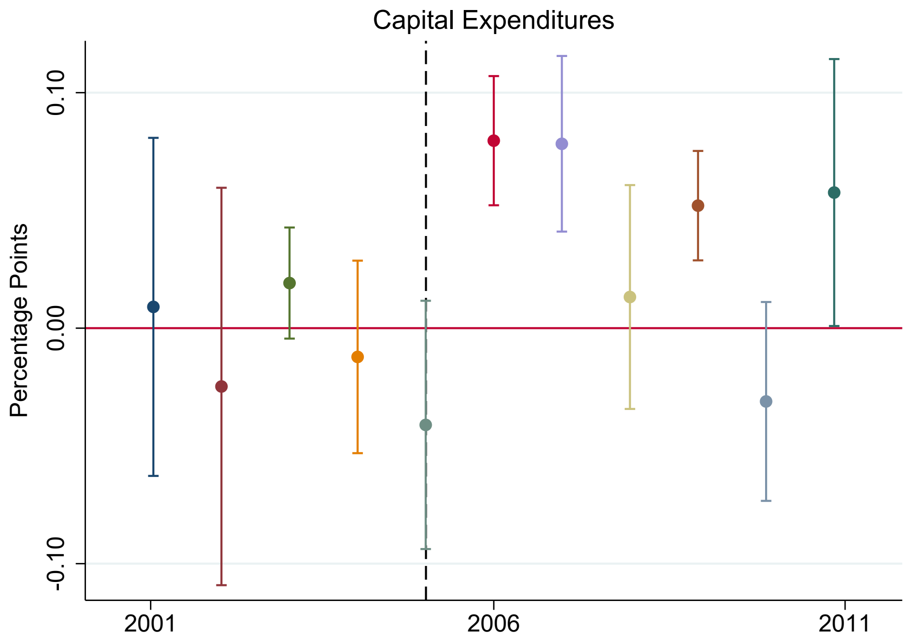
Columns (4)-(6) consider total output, employment and revenue productivity. While the point estimates are positive, the confidence intervals are too wide to rule out a null effect. For employment, the coefficient suggests a 12 percent increase in the hiring of workers, although the coefficient is only significant at 15% level (p-value: .141). Relative to the pre-treatment mean in non-underbanked districts, this amounts to an additional 120 workers employed on average in an industry in underbanked districts. Finally, we identify a positive and significant effect on the total number of establishments currently operating (column 7). There is however no impact on the fraction of establishments closed (column 8). This points to higher aggregate entry in underbanked districts in response to the policy intervention. Compared to the dependent variable mean in non-underbanked districts, the coefficient signifies 2 additional establishments operating in each 3-digit industry in underbanked districts in the post-treatment period.

Figure C1: Capital Investment in Underbanked Districts: Aggregate Cross-Sectional RD Estimates



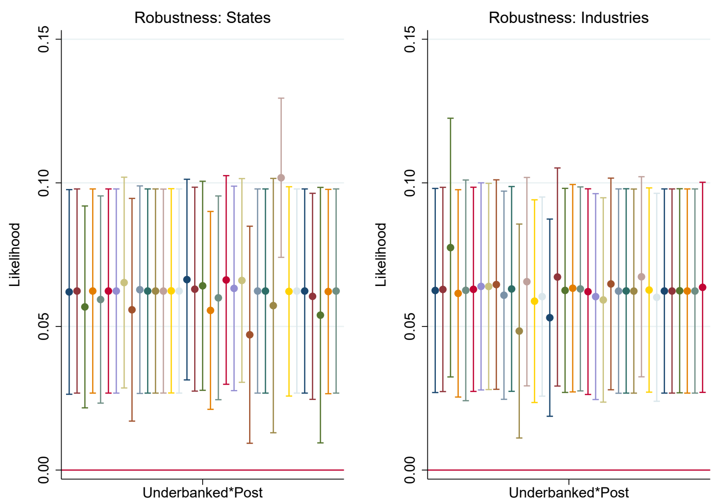
Notes: The above figure shows the treatment effect on capital investment using a cross-sectional RD specification. The unit of observation is the manufacturing establishment. The top panel corresponds to the post-treatment period; the bottom panel, to the pre-treatment period. The first column includes all establishments; the middle column, small establishments hiring below 25 workers; the last column, large establishments hiring in excess of 20 workers. For each period, capital expenditure is computed using equation (3). In place of closing and opening values, we use the average value of establishment plant and machinery for the first and last year in which the establishment is observed in each of the pre and post-treatment periods. Specifications include a linear polynomial in the running variable, and its interaction with the underbanked indicator. An indicator for whether the establishment is located in a rural area, along with state and 2-digit industry fixed effects are also included. The estimates are weighted using a triangular kernel and establishment-specific multiplier weights. The bandwidth used is the data-driven MSERD optimal bandwidth, computed using the procedure outlined in Calonico et al. (2020). Standard errors are clustered by district. The discontinuity estimate, standard error, and bandwidth is noted below each figure.
Source: Annual Survey of Industries (2001-11).

Figure C2: Capital Investment in Underbanked Districts: Annual Cross-Sectional RD Estimates



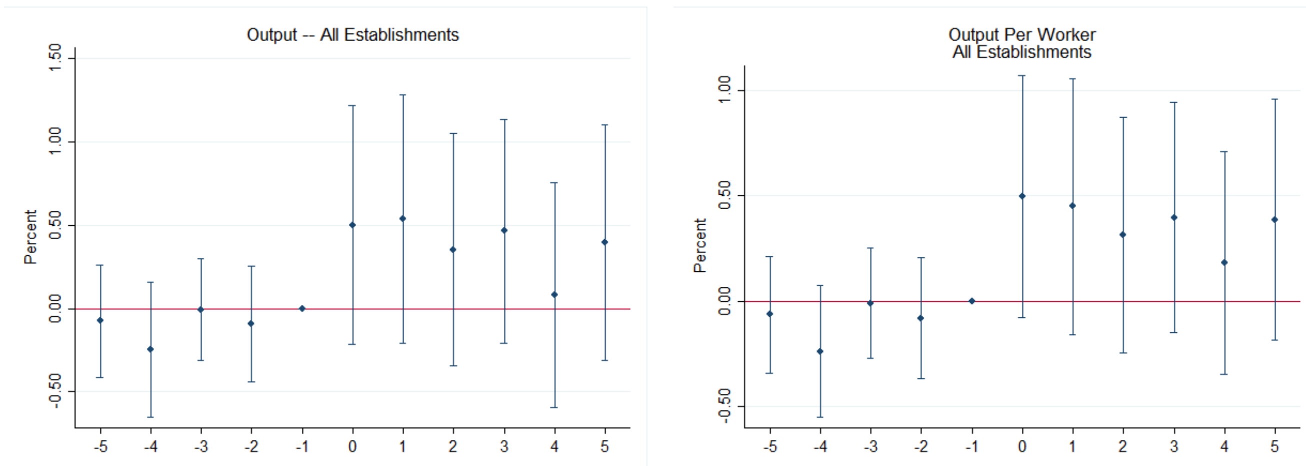
Notes: The above figure shows the treatment effect on capital investment using a cross-sectional RD specification for each year. The first coefficient estimate corresponds to the year 2001; the last coefficient estimate, 2011. The unit of observation is the manufacturing establishment. The outcome of interest is capital expenditures, defined as in specification (3). Capital expenditures is restricted to plant and machinery. All specifications include state and 3-digit industry fixed effects, in addition to establishment and district covariates. A linear polynomial in the running variable is also included. The estimates are weighted using a triangular kernel and establishment-specific multiplier weights. The bandwidth used for each year is the data-driven MSERD optimal bandwidth, computed using the procedure outlined in Calonico et al. (2020). The broken vertical line denotes the year 2005, the year of introduction of the BAP. Standard errors are clustered by district. Vertical lines denote 95% confidence intervals.
Source: Annual Survey of Industries (2001-11).

Figure C3: Manufacturing Investment in Underbanked Districts: Robustness to Dropping Individual States and Industries



Notes: The above figures shows the robustness of the baseline results to the dropping of individual states and industries. The unit of observation is the manufacturing establishment and the outcome of interest is capital expenditures (investment in plant and machinery). All specifications include establishment and industry-year fixed effects, a linear polynomial in the running variable, establishment, and district covariates. All specifications are weighted using establishment-specific weights. Specifications are estimated by dropping one state (two-digit industry) at a time. The sample is restricted to districts within a bandwidth of 15 around the discontinuity threshold. The vertical lines denote the 95% confidence intervals. Standard errors are clustered by district.
Source: Annual Survey of Industries (2001-11).

Figure C4: Branch Expansion and Manufacturing Output: Event-Study Plots



Notes: The above figure presents event-study plots estimating the effect of the BAP on the value of output (left panel), and output per worker (right panel), in underbanked districts, using a difference-in-discontinuity design. The unit of observation is the manufacturing establishment. The outcome of interest is inverse hyperbolic sine transformed. The solid line represents the average annual treatment effects, and the capped bars denote the 95% confidence intervals. The treatment effects are benchmarked to the year 2005 (omitted time period=-1) – the year in which the treatment is initiated. All specifications include establishment and industry-year fixed effects, a linear polynomial in the running variable interacted with the district underbanked indicator and a post-treatment indicator, establishment and district covariates. All specifications are weighted using establishment-specific weights. The sample in each instance is restricted to districts within a bandwidth of 15 around the discontinuity threshold. Standard errors are clustered by district.
Source: Annual Survey of Industries (2001-11).

Table C1: Summary Statistics: Manufacturing Establishments

	N	Mean	SD	P25	P50	P75
Plant and Machinery (INR)	71542	33.923	121.184	0.235	1.413	9.641
Fixed Assets (INR)	71542	47.770	149.249	0.893	3.678	18.999
Capital Expenditures – Machinery	71542	-0.001	0.395	-0.162	-0.105	0.032
Any Capital Expenditure – Machinery	71542	0.277	0.448	0.000	0.000	1.000
Capital Expenditures	71542	0.023	0.319	-0.127	-0.064	0.062
Any Capital Expenditure	71542	0.323	0.468	0.000	0.000	1.000
Loan Growth	54964	0.041	0.754	-0.210	0.000	0.269
Any Loan Growth	71169	0.382	0.486	0.000	0.000	1.000
No Loan	71169	0.226	0.419	0.000	0.000	0.000
New Loan	71542	0.025	0.155	0.000	0.000	0.000
Interest Rate	54945	0.246	0.281	0.071	0.145	0.286
Raw Materials (INR)	58690	18.406	51.898	0.675	2.746	10.502
Land and Buildings (INR)	71542	13.574	40.073	0.236	1.264	6.276
Assets (INR)	71168	148.732	443.806	4.659	16.482	71.469
Loans (INR)	71169	31.692	108.562	0.101	2.228	11.675
Hired Workers	71542	97.322	500.791	8.000	21.000	71.000
Contract Workers	71507	29.719	362.765	0.000	0.000	6.000
Supervisors	71507	11.130	89.631	1.000	3.000	6.000
Salaries – Hired Workers (INR)	71542	5.476	14.094	0.315	0.918	3.398
Salaries – Contract Workers (INR)	71507	1.097	3.548	0.000	0.000	0.209
Salaries – Supervisor (INR)	71507	2.893	8.909	0.064	0.273	1.323
Output (INR)	71517	204.090	598.860	2.297	17.111	105.348
Output per Worker (INR)	71011	2.773	7.072	.174	.994	2.732
Computer Use	70285	0.592	0.492	0.000	1.000	1.000
Age	71542	18.202	14.935	8.000	15.000	24.000
Young Establishment	71542	0.415	0.493	0.000	0.000	1.000
Micro-Enterprise	71280	0.631	0.482	0.000	1.000	1.000
Small Enterprise	71280	0.281	0.450	0.000	0.000	1.000
Medium Enterprise	71280	0.032	0.176	0.000	0.000	0.000
Large Enterprise	71280	0.056	0.229	0.000	0.000	0.000
Small-Scale Industries	71280	0.793	0.405	1.000	1.000	1.000
Publicly Listed	71542	0.139	0.346	0.000	0.000	0.000

Notes: This table shows the summary statistics for registered manufacturing establishments. The sample is restricted to establishments situated in districts located within a bandwidth of 15 around the discontinuity threshold. Rupee values are in constant 2005 millions of rupees. Growth variables are defined as in equation (3). Capital Expenditures include expenditures on plant, machinery, land and buildings (net of depreciation); Capital Expenditures – Machinery include expenditures on plant and mechinery only (net of depreciation). Interest Rate is defined as total interest paid during the year, scaled by total outstanding loans at the beginning of the accounting year. Supervisors are employees who are not directly engaged in manufacturing tasks, and holding managerial positions. Young refers to establishments incorporated after 1993. Micro, small, small-scale, medium and large enterprises are defined according to administrative definitions. Listed refer to establishment which are publicly listed. Observations vary based on whether a particular variable is reported by a firm.
Source: Annual Survey of Industries (2001-11).

Table C2: Manufacturing Investment in Underbanked Districts: Alternate Outcome Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Capital Expenditures: Plant and Machinery		Capital Expenditures			Raw Materials	
	Log Difference	Pr(Any Capex = 1)	Capital Expenditure	Log Difference	Pr(Any Capex = 1)	Expenditure	Log Difference
Underbanked × Post	.075***	.051**	.032*	.036**	.043*	.113***	.149***
	(.026)	(.024)	(.017)	(.017)	(.025)	(.040)	(.055)
Observations	71542	71542	71542	71542	71542	57673	57673
R^2	.37	.44	.38	.38	.45	.35	.35
Control Mean	-.003	.233	.003	.013	.268	.070	3.438

Notes: This table shows the robustness of the baseline specification to alternate functional forms and outcome variables. The unit of observation is the manufacturing establishment. All specifications include establishment, industry year fixed effects, and establishment size-year fixed effects, in addition to a linear polynomial in the running variable, establishment and district covariates. Columns (1) and (2) restrict capital expenditures to capital expenditures in plant and machinery; capital expenditures in columns (3)-(5) include net fixed assets; columns (6)-(7) refer to expenditures in raw materials. Columns (1), (4) and (7) measure capital expenditures as the logged difference in closing and opening values; the outcome in columns (2) and (5) is a dummy equaling 1 if the establishment undertook any positive capital spending during the year. All specifications include establishment-specific weights and the sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Standard errors are in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Annual Survey of Industries (2001-11).

Table C3: Credit Growth for Manufacturing Establishments in Underbanked Districts

	(1)	(2)	(3)	(4)	(5)	(6)
	Credit Growth	Credit Growth (Log)	Any Credit Growth	New Loan	No Loan	Interest Rate
Underbanked × Post	.128***	.600***	-.013	.011	.009	.013
	(.043)	(.139)	(.027)	(.008)	(.018)	(.018)
Observations	53666	71138	71138	71542	71138	53645
R^2	.34	.33	.44	.35	.71	.58
Control Mean	.043	.188	.381	.025	.224	.241

Notes: This table estimates the treatment effect on manufacturing credit growth. The unit of observation is the manufacturing establishment. All specifications include establishment, industry-year fixed effects, a linear polynomial in the running variable, district and establishment covariates. The outcome of interest in column (1) is credit growth, defined as in equation (3); in column (2), logged difference in closing and opening values of outstanding loans; column (3), a dummy equaling 1 if the closing value of loans exceeded the opening value; column (4), a dummy equaling 1 if the establishment had no outstanding loans through the year; in column (5), a dummy equaling 1 if the establishment had no outstanding credit at the beginning of the accounting period, but positive outstanding loans at the year-end; in column (6), the imputed interest rate. All specifications include establishment-specific weights and the sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Standard errors in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Annual Survey of Industries (2001-11).

Table C4: Manufacturing Investment in Underbanked Districts: Robustness and Placebo Checks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
				Capital Expenditures			
Underbanked × Post	.039**	.063***	.075***	.046*	.076***	.062***	-.003
	(.016)	(.021)	(.027)	(.027)	(.024)	(.021)	(.030)
Observations	71542	71484	61326	68648	53525	85633	38813
R^2	.26	.38	.38	.38	.39	.35	.47
Control Mean	-.02	-.03	-.03	-.04	-.04	-.02	-.02
Specification							
No Establishment Weights	Y	N	N	N	N	N	N
District-Industry Cluster	N	Y	N	N	N	N	N
Census Controls	N	N	Y	N	N	N	N
Drop Districts	N	N	N	Y	N	N	N
Drop Listed	N	N	N	N	Y	N	N
Long-Term	N	N	N	N	N	Y	N
Placebo	N	N	N	N	N	N	Y

Notes: This table shows robustness of the treatment effect of BAP on manufacturing investment to alternate specifications and placebo tests. The unit of observation is the manufacturing establishment. The outcome of interest is capital expenditures, defined as in (3). Capital expenditures is restricted to those in plant and machinery. All specifications include establishment, 2-digit industry-year fixed effects, a linear polynomial in the running variable, establishment and district covariates. Column (1) excludes establishment weights; column (2) clusters the standard errors by district-industry; column (3) includes 4 additional controls from the 2001 population Census which predict the location of rural private banks in underbanked areas interacted with a post-treatment indicator; column (4) excludes the 9 districts for which the underbanked rule was violated; column (5) excludes establishments owned by corporations which are publicly listed; column (6) extends the sample till the year 2014; column (7) restricts the sample to the years between 1998 and 2005 and considers the period after 2001 to comprise of the post-treatment period. All specifications except for column (1) include establishment-specific weights. The sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold in all specifications. Standard errors are in parentheses, clustered by district, with the exception of column (2), where they are twoway custered by district and industry. Significant levels: *10%, **5%, and ***1%.
Source: Annual Survey of Industries (2001-11).

Table C5: Bank Branch Expansion and Rural Infrastructure

	(1) Primary Health Care Centre	(2) Piped Water	(3) All Weather Road	(4) Electricity	(5) Rural Infrastructure Index
Underbanked × Post	.008	-.044	.018	-.032	-.027
	(.020)	(.041)	(.024)	(.024)	(1.196)
Observations	221	221	221	219	151
Dep Var Mean	.141	.490	.856	.900	.597

Notes: This table compares rural infrastructure variables from the 2011 population Census across underbanked and non-underbanked districts using a cross-sectional RD specification. The unit of observation is the district. The outcome of interest in column (1) is the fraction of villages in the district with a primary health care centre; in column (2), the fraction of villages with piped water; in column (3), the fraction of villages with an all weather road; in column (4), the fraction of villages with electricity. Column (5) is the sum of district-specific standardized indices of the above measures. All specifications include state fixed effects and a linear polynomial in the running variable. The sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Standard errors are in parentheses. Significant levels: *10%, **5%, and ***1%.
Source: Census 2011 and 2011.

Table C6: Bank Branch Expansion and Manufacturing Investment: Accounting for Contemporaneous Interventions

	(1)	(2)	(3)	(4)
	Capital Expenditures			
Underbanked × Post	.064***	.063***	.064***	.069***
	(.023)	(.021)	(.021)	(.024)
Underbanked × Growth × Post			-.133	
			(.250)	
Underbanked × Growth > Median × Post				-.016
				(.040)
Observations	70018	71435	71027	71027
R^2	.38	.38	.38	.38
Control Mean	-.03	-.03	-.03	-.03
Census Controls × Time Trend	Y	N	N	N
NREGS Controls × Time Trend	N	Y	N	N

Notes: This table shows robustness in the impact of the BAP on manufacturing investment to other contemporaneous interventions and overall growth. The unit of observation is the manufacturing establishment. All specifications include establishment, industry-year fixed effects, a linear polynomial in the running variable, district and establishment covariates. The outcome of interest is manufacturing investment, defined as in equation 3. Column (1) includes linear time trends in the fraction of villages in the district with a primary health centre, fraction of villages with all-weather roads, fraction of villages with tap water, fraction of villages with electricity, and fraction of durable houses in the district obtained from Census 2001. Column (2) includes linear time trends for districts which received the rural employment guarantee scheme in the first two years (2005 and 2006). *Growth* refers to the annual change in logged average night-lights in a district. $Growth > Median$ is a dummy equaling 1 if the district in a year has exhibited growth (based on logged annual change in night-lights) in excess of the sample median. All specifications include establishment-specific weights and the sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Standard errors are in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Annual Survey of Industries (2001-11).

Table C7: Manufacturing Investment in Underbanked Districts: Heterogeneity by Establishment and Industry Characteristics

	(1)	(2)	(3)	(4)	(5)
	Capital Expenditures				
Underbanked × Post	.084**	.068**	.076***	.087**	.065*
	(.035)	(.030)	(.026)	(.038)	(.039)
Underbanked × High Capital × Post	-.035				
	(.040)				
Underbanked × *Small* × Post		-.014			
		(.041)			
Underbanked × *Medium* × Post		-.149**			
		(.058)			
Underbanked × *Large* × Post		-.088			
		(.054)			
Underbanked × Non-SSI × Post			-.101**		
			(.047)		
Underbanked × High Collateral × Post				-.042	
				(.050)	
Underbanked × Partnership × Post					-.005
					(.047)
Underbanked × Private Ent. × Post					.036
					(.047)
Underbanked × Govt. × Post					.020
					(.103)
Underbanked × Listed × Post					-.094**
					(.047)
Observations	71542	71280	71280	71417	71542
R^2	.38	.38	.38	.38	.38
Control Mean	-.03	-.03	-.03	-.03	-.03

Notes: This table estimates the treatment heterogeneity on manufacturing investment across establishment fixed assets, tangibility, ownership and listing status. The unit of observation is the manufacturing establishment. The outcome of interest is capital expenditures. Capital expenditures refers to capital spending on plant and machinery, defined as in equation (3). All specifications include establishment and industry year fixed effects, along with a linear polynomial in the running variable, as well as establishment and district covariates. *High Capital* refers to establishments whose fixed assets exceed the median pre-treatment fixed assets. Administrative definitions are used to classify establishments as *Small*, *Medium*, *Large* and *SSI* (Small Scale Industries), based on their pre-treatment establishment fixed capital. *High Collateral* refers to establishments whose value of land and buildings exceed the pre-treatment median. *Listed* is a dummy for establishments owned by publicly listed corporations. All specifications include establishment-specific weights and the sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Standard errors are in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Annual Survey of Industries (2001-11).

Table C8: Credit Growth in Underbanked Districts: Heterogeneity by Establishment and Industry Characteristics

	(1)	(2)	(3)	(4)	(5)
			Credit Growth		
Underbanked × Post	.193**	.164***	.171***	.170**	.208**
	(.084)	(.058)	(.046)	(.067)	(.083)
Underbanked × High Capital × Post	-.089				
	(.101)				
Underbanked × *Small* × Post		-.045			
		(.077)			
Underbanked × *Medium* × Post		-.223			
		(.164)			
Underbanked × *Large* × Post		-.131*			
		(.076)			
Underbanked × Non-SSI × Post			-.178***		
			(.067)		
Underbanked × High Collateral × Post				-.061	
				(.079)	
Underbanked × Partnership × Post					-.064
					(.112)
Underbanked × Private Ent. × Post					-.087
					(.116)
Underbanked × Govt. × Post					-.196
					(.160)
Underbanked × Listed × Post					-.224**
					(.107)
Observations	53666	53507	53507	53597	53666
R^2	.34	.34	.34	.34	.34
Control Mean	.04	.04	.04	.04	.04

Notes: This table estimates treatment heterogeneity in credit growth across establishment fixed assets, tangibility, ownership, and listing status. The unit of observation is the manufacturing establishment. The outcome of interest is credit growth. All specifications include establishment and industry year fixed effects, along with a linear polynomial in the running variable, as well as establishment and district covariates. *High Capital* refers to establishments whose fixed assets exceed the median pre-treatment fixed assets. Administrative definitions are used to classify establishments as *Small*, *Medium*, *Large* and *SSI* (Small Scale Industries), based on their pre-treatment establishment fixed capital. *High Collateral* refers to establishments whose value of land and buildings exceed the pre-treatment median. *Listed* is a dummy for establishments owned by publicly listed corporations. All specifications include establishment-specific weights and the sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Standard errors are in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1% .
Source: Annual Survey of Industries (2001-11).

Table C9: Manufacturing Investment in Underbanked Districts: Heterogeneity by Pre-Treatment Establishment Characteristics

	(1)	(2)	(3)	(4)
		Capital Expenditures		
Underbanked × Post	.116***	.064***	.027	.091***
	(.031)	(.021)	(.031)	(.033)
Underbanked × High Interest × Post	-.058			
	(.043)			
Underbanked × ICR < 1 × Post		-.057		
		(.092)		
Underbanked × High MRPK × Post			.062*	
			(.035)	
Underbanked × High Output × Post				-.059
				(.042)
Observations	61198	71542	69918	71367
R^2	.38	.38	.38	.38
Control Mean	-.03	-.03	-.03	-.03
$H_0 : \beta_1 + \beta_2 = 0$: (p-val)	.04	.95	.00	.26

Notes: This table estimates the treatment heterogeneity on manufacturing investment across pre-2005 borrower characteristics. The unit of observation is the manufacturing establishment. The outcome of interest is capital expenditures, defined as in equation (3). All specifications include establishment and industry year fixed effects, along with a linear polynomial in the running variable, as well as establishment and district covariates. *High Interest* refers to establishments with relatively high (above median) interest rates; $ICR < 1$ refers to establishments whose annual interest payments exceeded annual sales at least once in the pre-treatment period; *High MRPK* refers to establishments with relatively high (above median) marginal product of capital; *High Output* refers to establishments with relatively high (above median) output per worker. All specifications include establishment-specific weights and the sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Standard errors are in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Annual Survey of Industries (2001-11).

Table C10: Bank Branch Expansion, Manufacturing Output

	(1)	(2)	(3)	(4)	(5)	(6)
	Value of Output			Output per worker		
Underbanked × Post	.286	.439	.484	.364	.518*	.714*
	(.322)	(.365)	(.457)	(.252)	(.297)	(.384)
Underbanked × *Size* > Median × Post		-.328			-.317	
		(.421)			(.354)	
Underbanked × Large, Young × Post			.063			-.152
			(.583)			(.491)
Underbanked × Large, Old × Post			-.636			-.735
			(.563)			(.481)
Underbanked × Small, Old × Post			-.087			-.345
			(.570)			(.549)
Observations	71514	71514	71514	70926	70926	70926
R^2	.87	.87	.87	.87	.87	.87
Control Mean	142.98	142.98	142.98	2.29	2.29	2.29

Notes: This table identifies the impact of the BAP on manufacturing output. The unit of observation is the manufacturing establishment. All specifications include establishment, industry-year fixed effects, a linear polynomial in the running variable, district and establishment covariates. The outcome of interest in columns (1)-(3) is the real value of manufacturing output; in columns (4)-(6), output per worker. The dependent variable is inverse hyperbolic sine transformed. *Median* refers to the median establishment size; *Large* and *Small* refer to establishments with above and below median sizes. *Young* refers to establishments which started operations after 1992. All specifications include establishment-specific weights and the sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Standard errors are in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Annual Survey of Industries (2001-11).

Table C11: Manufacturing Employment in Underbanked Districts

	(1) Total Employees (Log)	(2) Total Workers (Log)	(3) Contract Workers (Log)	(4) Supervisors (Log)	(5) Supervisors Share
Underbanked × Post	-.035	-.033	-.143	-.064*	-.002
	(.056)	(.064)	(.109)	(.037)	(.005)
Observations	71542	71542	71496	71496	71229
R^2	.92	.90	.77	.88	.66
Control Mean	105.92	87.55	29.47	8.38	.11

Notes: This table estimates the impact of BAP on manufacturing employment. The unit of observation is the manufacturing establishment. All specifications include establishment, industry-year fixed effects, a linear polynomial in the running variable, district and establishment covariates. The outcome variables in columns (1)-(4) is logged. The outcome of interest in column (1) is total employees; in column (2), total number of workers; column (3), total contract workers; column (4), the number of supervisors; in column (5), supervisors as a share of total employees. All specifications include establishment-specific weights and the sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Standard errors are in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Annual Survey of Industries (2001-11).

Table C12: Manufacturing Employment in Underbanked Districts: Heterogeneity by Establishment Size

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Total Employees (Log)		Total Workers (Log)		Contract Workers (Log)		Supervisors (Log))	
Underbanked × Post	-.029	-.124	-.021	-.122	-.010	-.068	-.030	-.037
	(.066)	(.081)	(.080)	(.099)	(.104)	(.134)	(.050)	(.066)
Underbanked × *Size* > Median × Post	-.012		-.025		-.240		-.061	
	(.078)		(.086)		(.169)		(.059)	
Underbanked × Large, Young × Post		.081		.087		-.185		-.118
		(.091)		(.101)		(.188)		(.089)
Underbanked × Large, Old × Post		.086		.073		-.179		-.014
		(.101)		(.116)		(.200)		(.072)
Underbanked × Small, Old × Post		.159**		.173*		.092		.011
		(.075)		(.090)		(.132)		(.069)
Observations	71542	71542	71542	71542	71496	71496	71496	71496
R^2	.92	.92	.90	.90	.77	.77	.88	.88
Control Mean	105.92	105.92	87.55	87.55	29.47	29.47	8.38	8.38

Notes: This table tests for heterogeneity in the impact of the BAP on manufacturing employment across establishment size. The unit of observation is the manufacturing establishment. All specifications include establishment, industry-year fixed effects, a linear polynomial in the running variable, district and establishment covariates. All outcome variables are logged. The outcome of interest in columns (1)-(2) is total employees; in columns (3)-(4), total number of hired workers; columns (5)-(6), total contract workers; columns (7)-(8), the number of supervisors. *Median* refers to the median establishment size; *Large* and *Small* refer to establishments with above and below median sizes. *Young* refers to establishments which started operations after 1992. All specifications include establishment-specific weights and the sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Standard errors are in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Annual Survey of Industries (2001-11).

Table C13: Labor Compensation in Underbanked Districts

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Total Wages (Log)				Daily Wages (Log)			
	All Employees	Total Workers	Contract Workers	Supervisors	All Employees	Total Workers	Contract Workers	Supervisors
Underbanked × Post	-.091	-.107	-.548	-.187	-.048*	-.036	-.127**	-.052
	(.096)	(.120)	(.446)	(.286)	(.026)	(.029)	(.050)	(.043)
Observations	71542	71542	71496	71496	71313	70999	24278	63427
R^2	.87	.78	.73	.78	.86	.82	.66	.77
Control Mean	6.95	3.92	.72	1.79	194.22	152.13	136.13	496.30

Notes: This table estimates the impact of BAP on manufacturing wages. The unit of observation is the manufacturing establishment. All specifications include establishment, industry-year fixed effects, a linear polynomial in the running variable, district and establishment covariates. All outcome variables are logged. Outcomes in columns (1)-(4) are total wage payments; in columns (5)-(8), average daily wages. All specifications include establishment-specific weights and the sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Standard errors are in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Annual Survey of Industries (2001-11).

Table C14: Labor Compensation in Underbanked Districts: Heterogeneity by Establishment Size

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Daily Wages (Log)							
	All Employees		Total Workers		Contract Workers		Supervisors	
Underbanked × Post	.004	-.010	.007	-.006	-.222**	-.234*	-.036	-.092
	(.035)	(.046)	(.037)	(.047)	(.099)	(.137)	(.067)	(.102)
Underbanked × *Size* > Median × Post	-.093**		-.074		.116		-.024	
	(.044)		(.055)		(.107)		(.066)	
Underbanked × Large, Young × Post		-.130*		-.074		.112		-.012
		(.066)		(.083)		(.175)		(.109)
Underbanked × Large, Old × Post		-.046		-.052		.138		.060
		(.055)		(.062)		(.162)		(.114)
Underbanked × Small, Old × Post		.027		.026		.085		.111
		(.078)		(.058)		(.229)		(.152)
Observations	71313	71313	70999	70999	24278	24278	63427	63427
R^2	.86	.86	.82	.82	.66	.66	.77	.77
Control Mean	194.22	194.22	152.13	152.13	136.13	136.13	496.30	496.30

Notes: This table estimates the impact of BAP on manufacturing wages. The unit of observation is the manufacturing establishment. All specifications include establishment, industry-year fixed effects, a linear polynomial in the running variable, district and establishment covariates. All outcome variables are logged. The outcome of interest in columns (1)-(2) refer to average daily wages of all employees; in columns (3)-(4), daily wages of hired workers; columns (5)-(6), daily wages of contract workers; columns (7)-(8), daily wages of supervisors. *Median* refers to the median establishment size; *Large* and *Small* refer to establishments with above and below median sizes. *Young* refers to establishments which started operations after 1992. All specifications include establishment-specific weights and the sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Standard errors are in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Annual Survey of Industries (2001-11).

Table C15: Aggregate Effects of Bank Branch Expansion

	(1) Capital Expenditure	(2) Any Capital Expenditure	(3) Credit Growth	(4) Output (Log)	(5) Workers (Log)	(6) Revenue TFP	(7) Total Establishments (Log)	(8) Fraction Closed
Underbanked×Post	.054**	.033	.103**	.018	.121	.032	.140**	-.032
	(.024)	(.023)	(.045)	(.087)	(.082)	(.040)	(.057)	(.026)
Observations	17962	18152	15908	18015	17898	16128	19388	19388
R^2	.07	.12	.06	.36	.35	.10	.33	.19
Control Mean	.03	.28	.07	1586.71	.97	-.03	14.59	.07

Notes: This table estimates the impact of BAP on aggregate district-level outcomes. The unit of observation is the district-industry (3-digit). The outcomes of interest in columns (1) and (3) are constructed using equation (3). The outcomes of interest in columns (2) and (8) are fractions. The remaining outcomes are log transformed. Capital expenditures refer to expenditures in plant and machinery. All specifications include district and 3-digit industry-year fixed effects, in addition to district-specific controls. Standard errors are in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Annual Survey of Industries (2001-11).

Table C16: Cost of Credit for Manufacturing Establishments in Underbanked Districts: Heterogeneity by Establishment Size and Age

	(1)	(2)	(3)	(4)
		Interest Rate		
Underbanked × Post	.039	.063**	.032	.007
	(.025)	(.031)	(.030)	(.021)
Underbanked × *Size* > Median × Post	-.046			
	(.029)			
Underbanked × 10 > *Size* ≤ 25 × Post		-.062*		
		(.036)		
Underbanked × 25 > *Size* ≤ 50 × Post		-.088*		
		(.046)		
Underbanked × 50 > *Size* ≤ 100 × Post		-.107**		
		(.047)		
Underbanked × *Size* > 100 × Post		-.042		
		(.044)		
Underbanked × Large, Young × Post			.014	
			(.040)	
Underbanked × Large, Old × Post			-.071*	
			(.036)	
Underbanked × Small, Old × Post			.013	
			(.029)	
Underbanked × Listed × Post				.055
				(.044)
Observations	53645	53645	53645	53645
R^2	.58	.58	.58	.58
Control Mean	.24	.24	.24	.24

Notes: This table estimates the treatment heterogeneity on imputed interest rates for manufacturing enterprises. The unit of observation is the manufacturing establishment. The outcome of interest is the imputed interest rate. All specifications include establishment and industry year fixed effects, along with a linear polynomial in the running variable, as well as establishment and district covariates. *Size* refers to the pre-treatment average number of employees employed by the establishment. *Large* and *Small* refer to establishments with above and below median sizes. *Young* refers to establishments which started operation after 1992. Listed establishments are those which are publicly listed. All specifications include establishment-specific weights and the sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Standard errors are in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Annual Survey of Industries (2001-11).

Table C17: Bank Branch Expansion, Capital Investment and Credit Growth: Heterogeneity by Tradable Industries

	(1)	(2)	(3)	(4)	(5)	(6)
	Capital Expenditures			Credit Growth		
	All	Size < 25	Size > 25	All	Size < 25	Size > 25
Underbanked × Post	.050*	.088**	-.056	.156**	.171**	.165*
	(.028)	(.035)	(.034)	(.062)	(.070)	(.091)
Underbanked × Tradable × Post	.034	.036	.084*	-.063	.029	-.219**
	(.037)	(.050)	(.050)	(.078)	(.108)	(.106)
Observations	68826	30296	38503	51251	22254	28976
R^2	.38	.42	.29	.34	.40	.25
Control Mean	-.03	-.03	-.03	.04	.04	.04

Notes: This table identifies the impact of the BAP on manufacturing output. The unit of observation is the manufacturing establishment. All specifications include establishment, industry-year fixed effects, a linear polynomial in the running variable, district and establishment covariates. The outcome of interest in columns (1)-(3) is manufacturing investment; in columns (4)-(6), credit growth. Both outcome variables are defined as in equation (3.) *Size* refers to the pre-treatment number of hired workers employed by the manufacturing employment. *Tradable* is a dummy equaling 1 if the industry has low (below median) geographic diversification. All specifications include establishment-specific weights and the sample is restricted to districts located within a bandwidth of 15 around the discontinuity threshold. Standard errors are in parentheses, clustered by district. Significant levels: *10%, **5%, and ***1%.
Source: Annual Survey of Industries (2001-11).