

# Does religion affect borrowing: Evidence from India

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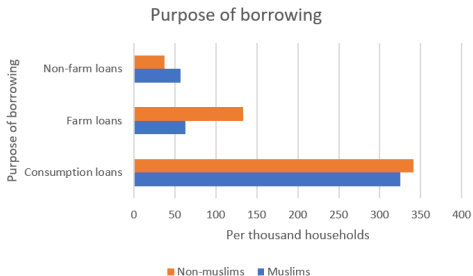
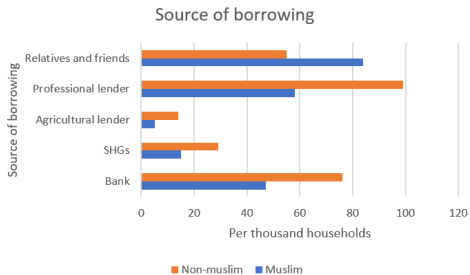
# Introduction

- ▶ Can religious rules influence economic choices?
  - ▶ Islamic law prohibits transactions involving interest.
  - ▶ Includes interest receipts and interest payments, 'riba' in any form of borrowing or lending activity.
  - ▶ The size of the Islamic finance market measured at 3.2 billion dollars suggests a strong inclination towards sharia-compliant modes of banking amongst muslims.
  - ▶ However limited evidence to indicate muslim's distaste for conventional banking.
- ▶ Using an exogenous expansion in bank branches in India, this paper measures whether Islam's rule on bank loans has a binding effect and the subsequent credit gap.
- ▶ Since there are no major Islamic banks in India, this difference in banking tendency can entirely be attributed to Islam's law on interest and muslims aversion to it.

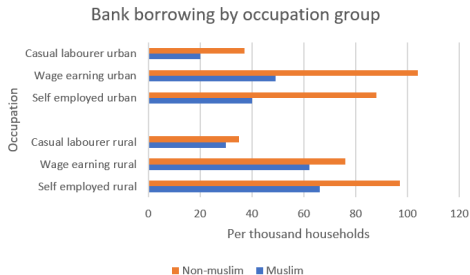
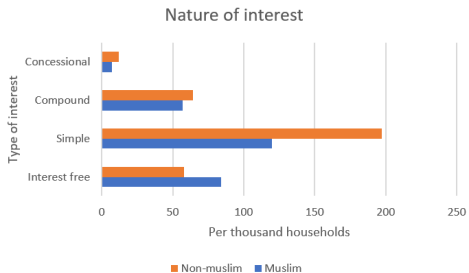
# Research Question

- ▶ Does Islam's prohibition on interest bearing transaction affect the demand for loans?
  - ▶ Examine the impact of a bank branch expansion policy on the demand for bank loans across household and firms.
- ▶ Confounding effects of discrimination and other potential difference between muslims and non-muslims.
  - ▶ Does discrimination against minorities, poor accessibility to banks or difference in occupational choice confound our results?
- ▶ Influence of religiosity
  - ▶ How does difference in religiosity across districts as measured by the number of mosque and madaras affect bank borrowing?

# Household characteristics

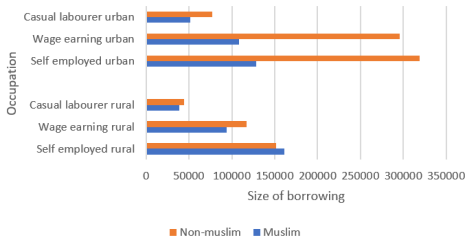


# Household characteristics

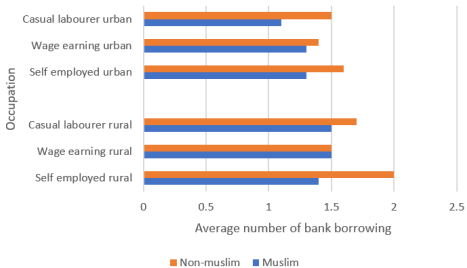


# Household characteristics

## Amount borrowed by occupation group



## Mean borrowing



# Literature Review

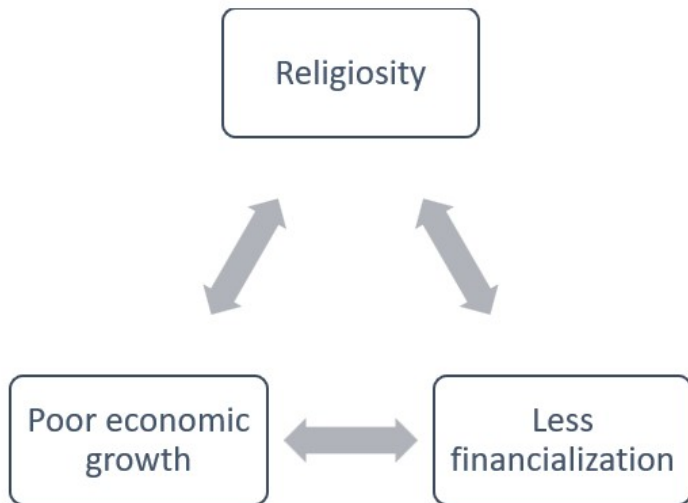
- ▶ Religious beliefs, laws, cultural practices, and institutions shape preferences, choices, actions, and value.
- ▶ Becker et al. (2024): impact of religion on the components of the macroeconomic production function and economic growth.
- ▶ Religion influence on economic life, Marx (1859) Smith (1776).
- ▶ Industrialization in Western Europe attributed to reformation in religion, Weber (1930).
- ▶ Protestant countries were economically robust prior to the reformation, Samuelson (1957).
- ▶ Endogeneity between religious institutions and economic outcomes.

# Literature Review

- ▶ How Islamic laws affect the economic choices and outcomes for muslims?
  - ▶ Campante et al (2015) assessed the impact of fasting on the subjective well-being and economic growth using the variation in duration of fasting hours across countries.
  - ▶ Bursztyn et al (2016) designed an experiment to study the role of morality in debt repayment amongst the credit card users in an Islamic bank in Indonesia.
  - ▶ Religious appeals to late paying customers reduced delinquency.
- ▶ Limited work on the impact of Islamic ruling against interest on borrowing behavior.
- ▶ This paper provides novel evidence on how compliance with Islamic finance laws can lead to deviations from standard borrowing behavior.



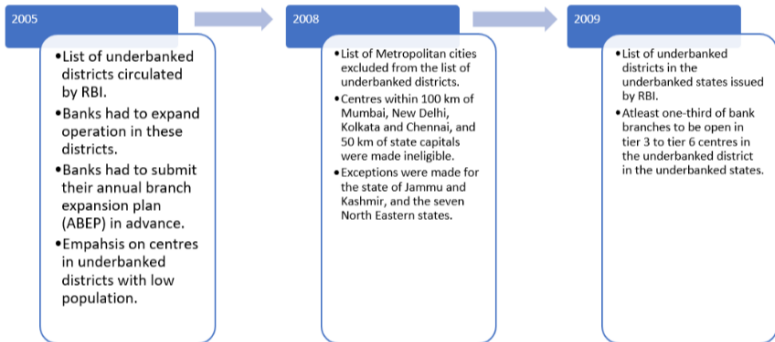
## The big E of economics



# Policy Rule

- ▶ 2005 bank branch expansion policy
  - ▶ Licenses to open new branches were linked to the bank's performance in the underbanked areas.
  - ▶ Districts were assigned underbanked (overbanked) status.
  - ▶ For private banks: 25% of their branching network had to work in centers with a population of less than 100000 people and 40% of outstanding credit had to be made to the priority sector.
  - ▶ Banks in underbanked districts were not allowed to shift or close their branch unless the given center had another operating commercial bank.
  - ▶ Shift their branches to centers with low population groups or other centers within the underbanked district.
  - ▶ 2009 amendment to the policy: emphasis on underbanked districts in the underbanked states.

# Timeline of Reforms



# Conceptual Framework

- ▶ Can an expansion in banking facilities prompt people to borrow more?
  - ▶ RBI 2005 and 2009 policy reforms: exogenous expansion in bank branches.
  - ▶ Emphasis on operating in the underbanked regions, reduced population burden and lending to the priority sectors ensured an increase in supply of banking services.
- ▶ 3 channels through which supply of credit will boost its demand.
  - ▶ **Credit constrained borrowers:** Banerjee and Duflo (2012) found that firms in India are severely credit-constrained.
  - ▶ Credit-constrained firms would use this expansion in credit facilities to take more bank loans without substituting any other source of credit.
  - ▶ Bank borrowing increased, no significant difference in the likelihood of obtaining a loan from other any credit source.
  - ▶ No difference in the interest rate between the treatment and control group, some evidence of **credit rationing** (Stiglitz and Weiss, 1981).

# Conceptual Framework

- ▶ **Lower average cost of borrowing:** The average rate of interest is significantly lower in the treated districts as informal lenders predominant in the control group charge a higher rate.
- ▶ Lower cost of borrowing may induce more households to borrow or increase their share of bank loans.
- ▶ **Risky loans:** To meet lending targets, banks may lend to risky borrowers who were previously not able to obtain a loan.
- ▶ Check for the probability of default on short term (1-1.5 years) and medium-term loans (3-5 years) between the treatment and control group.
- ▶ No difference in the default rates between the two groups, no evidence of risky borrowing.

Through either one of the channels mentioned, an expansion in credit facilities would prompt higher bank borrowing.

# Empirical Strategy

- ▶ The 2005 and the 2009 bank branch expansion policy reform was based on a simple district and national-level estimate of population per branch.
- ▶ Yields a clear quasi-natural experiment to employ the regression discontinuity techniques.
- ▶ Underbanked districts were identified using the population per branch in that district relative to the national population per branch.

Let us define the running variable  $Z_d$  as:

$$Z_d = \text{Branch}_d - \overline{\text{Branch}}$$

- ▶  $Z_d$ : district population per branch less than the national average.
- ▶ One running variable corresponding to two policy reforms.
- ▶ 2005 policy:
  - ▶  $ub_d=1$  if the district is assigned the underbanked status, 0 otherwise.
- ▶ 2009 policy:
  - ▶  $ub_s=1$  if the district is assigned the underbanked status and it belongs to the underbanked state, 0 otherwise.

# Empirical Strategy

- ▶ Employ fuzzy RD, since 4 districts on the right and 5 on the left of the cutoff violate the assignment rule.
- ▶ Following the fuzzy RD approach I have specified below the two-stage least squares model
  - ▶  $ub_i = \alpha_0 + \alpha_1 D_i + \alpha_2 Z_d + \alpha_2 Z_d * D_i + \alpha_3 X_i + \mu_i$
  - ▶  $Y_i^j = \beta_0 + \beta_1 \hat{u}b_i + \beta_2 Z_d + \beta_2 Z_d * D_i + \beta_3 X_i + \epsilon_i$
  - ▶ Binary instrument  $D_i=1$  if average population per branch is above the cutoff, 0 otherwise.
  - ▶  $Y_i^j$  is the outcome measured for subject  $i$  belonging to group  $j$  where  $j \in \{muslim, non - muslim\}$ .
  - ▶  $Z_d$  linear polynomial in running variable.
    - ▶ Include interactions with treatment dummies.

# Empirical Strategy

- ▶ Use the local polynomial approach proposed by Calonico et al. (2014) to obtain a point estimator with optimal properties (Cattaneo et al., 2020; Cattaneo and Titiunik, 2022).
- ▶ Primary specification includes linear regressions, MSE optimal bandwidth choice and uniform kernel.
- ▶ Estimate the impact of the two policies separately for muslims and non-muslims.
- ▶  $X_i$  reflects the household-specific covariates.



# Data Source

- ▶ Basic statistical returns as main (BSR).
- ▶ Master Office file (RBI) data on the exact location bank branches.
- ▶ Census data on district and sub-district wise total population and population of various religious groups.
- ▶ National Sample Survey (61st round) data on consumption and unemployment for pre-treatment covariate balance test.
- ▶ All India debt and Investment survey (70th and 59th round) survey and IHDS round 1 and 2 to assess the debt scenario at the household level.
- ▶ Economic census (6th round) to assess borrowing amongst firm.
- ▶ Waqf board data on mosque and madarsas.

# Preview of Results

- ▶ Effect on demand for loans
  - ▶ Demand for bank loans increased by about 36% - 55% for non-muslim borrowers.
  - ▶ There's an increase in both the incidence and share of bank loans.
  - ▶ The effect is larger in the rural areas where the policy was targeted.
  - ▶ No effect on households and firms owned by muslims.
- ▶ Higher demand for bank loans came from households engaged in farm and non-farm business.
- ▶ Insignificant effect of the policy on muslims cannot be explained by lender discrimination or poor accessibility to banks.
- ▶ Lower incidence of bank and a lower share of bank loans for muslim households borrowing in more religious districts.

# Impact on the banking sector

- ▶ Districts without a private bank branch fell from 45% in 2005 to 20% in 2010.
- ▶ Number of private bank branches in 2013 relative to 2005, around the threshold is twice as many as that in the overbanked districts.
- ▶ 48% - 73% higher growth in the number of bank branches opened in underbanked districts, Chowdhury and Ritadhi (2021).
- ▶ Using DID they found a 10-20% higher annual growth in the number of private bank branches in the treatment group.

# Check for manipulation

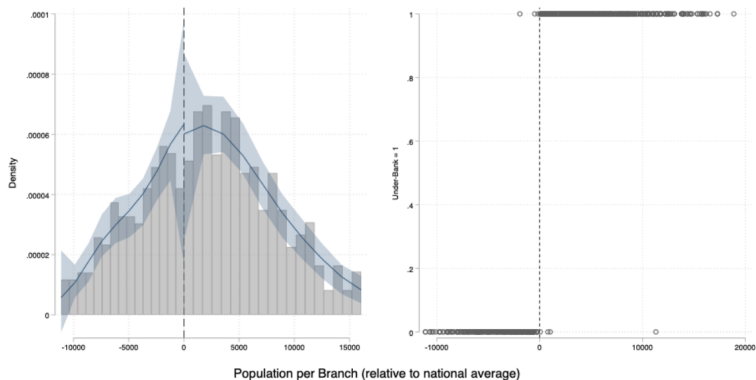


Figure: McCrary density test and fuzzy RD

McCrary density test shows a smooth distribution around the cutoff no discontinuity around the threshold.

# Balance Test

RD specification	Difference of means		RD estimate	
	(non-muslim) (1)	(muslim) (2)	(non-muslim) (3)	(muslim) (4)
A. Age	.502* (.268)	-.441 (.931)	-.640 (.820)	2.519 ( 2.873)
B. Male	-.013* (.005)	.021 (.021)	.017 (.017)	-.095 (.076)
C. Married	.0002 (.002)	-.003 (.012)	-.004 (.008)	.026 (.044)
D. Education	.493** (.055)	-.068 (.082)	-.087 (.242)	.638 (.453)
E. MPCE	186.6** ( 27.82)	-18.96 ( 57.81)	24.57 (126.05)	198.27 (154.69)
E. Household size	-.164* (.022)	.300 (.192)	.270 ( .293)	.035 (169.63)
F. Land ownership	-.217** ( .039)	-.034 (.040)	.215 (.291)	-.440 (.305)
G. LFPR	-.003 ( .003)	.013* (.009)	-.045 (.048)	-.057 (.054)
H. Farm business	-.063** (.006)	-.023 (.019)	-.042 ( .047)	.007 (.102)

Notes: Standard errors in parentheses, clustered by district. Significant levels: \*10%, \*5% and \*\*\*1%

## 2009 policy result

RD specification	Incidence of bank borrowing		Share of bank loans	
	(non-muslim) (1)	(muslim) (2)	(non-muslim) (3)	(muslim) (4)
A. Main specification	.036*	-.080	.058*	-.195**
	(.018)	(.052)	(.031)	(.084)
Observations	36288	1940	25554	1430
B. Covariate adjustment	.037*	-.084	.053*	-.100**
	(.019)	(0.052)	(0.032)	(0.081)
Observations	36916	1921	23479	1430
C. Quadratic run. var.	0.026	-0.067	0.058*	-0.191**
	(0.019)	(0.055)	(0.033)	(0.086)
Observations	65709	5875	46378	4345
D. Triangular kernel	0.024	-0.078*	0.057**	-0.199***
	(0.016)	(0.047)	(0.026)	(0.075)
Observations	46595	3119	33601	2381
E. Narrow bandwidth	0.024	-0.080	0.075**	-0.213**
	(0.019)	(0.054)	(0.032)	(0.089)
Observations	84452	11019	60258	8003

Notes: Standard errors in parentheses, clustered by district. Significant levels: \*10%, \*\*5% and \*\*\*1%

## 2009 policy result: rural sector

RD specification	Incidence of bank borrowing		Share of bank loans	
	(non-muslim) (1)	(muslim) (2)	(non-muslim) (3)	(muslim) (4)
A. Main specification	0.046** (0.020)	-0.072 (0.076)	0.078** (0.035)	-0.206 (0.130)
Observations	1910	852	13656	717
B. Covariate adjustment	0.035* (0.020)	-0.053 (0.067)	0.078** (0.035)	-0.149 (0.100)
Observations	14108	851	10167	617
C. Quadratic run. var.	.031 (.022)	-.079 (.073)	.049 (.036)	-.207* (.105)
Observations	39233	2506	27497	1915
D. Triangular kernel	0.037** (0.016)	-0.076 (0.065)	0.078*** (0.028)	-0.226** (0.094)
Observations	28761	1546	19645	1151
E. Narrow bandwidth	0.047** (0.021)	-0.082 (0.082)	0.096*** (0.032)	-0.214* (0.120)
Observations	16257	683	11537	617

Notes: Standard errors in parentheses, clustered by district. Significant levels: \*10%, \*\*5% and \*\*\*1%

## 2005 policy result

RD specification	Incidence of bank borrowing		Share of bank loans	
	(non-muslim) (1)	(muslim) (2)	(non-muslim) (3)	(muslim) (4)
A. Main specification	0.016 (0.017)	-0.032 (0.053)	0.036 (0.027)	-0.099 (0.086)
Observations	47858	3540	38319	3073
B. Covariate adjustment	0.008 (0.019)	-0.040 (0.044)	0.040 (0.027)	-0.100 (0.082)
Observations	42439	3478	34885	2856
C. Quadratic run. var.	0.017 (0.019)	-0.025 (0.050)	0.041 (0.031)	-0.077 (0.087)
Observations	81727	8518	58921	6215
D. Triangular kernel	0.010 (0.016)	-0.043 (0.045)	0.036 (0.026)	-0.077 (0.087)
Observations	55666	5596	41701	4254
E. Narrow bandwidth	0.016 (0.018)	-0.052 (0.057)	0.044 (0.029)	-0.082 (0.099)
Observations	41901	3210	35198	2520

Notes: Standard errors in parentheses, clustered by district. Significant levels: \*10%, \*\*5% and \*\*\*1%



## 2005 policy result: rural sector

RD specification	Incidence of bank borrowing		Share of bank loans	
	(non-muslim) (1)	(muslim) (2)	(non-muslim) (3)	(muslim) (4)
A. Main specification	0.024 (0.018)	-0.035 (0.074)	<b>0.052*</b> (0.031)	-0.125 (0.098)
Observations	27785	1456	20668	1445
B. Covariate adjustment	0.009 (0.019)	-0.040 (0.062)	0.038 (0.033)	0.017 (0.061)
Observations	25369	1443	16621	1067
C. Quadratic run. var.	0.018 (0.021)	-0.043 (0.071)	0.025 (0.034)	-0.120 (0.105)
Observations	49581	3241	35205	2494
D. Triangular kernel	0.020 (0.016)	-0.054 (0.064)	<b>0.051*</b> (0.029)	-0.113 (0.095)
Observation	33874	2168	24422	1817
E. Narrow bandwidth	0.022 (0.019)	-0.045 (0.073)	<b>0.061*</b> (0.032)	-0.107 (0.111)
Observations	24898	1283	18434	1184

Notes: Standard errors in parentheses, clustered by district. Significant levels: \*10%, \*\*5% and \*\*\*1%

## Effect on firms

RD specification	Major source of finance 2009		Major source of finance 2005	
	(non-muslim) (1)	(muslim) (2)	(non-muslim) (3)	(muslim) (4)
A. Main Specification	0.013 (0.014)	0.017 (0.012)	0.002 (0.009)	0.008 (0.011)
Observations	280264	363933	1868962	2676779
B. Covariate adjustment	0.009 (0.009)	-0.005 (0.010)	-0.001 (0.006)	-0.002 (0.005)
Observations	281795	209181	1859695	1707628
C. Quadratic run. var	0.020 (0.016)	0.019 (0.015)	0.007 (0.010)	0.013 (0.011)
Observations	587978	594237	4008646	589926
D. Triangular kernel	0.012 (0.013)	0.017 (0.011)	0.005 (0.008)	0.011 (0.010)
Observations	398534	504526	2778877	4085155
E. Narrow bandwidth	0.003 (0.016)	0.013 (0.014)	0.003 (0.009)	0.014 (0.012)
Observations	209181	292700	1500957	2273878

Notes: Standard errors in parentheses, clustered by district. Significant levels: \*10%, \*\*5% and \*\*\*1%

## Effect on firms (Rural)

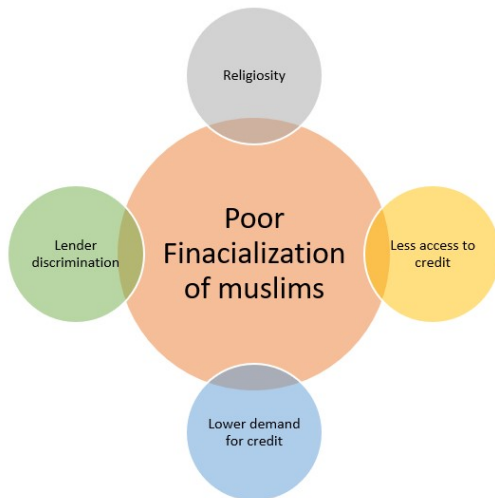
RD specification	Major source of finance 2009		Major source of finance 2005	
	(non-muslim) (1)	(muslim) (2)	(non-muslim) (3)	(muslim) (4)
A. Main specification	0.017*	0.046	0.019*	0.016
	(0.009)	(0.032)	(0.011)	(0.014)
Observations	690097	82137	1048451	119445
B. Covariate adjustment	0.017*	0.029	0.016**	0.006
	(0.009)	(0.076)	(0.031)	(0.012)
Observations	680772	89007	1166392	132141
C. Quadratic run. var.	0.017*	0.043	0.017	0.012
	(0.009)	(0.030)	(0.010)	(0.014)
Observations	1635809	197892	2335403	153258
D. Triangular kernel	0.013	0.043	0.018*	0.019
	(0.008)	(0.030)	(0.010)	(0.012)
Observations	1094201	117553	1508568	145322
E. Narrow bandwidth	0.006	0.036	0.025**	0.022
	(0.010)	(0.038)	(0.012)	(.014)
Observations	545978	64081	875382	112241

Notes: Standard errors in parentheses, clustered by district. Significant levels: \*10%, \*\*5% and \*\*\*1%

# Results

- ▶ Effect on households
  - ▶ Incidence of bank borrowing increases by 36% and the share of bank loans increases by 55% for non-muslim households in the treated districts.
  - ▶ The effect remains highly significant in alternative specifications.
  - ▶ Effect of the policy is larger in rural areas where the policy was targeted.
  - ▶ No effect of the policy on muslim households.
- ▶ Effect on firms
  - ▶ Focus on small sized firms, hiring less than 3 workers.
  - ▶ Firms in the treatment group owned by non-muslims, report significant increase in bank financing.
  - ▶ No effect on muslim borrowers.

# The 2 C's of Economics



# Demand for Loans

Can difference in the need for credit explain this credit gap?

- ▶ As per the economic census data in the rural areas:
  - ▶ Non-muslims are more likely to be engaged in agriculture (40.6%) as compared to muslims (21.2%)
  - ▶ In the treatment group, 11% (15%) of muslims (non-muslims) own agriculture establishments.
  - ▶ As an outcome of the policy: larger dependency on formal credit amongst farm-based business owned by non-muslims in the treated group.
- ▶ As per the AIDIS dataset:
  - ▶ Treatment effect: Non-muslim households borrow more both for consumption and occupation needs.
  - ▶ Higher demand for loans coming from households self-employed in both farm and non-farm business.
  - ▶ 31.1% muslims and 20.5% non-muslims employed in non-agricultural activities.
  - ▶ Borrowing is three times larger for this occupation group in the treated districts, no effect on muslims.

# Lender Discrimination

Can discrimination against muslims explain the insignificant impact of the policy?

- ▶ Cultural proximity increases credit access and borrowing, lowers collateral requirements in India, Fisman et.al(2017).
- ▶ In 2015-16 the share of muslim recipients in priority sector lending was marginally above 2%.
- ▶ Two indices to check for lender discrimination:
  - ▶ How likely are muslim households to obtain a loan conditional on them applying for it?
  - ▶ Is there any discrimination against muslim borrowers at the margin?

# Lender Discrimination

- ▶ Likelihood of obtaining a loan.
  - ▶ Muslim households 28% less likely to obtain a loan, IHDS (2011-12).
  - ▶ No such difference between muslims and non-muslims in our sample of treated districts.
  - ▶ Conditional on household characteristics, muslims are 36% less likely to apply for a bank loan.
- ▶ Likelihood of default
  - ▶ Gary Becker's outcome test:
  - ▶ Loan to a black applicant generates greater profit than that to a white applicant: racial bias, Becker (1993).
  - ▶ Whether loans to non-muslim borrowers at the margin have a higher rate of default.
  - ▶ Focus on the outstanding short and medium-term marginal loans borrowed at least one year or four years before the date of the survey.
  - ▶ Religion has no significant effect on the probability of default on bank loans.
  - ▶ No evidence of lender discrimination.



## Proximity to Banks

- ▶ Residential segregation of muslims and scheduled caste: public amenities located away from their neighborhoods Adukia et.al(2022).
- ▶ I look into the exact location of these new branches at the sub-district level.
- ▶ Calculate the expected probability of a muslim borrower to obtain a loan.
- ▶ Define  $p_i$ , probability of a borrower to get a loan in sub-district  $i$ : number of bank branches per capita in a sub-district.
- ▶ Multiply this with muslim population  $m_i$  and sum it across sub-districts to get the expected probability of a muslim borrower to obtain a loan  $E(m_j)$ .
- ▶ Divide the treated district within the bandwidth by their proximity to banks: districts above the median value and those below it.
- ▶ Incidence of bank borrowing for muslim borrowers: 5.1% and 3.2% and the proportion of bank loans: 17.4% and 9.1% respectively in districts above and below the median.
- ▶ No significant treatment effect for muslim households in either of the categories.

# Incorporating Religiosity

Can the degree of religiosity affect banking outcome?

- ▶ 83.7% of muslims identify themselves as religious, 94.4% Muslims believe in god and 30% to 35% of them believe in heaven and hell.
- ▶ 30% of them attend religious services more than once a week and 37.4% of them, offer prayers several times a day, WVS (2017-2022).
- ▶ Incorporate the heterogeneous impact of religion on borrowing behavior, using religious institutions as a measure of religiosity.

# Role of Religious Institutions

- ▶ Islam spread in the Indian subcontinent predominantly via two ways.
  - ▶ Trade routes between the Indian sub- continent and the Arab world .
  - ▶ Dynasties-led rule by Muslim rulers beginning from the Delhi Sultanate up-to the end of the Mughal era
- ▶ States with the largest share of mosques and madrasas include UP, Rajasthan, West Bengal and Haryana which were formerly ruled by muslim kings, or Kerala, Karnataka, Gujarat, and Maharashtra which were centers of trade.
- ▶ Sector wise number of mosque and madarsas (Islamic schools) in each district as a measure of religious adherence.
- ▶ Correlation with the overall development and prosperity of muslims in an area.
- ▶ No correlation between the religious institutions per capita and the banking outcome in districts within the bandwidth.

# Estimating Heterogeneity by the number of Religious Institutions

RD specification	Incidence of bank borrowing			Share of bank loans		
	(overall) (1)	(rural) (2)	(urban) (3)	(overall) (4)	(rural) (5)	(urban) (6)
A. Muslim	-0.085 (0.053)	-0.053 (0.077)	-0.055 (0.041)	-0.216** (0.093)	-0.297** (0.125)	-0.118* (0.066)
Observations	1918	863	1123	1398	628	781
B. Non-Muslim	0.039** (0.019)	0.054** (0.027)	0.012 (0.029)	0.073** (0.034)	0.101** (0.039)	0.038 (0.043)
Observations	31257	9372	13220	22059	11182	10602

Notes: Standard errors in parentheses, clustered by district. Significant levels: \*10%, \*\*5% and \*\*\*1%. Using the 2009 bank branch expansion policy.

- ▶ Estimate (HLATE), Becker et al. (2013).
- ▶  $Y_i^j = \beta_0 + \beta_1 \hat{u}b_i + \beta_2 Z_d + \beta_2 Z_d * D_i + \beta_3 R_i * \hat{u}b_i + \beta_4 R_i + \epsilon_i$
- ▶ After controlling for religiosity, negative coefficient no longer significant for muslim households.
- ▶ No qualitative difference for non-muslim borrowers.

# Effect of Religiosity

RD specification	Incidence of bank borrowing			Share of bank loans		
	(overall) (1)	(rural) (2)	(urban) (3)	(overall) (4)	(rural) (5)	(urban) (6)
A. All districts	-0.067 (0.049)	-0.017 (0.072)	<b>-0.069*</b> (0.039)	-0.176** (0.083)	-0.145 (0.112)	<b>-0.150**</b> (0.063)
Observations	2199	960	1242	1614	697	917
B. High religiosity	-0.102** (0.044)	-0.019 (0.098)	<b>-0.075**</b> (0.035)	<b>-0.237**</b> (0.075)	-0.170 (0.147)	<b>-0.154**</b> (0.061)
Observations	1884	765	1083	1380	558	794
C. Low religiosity	0.008 (0.049)	0.007 (0.088)	-0.054 (0.076)	0.059 (0.099)	-0.136 (0.154)	-0.178** (0.088)
Observations	1759	783	1012	1287	564	751

Notes: Standard errors in parentheses, clustered by district. Significant levels: \*10%, \*\*5% and \*\*\*1%. Using the 2009 bank branch expansion policy.

# Effect of Religiosity

- ▶ Divide districts into above median and below median sub-samples, based on their religiosity.
- ▶ Bank borrowing lower in high religiosity districts in urban areas. Marginal difference in rural areas.
- ▶ More religious districts have lower incidence and a lower share of bank loans.
- ▶ The negative coefficient on the incidence of bank borrowing in urban areas can be attributed to the high religiosity districts.
- ▶ No effect in rural areas. No effect on non-muslim households.

# Placebo Effect

RD specification	Incidence of borrowing		Share of bank loans	
	(non-muslim) (1)	(muslim) (2)	(non-muslim) (3)	(muslim) (4)
A.Placebo cutoff (AIDIS 2002)	-0.013 (0.019)	0.004 (0.053)	0.007 (0.036)	-0.033 (0.089)
Number of observations	30759	2852	21243	1621
B.Placebo cutoff = +400	<b>0.039*</b> (0.021)	0.004 (0.084)	<b>0.058*</b> (0.031)	<b>-0.019**</b> (0.079)
Number of observations	41841	2270	27677	1770
C.Placebo cutoff = -400	0.001 (0.040)	<b>-0.145**</b> (0.071)	<b>0.061*</b> (0.032)	<b>-0.205**</b> (0.088)
Number of observations	32968	3110	23298	1354

Notes: Standard errors in parentheses, clustered by district. Significant levels: \*10%, \*\*5% and \*\*\*1%

- ▶ No significant difference in the pre-policy period.
- ▶ Results are consistent after re-centering the running variable to four hundred units above and below the cutoff.

# Conclusion

- ▶ Islam's ruling on the interest-bearing transaction effectively constrains bank borrowing for muslims.
- ▶ Despite the demand for funds and ease in the supply of loans, muslim households and firms are unlikely to avail bank credit.
- ▶ Further explore the supply-side dynamics of loan transactions and the saving behavior of muslim households.



# Do households have a bank loan

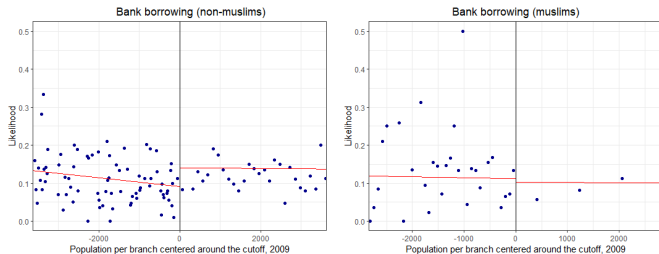


Figure: 2a. Household has a bank loan

# Do rural households have a bank loan

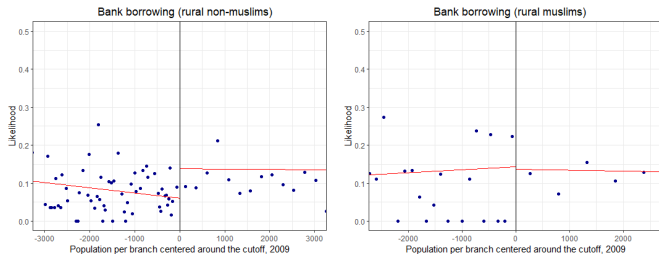


Figure: 2b. Household in the rural sector has a bank loan

# Do urban households have a bank loan

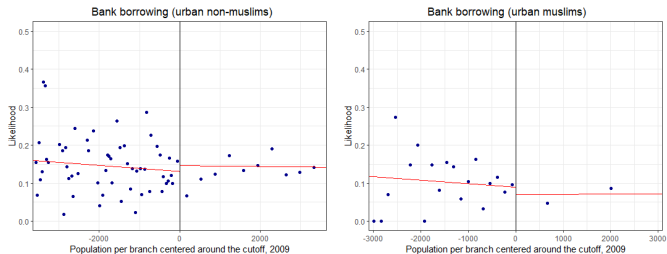


Figure: 2c. Household in the urban sector has a bank loan