Disentangling the Effect of Financial Inclusion on Household Well-Being

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Abstract

How does financial inclusion lead to improvements in household well-being when fewer than 10% of individuals in developing countries borrow from financial institutions (World Bank, 2021)? Exploiting a regression discontinuity design based on a major bank-branch expansion policy in India, we leverage panel data on households and census data on enterprises to study the general equilibrium effects of financial inclusion. We find that treated households significantly increase consumption expenditures, savings, and investments, but without increasing borrowing. Instead, treated enterprises borrow more, employ more workers, earn higher profits, and pay higher wages, suggesting that households benefit indirectly from bank access through improved employment opportunities. In addition to the existing evidence, we show that bank access benefits accrue more to middle income and socially disadvantaged households, especially in urban areas, where there are more economic opportunities. Overall, our findings suggest that financial inclusion has important spillover effects on the wider economy, with benefits accruing to households through the labor market.

Keywords: Financial Inclusion, Bank Branch Deregulation, Regression Discontinuity, Household well-being

JEL Codes: O12, C26, C33

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1 Introduction

A large literature finds that bank access enhances household consumption, reduces poverty, and increases economic growth (Levine and Zervos, 1998; Burgess and Pande, 2005; Beck et al., 2007a). However, while in developed countries credit supply expansion has a real impact on the economy through household borrowing (Mian and Sufi, 2018; Mian et al., 2019; Célerier and Matray, 2019). But household borrowing remains substantially lower in emerging markets. For example, nearly 70% of individuals in the U.S. and Canada borrow from financial institutions, compared to about 11% in South Asia (World Bank, 2021). How does financial inclusion increase household consumption and well-being in emerging markets without an increase in household borrowing?

According to the traditional "household demand" view, bank access benefits households by facilitating borrowing and savings (Mian and Sufi, 2018; Mian et al., 2019). Alternatively, under the "business finance" mechanism, bank access allows financially constrained firms to borrow more and increase employment (Bruhn and Love, 2014; Chodorow-Reich, 2014; Bai et al., 2018; Dehejia and Gupta, 2022; Fonseca and Matray, 2022), which indirectly benefits households through a rise in employment opportunities and wages in the labor market.

To study the causal impact of bank access on households, we utilize a regression discontinuity design based on a major bank branch expansion policy in India. We find that bank access increases household consumption, savings, investments, and other measures of well-being, without an increase in household borrowing. In fact, treated households make lower interest payments and take out fewer consumption loans. Instead, we find that bank access increases firm-level borrowing, total employment, and wages, which suggests that households benefit from bank access indirectly through the labor market. We also find that the benefits of bank access accrue to richer, socially advantaged households living in urban areas, where there are more economic opportunities.

Our main contributions are as follows: First, in contrast to the evidence from developed countries, we show that bank access increases household well-being without increasing household borrowing.[1] Second, we disentangle the causal mechanisms and show that bank access benefits households indirectly through the labor market with an expansion in employment opportunities and wages. Third, in contrast to the existing evidence on the effect of bank access on rural households (Burgess and Pande, 2005; Barboni et al., 2022), we find that bank access benefits households living in urban areas, which have greater economic opportunities. Expansion of bank

[1]For example, in the U.S. bank branch deregulation increases household debt (Célerier and Matray, 2019).

access has no impact on rural households.

We investigate the causal mechanisms through which financial inclusion affects household financial well-being with a regression discontinuity (RD) design, leveraging panel data on households and census data on enterprises. Our RD design is built upon a significant policy intervention that oversaw the expansion of bank branches in India. In 2005, the Indian central bank provided incentives for commercial banks to open new branches in under-banked districts with a population-to-branch ratio above the national average. We compare households and enterprises in treatment districts with a population-to-branch ratio just above the national average to those in control districts with a ratio just below the national average. Our analysis draws on three nationally representative surveys: India Human Development Survey, Economic Census, and National Family Health Survey, providing data on a wide range of household financial variables including consumption expenditures, savings and investments, employment, wages, borrowing, and household wealth.

We find that bank branch expansion has a positive effect on household consumption expenditures, ownership of motor vehicles, and overall living standards. The RD estimates also show that households in treated districts access more financial products such as savings accounts and life insurance policies, and invest more in longer-term interest bearing deposits. In contrast to the existing literature, we find that higher household expenditures are not accompanied by an increase in household debt. On the contrary, treated households experience a significant decline in interest payments and consumption loans. For example, there is a one-fourth decline in the monthly interest on loans paid and a one-third decline in the likelihood of taking loans for consumption, marriage or medical reasons by treated households.

We also observe a substantial increase in the business revenues earned by treated households that own businesses, and a significant increase in the employment earnings of treated households. Specifically, employment earnings and business revenues increase by 14% and 25%, respectively. In contrast to the effect on household debt, results from the census data on enterprises show that treated firms experience a significant increase in debt and employment. For example, treated firms increase borrowings from formal financial sources by 36% and their number of employees by 20%, relative to the mean. Disentangling the impact of financial inclusion, our results support the "business finance" view that financial inclusion impacts household well-being via the labor market effect of enhancing access to finance for firms.

A plausible explanation for these results is that banks operating in emerging markets find it more profitable to lend to firms rather than households. In India for example, more than a quarter of individual bank accounts remain dormant and only 10% of adults have ever borrowed from financial institutions (World Bank, 2021). For comparison, in the United States only about .3% of bank accounts are inactive, and 66% of individuals have borrowed from a formal financial institution.

To investigate bank incentives, we analyze lending behavior in rural versus urban districts, as the latter regions have a greater concentration of enterprises and better infrastructure to facilitate business expansion. Our results support the hypothesis that banks find it more profitable to lend to firms. First, credit growth is significantly higher in treated urban districts (50% relative to the mean) compared to rural districts (17% relative to the mean) following the policy change. Second, treated urban enterprises are significantly more likely to rely on institutional loans as their primary source of borrowing, compared to rural enterprises. Third, treated urban households have significantly higher consumption expenditures, pay lower interest on loans, have fewer consumption loans and lower debt, there is no significant impact on the financial characteristics of treated rural households.

We investigate the validity of the regression discontinuity design in several ways. First, we show that there was no difference in the number of bank branches, credits, and deposits around the population-branch ratio cut-off prior to the policy change in 2005. Following the policy change, there is a discontinuous increase in the number of banks and credit and deposits in treated districts. Second, we show that there are no pre-policy differences in household financial characteristics in treated versus control districts. Third, we find no evidence of household migration in anticipation of the policy. Fourth, local average treatment effect estimates from the RD regressions are robust to generic robustness tests, including higher order polynomials, placebo discontinuity test, bandwidth multipliers and bandwidth selectors. Fifth, we conduct a placebo test to see if the policy had any impact on growth of regional rural banks, which were not the policy priority, and find no impact. Sixth, Cramer (2020) use the same treatment condition and show that there were no other contemporaneous policy changes that had the same priority districts as that of the RBI policy. Lastly, the population-to-branch ratio around the cut-off is unlikely to be manipulated since the population data are from the 2001 population census, and bank branches data are collected by the Indian central bank.

Our findings shed light on the complex relationship between financial inclusion and household financial well-being. We explain the puzzle that financial inclusion improves household well-being in emerging markets even though household borrowing remains low. Disentangling the causal impact of bank access on households and firms, we show that financial inclusion has important spillover effects on the wider economy, which benefit households through employment and wages. Moreover, our results show that bank access benefits urban households and firms, which underscores the need for policymakers to expand credit in less industrialized areas in order to promote inclusive growth.

1.1 Related Literature

We contribute to the literature on financial access and household well-being. First, Barboni et al. (2022) study the impact of randomized branch placement by one bank in an Indian state, which targeted micro-credit to rural women. They find that this leads to higher borrowing, lower poverty, and increased non-farm employment for these households. While (Barboni et al., 2022)'s results show that targeting credit to rural women has a positive impact, we show that expansion in bank access across types of banks and at the national level does not have similar benefits for households or firms.[2] Second, Célerier and Matray (2019) show that bank branch deregulation in the U.S. increased household wealth by allowing households to borrow more. Our findings suggest that the effects of bank branch expansion on households differ in emerging markets.

Bruhn and Love (2014) examine the impact of introducing Banco Azteca in Mexico in 2002 on poverty and entrepreneurship, specifically within informal and formal businesses. They find a significant 7.6% increase in informal businesses, highlighting the importance of financial support for entrepreneurs lacking traditional loan qualifications. Our study examines commercial bank expansion and focuses on both households and enterprises. We also analyze informality using official definitions of organized and unorganized sectors in India, and analyze the impact of bank expansion on the primary, secondary and services sector. Karlan and Zinman (2010) conducted a field experiment in South African by relaxing loan screening criteria. They unveiled the presence of credit constraints and found favorable outcomes for marginal borrowers with varying profitability. Their findings align with ours and challenges the simplistic assumption of expanded credit ensuring welfare enhancements through borrowing. However, their study is a short-term field experiment

[2] Breza and Kinnan (2021) study the impact of micro-credit on rural labor markets in one Indian state, but do not distinguish between the effects of household demand and business finance on household consumption.

for entrepreneurs, while our is at the national scale and covers a longer run economic impact on both households and enterprises.

We also contribute to the literature on the effect of financial access on firms and labor markets. For example, Dehejia and Gupta (2022) show that improved access to finance moves households from informal self-employment to formal wage employment in firms, but do not study the impact on household financial well-being. Lastly, Fonseca and Matray (2022) show that bank deregulation in Brazilian cities increased firm investments, output, employment and wages. Our focus is on households and firms, and the comparative effects of bank expansion in rural and urban areas (Fan et al., 2023).

Our paper is also related to the large literature examining the effects of access to credit and bank deregulation, which finds that bank entry may affect firms' access to credit (Petersen and Rajan, 1995; Beck et al., 2004), economic growth (Jayaratne and Strahan, 1996; Cetorelli and Gambera, 2001), and, entrepreneurship (Black and Strahan, 2002). We also contribute to the literature on financial development and growth ((Beck et al., 2007b; Bruhn and Love, 2014; Rajan and Zingales, 1998; Fisman and Love, 2004; Bekaert et al., 2005; Gupta and Yuan, 2009). We contribute to this literature by disentangling the impact of bank access on households and firms, and showing the unequal impact across urban and rural areas.

2 Data

We use four sources of data in our analysis: (i) RBI's Master Office File (1997-2016) and Basic Statistical Returns (2005-2015) data, (ii) Panel of the India Human Development Survey 2005-2005 and 2011-2012, (iii) The National Family Health Survey (Demographic and Health Survey (DHS), 2015), and (iv) Economic Census, 2005 and 2013. In this section, we discuss the variables derived from each of the data sets.

2.1 RBI's Master Office File & Basic Statistical Returns

RBI's Master Office File (MOF) provide data on the number of bank branches and licenses in a given district. Since the policy was to incentivize commercial bank expansion, regional rural banks (RRBs) were excluded from the policy, and therefore from our analysis.[3] We use annual data on physical bank branches from 1997 to 2016 at the district level to examine the dynamic expansion

[3]The policy level exclusion of RRBs allows us to perform placebo tests, which we show in our empirical results.

of bank branches and licenses in treatment districts pre- and post-policy. We test for pre-policy smoothness around the policy cut-off using data from 1997 to 2005, and examine discontinuities after the policy with data from 2006 to 2016. Summary statistics are described in Table A2. The Basic Statistical Returns data from 2005 to 2015 provides the annual currency amount of credit and deposit of all scheduled commercial banks. Summary statistics of the credit and deposit in banked and underbanked districts are shown in Table A3.

2.2 India Human Development Survey Panel

The India Human Development Survey is a nationally representative panel data survey of over 40,000 households in 1,420 villages and 1,042 urban neighborhoods across India (appendix Table A1 shows that IHDS is nationally representative).[4] The two panels of survey are IHDS-1, conducted in 2004-2005 and IHDS-2 conducted in 2011-2012. We obtain the household financial well-being measures from these surveys. Since IHDS-1 was conducted a year before the branch expansion policy we use it to measure pre-policy smoothness for outcomes. IHDS-2 was conducted six years after the policy and provides the estimates for post-policy discontinuity in outcomes. IHDS-2 successfully re-interviewed approximately 83% of the 41,554 households that were interviewed in 2005 with additional replacement households, and covers 64% of the districts in 2005 (as per the 2001 census borders) and 65% of the districts in 2012 (Desai and Vanneman, 2018).

Figure A1 shows the treatment districts in IHDS corresponding to underbankedness as described by the policy cut-off, with 220 underbanked districts and 151 banked districts.[5] The survey covers wide ranging topics related to household consumption, food expenses, poverty, ownership of vehicles, earnings from work and business receipts. In addition, the survey also covers household finance variables such as bank deposits (fixed and savings), insurance products, interest on loans and sources of loans, among others. To conduct heterogeneous impact evaluations, the IHDS survey provides sufficient observations and variations for rural–urban comparisons. Attrition in the IHDS survey does not pose a threat to our identification as we only use IHDS 2 (compare

[4]IHDS is a collaborative project by the University of Maryland, the National Council of Applied Economic Research (NCAER), Indiana University, and the University of Michigan. The survey covers all states and union territories of India except for the union territories of Lakshadweep and Andaman and Nicobar Islands. The IHDS sample is designed to be nationally representative along a number of dimensions including geographic, religious, ethnicity and language (Heyes and Saberian, 2022). See https://www.icpsr.umich.edu/ icpsrweb/content/DSDR/idhs-II-data-guide.html for a data guide on the IHDS.

[5]For the merged IHDS panel, we have a total of 379 districts (384 in IHDS 2, 379 in IHDS 1). When we merge the panel of IHDS with RBI data, we lose an additional 8 districts because IHDS data shows Delhi divided in 8 districts, but the RBI data categorizes Delhi as one district. However, as all districts in Delhi fall into banked category, the identification is not threatened. After the final merge, we have a total merged panel of 371 districts.

households in treatment and control districts) for the analysis.

Summary statistics of the IHDS survey (overall sample and the rural-urban sample) are provided in Tables A4– A7. These tables also provide the summary statistics of the variables within the average range of the policy cut-off, ± 4,000. The within bandwidth summary statistics provide external validity to our design as they are similar to the full sample values, and the differences in treatment and control values for outcomes are also smaller within the bandwidth.

Our main well-being variable is the real annual per capita consumption expenditure derived from the real total household consumption expenditure using the OECD equivalent measure. Real monthly expenditure on food is computed by aggregating over the expenditures on the following items: rice, wheat, sugar, kerosene, cereals, pulses, meat, gur and sweeteners, oil, eggs, milk, milk products, cereal products, vegetables, salt and spices, tea, coffee, fruits, and processed foods. In IHDS, household poverty is based on monthly consumption per-capita and the official Planning Commission poverty line as of 2005. Poor is an indicator (0/1) variable indicating whether the household is above or below this poverty line. Ownership of motor vehicles is equal to one for households with a motor vehicle, and 0 otherwise. All other variables derived from the IHDS surveys are discussed in the results section.

2.3 Economic Census (2005 and 2013) and National Family Health Survey (2015-2016)

We use two additional national level surveys, The National Economic Census (EC, 2005 and 2013), which describes enterprise data and the National Family Health Survey (NFHS, 2015-2016), which provides additional household data on living standards. From the Economic Census, which covers all the districts in India, we observe an enterprise's likelihood of having institutional loan as a major source of finance and total employment before and after the policy. The activities covered in the Sixth Economic Census (2012/2013) constitute 86% of the national GDP in 2012.[6]

NFHS (2015-2016) provides a unique standard of living index for the overall sample, rural and urban areas by combining various household assets and services owned by the household.[7]

The advantage of EC and NFHS is that they are very large sample surveys (covering all districts in India). Based on EC and NFHS, we are able to provide estimates for 581 districts, separately for rural and urban areas. The banked underbanked districts covered in the NFHS

[6]Link to Central Statistical Organization documentation of the Sixth Economic Census.

[7]NFHS data is available for 601,509 households.

survey is given in Figure A2. Summary statistics of the variables used from these data sources is available in Table A8. Living standard index is a composite measure of a household's cumulative living standard. The variable is based on a household's ownership of consumer items such as a television and car; dwelling characteristics such as flooring material; type of drinking water source; toilet facilities; and other characteristics that are related to wealth status. Each household asset for which information is collected is assigned a weight generated through principal component analysis. The resulting asset scores are used to define wealth quintiles.

2.4 Mapping and Timeline

India's district borders changed between the census in 2001 and 2011. Census 2001 had 593 districts while Census 2011 had 640 districts. For our study, we use Census 2001 and make adjustments in merging the 581 districts for which the RBI data is available and therefore, all district boundaries are traced back to Census 2001. Economic Census, 2003 and IHDS, 2005 serve as the baseline for the RD design, and IHDS, 2012, Economic Census, 2013 and NFHS, 2015 serve as the endline to examine the causal effects. Figure 1 shows the timeline of our study and the data sets used.

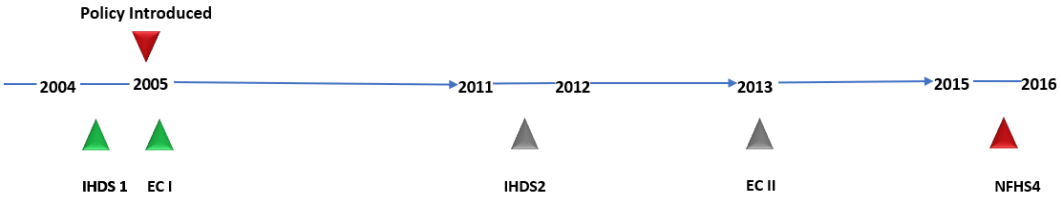


Figure 1: Timeline for the study. The three main data sets used: IHDS (2005-2012), NFHS (2015) and EC (2005 and 2013).

3 Identification

3.1 Bank Expansion Policy

In 2005, the Reserve Bank of India (RBI) introduced a policy to incentivize commercial banks to open new consumer facing bank branches in previously underbanked locations. The criteria for

being an underbanked location was based on the condition that the district had a population-to-branch ratio higher than the national average (as per the 2001 census and district boundaries). Consequently in July 2006, the RBI announced a list of underbanked districts.[8] The policy stated that banks can increase their chance of acquiring licences for opening up branches in favored locations if they open branches in underbanked districts.

We construct district-level ratios using district level population from the 2001 census and the number of scheduled commercial bank branches in the district in the first quarter of 2006 from RBI data. The national average population-branch ratio in a district is approximately 14,780 people. If a district has more than 14,780 people per bank branch it was classified as underbanked. Since 2006, the list of the underbanked districts has remained constant.

3.2 Design of RDD

Following Young (2017), Cramer (2020), Acharya et al. (2022) and Khanna and Mukherjee (2023), we use the cross-sectional variation in the district level population-to-branch ratio in 2006 as the running variable in the regression discontinuity design.[9]

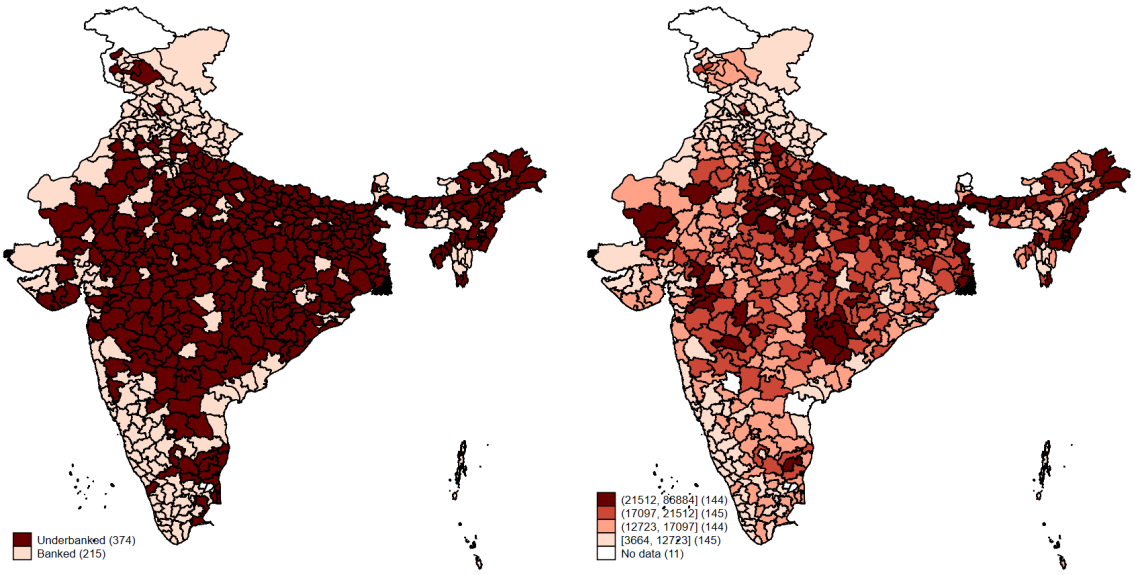
$$\frac{Population_{District(2001)}}{NumberofBankBranches_{District(2006Q1)}} > \frac{Population_{National(2001)}}{NumberofBankBranches_{National(2006Q1)}} \quad (1)$$

Equation 1 shows the condition used to identify underbanked areas. In districts where the inequality of equation 1 holds, commercial banks were incentivized to open up bank branches. Panel (A) in Figure 2 shows the districts that were considered underbanked in 2005 and Panel (B) shows the population to branch ratio at the district level with darker shades reflecting higher levels of under-banking. The maps show that underbanked districts cover a wide geographic area in the country.

The RD design guides the size of the optimal bandwidth for each robust bias corrected inference of the outcome variables (Calonico et al., 2020; Cattaneo and Vazquez-Bare, 2017; Imbens and Kalyanaraman, 2012). The majority of the optimal bandwidths fall in the range of ±4,000 relative to the cut-off. Figure 3 shows the large jump in the probability that a district is listed as

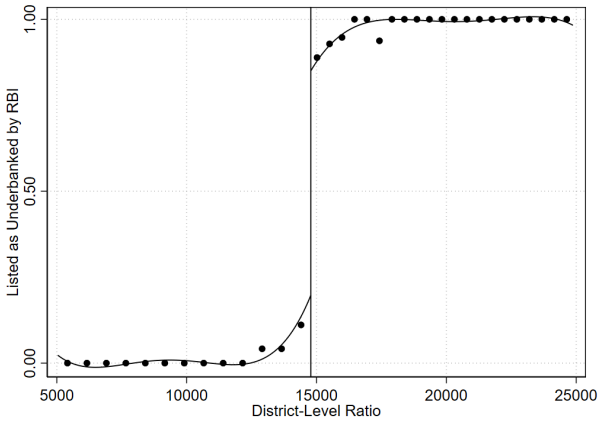
[8] See RBI Policy Document.

[9] The Branch Authorization Policy (BAP) policy was introduced in September 2005 (Khanna and Mukherjee, 2023), but the RBI released the list of underbanked districts in 2006 (Cramer, 2020), therefore, we employ the cross sectional variation district level bank branches from 2006 to construct the running variable for the RD design.



Panel (A) Panel (B)

Figure 2: Banked and Under-banked Districts. Panel (A): RBI MOF, 374 underbanked, 207 Banked.. Panel (B): RBI MOF District level bank branch-to-population ratio



First Stage

Figure 3: RD design, banked or underbanked districts. Authors' computations using RBI MOF. District borders refer to the 2001 Census. Cut off is set at 14,780.

underbanked when the district's population to bank branch ratio crosses the national average.

Similar to Cramer (2020), we estimate the following specification with household financial well-

being measures as the dependent variable using non-parametric inference in a RDD framework.

$$\begin{aligned} Underbanked_d &= \gamma_0 + \gamma_1 Above_d + \gamma_2 PopRatio_d + \gamma_3 Above * PopRatio_d + \eta_d, \\ Y_{h,d} &= \beta_0 + \beta_1 Underbanked_d + \beta_2 PopRatio_d + \beta_3 Above * PopRatio_d + \epsilon_{h,d} \end{aligned} \tag{2}$$

In Equation 2, h denotes the household and d denotes the unique district in a state. In the first stage, $Underbanked_d$ is an indicator that is equal to 1 if the district is underbanked and 0 otherwise. $PopRatio_d$ is the district population to bank branch ratio. $Above_d$ is an indicator that is equal to 1 if the district population to branch ratio is higher than the national average. Since the survey sample used in our study is derived from a random stratified sampling approach, and the treatment assignment is homogenous at the district level, following Abadie et al. (2023), we cluster standard errors at the district level.

For the outcomes of well-being $Y_{h,d}$, we do not use any covariates. Under standard continuity assumptions, the 'unadjusted' local linear estimator is consistent for the continuity-based RD treatment effect, and thus robust bias-corrected inferences can be employed (Cattaneo et al., 2021; Cattaneo and Titiunik, 2022). $X_d \geq c$ (district ratio above national average) is the excluded instrument, and the treatment $Underbanked_d$ is the endogenous regressor. The coefficient of interest is β_1, and the estimator shows the local average treatment effects (LATE) of being in an underbanked district. We also demonstrate robustness with three other bandwidths commonly used in the literature and test for higher order polynomials.

For the first analysis of the branch expansions and increase in licenses, which are based on district population and number of existing branches in the district, we control for bank branches and licenses in 1996, which is the first year the data is available. Doing so allows us to arrive at covariate-adjusted RD estimator that remains consistent for the canonical fuzzy RD treatment effect, while offering a reduction in variance (Cattaneo et al., 2021; Calonico et al., 2019).

To estimate heterogeneous treatment effects using a sub-sample of rural and urban areas, we conduct uniform tests and tests for conditional moment equality. In addition, we check if proportion of compliers is large enough for each sub-sample, and if the sub-sample local average treatment effect estimator of the first stage is strong before conducting the heterogeneity analysis.

3.3 Testing assumptions of RD

We start by testing for pre-policy smoothness using the RBI bank branch data from 2005, IHDS-1 (2004/05) and Economic Census (2005). Table 1 shows the mean values of the outcome variables by treatment in columns 1 and 2, and the mean values of the outcomes within the optimal bandwidth in column 3 and 4. In column 5, we show the fuzzy RDD coefficients pre-policy, which show that prior to the policy, treatment districts do not have significantly higher bank branches or licenses. Also, households in treatment districts do not have higher consumption, poverty, or motor vehicle ownership in the pre policy period.

Insert Table 1 about here

The labor and credit market outcomes are also similar across treated and control districts in the pre-policy period. Treated districts in the pre-policy period do not have higher employment levels, earnings, interest on loans, number of loans, unproductive loans or household debts. Importantly, the differences in mean values between treated and control districts decrease within the optimal bandwidth, providing empirical support for the choice of the bandwidth (Imbens and Lemieux, 2008). The assumption of continuity of all characteristics in the sample except for being banked or underbanked would be violated if agents can manipulate the population to bank ratio in the district. Such manipulation is unlikely however since the district population is derived from the 2001 census, which was several years prior to the conception of the policy by the RBI in 2005. Also, the number of branches a bank has in the district is recorded by the RBI leaving no space for manipulation. Another potential threat to identification is household migration to underbanked districts. Table A9 shows that there is negligible and insignificant household migration into underbanked districts. Cramer (2020) shows that there is no correlation between the 2005 RBI policy and contemporaneous policies that may confound the effects of bank presence and do not find a significant impact of RBI policy at the district level. Lastly, the threat to identification in heterogeneity analysis (rural-urban) lies in the fact that a sub-sample analysis may bias the data generating process and make it non-random in RD design (Feir et al., 2016; Hsu and Shen, 2019). To address this we use IHDS 1 and test for non-random distribution of the rural-urban sample. In Table A10, we see that the treatment effect is not conditional on the rural or urban sub-sample and does not pose a threat to the identification.

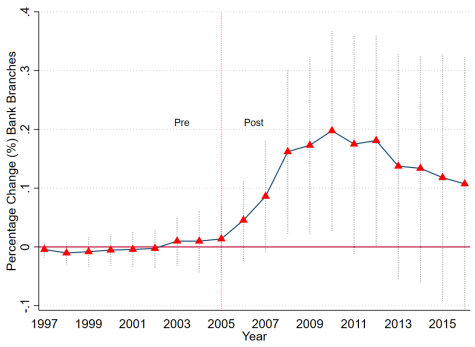


Figure 4A

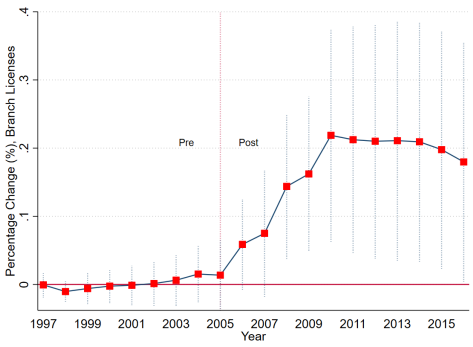


Figure 4B

Figure 4: Figure 4A and 4B depict the dynamic treatment effects on branch licenses and branches. Results from regressions for 2005 and 2010 are described in Columns 3 and 4 of Table 2. Confidence intervals at 5% level of significance.

3.4 Post policy banking expansion

Insert Table 2 about here

We examine if the bank branch expansion policy has a significant impact on bank branches, credits, and deposits in treated districts. From the results reported in Table 2, we find that banks react positively to the incentive to open branches in underbanked districts. For example, we find an increase of 19% in bank branches and 21% in bank licenses five years after the policy in 2010. The average treatment effect on the number of new bank branches opening up in the district are conditional on the number of branches and licenses in the district in 1996. Figure 5 shows the RD graph before policy in 2005 (left) and after policy in 2010 (right) within the optimal bandwidth for bank branches and licenses. Data from 1997 to 2005 show pre-policy smoothness, and from 2005-2016 show post-policy discontinuities. While the pre-policy coefficients in 2005 are not significant, a significant discontinuity exists after 2005 in bank branches and licenses.

Figure 5A shows pre-policy smoothness before 2005 in bank branches and a discontinuous jump thereafter. Figure 5B for branch licenses also shows a similar trend. The policy had an immediate effect on increase in branch licenses once the list of underbanked districts was released in early 2006, and had a lagged effect on branch expansion, occurring mainly after 2007 (banks react to license incentive after a lag). There appears a decrease in bank branch openings and licenses post 2010 at the district level. This is attributable to RBI's shift in objective from bank expansion at the district level to expansion at the village/town level (RBI, 2016; Bhaskar, 2013).

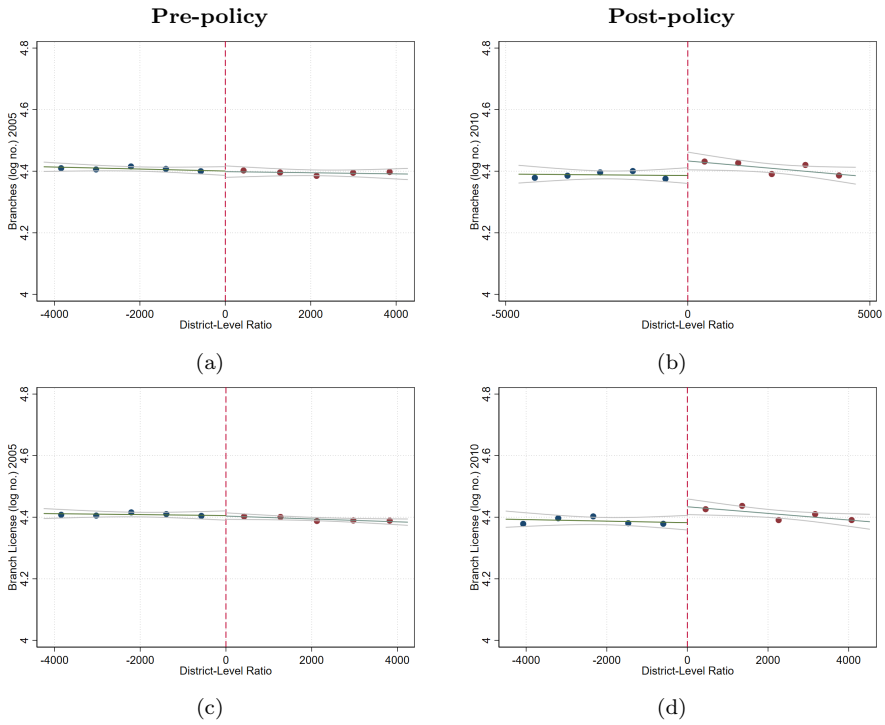
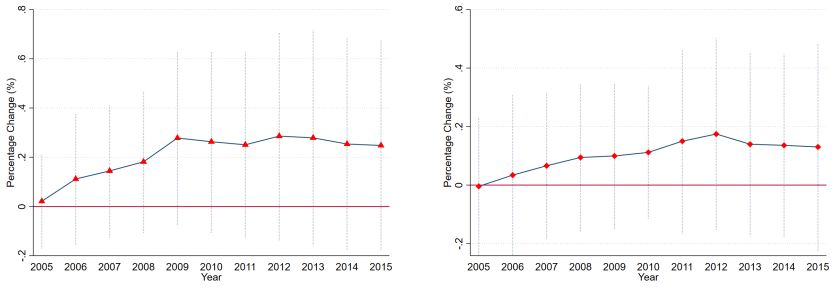


Figure 5: These graphs show binned means to the left and right of the cutoff, within the optimal bandwidth. They also show local linear polynomials to the left and right of the cutoff, with 99 percent confidence intervals. The cutoff is normalized to zero. Panel (a) and (c) shows pre policy smoothness, and Panel (b) and (d) show post policy discontinuity in bank branches and licenses, respectively.

The bank branch expansion policy also affected the credit supply and deposits of commercial banks in treated underbanked districts. In Figure 6A we show the RD estimates of the percentage increase in total credit of all scheduled commercial banks from 2005-2015, with 2005 as the pre-treatment period. Figure 6B shows the corresponding percentage increase in total deposits. Although the estimates are not statistically significant at conventional levels of confidence, the graphs show an expansionary trend in total credit and deposit in the treated districts.

4 Causal impact of bank branch expansion on household financial well-being

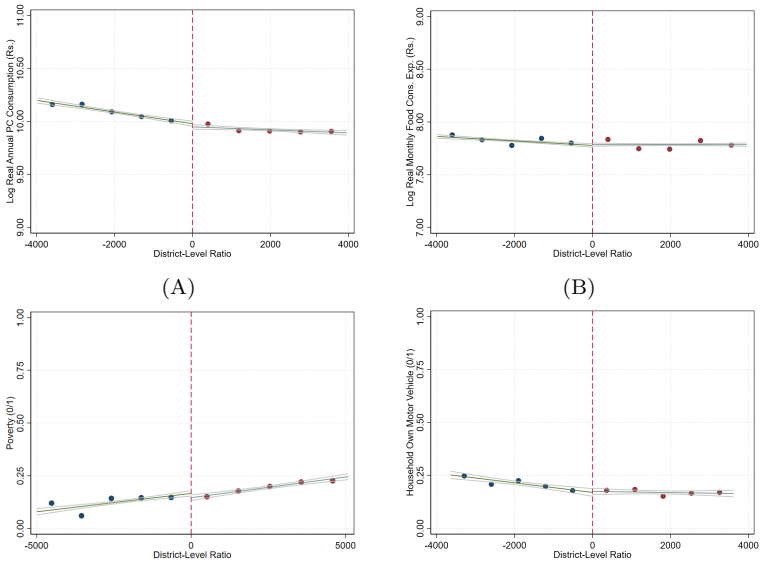
In this section, we examine the causal impact of the bank branch expansion policy on household well-being measures including per capita consumption, household food consumption expenditure, poverty, and ownership of motor vehicles. Figure 7 shows the pre-policy smoothness in per



A: Total Credit B: Total Deposit

Figure 6: Dynamic effects of credit and deposit expansion. The outcome variable is 'log total annual credit and deposit in Rs. at the district level for all scheduled commercial banks' winsorized and trimmed at 10% and 90% percentile. Source: Reserve Bank of India, Basic Statistical Returns Data, 2005-2015.

capita consumption, food consumption, likelihood of being poor and ownership of a motor vehicle, respectively. Figure 8 shows the respective post-policy discontinuities. The post-policy graphs show a clear discontinuity in unconditional measures of household well-being. Post-policy, there is a substantial increase in per capita consumption, food expenditures and ownership of motor vehicles of households, but no reduction in poverty.



(A) (B)

(C) (D)

Figure 7: Smooth pre-policy covariates of household financial well-being. These graphs show binned means to the left and right of the cutoff, within the optimal bandwidth. Local linear polynomials to the left and right of the cutoff, with 95 percent confidence intervals. The cutoff is normalized to zero.

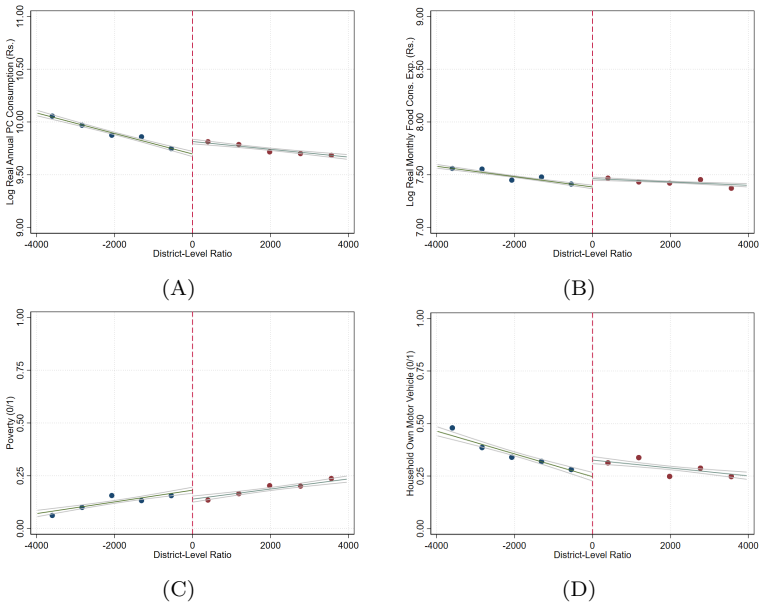


Figure 8:

Post-policy discontinuity of household financial well-being. These graphs show binned means to the left and right of the cutoff, within the optimal bandwidth. They also show local linear polynomials to the left and right of the cutoff, with 95 percent confidence intervals. The cutoff is normalized to zero.

Insert Table 3 about here

Table 3 shows the results of the raw RD estimates. In column 1, we observe that households in treated districts experience a 13% increase in per capita annual consumption expenditures relative to a mean of Rs. 23,858. The corresponding monetary value is Rs. 3,095 (equivalent to $62 at the exchange rate of $1/Rs.50 in 2012). Column 2 shows that real monthly food expenditure of households in treated districts increased by 9% relative to sample mean of Rs. 2,333. In column 3, we find a negative but insignificant effect of the treatment on the likelihood of the household falling into the poor category Column 4 in Table 3 shows that households in treated districts have a 9% increase in the likelihood of owning motor vehicles.Overall, the results show that bank branch expansion significantly increases household financial well-being.

The panel household survey data allows us to capture the pre and post-policy difference in the well-being outcomes. Unique to the empirical literature, with panel data, we can compare fixed effects estimates in a RD framework. Figure 9 shows the impact of bank expansion on the financial well-being of treated versus control households. Leveraging the panel structure of the data, we use the first difference of the outcome variable to measure the growth rate of total consumption and

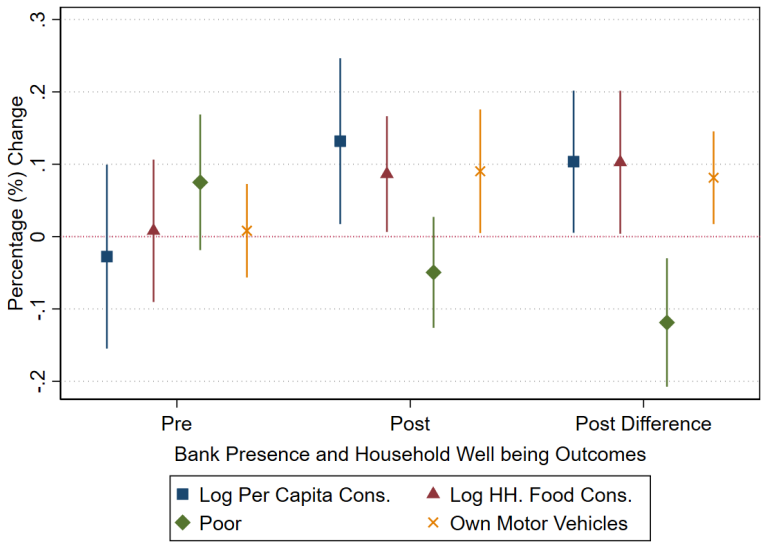


Figure 9: Pre-Policy, Post-Policy and Post-Policy Difference in Treatment Coefficients.

food consumption, and the likelihood of becoming poor and having a motor vehicle conditional on not being poor and not having motor vehicle in the pre-treatment period. We observe that the policy significantly increases the growth rate of consumption and food expenditures, reduces the likelihood of being poor, and increases the likelihood of owning a motor vehicle. These post difference estimates provide additional support for our post policy cross-sectional estimates.

5 Distinguishing household demand or business finance channels

5.1 Does bank branch expansion increase household borrowing?

According to the "household demand" channel, financial inclusion increases household consumption and financial well-being by facilitating household borrowing. In this section, we study whether the bank branch expansion policy led to more borrowing by households.

We study the impact of bank presence on the interest paid by households on loans, the total number of loans, total unproductive loans (consumption, marriage or medical expenses) taken by households, and overall household debt. Specifically, we compare these variables between treated and control districts. The results are reported in Table 4. Bank branch expansion led to a significant decrease of 0.50 percentage points in monthly interest paid on loans, a decrease of 23%

from the control mean value. Households in treatment districts experienced a 33% decline in the number of loans (0.48 fewer loans). Households in treatment districts also saw a significant decline of 8.2 percentage points in the likelihood of taking up an unproductive loan, and an insignificant decrease of Rs. 2,392 ($53) in outstanding household debt.

Insert Table 4 about here

The results reported in Table 4 show that bank branch expansion does not increase borrowing by households. In fact, households pay lower interest on loans and take out fewer consumption loans, and aggregate household debt declines. These results do not support the "household demand" channel that financial inclusion increases household financial well-being through increased borrowing. Figure A5 graphically shows the pre-policy smoothness and post-policy discontinuities for the aggregate sample.

5.2 Effect of Bank Branch Expansion on Enterprise Borrowing and Labor Markets

In this section, we investigate whether bank branch expansion affects households indirectly through the labor market. Specifically, we study the impact of bank branch expansion on household business earnings and income, and on firm-level borrowing and employment. The results are reported in Table 5.

Insert Table 5 about here

We start by examining the impact on household earnings (wage earnings and income) in Table 5, Panel A. For all variables, column 1 shows smooth pre-policy covariates and column 2 shows the post-policy discontinuity. The results show that treated households experience an increase of Rs. 4,093 ($80) in annual earnings (column 2). In Panel B of Table 5, we study the impact of bank presence on the gross business receipts of household enterprises. There is a significant increase of Rs. 65,932 ($1320) in gross business receipts in treated versus control districts. These results suggest that the increase in household consumption expenditures are funded by an increase in household income and revenues from household-owned small businesses.

Using census data on enterprises, in Panel C of Table 5, we study the impact of bank branch expansion on enterprise loans for the universe of enterprises in the Economic Census. *Enterprise*

Institutional Loan is an indicator variable equal to one if loans from financial institutions are a major source of borrowing for the firm. The likelihood of borrowing from financial institutions is higher in the post-policy period compared to the pre-policy period for treated firms, although the difference is not statistically significant, results in Panel D for enterprises seeking external source of funding shows a significant increase of 6.8 percentage points in the post-policy period for enterprises in treated districts. We conduct this analysis for urban and rural sub-samples in Table 6 and find that treated urban enterprises are significantly more likely to borrow from financial institutions in the post-policy period. In Panel D of Table 5 we study the impact of bank presence on enterprise employment at the district level in treated districts. Post-policy, we find that employment increases in treated enterprises, although the change is not significant. In Panel E, we show that firms who seek external finance in treated districts employ 0.63 more workers. In addition, in the rural urban heterogeneity analysis, we show that employment increases significantly in treated urban firms.

6 Bank Lending Incentives

Our results show that bank branch expansion increases household consumption expenditures and financial well-being. However, this increase in well-being is not financed by an increase in household debt and borrowing. Instead, we find that households indirectly benefit from financial inclusion with higher employment and earnings. These results suggest that banks prefer to lend to firms rather than households. In this section we provide evidence supporting the profit motive of banks.

6.1 Rural-Urban Heterogeneity in Lending

We first examine whether the difference in credit expansion between rural and urban areas. Urban districts are likely to have more industries whereas rural districts are more agricultural. If banks prefer to lend to firms then we would expect banks to expand credit more in urban areas. The results reported in Table 6 show that banks increase credit more in urban areas, but there is no significant difference in credit in treated rural areas following the policy change.

Insert Table 6 about here

In Table 6, we study the likelihood that loans from a financial institution is the main source of

borrowing for the firm. Comparing the pre-policy versus post-policy coefficients in rural areas in columns (1) and (3) in panel A of Table 6, we find that the post-policy coefficient in treated rural areas is significant. However, the magnitude of this coefficient is the same pre and post-policy. In comparison, the post-policy coefficient for urban areas in panel A of Table 6, column (4) is not only significant, but 14 times higher in magnitude than the pre-policy coefficient in column (2). In panel B, we restrict the sample to enterprise's likelihood of taking finance from financial institution conditional on seeking some sort of external finance (banks, government, money lender, others). Similar to results in Panel A, we find that the likelihood of a loan from financial institution is significantly higher in urban areas, 8.6 pp, compared to 5.7 pp in rural areas. This result shows that following the policy change, banks lend more to firms in treated urban areas than in rural areas.

Insert Table 7 about here

Results in Table 7 show the impact of bank presence on access to institutional loans, with a focus on enterprise size and economic specialization across rural and urban settings. In panel (A), a positive influence of bank presence is evident across all organized enterprises, resulting in a substantial 50% increase in loan access compared to the control mean. Remarkably, this effect remains consistent whether the enterprises are situated in rural or urban areas, underlining the significant role of banks in facilitating loan access for larger firms. In contrast, the unorganized sector, primarily consisting of smaller enterprises, experiences a less pronounced impact of bank presence in rural regions, with a 58% increase in loan access over the control mean observed in urban settings. These findings underscore the banking sector's inclination to provide more substantial loans to larger firms, which are predominantly urban-based, thus contributing to a more pronounced impact in urban areas. Panel (B) reveals insignificant effects on loan access in the primary and secondary sectors in rural areas, while urban regions witness significant increases, with an 80% rise in the primary sector and an 86% increase in the secondary sector. Notably, bank expansion substantially enhances access to institutional loans in the services sector for both rural and urban areas, with a 40% increase in rural regions and a 50% increase in urban ones. These findings provide valuable insights into the nuanced impact of bank presence on loan access across diverse enterprise types and sectors.

Insert Table 8 about here

From the IHDS household sample, in Table 8, we study the rural urban differences in interest paid by households on loans, number of loans, unproductive loans and household debt. Supporting our hypothesis of the stronger labor market and business finance channels, and reductions in borrowing in urban areas, we find that branch expansion led to a significant decrease of 0.97 percentage points in interest on loans in urban areas. Similarly, in urban areas, the number of loans reduces significantly by 1.03 loans, the number of unproductive loans also reduces by 0.14 percentage points and outstanding household debt reduced significantly by Rs. 29,563 ($739). No such significant effects exists in rural areas.

Insert Table 9 about here

Since banks lend more to firms in urban areas, we also study whether the labor market impact is greater in urban compared to rural areas. The results reported in Table 9 show that firms in treated urban areas employ significantly more workers, urban households have higher employment earnings, and urban businesses earn higher revenues following the policy change. In contrast, there is no change in the employment, earnings, and revenues in treated rural areas after the policy change. Our results of disproportionate business, employment and earnings growth with bank presence in urban areas compared to rural areas corroborates with the study by Fan et al. (2023) who find pronounced "urban bias" in the provision of financial services and higher productivity growth in urban locations, where the average household is richer.

The results show that banks expand credit more in urban areas, and that firms in urban areas benefit more from bank branch expansion. Therefore, we study whether the impact of bank branch expansion on financial well-being varies between rural and urban households. We describe these results in Table 10.

In Table 10 we describe the results from the RD estimates for household well-being in urban and rural areas. Panel (A) of Table 10 shows that in rural areas, the policy had positive but insignificant effects on all measures of well-being. In contrast, in Panel (B) we find that in urban areas, the policy had significant positive effects on the measures of well-being. For example, the treatment had no impact on consumption expenditures of rural households, but increased household per capita consumption expenditures by 22.1 percentage points in urban areas. Household monthly food consumption also increases by 17% in urban areas. Household poverty declines significantly by 9.9 percentage points in urban areas, but there is no significant impact on rural household poverty. Motor vehicle ownership also increased by 18.8 percentage points for urban

but not rural households.

6.2 Banks and Household Investments

Our results suggest that profitability concerns may lead banks to lend to firms, especially in urban areas, but not to households. In this section, we examine the impact of bank branch expansion on household investments decisions in banking products including savings accounts, life insurance policies, long-term fixed deposit accounts, pension or provident fund accounts, and securities (mutual funds, shares, stocks) or a post office account. Financial inclusion could increase household access to these financial instruments, providing households with additional funds for consumption expenditures. Moreover, the profit motive could lead banks to market financial products to households.

In Figure 10 we show the post-policy discontinuity of the household investment measures in urban versus rural areas. In Panels A-D we observe sharp post-policy discontinuities in the savings accounts, life insurance policies, long-term fixed deposit/pension accounts, and securities/post-office accounts of households in treated urban districts. We also observe a post-policy discontinuity in the savings account of households in treated rural districts (Panel E). However, none of the other investment measures of rural households show a discontinuity.

Insert Table 11 about here

Table 11 shows the impact of bank branch expansion policy on household investments. Panel A shows results for the full sample, Panel B for rural districts, and Panel C for urban districts. From the full sample, in column 1 of Table 11 A we find that the policy led to a significant increase of 21.3 percentage points in average household bank savings in treated districts. In column 2, the likelihood of buying a life insurance product is higher although not statistically significant at conventional levels. Moreover, in column (3) there is a significant increase of 9.8 percentage points in the likelihood of opening up a fixed deposit, pension or provident fund account by households in treated districts. Lastly in column 4, we observe a positive but insignificant increase in the likelihood of investments in securities or post office account (4.4 percentage points). Overall, we find that bank branch expansion leads to a significant increase in household investments in interest bearing instruments.

In Panels B and C of Table 11 we study the effects of the policy on households in urban and rural areas, respectively. Urban households may invest more in financial products because

they have more disposable income because of the positive spillover from the labor market effects of bank branch inclusion. Banks may also market financial products more heavily in urban areas where there are more rich households. The results in Panel B show that all household investment measures increase significantly in treated urban districts following the policy change. From Panel C we observe that household savings increases significant in treated rural districts, but the remaining investment variables do not change significantly.

6.3 Heterogeneity in household financial well-being

We show that profit considerations lead banks to expand credit in treated urban areas more than rural areas, and to lend more to urban enterprises compared to rural enterprises, which in turn leads urban firms to employ more workers and earn higher business revenues, increasing urban household earnings from employment. Below we examine if the heterogeneity in bank lending behavior also generates heterogeneity in household financial well-being across urban versus rural areas.[10]

Insert Table 10 about here

In Table 10 we study the impact of bank branch expansion on household financial well-being in urban and rural districts. From the results reported in Panel A of Table 10 we observe that households in treated urban districts experience significant improvement in well-being across all the measures.

Figure 11 shows the post-policy estimates of the treatment in rural and urban areas. Figure 11 (a), (b), (c), and (d) show no clear discontinuities in outcomes in rural areas with the treatment, while figure 11 (e), (f), (g), and (h) show clear discontinuities in urban areas. Almost all of the positive effects on well-being outcomes are driven by urban areas.

6.4 Low income and socially disadvantaged households

We analyze the impact of the branch expansion policy based on household income groups, social group, and education levels. Specifically we construct income quintiles; categorize households

[10]Table A11 and A12 shows the pre-policy insignificance of the treatment effect on RD estimates for rural and urban areas. Figure A4 shows the pre-policy smoothness in rural areas and Figure A4 shows the corresponding pre-policy smoothness in urban areas for all the household well-being measures. Pre-policy smoothness of heterogeneous treatment effects lends credibility to our post-policy analysis.

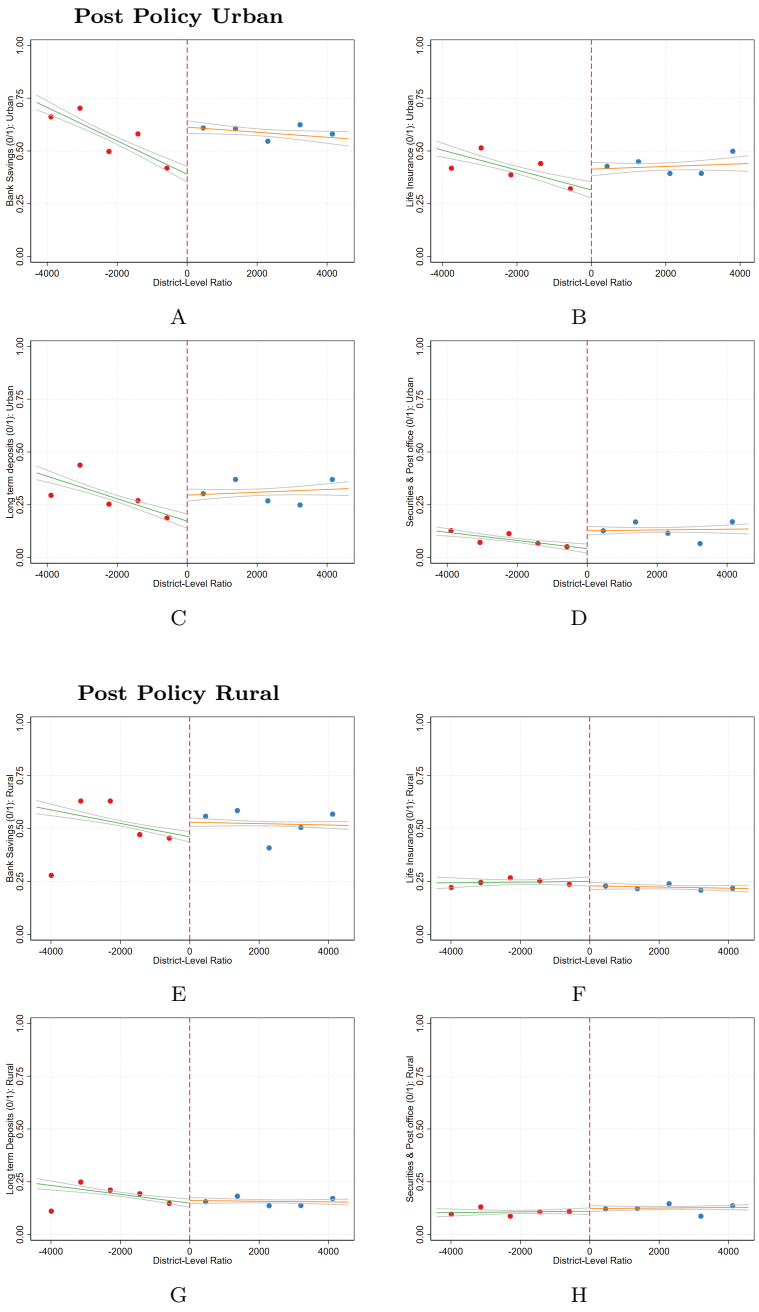


Figure 10: Post- policy discontinuity in bank presence and household investments in rural and urban areas.

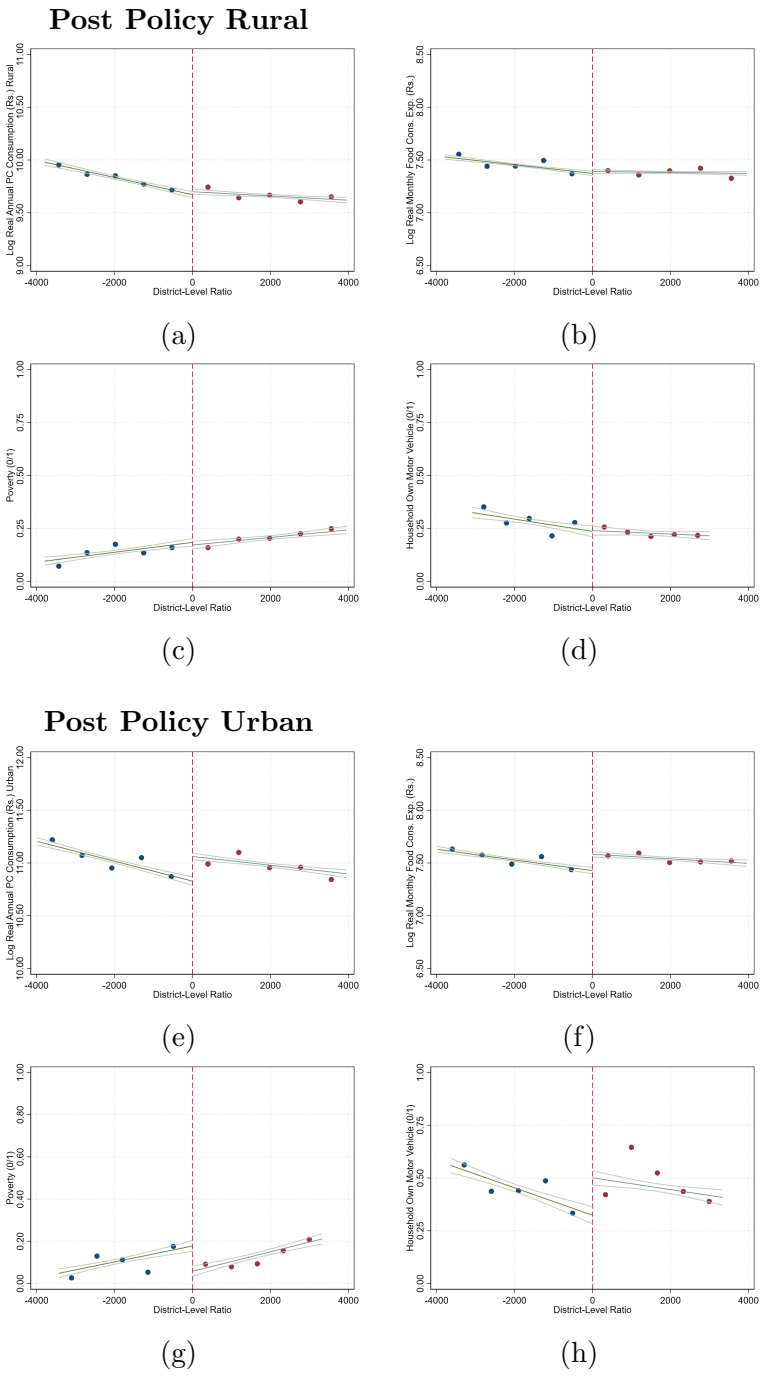
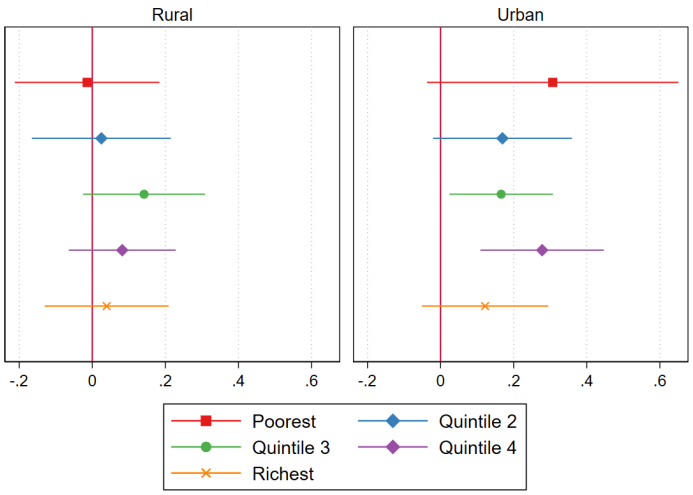


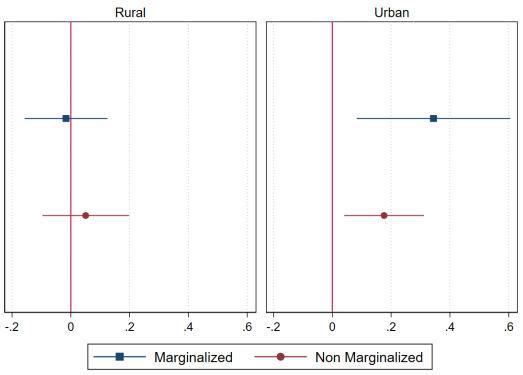
Figure 11: Post policy discontinuity in household well-being in rural and urban areas. Fig (a), (b), (c) and (d) correspond to rural areas, and figures (e), (f), (g) and (h) correspond to urban areas. Source: Authors' computations using RBI Master Office File and IHDS Data (2012).

belonging to Scheduled Caste, Scheduled Tribe and Muslim households as marginalized; and lastly, denote Literate households as those with a literate adult as 1, and 0 otherwise.

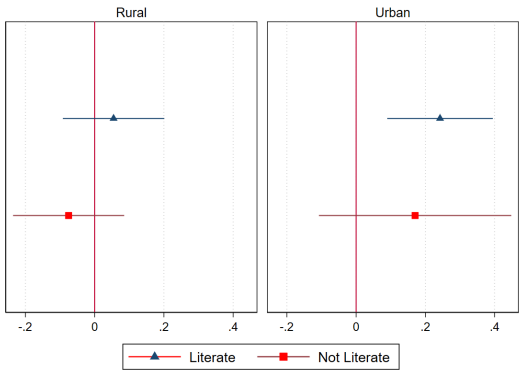
Figure 12 shows that for all income quintiles, the impact of the policy is larger in urban areas compared to rural areas. Interestingly, poorer households benefited more in urban areas owing to the larger labor market effects compared to poorer households in rural areas. We also find that households belonging to marginalized social groups, and literate households benefited more in urban areas as compared to their rural counterparts (see Figure 12).



A: Treatment Effect by Income Quintiles



B: Treatment Effect by Caste Marginalization



C: Treatment Effects by Adult Literacy

Figure 12: Panel A shows local Average Treatment Effects of bank branch expansion on log real annual per capita consumption expenditure in rural and urban areas by income quintiles. X-axis measures percentage (%) change. Panel B Depicts the dynamic effects of bank branch expansion on log real annual per capita consumption expenditure in rural and urban areas by caste based marginalization and Panel C by adult literacy. Source: Authors' computations using RBI Master Office File and IHDS 2012.

7 Robustness and Placebo Tests

7.1 Living Standards Index

We check the robustness of the household well-being measures by using an alternative measure of well-being - the household living standard index in the NFHS 2015 data. The results are reported in the Appendix Table A13. They show that the policy had a long-term effect on living standards in treatment districts. For example, the policy led to a 9.4% increase in living standards for the aggregate sample, compared to the control mean of 1.282 (column 1). An important placebo test for robustness that emerges from the policy design of incentivizing commercial banks is that there should not be any significant positive effect on the number of regional rural banks in the treatment districts which were excluded from the policy agenda. Table A19 shows that there was an insignificant effect of the policy on the number of regional rural banks in the treatment districts.

7.2 Robustness of RD specification

We estimate quadratic approximations of the RD coefficients, which is the highest polynomial approximation that researchers should apply (Gelman and Imbens, 2019). The results are similar to those obtained in the main analysis (linear estimations) and are reported in the Appendix Tables A14–A18. We also aggregate the financial well-being outcomes at the community (village/primary sampling unity) and check for robustness at community level. Results in Table A20 shows that bank presence has a significant positive impact on community's financial well-being.

We also conduct the classical regression discontinuity robustness test by examining smoothness around placebo cut-offs. We analyze two placebo cut-offs on each side of the true cut-off (normalized to zero), i.e, -3000, -1000, 1000 and 3000. The choice of placebo is based on having enough observations on each side of the cut-off. Results are reported in the Appendix, Table A21 and A22. We find no evidence of significance in p-values of the RD estimates in any of the placebo cut-offs considered.

We test whether the coefficients remain statistically significant when using different levels of the bandwidth. In this approach, we examine bandwidth multipliers in the range of 0.5 to 1.5. For instance, if the MSE-optimal bandwidth is 4,000, we examine bandwidth in the range from 2,000 to 6,000 (i.e, 2,000, 3,000, 4,000, 5,000 and 6,000). The results are reported in the Appendix Table A23 and A24. For 0.50x bandwidth multiplier, we find that motor vehicle ownership, earnings

from employment, and long-term deposits, which are significant at RD robust bandwidth, are no longer significant for the aggregate sample. For 0.75x bandwidth multiplier, all results which were significant with the RD robust bandwidth are also significant. For 1.25x bandwidth multiplier, we lose significance for the living standard index, and for 1.5x bandwidth multiplier, we lose significance for living standard index, interest on loan and long-term deposits. We anticipate the estimates with bandwidth multipliers to be stronger for urban areas compared to the aggregate results.

Lastly, we also test the robustness of the bandwidth selectors. For the main results we use the default MSE-optimal bandwidth selector by Calonico et al. (2019, 2014) that chooses identical bandwidths to the left and right of the cut-off. We also use the two sided MSE-optimal selector which separately chooses bandwidths to the left and right of the cut-off. Additionally, we use two other bandwidth selectors, first the selector suggested by Calonico et al. (2020) that optimizes the coverage error rate (CER), which also chooses identical bandwidths to the left and right of the cut-off, and the two-sided CER-optimal bandwidth selector, which separately chooses robust bandwidths to the left and right of the cut-off. The results are reported in Tables A25 and A26 with different bandwidth selectors.

MSE-optimal bandwidth selector shows our main results at the aggregate level. With the two sided MSE-optimal results, we lose significance in living standard index and long term deposits while we gain significance for aggregate employment at the district level. With the CER optimal method, we lose significance for ownership of motor vehicles, and when using two-sided CER optimal method, we gain significance in result for poverty reduction, but lose significance for living standard index, interest on loan and bank savings.

Overall, the robustness test for quadratic estimations, placebo cut-off, bandwidth multiplier and bandwidth selector methods show that our aggregate results are robust to standard RD robustness tests.

8 Conclusion

We use a nation-wide natural experiment to increase bank branch presence in underbanked areas in India to disentangle the impact of financial inclusion on household well-being. Using a regression discontinuity design and rich panel data on a wide range of household financial well-being measures, we show that bank branch expansion has a significant positive impact on household

consumption expenditures, financial investments, and other measures of financial well-being. Contrary to the "household demand" view of how financial inclusion affects household well-being, we find that household debt and borrowing do not increase. Instead, households appear to benefit through the labor market with higher employment earnings and increase in business revenues of household-owned small businesses.

Using census data on enterprises, we show that bank branch expansion leads enterprises to borrow more and hire more workers, especially in urban areas. Consistent with the profit motive of banks, our results suggest that banks prefer to lend to firms rather than households. Our results suggest that financial inclusion has important spillover effects where households benefit indirectly from the labor market effects of credit expansion.

9 Tables

Table 1: Smooth Pre-policy Covariates

	All observations		Within Bandwidth		RDD
	Treated	Not Treated	Treated	Not Treated	Coefficient
	(1)	(2)	(3)	(4)	(5)
Banks					
Bank Branches 2005 (log no.)	3.54	4.13	3.77	4.12	0.02
	(1.05)	(1.19)	(0.98)	(1.17)	(0.03)
Branch Licenses 2005 (log no.)	3.56	4.14	3.81	4.13	0.01
	(1.01)	(1.24)	(0.97)	(1.17)	(0.03)
Well-being outcomes					
Real Ann. Per Capita Cons. (Rs.)	22,426	28,615	23,385	27,307	-104
	(13,413)	(15,303)	(13,800)	(14,543)	(1759)
Real Monthly Food Exp. (Rs.)	2,555	2,721	2,551	2,655	11
	(874)	(862)	(875)	(874)	(142)
Poor (0/1)	0.29	0.13	0.28	0.16	0.07
	(0.45)	(0.34)	(0.45)	(0.36)	(0.05)
Ownership Vehicle (0/1)	0.13	0.23	0.17	0.21	0.00
	(0.34)	(0.42)	(0.38)	(0.40)	(0.04)
Mechanisms					
Labor Market					
Total Employment Enterprises (District)	74,953	110,013	94,617	122,288	-3,348
	(97,003)	(72,015)	(83,140)	(94,115)	(29,801)
Real Ann. Emp. Earnings (Rs.)	23,211	28,225	24,407	26,831	3,485
	(21,259)	(25,342)	(22,413)	(23,759)	(2,823)
Real Ann. Business Receipts (Rs.)	109,934	139,083	117,314	127,758	38,098
	(105,728)	(112792)	(107,391)	(110,699)	(36,053)
Credit Market					
Household Loan from Bank (0/1)	0.11	0.12	0.12	0.12	-0.00
	(0.31)	(0.33)	(0.33)	(0.32)	(0.03)
Institutional Loan (0/1)	0.03	0.04	0.03	0.03	0.00
	(0.16)	(0.19)	(0.18)	(0.18)	(0.01)
Interest on Loan (% Monthly)	2.21	1.76	2.01	1.76	-0.31
	(2.10)	(1.67)	(1.71)	(1.70)	(0.35)
Number of Loans (count)	1.65	0.93	1.73	1.18	0.183
	(2.96)	(2.03)	(2.47)	(3.14)	(0.823)
Unproductive Loans (0/1)	0.09	0.06	0.09	0.06	0.028
	(0.28)	(0.23)	(0.28)	(0.23)	(0.029)
Life Insurance (Pvt./Govt.) (0/1)	0.18	0.24	0.19	0.21	-0.00
	(0.38)	(0.43)	(0.39)	(0.40)	(0.03)
Outstanding HH Debt (Rs.)	30,810	39,904	35,368	42,232	12,076
	(67,050)	(86,116)	(75,008)	(88,442)	(10,187)

Notes: Standard errors in parentheses (clustered at the district level). Data from the RBI Master Office File, IHDS I (2005/2006) and Economic Census (2005), district and household level.

Table 2: RBI Policy: Branch Licenses and Bank Openings

	Pre-Policy (2004)		Post-Policy (2010)	
	Branches (Log no.)	Licenses (Log no.)	Branches (Log no.)	Licenses (Log no.)
	(1)	(2)	(3)	(4)
Treated	0.013	0.015	0.192**	0.219***
	(0.029)	(0.031)	(0.087)	(0.079)
Control mean	4.13	4.05	4.39	4.38
Two stage q values	0.387	0.551	0.019	0.003
First Stage	0.77	0.78	0.78	0.78
Bandwidth	4,664	4,420	4,586	4,369
Efficient obs.	270	269	289	285
Baseline Control	Y	Y	Y	Y
Observations	576	576	571	576

Notes: in Table 2 above and subsequent tables, the first row 'Treatment' reports the main coefficient of interest, β_1 for treatment districts.

Table 3: Banks and Aggregate Household Well-being

	(1)	(2)	(3)	(4)
	Real annual PC cons. exp. (Rs.)	Real monthly HH food cons exp. (Rs.)	Poverty (0/1)	Ownership motor vehicle (0/1)
Treatment	3,095**	169.23*	-0.040	0.090*
	(1,468)	(98)	(0.040)	(0.052)
Control mean	23,858	1,947	0.12	0.36
Two stage q value	0.044	0.043	0.187	0.063
First Stage	0.79	0.81	0.77	0.75
Bandwidth	4,299	4,725	4,150	3,557
Efficient Observations	19,030	17,113	20,099	18,463
Observations	31,789	28,628	39,994	39,998

Notes: $*p < 0.1$, $**p < 0.05$,$***p < 0.01$. Standard errors in parentheses clustered at the district level. Data IHDS II (2011/2012), household level (full sample). Variables measured in currency (Rs.) are deflated using the panel survey deflator, and trimmed at the 10^{th} and 90^{th} percentile.

Table 4: Bank Branch Expansion and Interest Rates, Consumption Loans, and Aggregate Household Debt

	(1)	(2)	(3)	(4)
	Monthly Interest Loan (%)	Number of Loans (No.)	Unproductive Loan (0/1)	Outstanding HH Debt (Rs.)
Treatment	-0.503*	-0.488	-0.082*	-2,393
	(0.287)	(0.632)	(0.0493)	(12,989)
Control Mean	2.18	1.42	0.21	63,888
Two stage q values	0.061	0.418	0.077	0.938
First Stage	0.74	0.80	0.80	0.77
Bandwidth	4,000	5,447	5,494	4,517
Efficient observations	6,756	24,566	24,606	20,151
Observations	12,881	39,942	40,018	36,678

Notes: $*p < 0.1$, $**p < 0.05$,$***p < 0.01$. Standard errors in parentheses clustered at the district level. Outstanding household debt in Rs. is trimmed at 1st and 99th percentile. Data IHDS II (2011/2012), household level (full sample).

Table 5: Banks and Labor Market Outcomes

	(1)	(2)
	Pre Policy	Post Policy
A *Real Annual Household Earnings*		
Treatment	3,485	4,093*
	(2,823)	(3,016)
Control Mean	35,151	28,134
Two stage q values	0.311	0.076
First stage	0.78	0.75
Bandwidth	5,297	3,817
Efficient observations	13,144	13,484
Observations	21,219	28,147
B *Total Revenue Business (Rs.)*		
Treatment	38,098	65,932***
	(36,053)	(22,059)
Control mean	139,086	106,822
Two stage q value	0.316	0.001
Bandwidth	3,865	3,046
Efficient observations	3,738	3,066
Observations	7,913	7,687
C *Enterprise Institutional Loans*		
Treatment	0.007	0.009
	(0.015)	(0.007)
Control Mean	0.040	0.025
Two stage q values	0.711	0.165
First stage	0.85	0.84
Bandwidth	5,081	3,306
Efficient observations	25,373,915	24,588,905
Observations	40,025,273	55,004,630
D *Enterprise Institutional Loans: EF*		
Treatment	0.024	0.068**
	(0.081)	(0.034)
Control Mean	0.374	0.116
Two stage q values	0.545	0.045
First stage	0.89	0.86
Bandwidth	6,522	4,931
Efficient observations	3,087,573	6,748,097
Observations	4,047,799	11,065,880
D *Total Employment Enterprises (District)*		
Treatment	-3,348	21,448
	(29,861)	(16,782)
Control Mean	110,013	87,321
Two stage q values	0.919	0.158
First stage	0.77	0.76
Bandwidth	4,335	3,770
Efficient observations	276	238
Observations	581	581
E *Total Employment Enterprises: EF*		
Treatment	-0.387	0.631*
	(0.559)	(0.377)
Control Mean	5.04	2.54
Two stage q values	0.712	0.04
First stage	0.89	0.86
Bandwidth	5,084	4,385
Effective Obs.	2,690,261	6,165,857
Observations	4,047,799	11,065,880

Notes: $*p < 0.1$, $**p < 0.05$,$***p < 0.01$. Standard errors in parentheses clustered at the district level. Outcome variable: Institutional Loan is equal to 1 if the enterprise borrows from financial institutions as a major source of finance, and 0 otherwise. 'Total annual employment of all enterprises' (farm and non-farm) is winsorized at 5^{th} and 95^{th} percentile, Outcomes for earnings and business revenue are winsorized at 10^{th} and 90^{th} percentile. All other characteristics of the model are same as in Table 3. The baseline control variable used in panel (B) is the number of days worked in a year. In panel E, the sample is restricted to firms seeking external finance.

Table 6: Entrepreneurial Access to Institutional Finance in Urban and Rural Districts

	(1)	(2)	(3)	(4)
	Pre Policy		Post Policy	
	Rural	Urban	Rural	Urban
A *Enterprise Institutional Loans*				
Treatment	0.010	0.001	0.010*	0.014**
	(0.017)	(0.011)	(0.006)	(0.006)
Control Mean	0.041	0.039	0.025	0.025
First stage	0.85	0.87	0.85	0.83
Two stage q values	0.587	0.922	0.114	0.029
Bandwidth	4,705	8,413	4,870	4,938
Efficient obs.	15,325,078	12,490,413	20,660,499	12,626,203
Observations	25,143,369	14,881,904	33,461,924	21,542,706
B *Enterprise Institutional Loans Condtional on Seeking External Finance*				
Treatment	0.046	-0.018	0.057*	0.086*
	(0.092)	(0.086)	(0.032)	(0.046)
Control Mean	0.352	0.440	0.121	0.159
First Stage	0.89	0.89	0.83	0.83
Two stage q values	0.688	0.812	0.076	0.061
Bandwidth	5,956	5,263	5,429	4,372
Efficient Observations	2,036,150	779,444	4,943,455	1,938,643
Observations	2,844,933	1,202,866	7,527,433	3,538,447

Notes: Baseline control: No, $*p < 0.1$, $**p < 0.05$, $***p < 0.01$. Standard errors in parentheses clustered at the treatment (district) level. Data is from the Economic Census, which covers the universe of enterprises in India in 2005 and 2013. *Enterprise Institutional Loan* is equal to 1 if the enterprise has borrowings from financial institutions as a major source of finance, and 0 otherwise. Panel (A) comprises of the universe of enterprises covered by the Economic Census of India, while Panel (B) comprises of only those enterprises which rely on external sources of finance.

Table 7: Bank Presence and Institutional Loan: Organized and Unorganized Enterprises, and by Sector, Economic Census, 2013

	(1)	(2)	(3)	(4)	(5)	(6)
	Organized			Unorganized		
	All	Rural	Urban	All	Rural	Urban
A: Enterprise Institutional Loans						
Treatment	0.0414**	0.0540**	0.0400**	0.00878	0.010	0.014**
	(0.018)	(0.025)	(0.019)	(0.007)	(0.006)	(0.006)
Control Mean	0.08	0.09	0.09	0.024	0.024	0.024
First Stage	0.88	0.89	0.87	0.84	0.85	0.83
Bandwidth	4,839	4,401	4,156	3,382	4,906	5,004
Observations	722,363	329,975	392,388	54,282,267	33,131,949	21,150,318
	Rural			Urban		
	Primary	Secondary	Services	Primary	Secondary	Services
B: Enterprise Institutional Loans						
Treatment	0.0133	0.006	0.015*	0.008*	0.019**	0.013*
	(0.008)	(0.010)	(0.008)	(0.004)	(0.007)	(0.007)
First Stage	0.85	0.65	0.86	0.89	0.79	0.84
Control Mean	0.012	0.027	0.037	0.010	0.022	0.027
Bandwidth	3,059	1,700	5,130	5,121	4,536	5,264
Efficient Obs.	3,058,026	1,190,442	9,434,932	661,780	2,852,271	9,549,695
Observations	11,623,782	5,821,063	16,017,079	1,022,318	4,998,381	15,522,007

Notes: RD robust p-values. $*p < 0.1$, $**p < 0.05$,$***p < 0.01$. Standard errors in parentheses clustered at the district level. Unorganized enterprise is a dummy variable that takes value 1 if the enterprise has less than 10 employees, and vice-versa for the organized enterprise. Activity type: primary– activities related to agriculture other than crop production and plantation, livestock, forestry and logging, fishing and and culture, and mining and quarrying. Secondary–manufacturing (including repair and installation of machinery and equipment), electricity, gas, steam and air conditioning supply, water supply, sewerage, waste management and remediation activities, and construction. Services–trade (wholesale and retail), transportation, storage, postal and courier, accommodation and food service, information and communication, finance and insurance, real estate, advertising, marketing, travel, trade, education, health services, arts, entertainment, and sports among others. These activities combined constituted 86% of the national GDP in 2012.

Table 8: Bank Credit and Deposit Expansion in Urban versus Rural Areas

	(1)	(2)	(3)	(4)
	Monthly Interest Loan (%)	Number of Loans (No.)	Unproductive Loan (0/1)	Outstanding HH Debt (Rs.)
(A) *Urban*				
Treatment	-0.975**	-1.039**	-0.149**	-29,563*
	(0.426)	(0.528)	(0.0633)	(16,002)
Control mean	2.30	1.35	0.19	44,768
Two stage q values	0.021	0.048	0.020	0.092
First stage	0.84	0.79	0.80	0.76
Bandwidth	3,743	4,866	5,647	4,178
Efficient observations	1,587	6,932	7,686	5,792
Observations	3,099	11,791	11,813	10,692
(B) *Rural*				
Treatment	-0.342	-0.115	-0.047	13,221
	(0.323)	(0.834)	(0.0594)	(15,241)
Control Mean	2.12	1.61	0.22	44,500
Two stage q values	0.187	0.911	0.337	0.301
First Stage	0.70	0.79	0.78	0.75
Bandwidth	3,890	4,984	4,753	4,143
Efficient observations	4,949	16,008	15,907	13,013
Observations	9,782	28,151	28,205	25,986

Notes: $*p < 0.1$, $**p < 0.05$,$***p < 0.01$. Standard errors in parentheses clustered at the district level. Outstanding household debt in Rs. is trimmed at 1st and 99th percentile. All other characteristics are similar to Table 3.

Table 9: Banks and Labor Market Outcomes in Urban versus Rural Areas

	(1)	(2)	(3)	(4)
	Pre Policy		Post Policy	
	Rural	Urban	Rural	Urban
(A) *Total Employment Enterprises (District)*				
Treatment	-10,151	50.91	9,537	33,682**
	(37,384)	(31,263)	(22,528)	(15,835)
Control Mean	117,640	102,374	84,577	88,877
Two stage q values	0.677	0.862	0.931	0.018
First stage	0.76	0.76	0.76	0.78
Bandwidth	4,259	4,393	4,548	3,829
Efficient observations	279	273	286	243
Observations	575	566	576	578
(B) *Total Employment Enterprises (EF)*				
Treatment	-0.357	-0.293	0.278	0.927*
	(0.405)	(1.227)	(0.276)	(0.557)
Control Mean	3.80	7.23	1.94	3.40
Two stage q values	0.683	0.822	0.578	0.077
First stage	0.89	0.89	0.87	0.83
Bandwidth	5,330	3,878	5,112	4,517
Efficient observations	1,945,599	633,855	4,801,910	1,957,911
Observations	2,844,933	1,202,866	7,527,433	3,538,447
(C) *Real Annual HH. Employment Earnings*				
Treatment	3,314	2,650	2,813	8,135**
	(3,358)	(2,517)	(3,444)	(3,931)
Control Mean	29,995	46,905	23,941	37,510
Two stage q values	0.406	0.363	0.488	0.023
First stage	0.72	0.80	0.70	0.80
Bandwidth	3,893	5,148	3,390	4,267
Efficient observations	7,844	3,298	9,181	3,868
Observations	16,191	5,010	21,295	6,852
(D) *Total Business Revenue*				
Treatment	28,978	6,702	44,004**	52,802**
	(32,082)	(31,409)	(21,700)	(20,609)
Control mean	107,075	166,950	80,188	133,050
Two stage q value	0.427	0.878	0.041	0.003
Bandwidth	4,831	4,702	3,542	3,649
Efficient observations	2,440	1,967	1,903	1,571
Observations	4,466	3,447	4,191	3,496

Notes: $*p < 0.1$, $**p < 0.05$,$***p < 0.01$. Standard errors in parentheses clustered at the district level. Outcome variable: 'Total annual employment of all enterprises' (farm and non-farm) is winsorized at 5^{th} and 95^{th} percentile, Outcomes for earnings and business revenue are winsorized at 10^{th} and 90^{th} percentile. All other characteristics of the model are same as in Table 3. The baseline control variable used in panel (B) is the number of days worked in a year.

Table 10: Household well-being in urban and rural areas

	(1)	(2)	(3)	(4)
Variables	Real annual PC cons. exp. (Rs.)	Real monthly HH food cons. exp. (Rs.)	Poverty (0/1)	Ownership pf motor vehicle (0/1)
A: Urban				
Treatment	4,755**	360***	-0.099**	0.188**
	(2,058)	(123)	(0.043)	(0.080)
Control mean	26,741	2,086	0.14	0.38
Two stage q values	0.004	0.008	0.020	0.041
First stage	0.76	0.76	0.75	0.76
Bandwidth	4,748	5,077	3,426	3,628
Efficient Observations	5,965	5,571	5,647	5,768
Observations	10,060	9,277	11,804	11,807
B: Rural				
Treatment	1,347	9.40	-0.011	0.007
	(1,714)	(108)	(0.054)	(0.054)
Control mean	22,126	1,860	0.17	0.30
Two stage q values	0.414	0.477	0.738	0.954
First stage	0.79	0.79	0.77	0.71
Bandwidth	4,111	4,353	4,426	3,002
Efficient Observations	12,314	11,441	15,073	11,338
Observations	21,729	19,351	28,190	28,191

Notes: $*p < 0.1$, $**p < 0.05$,$***p < 0.01$. Standard errors in parentheses clustered at the district level. Data IHDS II (2011/2012), household level. Variables measured in currency Rs. are deflated using the survey deflator, and trimmed at the 10^{th} and 90^{th} percentile.

Table 11: Banks and Household Investments

	(1)	(2)	(3)	(4)
	Bank Savings (0/1)	Life Insurance (0/1)	Long Term Deposits (0/1)	Securities or Post Off. Acc (0/1)
A *Full Sample*				
Treatment	0.213**	0.044	0.098*	0.044
	(0.085)	(0.041)	(0.053)	(0.044)
Control Mean	0.59	0.35	0.27	0.14
Two stage q value	0.011	0.348	0.054	0.511
Bandwidth	4,796	4,801	3,293	4,727
Efficient observations	22,724	22,723	17,473	22,803
Observations	39,871	39,903	40,018	40,018
B *Urban*				
Treatment	0.294**	0.134*	0.169*	0.138***
	(0.125)	(0.070)	(0.088)	(0.052)
Control mean	0.63	0.44	0.34	0.13
Two stage q value	0.019	0.081	0.058	0.006
Bandwidth	4,439	4,234	3,499	3,498
Efficient observations	6,615	6,441	5,680	5,680
Observations	11,770	11,782	11,813	11,813
B *Rural*				
Treatment	0.204**	-0.026	0.057	0.011
	(0.096)	(0.033)	(0.047)	(0.060)
Control Mean	0.56	0.30	0.24	0.14
Two stage q value	0.021	0.248	0.233	0.978
Bandwidth	4,451	4,922	3,605	4,386
Efficient observations	15,011	16,094	12,751	14,968
Observations	28,101	28,121	28,205	28,205

Notes: $*p < 0.1$, $**p < 0.05$,$***p < 0.01$. Standard errors in parentheses clustered at the district level. Long term deposits is dummy variable which takes the value 1 if the household has a fixed deposit account in a bank or has pension fund or other saving schemes, and 0 otherwise. Life insurance is a dummy variable which takes the value 1 if the household head has a life insurance product either from the government or private sources, 0 otherwise. Securities and Post Office Account is a dummy variable with value 1 if the household has bought any Mutual Fund/Unit Trust/Share Market/Bonds or Post Office Account (Recurring deposits, farmer development certificate, etc.), 0 otherwise. Bank savings is a dummy with value 1 if the household has a savings/current account in the bank.

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10 Appendix

Table A1: Representativeness of IHDS compared to other national level surveys.

	India Human Development Survey	National Family Health Survey	National Sample Survey	Indian Census
	IHDS, 2004-5	NFHS 3, 2005-2006	NSS, 2004-2005	Census, 2001
Urban	26	31	25.32	27.78
% literate				
Age 5+	66.62	67.35	66.28	NA
Age 7+	68.08	68.62	67.33	64.8
Caste				
Other backward classes	41.79	39.6	40.96	NA
Scheduled Caste	21.1	19.2	19.5	16.2
Scheduled Tribe	7.06	8.4	8.64	8.2
Other	30.01	31.9	30.81	NA
Religion				
Hindu	80.29	81.6	82.16	80.5
Muslim	14.01	12.5	12.66	13.4
Christian	2.16	2.7	2.09	2.3
Sikh	1.53	1.6	1.88	1.9
Others	1.11	0.4	0.3	0.7
% currently in school (age 5-14)	80.37	NA	82.58	NA
Knowledge of AIDS (women)	53.64	61	NA	NA
Work participation rate for males	52.7	NA	54.7	51.7
Work participation rate for females	31.9	NA	28.7	25.6
Average family size	5.2	4.8	4.7	5.3
% of women maaried	73.17	75.23	75.78	76.61
% of households with electricity	71.85	67.9	65.2	55.8
% household use LPG	33.3	24.7	21.9	17.5
% flush toilets	22.7	NA	19.2	18
% poor	25:73	NA	27.47	NA

Source: Authors elaboration from IHDS and other national sample surveys as listed above. The table is extracted from Table 2 of the India Human Development Survey: Design and Data Quality (see Link for description).

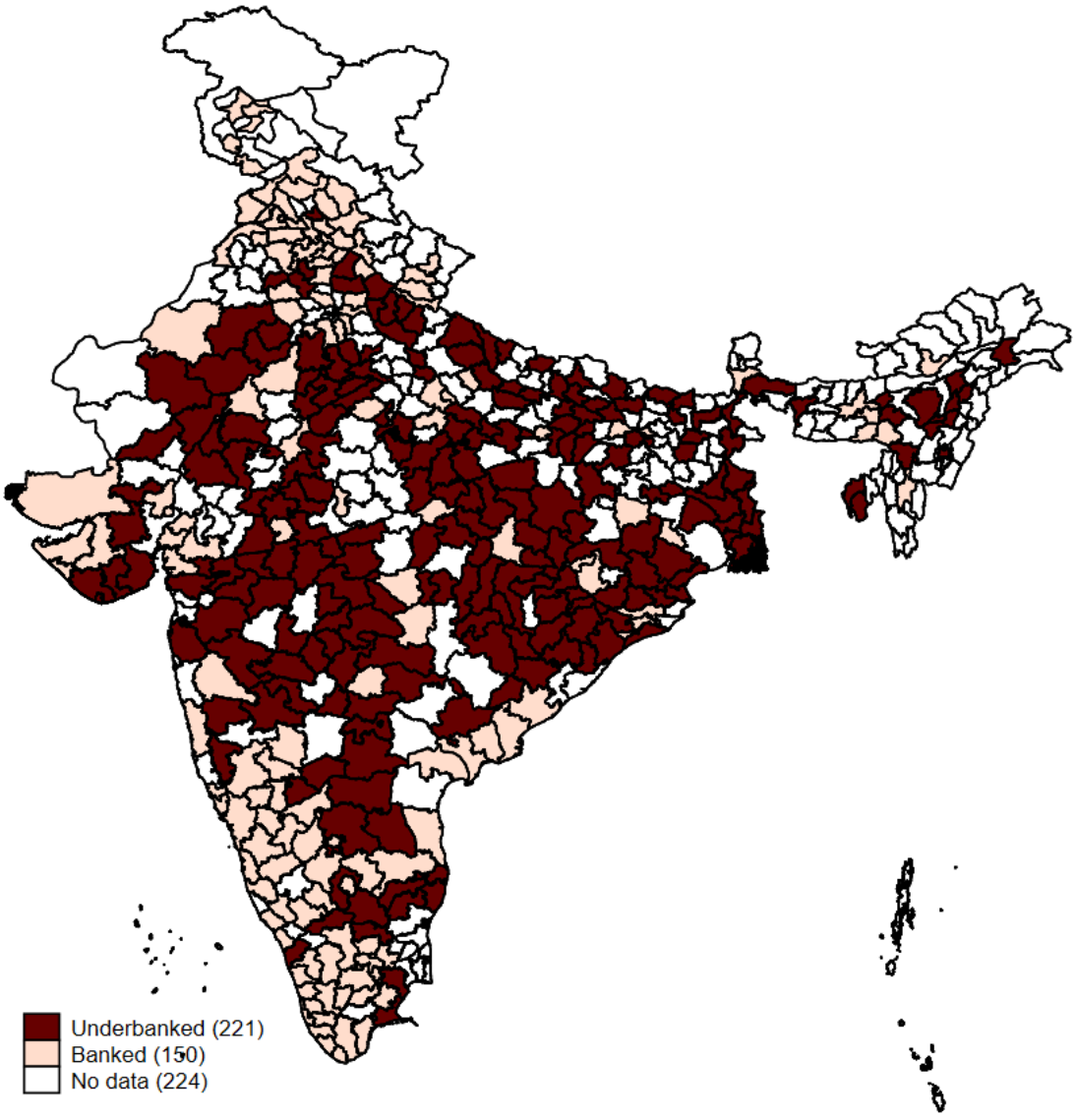


Figure A1: Sixty five percent of all districts interviewed in IHDS 2012. Districts not covered in white color. Authors' computations using IHDS and MOF RBI merged data

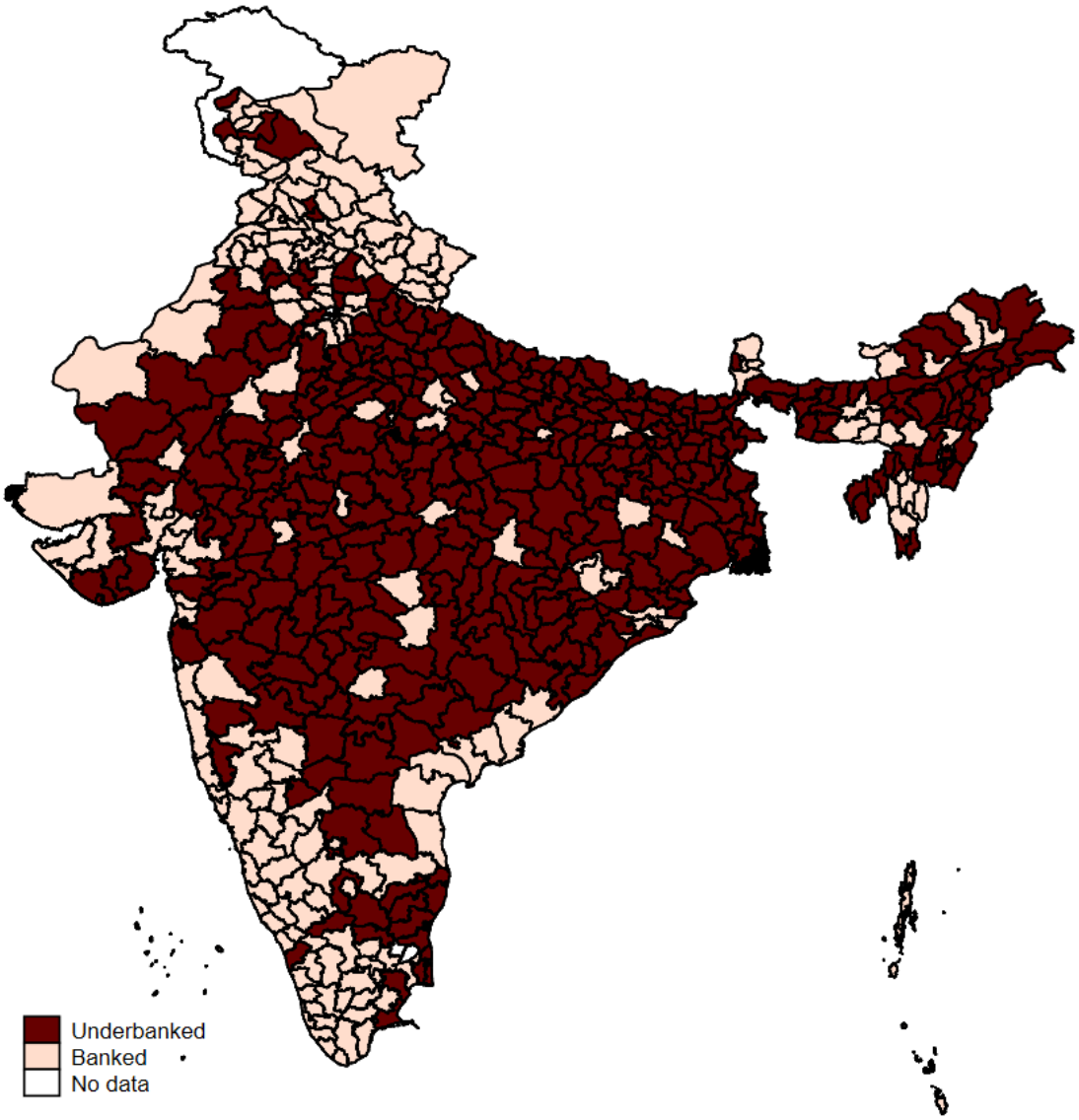
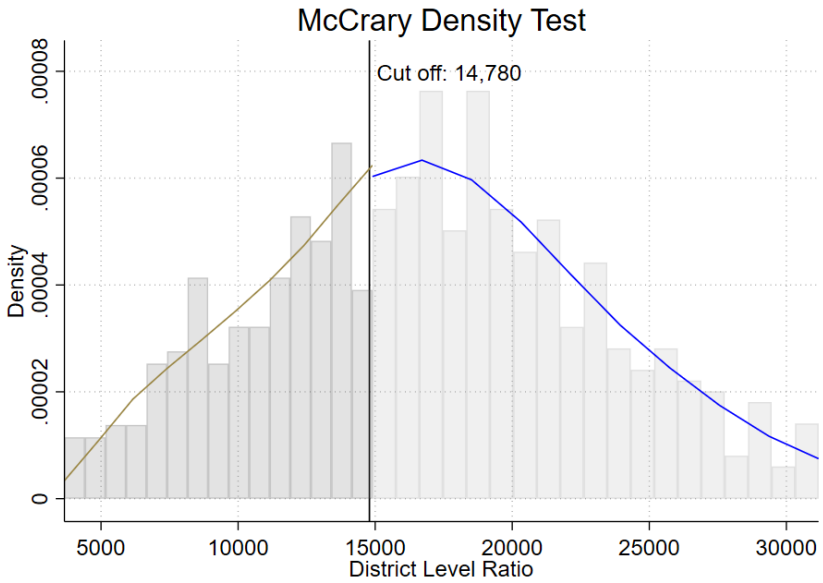


Figure A2: In NFHS, interviews were conducted in all districts. Source: authors' computations using NFHS (2015-2016) and MOF RBI Merged Data.



McCrary RD density test

Figure A3: Banked and Underbanked Districts. District borders refer to the 2001 Census.

Notes: The McCrary Discontinuity estimate is -0.1996 with a p-value of 0.8418. For details about the test, please see McCrary (2008). Source: Authors' computations using RBI Master Office File.

Table A2: Branch Summary Statistics

	All districts				**[-4000,+4000]**			
	1996	2004	2010	2016	1997	2004	2010	2016
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Branches (no.)	67	74	107	177	72	79	117	199
	(82)	(98)	(151)	(231)	(64)	(72)	(110)	(184)
Branch License (no.)	67	75	107	120	72	80	117	133
	(82)	(100)	(156)	(184)	(63)	73)	(113)	(133)
Observations	581	581	581	581	223	223	223	223

Notes: Standard deviations in parentheses. Raw data from RBI at the District level. Regional rural banks are excluded from the analysis. Between 2004 (pre policy) and 2016 (post policy), the final year of the last survey, we observe a large increases in branch openings of 130 percent, and similarly, a large increase in the number of branch licenses of 90 percent, in the average district. Districts with a population-to-branch ratio in the range of ± 40,00 of the policy cutoff generally have a higher number of branches and licenses on average.

Table A3: District level credit and deposit of scheduled commercial banks (2005-2015)

	Log annual total credit (Rs.)						Log annual total deposit (Rs.)					
	Banked			Underbanked			Banked			Underbanked		
	Obs.	Mean	SD	Obs.	Mean	SD	Obs.	Mean	SD	Obs.	Mean	SD
Urban												
2005	62	10.78	0.60	120	9.95	1.05	62	11.43	0.61	120	10.89	0.89
2006	76	10.96	0.74	165	10.12	0.82	76	11.52	0.66	165	10.95	0.73
2007	77	11.22	0.71	166	10.31	0.83	76	11.73	0.64	167	11.11	0.72
2008	77	11.31	0.97	165	10.45	0.85	78	11.80	0.94	165	11.31	0.72
2009	77	11.39	1.22	165	10.61	0.87	77	12.06	0.88	165	11.55	0.69
2010	77	11.67	0.90	165	10.79	0.87	77	12.27	0.76	165	11.71	0.68
2011	75	11.85	0.89	165	10.95	0.88	76	12.43	0.75	164	11.86	0.67
2012	76	11.79	1.10	164	11.12	0.84	79	12.50	0.88	162	12.02	0.64
2013	75	12.06	1.05	162	11.27	0.84	76	12.69	0.81	160	12.16	0.63
2014	72	12.26	0.87	163	11.46	0.82	74	12.87	0.79	161	12.31	0.64
2015	73	12.28	1.24	163	11.60	0.81	76	12.93	1.17	160	12.44	0.63
Semi-urban												
2005	136	9.41	1.00	336	9.24	0.90	193	10.51	1.42	360	10.00	1.06
2006	138	9.64	0.92	333	9.40	0.84	195	10.68	1.28	368	10.16	1.02
2007	138	9.84	0.89	333	9.65	0.81	198	10.81	1.26	369	10.34	1.00
2008	139	10.06	0.89	332	9.81	0.82	198	10.99	1.28	369	10.52	1.01
2009	138	10.20	0.86	333	9.94	0.82	198	11.20	1.27	368	10.76	0.97
2010	138	10.38	0.88	333	10.13	0.82	198	11.33	1.24	368	10.93	0.95
2011	140	10.52	0.92	330	10.24	0.83	196	11.48	1.24	367	11.10	0.96
2012	142	10.68	0.96	329	10.43	0.83	197	11.67	1.23	369	11.24	0.98
2013	140	10.81	0.99	331	10.58	0.87	196	11.82	1.23	368	11.37	1.04
2014	141	11.01	1.00	330	10.77	0.88	196	11.99	1.24	367	11.52	1.00
2015	142	11.17	0.99	329	10.93	0.87	197	12.11	1.25	369	11.65	1.02
Rural												
2005	210	9.48	0.99	377	9.28	0.87	159	10.25	0.64	312	10.03	0.64
2006	210	9.66	0.93	377	9.43	0.83	153	10.29	0.65	318	10.09	0.64
2007	210	9.87	0.93	377	9.62	0.84	154	10.40	0.66	317	10.20	0.65
2008	210	10.04	0.93	377	9.79	0.85	155	10.59	0.65	316	10.36	0.63
2009	210	10.13	0.96	377	9.89	0.87	154	10.78	0.62	317	10.54	0.64
2010	210	10.31	0.96	377	10.08	0.88	160	10.90	0.64	311	10.70	0.62
2011	209	10.46	0.98	377	10.21	0.90	158	11.06	0.64	312	10.86	0.63
2012	210	10.64	1.00	377	10.39	0.90	158	11.21	0.63	313	10.99	0.62
2013	210	10.83	1.01	377	10.54	0.92	160	11.35	0.64	310	11.14	0.62
2014	210	10.99	1.01	377	10.71	0.90	158	11.48	0.65	311	11.29	0.63
2015	210	11.11	1.04	377	10.84	0.92	156	11.64	0.64	314	11.42	0.64

Notes: Data derived from the annual amount of credit and deposit (annual balance sheet report, BSR) in Rs. of all scheduled commercial banks. Source: RBI, BSR data, 2005-2015. Log credit and deposit variables are derived by winsorizing and trimming the respective level variables (Rs.) at 10th and 90th percentile and then taking natural log of the level variables.

Table A4: Households Summary Statistics (IHDS)

	IHDS 1 (2004/2005)		IHDS 2 (2011/2012)	
	All districts	[-4000, +4000]	All districts	[-4000, +4000]
	(1)	(2)	(3)	(4)
Real Ann. PC Cons (Rs.)	25,059	25,080	21.130	21,143
	(14,572)	(14,259)	(13,108)	(13,024)
Observations	32,187	16,204	31,789	16,113
Real Monthly Food Cons (Rs.)	2,625	2,596	1,862	1,873
	(873)	(876)	(692))	(685)
Observations	31,891	16,061	28,628	14,234
Poverty (0/1)	0.22	0.22	0.16	0.15
	(0.41)	(0.40)	(0.37)	(0.36)
Observations	39,973	20,093	39,994	20,098
Ownership Vehicle (0/1)	0.18	0.18	0.29	0.29
	(0.38)	(0.37)	(0.45)	(0.45)
Observations	39,993	20,075	39,998	20,105

Notes: Standard deviations in parentheses. Data IHDS I (2004/2005) and IHDS II (2011/2012). Household and individual level. We observe that households in districts within the range of [-4000, +4000] are similar to households in all districts, strengthening external validity of our design.

Table A5: Households Summary Statistics: Mechanisms (IHDS)

	IHDS 1 (2004/2005)		IHDS 2 (2011/2012)	
	All districts	[-4000, +4000]	All districts	[-4000, +4000]
	(1)	(2)	(3)	(4)
Loan Monthly Rate (%)	2.05	1.97	2.32	2.17
	(1.97)	(1.70)	(2.27)	(1.87)
Observations	17,367	8,966	12,881	6,756
Number of Loans	1.34	1.55	1.64	1.77
	(2.62)	(2.95)	(2.75)	(2.91)
Observations	40,017	20,113	39,942	20,113
Unproductive Loan (0/1)	0.07	0.07	0.25	0.25
	(0.26)	(0.26)	(0.43)	(0.43)
Observations	40,018	20,113	40,018	20,113
Outstanding HH Debt (Rs.)	34,645	38,910	37,361	40,715
	(75,810	(81,197)	(83,657)	(86,059)
Observations	31,941	16,038	36,678	18,448
Real Emp. Earnings (Rs.)	25,332	25,456	18,911	19,379
	(23,207)	(23,035)	(20,144)	(20,142)
Observations	25,420	12,909	35,169	17,730
Real Total Business Revenue (Rs.)	121,422	121,677	94,650	87,627
	(109,496)	(108,898)	(98,311)	(92,647)
Observations	7,913	3,878	7,687	3,813
Bank Savings (0/1)	-	-	0.57	0.54
	(-)	(-)	(0.49)	(0.49)
Observations	-	-	39,871	20,040
Life Insurance Pvt./Govt. (0/1)	0.21	0.20	0.30	0.29
	(0.40)	(0.40)	(0.45)	(0.45)
Observations	39,943	20,080	39,903	20,033
Long Term Deposits (0/1)	-	-	0.22	0.21
	(-)	(-)	(0.41)	(0.40)
Observations	-	-	40,018	20,113
Securities & Post off. Acc. (0/1)	-	-	0.12	0.11
	(-)	(-)	(0.33)	(0.31)
Observations	-	-	40,018	20,113

Notes: Standard deviations in parentheses. Data IHDS I (2004/2005) and IHDS II (2011/2012). Household and individual level. We observe that households in districts within the range of [-4000, +4000] are similar to households in all districts, strengthening external validity of our design.

Table A6: Summary Statistics, IHDS (2004-2005 & 2011-2012) by Rural and Urban Areas

	IHDS 1 (2004-2005)				IHDS 2 (2011-2012)			
	Rural		Urban		Rural		Urban	
	All Districts	[-4000,+4000]	All Districts	[-4000, +4000]	All Districts	[-4000, +4000]	All Districts	[-4000, +4000]
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Real Ann PC Cons (Rs.)	23,009	23,257	30,175	29,236	19,393	19,511	24,882	24,415
	(13,463)	(13,383)	(15,915)	(15,286)	(12,189)	(12,254)	(14,195)	(13,879)
Observations	22,980	11,262	9,207	4,942	21,005	10,454	10,784	5,005
Real Monthly Food Cons. (Rs.)	2,563	2,546	2,778	2,703	1,764	1,750	2,044	1,996
	(874)	(883)	(852)	(852)	(648)	646)	(734)	(725)
Observations	22,654	10,986	9,237	5,075	18,635	9,229	9,993	5,005
Poverty (0/1)	0.23	0.21	0.21	0.21	0.19	0.17	0.10	0.10
	(0.42)	(0.41)	(0.41)	(0.40)	(0.39)	(0.38)	(0.31)	(0.31)
Observations	28,184	13,875	11,789	6,218	27,293	13,515	12,701	6,583
Ownership Vehicle (0/1)	0.12	0.13	0.30	0.29	0.22	0.25	0.42	0.41
	(0.33)	(0.34)	(0.46)	(0.45)	(0.41)	(0.43)	(0.49)	(0.49)
Observations	28,157	13,855	11,776	6,220	27,294	13,517	12,704	6,588

Notes: Standard deviations in parentheses. Data IHDS I (2004/2005) and IHDS II (2011/2012)–household level data. Real values are winsorized and trimmed at 10^{th} and 90^{th} percentile. We observe that households in districts within the range of [-4000, +4000] are similar to households in all districts, strengthening external validity of our design.

Table A7: Summary Statistics for Mechanisms, IHDS (2004-2005 and 2011-2012) by Rural and Urban Areas

	IHDS 1 (2004-2005)				IHDS 2 (2011-2012)			
	Rural		Urban		Rural		Urban	
	All Districts	[-4000,+4000]	All Districts	[-4000, +4000]	All Districts	[-4000, +4000]	All Districts	[-4000, +4000]
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Loan Monthly Rate (0/1)	2.10	1.97	1.88	1.90	2.38	2.18	2.14	2.13
	(1.98)	(1.62)	(1.93)	(1.88)	(2.26)	(1.78)	(2.29)	(2.11)
Observations	13,217	6,530	4,150	2,436	9,618	5,000	3,263	1,756
Number of Loans	1.49	1.60	0.98	1.21	1.82	2.01	1.21	1.21
	(2.74)	(2.93)	(2.27)	(2.64)	(2.01)	(2.21)	(2.29)	(2.31)
Observations	28,205	13,886	11,812	6,227	28,151	13,862	11,791	6,220
Unproductive Loan	0.08	0.07	0.06	0.07	0.27	0.26	0.20	0.21
	(0.27)	(0.26)	(0.25)	(0.26)	(0.44)	(0.44)	(0.40)	(0.40)
Observations	28,205	13,886	11,813	6,227	28,205	13,886	11,813	6,227
Outstanding HH Debt (Rs.)	34,481	38,777	35,066	39,232	37,443	42,719	37,161	36,147
	(73,572)	(78,865)	(81,272)	(86,553)	(81,204)	(86,091)	(89,343)	(85,819)
Observations	22,981	11,325	8,960	4,713	25,986	12,823	10,692	5,625
Real Emp. Earnings (Rs.)	22,238	22,430	34,032	33,289	16,743	17,097	24,455	24,847
	(20,406)	(20,549)	(27,919)	(26,951)	(17,616)	(17,496)	(24,639)	(24,537)
Observations	18,751	9,312	6,669	3,597	25,281	12,509	9,888	5,221
Real Total Bus. Rev. (Rs.)	92,665	93,641	158,681	155,381	71,807	67,827	122,035	114,418
	(95,013)	(93,772)	(115,629)	(116,056)	(84,430)	(81,011)	(106,457)	(99,894)
Observations	4,466	2,117	3,447	1,761	4,191	2,081	3,496	1,732
Bank Savings (0/1)	-	-	-	-	0.54	0.52	0.62	0.57
	(-)	(-)	(-)	(-)	(0.49)	(0.49)	(0.48)	(0.49)
Observations	-	-	-	-	28,101	13,836	11,770	6,204
Life Insurance Pvt./Govt. (0/1)	0.15	0.14	0.34	0.32	0.24	0.23	0.43	0.42
	(0.36)	(0.35)	(0.47)	(0.46)	(0.43)	(0.42)	(0.48)	(0.49)
Observations	28,172	13,866	11,771	6,214	28,121	13,827	11,782	6,206
Long Term Deposits (0/1)	-	-	-	-	0.18	0.33	0.17	0.29
	(-)	(-)	(-)	(-)	(0.38)	(0.37)	(0.47)	(0.45)
Observations	-	-	-	-	28,205	13,886	11,813	6,227
Securities & Post Off. Acc. (0/1)	-	-	-	-	0.12	0.11	0.13	0.10
	(-)	(-)	(-)	(-)	(0.33)	(0.32)	(0.32)	(0.30)
Observations	-	-	-	-	28,205	13,886	11,813	6,227

Notes: Standard deviations in parentheses. Data IHDS I (2004/2005) and IHDS II (2011/2012), household level. Variables in Rs. are deflated using the IHDS deflator, winsorized and trimmed at 10^{th} and 90^{th} percentile. We observe that households in districts within the range of [-4000, +4000] are similar to households in all districts, strengthening external validity of our design.

Table A8: Summary Statistics for Outcome: NFHS (2015-2016), Economic Census (2005 and 2013)

Variable	Obs.	Mean	Std. dev.	Min	Max
NFHS, 2015-2016					
Banked					
Living Standard Index	206	1.283	0.169	0.667	1.529
Living Standard Index Urban	203	1.131	0.221	0.371	1.455
Living Standard Index Rural	201	1.354	0.171	0.643	1.580
Living Standard Index, Within State	206	1.115	0.133	0.857	1.291
Living Standard Index, Urban, Within State	203	1.075	0.129	0.820	1.237
Living Standard Index, Rural, Within States	201	1.151	0.120	0.911	1.307
Underbanked					
Living Standard Index	374	0.933	0.239	0.429	1.458
Living Standard Index Urban	374	0.918	0.225	0.371	1.443
Living Standard Index Rural	373	1.021	0.237	0.512	1.550
Living Standard Index, Within State	374	1.053	0.142	0.857	1.291
Living Standard Index, Urban, Within State	374	1.028	0.131	0.820	1.237
Living Standard Index, Rural, Within States	373	1.102	0.130	0.911	1.307
Economic Census, 2005					
Banked					
Institutional Loan as Major Source of Finance	17,650,614	0.040	0.196	0	1
Institutional Loan (Rural)	9,992,916	0.041	0.199	0	1
Institutional Loan (Urban)	7,657,698	0.038	0.192	0	1
Total Employed Persons	207	110,013	97,003	4,482	355,780
Total Employed Persons (Rural)	202	117,640	114,970	4,482	355,780
Total Employed Persons (Urban)	201	102,374	100,804	4,482	355,780
Underbanked					
Institutional Loan as Major Source of Finance	22,374,659	0.028	0.167	0	1
Institutional Loan (Rural)	15,150,453	0.027	0.162	0	1
Institutional Loan (Urban)	7,224,206	0.032	0.178	0	1
Total Employed Persons	374	74,953	72,015	4,482	355,780
Total Employed Persons (Rural)	373	95,057	90,722	4,482	355,780
Total Employed Persons (Urban)	365	56,277	66,497	4,482	355,780
Economic Census, 2013 **Banked**					
Institutional Loan as Major Source of Finance	22,665,299	0.025	0.157	0	1
Institutional Loan (Rural)	11,810,794	0.025	0.157	0	1
Institutional Loan (Urban)	10,854,505	0.025	0.157	0	1
Total Employed Persons	207	87,321	76,740	3,280	3275,724
Total Employed Persons (Rural)	203	84,577	81,283	3,280	275,724
Total Employed Persons (Urban)	204	88,877	87,240	3,280	275,724
Underbanked					
Institutional Loan as Major Source of Finance	32,339,331	0.016	0.128	0	1
Institutional Loan (Rural)	21,651,130	0.016	0.1926	0	1
Institutional Loan (Urban)	10,688,201	0.018	0.134	0	1
Total Employed Persons	374	63,669	61,469	3,280	275,724
Total Employed Persons (Rural)	373	79,160	74,411	3,280	275,724
Total Employed Persons (Urban)	374	48,372	59,672	3,280	275,724

Author's elaboration from Economic Census 2005 and 2013 and NFHS (2015-2016). Variables from Economic census are winsorized and trimmed at 5^{th} and 95^{th} percentile. Variables from NFHS are winsorized and trimmed at 1^{st} and 99^{th} percentile.

Table A9: Negligible Migration

	Migration 5 Years (Yes/No)		Seasonal Migration (Yes/No)	
	(1)	(2)	(3)	(4)
Treatment	0.005	0.004	0.012	0.009
	(0.009)	(0.008)	(0.014)	(0.013)
Control Mean	0.018	0.018	0.037	0.040
First Stage	0.78	0.79	0.78	0.79
Bandwidth	4,549	4,985	4,203	4,661
Efficient Observations	21,746	22,804	20,594	22,270
Observations	39,084	39,084	39,265	39,265
Baseline Controls	Yes	No	Yes	No

$*p < 0.1$, $**p < 0.05$,$***p < 0.01$. Standard errors in parentheses clustered at the district level. Notes: in table A9 above, the first row 'Treatment' provides the main coefficient of interest, β_1. Baseline control variables are district population and the number of non-regional rural bank branches in the district in 1996. Data IHDS, 2011/2012.

Table A10: Bank Expansion Validity with Survey Sub-sample Check

	(1)	(2)	(3)
	Full Sample	Rural Sample	Urban Sample
Treatment	-0.005	-0.002	0.003
	(0.150)	(0.183)	(0.165)
RD robust p values	0.939	0.896	0.833
Two stage q values	0.991	0.994	0.892
First Stage	0.77	0.76	0.78
Bandwidth	4,339	4,126	4,798
Efficient Obs.	276	257	296
Baseline Controls	No	No	No
Observations	581	581	581

Notes: $*p < 0.1$, $**p < 0.05$, $***p < 0.01$. Standard errors in parentheses clustered at the district level. Notes: in table A10 above, 'Treatment' provides the main coefficient of interest, β_1 which shows if the aggregate, rural or urban sample when analyzed separately satisfy the randomization required to estimate the causal effects. Since the β_1 coefficient is insignificant for the aggregate and the rural and sub-samples, we can say that the aggregate sample and the sub-samples from the IHDS are not affected by the treatment assignment of districts as underbanked, which implies a clean randomization, and allows us to estimate the local average treatment effects.

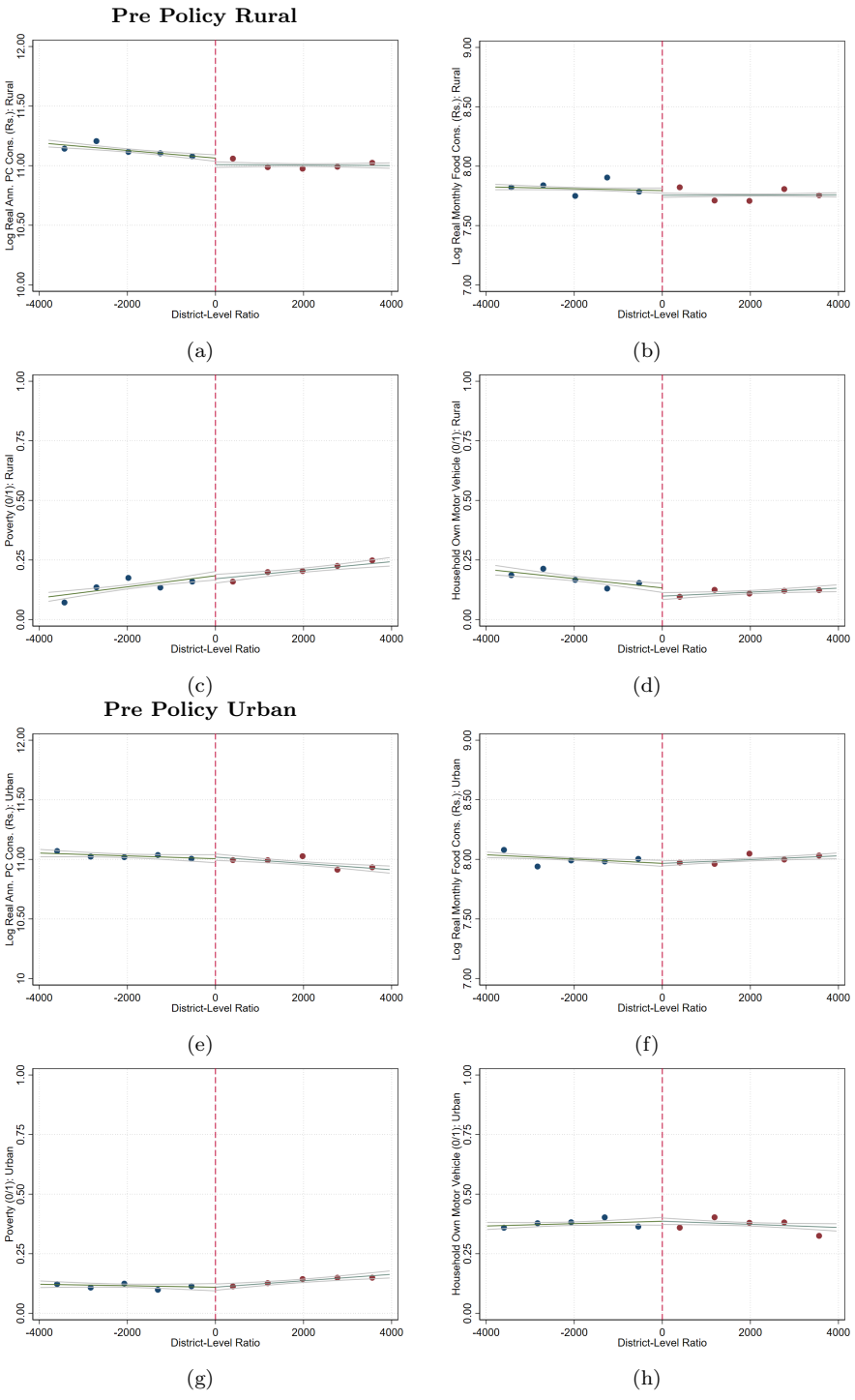


Figure A4: Pre policy smoothness in rural and urban areas. Fig (a), (b), (c) and (d) correspond to rural areas, and figures (e), (f), (g) and (h) correspond to urban areas.

Notes: Source: Authors' computations using RBI Master Office File and IHDS Data (2005).

Table A11: Bank Presence and Household Well-being in Rural and Urban Areas, Pre-Policy

	(1)	(2)	(3)	(4)
	Real Ann. PC Cons. Exp. (Rs.)	Real Monthly Food Exp. (Rs.)	Poverty (0/1)	Ownership of motor vehicle (0/1)
Rural				
Treatment	-2,282	-61	0.064	-0.048
	(2,112)	(200)	(0.076)	(0.0432)
Control mean	26,627	2,678	0.11	0.17
RD robust p value	0.404	0.899	0.397	0.266
Two stage q value	0.501	0.643	0.311	0.290
First Stage	0.79	0.75	0.76	0.74
Bandwidth	4,370	3,941	4,007	3,610
Efficient Obs.	10,643	11,932	12,682	11,755
Baseline Controls	No	No	No	No
Observations	22,980	22,654	28,145	28,157
Urban				
Treatment	2,920	37	-0.016	-0.034
	(2,495)	(201)	(0.064)	(0.071)
Control mean	87,033	2,796	0.16	0.34
RD robust p value	0.267	0.564	0.798	0.632
Two stage q value	0.270	0.581	0.715	0.683
First Stage	0.81	0.78	0.76	0.76
Bandwidth	4,658	3,358	4,042	3,854
Efficient Obs.	4,542	4,675	6,216	5,906
Baseline Controls	No	No	No	No
Observations	9,207	9,237	11,780	11,767

Notes: $p < 0.1, p < 0.05, p < 01$. Standard errors in parentheses clustered at the district level. Data IHDS II (2004/2005), household level. All variables measured in currency Rs. are winsorized and trimmed at the 10^{th} and 10^{th} percentile. All other characteristics are similar to Table 3.

Table A12: Bank Presence and Household Credit. Pre Policy

	(1)	(2)	(3)	(4)
	Monthly Interest on Loan (%)	Number of Loans	Unproductive Loans (0/1)	HH Out. Debt (Rs.)
(a): *Full Sample IHDS*				
Treatment	-0.312	0.183	0.0281	5,555
	(0.350)	(0.823)	(0.0192)	(18,217)
Baseline controls	N	N	N	N
Observations	17,367	40,017	40,018	32,242
(b): *Rural*				
Treatment	-0.312	0.183	0.0281	13,221
	(0.350)	(0.823)	(0.0192)	(15,241)
Baseline controls	N	N	N	N
Observations	17,367	40,017	40,018	25,986
(c): *Urban*				
Treatment	-0.613	-0.665	0.00415	11,991
	(0.418)	(0.671)	(0.0315)	(20,992)
Baseline controls	N	N	N	N
Observations	4,150	11,812	11,813	9,061

Notes: $*p < 0.1$, $**p < 0.05$,$***p < 0.01$. Standard errors in parentheses clustered at the district level. All other characteristics are similar to the ones in Table 3 and **??**.

Table A13: Bank Presence and Living Standard Index

	(1)	(2)	(3)	(4)	(5)	(6)
	Living Standard Index Overall			Living Standard Index Within State		
	All	Rural	Urban	All	Rural	Urban
Panel (A): Linear						
Treatment	0.094*	0.081	0.127**	0.043	-0.000	0.073*
	(0.055)	(0.071)	(0.072)	(0.044)	(0.044)	(0.044)
Control Mean	1.282	1.353	1.131	1.115	1.150	1.074
Two stage q value	0.079	0.200	0.043	0.392	0.944	0.063
First Stage	0.77	0.77	0.75	0.77	0.76	0.71
Bandwidth	5,016	5,030	4,113	4,844	4,472	3,231
Efficient Obs.	311	311	254	297	283	207
Observations	580	574	577	580	574	577
Panel (B): Polynomial 2						
Treatment	0.134**	0.123	0.154**	0.063	-0.003	0.080*
	(0.064)	(0.085)	(0.077)	(0.056)	(0.050)	(0.046)
Baseline Controls	N	N	N	N	N	N
Observations	580	574	577	580	574	577

Notes: $*p < 0.1$, $**p < 0.05$,$***p < 0.01$. Standard errors in parentheses clustered at the district level. Data: National Family Health Survey, 2015 and MOF, RBI, district level data. Control mean is the average value of the outcome for the non-treated household in the optimal bandwidth.

Table A14: Banks Open Branches and Licenses: Polynomial 2

	Pre-Policy (2004)		Post-Policy (2010)	
	Branch (Log no.)	Branch License (Log no.)	Branch (Log no.)	Branch License (Log no.)
	(1)	(2)	(3)	(4)
Treated	0.03	0.02	0.22**	0.24***
	(0.03)	(0.02)	(0.09)	(0.08)
Baseline Control	Yes	Yes	Yes	Yes
Observations	576	576	571	576

Notes: in table A14 above, the first row 'Treatment' provides the main coefficient of interest, β_1. The last line controls for the log value of the outcome variable in 1997.

Table A15: Bank Presence and Household well-being in Rural and Urban Areas: Polynomial 2

	(1)	(2)	(4)	(6)
	Real Ann. PC Cons. Exp. (Rs.)	Real Monthly Food Exp. (Rs.)	Poverty (0/1)	Ownership of motor vehicle (0/1)
(a): Full Sample IHDS				
Treatment	3,383**	188.5*	-0.0469	0.119*
	(1,697)	(112.5)	(0.0475)	(0.0651)
Observations	31,789	28,628	39,994	39,998
(b): Rural				
Treatment	924	31.67	-0.012	0.018
	(1,855)	(120)	(0.061)	(0.064)
Observations	21,729	19,351	28,190	28,191
(c): Urban				
Treatment	5,009**	369.2***	-0.105**	0.193**
	(2,422)	(139)	(0.047)	(0.093)
Observations	10,060	9,277	11,804	11,807

Notes: $*p < 0.1$, $**p < 0.05$,$***p < 0.01$. Standard errors in parentheses clustered at the district level. All other characteristics are similar to the ones in Table 3 and 10.

Table A16: Banks, Institutional Loan and Labor Market Outcomes: Polynomial 2

	(1)	(2)	(3)	(4)	(5)	(6)
	Pre Policy			Post Policy		
	All	Rural	Urban	All	Rural	Urban
(a): *Institutional Loan as Major Source of Finance (0/1)*						
Treatment	0.005	0.014	-0.011	0.012*	0.011*	0.013**
	(0.019)	(0.0205)	(0.0218)	(0.008)	(0.007)	(0.007)
Baseline Controls	N	N	N	N	N	N
Observations	40,025,273	25,143,369	14,881,904	55,004,630	33,461,924	21,542,706
(b): *Total Employment Enterprises (District)*						
Treatment	3,324	-4,666	11,510	25,802	13,281	39,267**
	(34,144)	(41,833)	(37,656)	(18,680)	(25,389)	(17,888)
Baseline Controls	N	N	N	N	N	N
Observations	581	575	566	581	576	578
(c): *Real Annual Emp. Earnings (Rs)*						
Treatment	3,763	3,599	2,099	3,267	327	9,660**
	(3,393)	(4,019)	(2,999)	(3,206)	(3,606)	(4,458)
Baseline controls	N	N	N	N	N	N
Observations	21,219	16,191	5,010	28,147	21,295	6,852
(d): *Total Business Revenue (Rs.)*						
Treatment	42,369	32,210	7,552	71,307***	38,812*	60,354**
	(35,776)	(41,113)	(36,564)	(23,008)	(21,814)	(24,266)
Baseline controls	N	N	N	N	N	N
Observations	7,913	4,466	3,447	7,687	4,191	3,496

Notes: $*p < 0.1$, $**p < 0.05$,$***p < 0.01$. Standard errors in parentheses clustered at the district level. All other characteristics are similar to the ones in Table 5.

Table A17: Banks and household credit: Polynomial 2

	(1)	(2)	(3)	(4)
	Monthly Interest Loan (%)	Number of Loans	Unproductive Loans (0/1)	Outstanding HH Debt (Rs.)
(a) *Full Sample IHDS*				
Treatment	-0.396	-0.625	-0.0949*	-2,415
	(0.307)	(0.734)	(0.0571)	(14,729)
Baseline controls	N	N	N	N
Observations	12,881	39,942	40,018	36,678
(b): *Rural*				
Treatment	-0.191	-0.118	-0.0499	12,457
	(0.355)	(0.941)	(0.0660)	(16,830)
Baseline controls	N	N	N	N
Observations	9,782	28,151	28,205	25,986
(c): *Urban*				
Treatment	-1.093**	-1.196*	-0.175**	-30,348*
	(0.490)	(0.624)	(0.0731)	(17,723)
Baseline controls	N	N	N	N
Observations	3,099	11,791	11,813	10,692

Notes: $*p < 0.1$, $**p < 0.05$,$***p < 0.01$. Standard errors in parentheses clustered at the district level. All other characteristics are similar to the ones in Table **??**.

Table A18: Banks and Household Investments: Polynomial 2

	(1)	(2)	(3)	(4)
	Bank Savings (0/1)	Life Insurance (0/1)	Long Term Deposits (0/1)	Securities & Post office (0/1)
(a): *Full Sample IHDS*				
Treatment	0.236**	0.0450	0.134*	0.0437
	(0.101)	(0.0511)	(0.0687)	(0.0550)
Baseline control	N	N	N	N
Observations	39,871	39,903	40,018	40,018
(b): *Rural*				
Treatment	0.196*	-0.0486	0.0634	0.00150
	(0.109)	(0.0414)	(0.0580)	(0.0705)
Baseline control	N	N	N	N
Observations	28,101	28,121	28,205	28,205
(c): *Urban*				
Treatment	0.322**	0.147*	0.208*	0.138**
	(0.141)	(0.081)	(0.113)	(0.061)
Baseline control	N	N	N	N
Observations	11,770	11,782	11,813	11,813

Notes: $*p < 0.1$, $**p < 0.05$,$***p < 0.01$. Standard errors in parentheses clustered at the district level. All other characteristics are similar to the ones in Table 11.

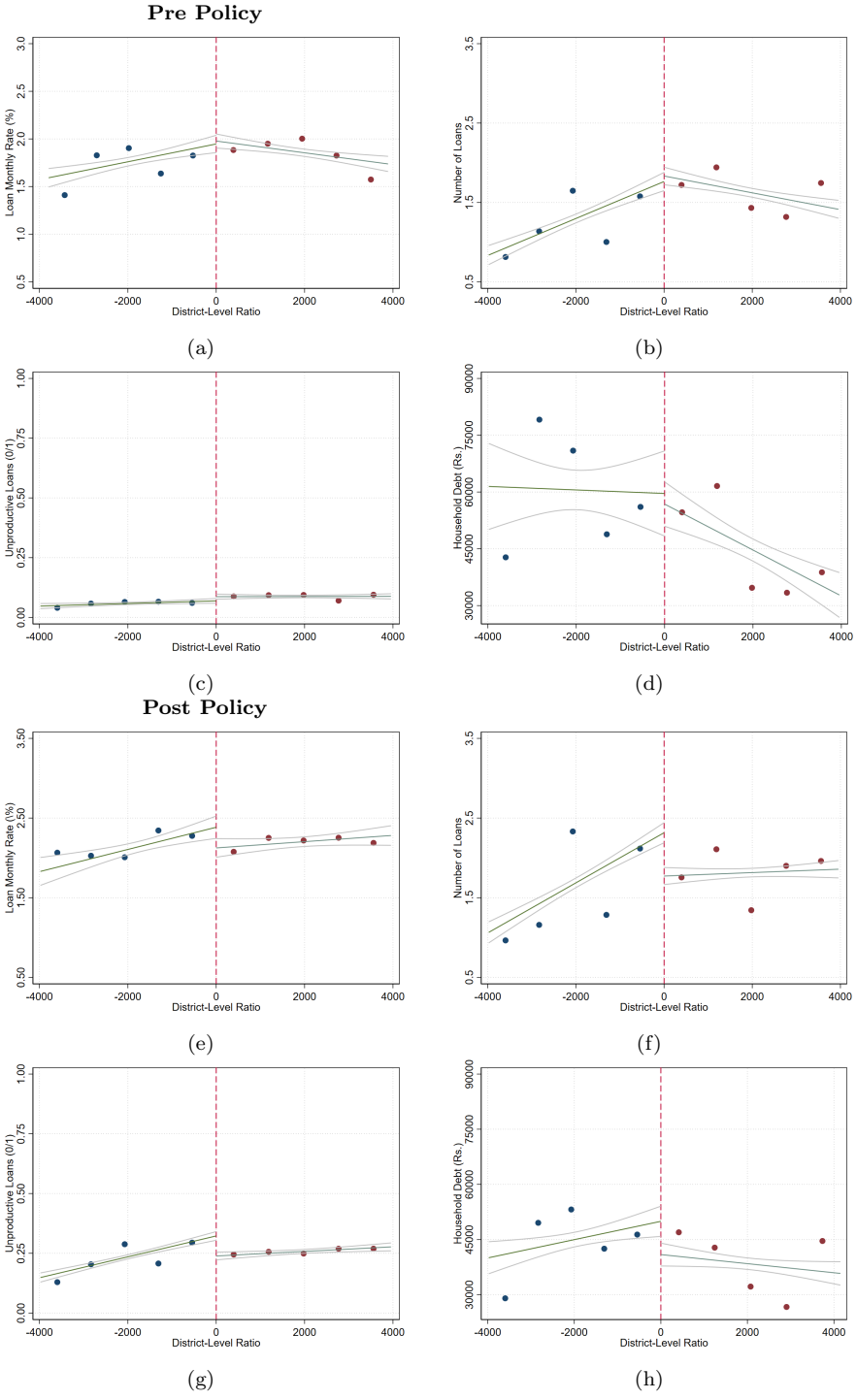


Figure A5: Pre and Post Policy Covariates of household credit market outcomes for the full IHDS sample. These graphs show binned means to the left and right of the cutoff, within the optimal bandwidth. They also show local linear polynomials to the left and right of the cutoff, with 95 percent confidence intervals. The cutoff is normalized to zero.

Notes: Source: Authors' computations using RBI Master Office File and IHDS Data.

Table A19: Placebo Test: Regional Rural Banks

	(1)	(2)
	Regional Rural Bank Branches 2010 (No.)	Regional Rural Bank Licenses 2010 (No.)
Treatment	-0.054	-0.091
	(0.056)	(0.073)
Control Mean	1.03	1.03
First Stage	0.78	0.79
Bandwidth	4,853	5,181
Efficient Observations	291	311
Baseline Control	No	No
Observations	567	565

Notes: $*p < 0.1$, $**p < 0.05$,$***p < 0.01$. Standard errors in parentheses clustered at the district level. Data MOF RBI, only regional rural banks are analyzed.

Table A20: Bank Presence and Local Economic Development

	(1)	(2)	(4)	(6)
	Log Real Ann. Cons. Exp. (Rs.)	Log Real Monthly Food Exp. (Rs.)	Poverty (0/1)	Ownership of motor vehicle (0/1)
(a): *Full Sample IHDS*				
Treatment	0.259***	0.175***	-0.0568**	0.104***
	(0.0688)	(0.0509)	(0.0235)	(0.0274)
Observations	2,435	2,420	2,435	2,435
(b): *Rural*				
Treatment	0.0544	0.0915**	-0.0320	0.0689**
	(0.0521)	(0.0422)	(0.0272)	(0.0314)
Observations	1,465	1,455	1,465	1,465
(c): *Urban*				
Treatment	0.231***	0.235***	-0.0818***	0.125**
	(0.0634)	(0.0505)	(0.0292)	(0.0584)
Observations	970	965	970	970

Notes: $*p < 0.1$, $**p < 0.05$,$***p < 0.01$. Standard errors in parentheses clustered at the district level. All other characteristics are similar to the ones in Table 3 and 11.

Table A21: Placebo Cutoffs: Main Results

	Placebo Cut-off Main Results				
	-3000	-1000	0	1000	3000
	(1)	(2)	(3)	(4)	(5)
Banks Table (2)					
Branches (Log. No)	0.823	0.429	0.036	0.983	1.00
Branch License (Log No.)	0.888	0.825	0.000	0.559	0.999
Household Well-being (Table 3)					
Real Ann. PC Cons. Exp (Rs.)	0.722	0.922	0.035	0.989	0.606
Real Monthly Food Exp (Rs.)	0.601	0.418	0.085	0.766	0.890
Poverty (0/1)	0.512	0.584	0.188	0.725	0.940
Ownership Vehicle (0/1)	0.677	0.838	0.082	0.615	0.989
Living Standards (Table 9)					
Living Standard Index	0.677	0.216	0.087	0.946	0.332
Living Standard Index, Within State	0.877	0.518	0.327	0.684	0.208

Notes: p-values of respective robust regressions with different (placebo) cutoffs shown. For details of the regressions, refer to the respective main table.

Table A22: Placebo Cutoffs: Mechanism Results

	Placebo Cut-off Mechanism Results				
	-3000	-1000	0	1000	3000
	(1)	(2)	(3)	(4)	(5)
Institutional Loan (Table 5)	0.626	0.661	0.229	0.615	0.713
Labor Market Outcomes (6)					
Total Employed Persons (District)	0.697	0.845	0.170	0.869	0.977
Real Annual Emp. earnings (Rs.)	0.897	0.870	0.085	0.638	0.320
Total Business Revenue (Rs.)	0.583	0.738	0.002	0.373	0.277
Credit Market Outcomes Table (7)					
Interest on Loan Monthly (%)	0.732	0.968	0.080	0.796	0.132
Number of Loans	0.332	0.924	0.441	0.621	0.723
Unproductive Loan (0/1)	0.437	0.858	0.093	0.714	0.490
Outstanding HH Debt (Rs.)	0.460	0.953	0.854	0.663	0.163
Household Investment Outcomes Table (8)					
Bank Savings (0/1)	0.506	0.836	0.012	0.865	0.288
Life Insurance Pvt./Govt. (0/1)	0.401	0.694	0.280	0.935	0.378
Long Term Deposits (0/1)	0.355	0.363	0.065	0.921	0.653
Securities & Post Off. Acc. (0/1)	0.537	0.818	0.322	0.990	0.957

Notes: p-values of respective regressions with different (placebo) cutoffs shown. For details of the regressions, refer to the respective main table.

Table A23: Robustness to Different Bandwidth Multipliers: Main Results

	Bandwidth Multiplier				
	0.50x	**0.75x**	**1.00x**	**1.25x**	**1.50x**
	(1)	(2)	(3)	(4)	(5)
Banks (Table 2)					
Branches (log No.)	0.27*	0.26***	0.17**	0.15**	0.14**
	(0.14)	(0.09)	(0.07)	(0.07)	(0.023)
Branch License (Log No.)	0.22*	0.20**	0.19***	0.20***	0.17***
	(0.14)	(010)	(0.06)	(0.06)	(0.06)
Household Well-being (Table 3)					
Real Ann. PC Cons. Exp. (Rs.)	3,206*	2,928*	3,095**	2,234*	1,203
	(2,170)	(1,660)	(1,468)	(1,349)	(1,220)
Real Monthly Food Cons. (Rs.)	224*	174*	169*	133*	96*
	(125)	(101)	(98)	(78)	(55)
Poverty (0/1)	-0.09	-0.04	-0.04	-0.05	-0.04
	(0.08)	(0.05)	(0.04)	(0.03)	(0.03)
Ownership Vehicle (0/1)	0.00	0.05*	0.08*	0.08**	0.08*
	(0.06)	(0.03)	(0.03)	(0.03)	(0.03)
Living Standard (Table 9)					
Living Standard Index	0.18**	0.13**	0.09*	0.07	0.04
	(0.08)	(0.06)	(0.05)	(0.04)	(0.04)
Living Standard Index, Within State	0.14*	0.07	0.04	0.03	0.02
	(0.07)	(0.05)	(0.04)	(0.03)	(0.03)

Notes: $*p < 0.1$, $**p < 0.05$, $***p < 0.01$. Standard errors in parentheses. For details of the regression, refer to the respective main table.

Table A24: Robustness to Different Bandwidth Multipliers: Mechanism Results

	Bandwidth Multiplier				
	0.50x	**0.75x**	**1.00x**	**1.25x**	**1.50x**
	(1)	(2)	(3)	(4)	(5)
Institutional Loan (Table 5)	-0.000	0.008	0.009	0.010	0.011*
	(0.012)	(0.008)	(0.007)	(0.006)	(0.006)
Labor Market Outcomes (6)					
Total Employed Persons (District)	19,465	24,081	21,451	19674	17,313
	(28194)	(20,319)	(16,842)	(14,467)	(12,783)
Real Annual Emp. earnings (Rs.)	5582	4,624*	4,093*	3,924*	3,773
	(4,412)	(2,894)	(3,021)	(2,723)	(2,509)
Total Business Revenue (Rs.)	86,659*	79,192***	65,937***	62,868***	55,799***
	(52,243)	(28,351)	(22,137)	(19,361)	(17,626)
Credit Market Outcomes Table (7)					
Interest on Loan Monthly (%)	-0.76*	-0.61*	-0.50*	-0.38*	-0.25
	(0.40)	(0.31)	(0.28)	(0.26)	(0.24)
Number of Loans	-0.33	-0.45	-0.48	-0.41	-0.35
	(0.90)	(0.73)	(0.63)	(0.53)	(0.46)
Unproductive Loan (0/1)	-0.06	-0.07	-0.08*	-0.07*	-0.05*
	(0.07)	(0.05)	(0.04)	(0.04)	(0.03)
Outstanding HH Debt. (Rs.)	-3,684	-4,007	-2,391	-3,021	-5,191
	(19,713)	(15,065)	(13,013)	(11,503)	(9,794)
Household Investments Table (8)					
Bank Savings (0/1)	0.27*	0.27**	0.21**	0.16**	0.12**
	(0.15)	(0.10)	(0.08)	(0.07)	(0.06)
Life Insurance Pvt./Govt. (0/1)	0.05	0.04	0.044	0.040	0.032
	(0.05)	(0.045)	(0.041)	(0.036)	(0.032)
Long Term Deposits (0/1)	0.06	0.11*	0.09*	0.11*	0.09
	(0.12)	(0.06)	(0.05)	(0.05)	(0.04)
Securities & Post Off. Acc. (0/1)	0.03	0.04	0.04	0.05	0.05*
	(0.06)	(0.05)	(0.04)	(0.03)	(0.03)

Notes: $*p < 0.1$, $**p < 0.05$, $***p < 0.01$. Standard errors in parentheses. For details of the regression, refer to the respective main table.

Table A25: Robustness to Different Bandwidth Selectors: Main Results

Variables	MSE Optimal		CER Optimal	
	Common	Two-sided	Common	Two-sided
	(1)	(2)	(3)	(4)
Banks (Table 2)				
Branches (Log No.)	0.17**	0.21***	0.23**	0.23**
	(0.06)	(0.07)	(0.09)	(0.09)
Branch License (Log No.)	0.19***	0.26***	0.31***	0.30***
	(0.06)	(0.07)	(0.02)	(0.02)
Household Well-being (Table 3)				
Real Ann. PC Cons. Exp. (Rs.)	3,095**	3,163**	2,924*	3,994**
	(1,468)	(1,531)	(1,661)	(2,016)
Real Monthly Food Cons. (Rs.)	168*	138*	175*	159*
	(98)	(79)	(108)	(98)
Poverty (0/1)	-0.04	-0.05	-0.04	-0.12*
	(0.04)	(0.04)	(0.05)	(0.07)
Ownership Vehicle (0/1)	0.08**	0.08**	0.05	0.09*
	(0.03)	(0.04)	(0.04)	(0.05)
Living Standard (Table 9)				
Living Standard Index	0.09*	0.08	0.13**	0.10
	(0.05)	(0.05)	(0.06)	(0.06)
Living Standard Index, Within State	0.04	0.04	0.08	0.05
	(0.04)	(0.04)	(0.05)	(0.06)

Notes: $*p < 0.1$, $**p < 0.05$, $***p < 0.01$. Standard errors in parentheses. The first and second columns are MSE-optimal bandwidths, initially identical and then different to the left and right of the cutoff. The third and fourth columns indicates CER (Coverage Error Rate)-optimal bandwidths, first identical and then different to the left and right of the cutoff (Calonico et al., 2020; Calonico et al., 2014). For details of the regression, refer to the respective main table.

Table A26: Robustness to Different Bandwidth Selectors: Mechanism Results

Variables	MSE Optimal		CER Optimal	
	Common	Two-sided	Common	Two-sided
	(1)	(2)	(3)	(4)
Institutional Loan (Table 5)	0.009	0.009	0.008	0.008
	(0.007)	(0.007)	(0.008)	(0.008)
Labor Market Outcomes (6)				
Total Employed Persons (District)	21,448	22,233*	24,671	24,640
	(16,782)	(14,905)	(20,675)	(18,605)
Real Annual Emp. earnings (Rs.)	4,093*	3,251	3,626	4,192*
	(3,015)	(2,821)	(3,397)	(2,723)
Total Business Revenue (Rs.)	65,932***	69,814***	79,674***	83,969***
	(22,059)	(24,145)	(28,454)	(38,874)
Credit Market Outcomes Table (6)				
Interest on Loan Monthly (%)	-0.50*	-0.52**	-0.61*	-0.46
	(0.28)	(0.26)	(0.31)	(0.30)
Number of Loans	-0.48	-0.33	-0.44	-0.85
	(0.63)	(0.79)	(0.73)	(1.06)
Unproductive Loan (0/1)	-0.08*	-0.06	-0.07	-0.11*
	(0.04)	(0.05)	(0.05)	(0.07)
Outstanding HH Debt (Rs.)	-2,391	-1,764	-4,169	-8,109
	(12,989)	(15,804)	(15,078)	(20,907)
Household Investments Table (7)				
Bank Savings (0/1)	0.21**	0.19**	0.27***	0.18
	(0.08)	(0.10)	(0.10)	(0.14)
Life Insurance Pvt./Govt. (0/1)	0.04	0.05	0.04	0.03
	(0.04)	(0.05)	(0.04)	(0.08)
Long Term Deposits (0/1)	0.09*	0.08	0.11*	0.06
	(0.05)	(0.05)	(0.06)	(0.12)
Securities & Post Off. Acc. (0/1)	0.04	0.04	0.04	0.03
	(0.04)	(0.04)	(0.05)	(0.06)

Notes: $*p < 0.1$, $**p < 0.05$, $***p < 0.01$. Standard errors in parentheses. The first and second columns are MSE-optimal bandwidths, initially identical and then different to the left and right of the cutoff. The third and fourth columns indicates CER (Coverage Error Rate)-optimal bandwidths, first identical and then different to the left and right of the cutoff (Calonico et al., 2020; Calonico et al., 2014). For details of the regression, refer to the respective main table.