

# Borrowing Culture and Debt Relief: Evidence from a Policy Experiment

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# Background

- This research is part of the research agenda on access to finance for underserved sectors in emerging economies at the Centre for Emerging Societies (CES) at the Shiv Nadar University, India.
- SNU is a new, private, research-focused university located in greater Delhi area.

# Presentation scheme

- Research questions: motivation and existing literature
- Model and hypotheses
- Indian government's *Debt Relief Program for Small and Marginal Farmers (08)*
- Data
- Empirical strategy
- Summary of results:
  - Results for borrowers' reaction to debt relief program
    - Within-group results for three groups of borrowers
    - Between-group results from difference-in-difference tests
  - Results for alternative explanations
  - Results for creditors' reaction to debt relief program
- Implications for banking and financial market efficiency

# Research questions and motivation

1. What are the effects of a large-scale debt relief program on the borrowing culture (debt repayment behavior of the borrowers) in the post-relief period?
2. What are the implications of the behavioral changes of the borrowers (if any) for credit market efficiency?
3. Can we model (1) and (2) above in a realistic emerging economy setting?
4. What are the predictions of the model? Do they hold up in extensive empirical testing?

Our motivation: The questions are very important. However, the existing literature addresses none of the above.

# Our setting

- A rural credit market representative of many emerging economies
  - Borrowers borrow from financial institutions at a subsidized rate and from informal sources at a much higher rate
  - Debt contract enforcement is imperfect
  - Political interventions in debt market in the form of debt relief for overdue debt can happen even in a normal state
- We use a comprehensive framework, including creditors as well as all classes of borrowers:
  - Those who receive full waiver ,
  - Those who receive partial waiver
  - Those who receive no benefit, not having any overdue debt
- For empirical work, we use data from one of the biggest debt relief programs in history.

# Existing literature

- Bolton and Rosenthal (2002) present a theoretical model of a rural credit market where
  - Poor farmers borrow from rich farmers
  - Debt contract enforcement is perfect
  - State-contingent intervention is politically feasible only in poor states of nature (no political economy issues)
- In their setting there are both *ex-post* and *ex-ante* efficiency gains arising from debt relief
- Importantly, borrowers are non-strategic and all borrowers are covered by the debt relief program.
- Recently, a few papers have looked at strategic default in reaction to various measures adopted in the USA following the recent financial crisis (Aggarwal et al , 2011; Mayer et al, 2012). Their focus is primarily NOT on borrower behavior in the post-relief period.

# A simple model: setting

- Time:

At  $t = 0$ , a government waiver was announced on all existing overdue loans, and new loans were given or loan applications rejected

At time=1, the current point in time, a given farmer has to decide whether to repay the current loan, or wait for another waiver.

- Credit market:

One bank lending 1 unit at a subsidized rate  $r_b$  :  $R = 1 + r_b$

Moneylenders lending 1 unit at a higher rate  $r_m$

- Farmers:

Type 1 (good) and type 2 (bad) in proportions  $\pi$  and  $1-\pi$ .

Type 1 farmers produce  $\Theta$  units with probability  $p_1$  and 0 units with probability  $1-p_1$ .

Type 2 farmers produce  $\Theta$  units with probability  $p_2$  and 0 units with probability  $1-p_2$ .

$p_1 > p_2$

# A simple model: bankers' decisions

- Imperfect contract enforcement in emerging economies
  - Seizure of collaterals practically infeasible (Allen, Qian, and Qian, 2005; Allen, Chakrabarti, De, Qian and Qian, 2012).
  - In India, priority sector loan rates same for defaulters as well as non-defaulters
  - Hence, banks want their loan officers to avoid bad loans at all costs, and design their incentive structure accordingly (Banerjee and Duflo, 2008).
- At  $t=0$ , loan officers reject loan applications of dubious prospects and ration credit. They target those farmers who had defaulted at  $t=0$ . Rationing causes *ex ante* inefficiency in the debt market.
- At  $t=1$ , the same incentive to avoid a bad loan motivates loan officers to grant extensions of  $Y$  days to past defaulters and  $X$  days to non-defaulters where  $X > Y$ .



## A simple model: borrowers' decisions

- The farmers weigh the benefit of a future debt waiver against the opportunity cost of defaulting on their current loans and being denied bank credit in future. In case no debt waiver materializes, they have to opt for more costly financing from the informal sector.
- The conflict between the two outcomes is affected by
  - their type (1 or 2), which determines their opportunity cost of losing bank credit, and
  - credit history (defaulter or non-defaulter) which determines the length of the extension (grace period) granted by the bankers on their current loans.

# A simple model: borrowers' decisions

- A borrower's payoff depends on his production ( $\Theta$  or zero), his action (repay or default) and the state (waiver or no waiver).
- The expected value today of all future production for a farmer of type  $i$  is
  - $\Theta * p_i / r_b = V_{bi}$  if he does not default
  - $V_{bi} + R$  if he defaults and the loan is waived
  - $V_{mi}$  if he defaults and the loan is not waived:  $V_{bi} > V_{mi}$
- Every day of delay after the due date diminishes the chance of getting a new bank loan by  $1/Y$  for past defaulters and  $1/x$  for non defaulters:  $1/Y > 1/X$
- $D_{xi}$ , the optimal number of days of delay for a type  $i$  farmer who had not defaulted before is given by

$$P[V_{bi} + R] + (1 - P)[(D_{xi}/X) * V_{mi} + (1 - D_{xi}/X) * V_{bi}] = V_{bi}, \quad i = 1, 2$$

$$D_{xi} = XRP / (1 - P)(V_{bi} - V_{mi}), \quad \text{where } P \text{ is prob. of future waiver}$$

## A simple model: borrowers' decisions

- $D_{Xi} = XRP/(1-P)(V_{bi} - V_{mi})$ , where P is prob. of future waiver
- The optimal delay
  - increases in X (Y), the length of grace period
  - increases in P, probability of future waiver
  - decreases in  $(V_{bi} - V_{mi})$ , the opportunity cost of losing bank finance
- This is our basic test model

## A simple model: predictions

1. Expectations of more debt relief in future coupled with extensions granted by bankers motivate all borrowers regardless of type and credit history to delay debt payment more in the post-waiver period than in the pre-waiver period: *ex-post* inefficiency in the credit market
2. Borrowers with good credit history (no overdue debt in the past) delay the longest
3. Full-waiver and partial-waiver farmers behave similarly
4. Loan size does not make a difference to the optimal decision to delay debt payment
5. Negative association between output and delay in debt repayment
6. Bankers ration credit. They target past defaulters for new loan rejection: *ex ante* inefficiency

# *Debt Relief Programme for Small and Marginal Farmers 2008*

- Was announced on February 29, 2008 as part of the central government budget 2008-9.
- The state of the rural economy was normal.
- One of the biggest debt relief programs in history:
  - Covered 36 million farmers
  - \$35.9 billion dollars of overdue bank debt were written off, equivalent to 1.3% of national GDP
  - Transfer from taxpayers to the borrowers. Banks were fully compensated by the govt.
- Asymmetric relief for different classes of borrowers:
  - Full relief for famers with less than 2 hectares
  - Partial (25%) relief for farmer with more than 2 hectares
  - No benefit for famers with no overdue debt
  - No benefit for farmers with non-bank loans.

# A normal state of the rural economy

Year	Percentage of sub-divisions with deficient rainfall	Actual rainfall as percentage of normal rainfall
2005	4	99
2006	10	99
2007	5	106
2008	3	98
2009	22	78
2010	5	102
2011	3	101
2012	13	92
Average	8	97

Table A1. Annual rainfall  
Table A2: Agricultural production

Year	Area under cultivation	Production	Yield
	(million hectares)	(million tonnes)	(Kg/ hectare).
2005-06	121.6	208.6	1715
2006-07	123.7	217.3	1756
2007-08	124.1	230.8	1860
2008-09	122.8	234.5	1909
2009-10	121.3	218.1	1798
2010-11	126.7	244.5	1930
2011-12	125	257.4	2059
Average	123.6	230.2	1861

# Data

- Panel data of complete transactions records of about sixteen thousand farmers over six years (May 2005 - February 2012).
- The period includes three years before and after the 2008 debt waiver program
- Accounts spread over nine branches of a public sector bank in four districts of Andhra Pradesh
- Final sample includes 12,645 borrowers, including
  - 8,064 full-waiver borrowers
  - 2,209 partial-waiver borrowers
  - 2,372 no-waiver borrowers

# Table 1: Summary Statistics

Variables	Full waiver	Partial Waiver	No Waiver	Full Sample
Number of farmers	8064	2209	2372	12645
Land holding				
Mean	0.99	5.66		2.37
Median	1.00	3.11		1.25
Q1	0.54	2.45		0.67
Q3	1.47	4.25		2.13
Loan Outstanding (days as of Feb 29 ,2008)				
Mean	434	419	254	373
Median	443	405	251	366
Q1	345	318	186	238
Q3	556	552	331	500
Average Loan (Oct 2005 - Feb 2008)				
Mean	23618	48746	26051	28458
Median	18233	40800	21792	22000
Q1	10000	26000	13584	11822
Q3	30000	51090	35000	37532
Total Number of Loans Feb 29, 2008	8166	2565	5143	15874
Total Number of Loans Feb 28, 2011	12585	3097	3717	19399



# Empirical strategy

- $Days_{ijt}$  is the appropriate dependent variable

- Within-group comparison before and after the waiver

$$Days_{ijt} = \alpha + \nu_b + \delta Post08 + \beta_1 Loan_{ijt} + \beta_2 Land_{it} + \beta_3 Production_{dt} + \beta_4 Rain_{dt} + \beta_5 Credit_{dt} + \beta_6 Inflation_t +$$

- Between -group comparison before and after the waiver (difference-in-difference tests)

$$Days_{ijt} = \alpha + \nu_b + \delta_1 Post08 + \delta_2 Fullwaiver + \delta_3 Partialwaiver + \delta_4 Post08 * Fullwaiver + \delta_5 Post08 * Partialwaiver + \beta_1 Loan_{it} + \beta_2 Production_{dt} + \beta_3 Rain_{dt} + \beta_4 Rainfall_{dt} + \beta_5 Credit_{dt} + \beta_6 Inflation_t + \epsilon_{it}$$

- $Post08$  is the main variable of interest
- Loan, landholdings, and production are farmers-specific control variables.
- Rainfall, credit flow are district-specific control variables.
- We also control for inflation in the agricultural sector.

# Empirical strategy

- For most tests, we consider four specifications:
  1. Comparison between all loans before and all loans after the waiver.
  2. Comparison between the last loan before and all loans after the waiver.
  3. Comparison between the last loan before and the first loan after the waiver.
  4. Comparison between the last loan before and the last loan after the waiver in our dataset.
- Intuitively, we should expect strongest results in (3).
- Our test results confirm the intuition.

# Empirical results

- All model predictions are confirmed.
- Four groups of results;
  1. Within-group comparison: In the post-waiver period, do all groups of borrowers delay their debt payment beyond the due date? Do they delay more than in the pre-waiver period? (Prediction 1)
  2. Between-group comparison: Do the group that did not default before delay the longest (Prediction 2)? Do the full-waiver and partial-waiver group delay statistically similarly (Prediction 3)
  3. Alternative explanations: Are there alternative explanations for our results? Do they bear out?
  4. Creditors' reaction: Do they ration credit?

## Empirical results: Within-group comparison

- In the post-waiver period, all groups of borrowers delay their debt payment beyond
- They delay more than in the pre-waiver period
- Table 2 (univariate tests)
- Tables 3A - 3D (multivariate tests)
- The results indicate *ex post* inefficiency in the rural debt market

## Empirical results: Between-group comparison

- In the post-waiver period, no-waiver farmers who did not default before delay longer than the other groups
- Table 4: dependent variable no. of days
- Table 5: dependent variable default probability
- Table 6: robustness on Table 4 - loan size as a proxy for the missing landholding information. The sample is divided into four quartiles:
  - Group 1: average loan amount up to INR 11,266
  - Group 2: average loan amount more than INR 11,266 but not exceeding 21,000
  - Group 3: average loan amount more than INR 21,000 but not exceeding 35,000
  - Group 4: average loan amount exceeding INR 35,000

## Empirical results: Alternative explanations

- Alternative explanation : no-waiver farmers delay the longest in the post-waiver period because their debt burden has not declined.
- However, if true, then partial-waiver farmers would delay longer than the full-waiver farmers.
- Table 7A: we do not find supporting evidence
- Table 7B: RD test again does not find supporting evidence

# Empirical results: Creditors' reaction

- Do the banks ration credit?
- 1022 farmers in our sample do not show loans in the post-waiver period:
  - 533 full-waiver
  - 368 partial-waiver
  - 121 no-waiver

# Empirical results: Creditors' reaction

- Test model (Probit regression):

$$Reject_i = a + v_b + \delta_1 fullwaiver_i + \delta_2 Partialwaiver + \varepsilon_{it}$$

- Table 8A:

Compared to no-waiver farmers, the median full-waiver farmer has 5.5% more chance and median partial-waiver farmer 19.9% more chance of loan rejection.

- Table 8B:

- When compared directly with each other the median partial-waiver farmer has 9.7% - 10.1% higher chance of loan rejection.
- In addition to default status, days outstanding does not affect loan rejection chances
- Why do partial-waiver farmers face a higher probability of loan rejection?



## Empirical results: Creditors' reaction

- Do creditors also micro-ration credit? Are the new loans for a farmer

- Test model:

$$\text{Loanamt}_{it} = \alpha + \nu_t + \delta_1 \text{Post08} + \beta_1 \text{Production}_{dt} + \beta_3 \text{Rain}_d + \beta_4 \text{Credit}_d + \beta_2 \text{Inflation} + \varepsilon_{it}$$

- Table 9 finds no evidence. The coefficient of *Post08* is insignificant for all groups.
- Interestingly, the coefficient is large and negative for only no-waiver group.

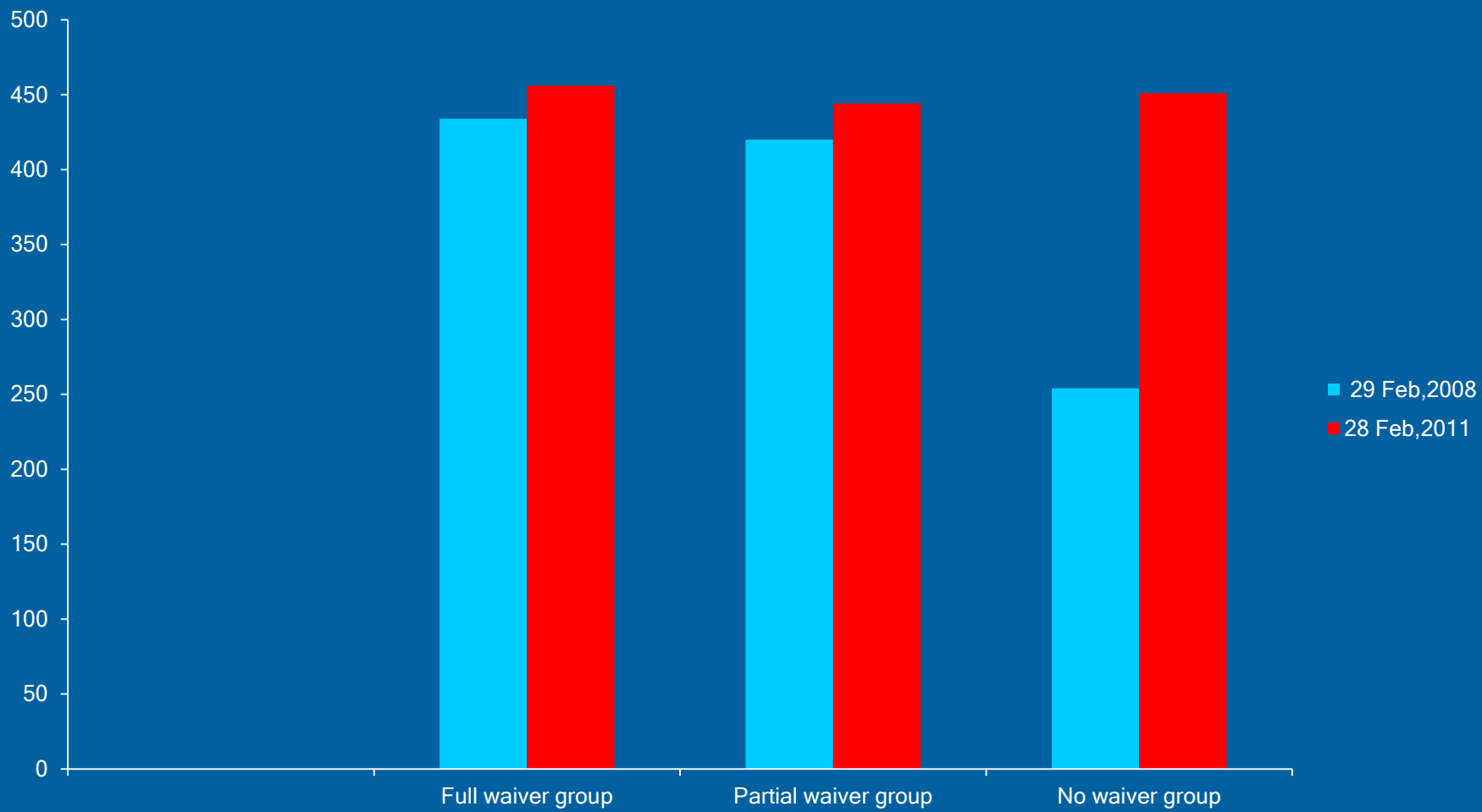
# Conclusions

- Our research focuses on the aftermath of debt relief and, in that context, highlights the role of borrower behavior.
- This has been scarcely researched before.
- Theoretically as well as empirically, our research demonstrates that expectations of more debt relief in future coupled with extensions granted by banks cause both *ex post* and *ex ante* inefficiencies in the credit market.
- Can these two factors be sufficiently controlled?
- Will require significant political and structural reform.
- The implications of our findings are sobering.

THANK YOU

## Table 2: Univariate Statistics

	29 Feb 2008	28 Feb 2011	Mean difference T-stats
Number of days loan outstanding			
Full waiver-group	434	456	- 5.9 ***
Partial-waiver group	419	444	-3.7***
No -waiver group	254	451	-45.6 ***



**Table 3A: Within Group Comparison: Days outstanding in pre and post-waiver periods**

	Full Waiver	Partial Waiver	No waiver
VARIABLES	Days	Days	Days
Post08	130.9*	137.1	352.9***
	[1.8]	[1.5]	[3.4]
Loan	-.0.0	-.0.0	-.0.0
	[-1.0]	[-1.0]	[-1.1]
Land	-21.4*	0.0	
	[-1.8]	[0.7]	
Production	-0.1	-0.1**	0.0
	[-1.6]	[-2.2]	[0.2]
Rain	YES	YES	YES
Credit	YES	YES	YES
Inflation	YES	YES	YES
Branch FE	YES	YES	YES
Observations	13,087	5,491	8,845
Number of accounts	4,913	2,145	2,360
R <sup>2</sup>	0.09	0.12	0.36

*Multivariate tests based on all loans before and after the waiver*

Table 3B: Within Group Comparison: Days outstanding in pre and post-waiver periods

	Full waiver	Partial waiver	No waiver
VARIABLES	Days	Days	Days
Post08	83.4	103.5	354.0***
	[1.0]	[1.2]	[3.7]
Loan	-0.0	-0.0	-0.0
	[-1.12]	[-.12]	[-.74]
Land	-11.6	0.0***	
	[-1.0]	[7.0]	
Production	-0.2	-0.2*	-0.0
	[-1.5]	[-1.8]	[-0.0]
Land	-11.6	0.0***	
	[-1.0]	[7.0]	
Rain	Yes	Yes	Yes
Credit	Yes	Yes	Yes
Inflation	Yes	Yes	Yes
Branch FE	Yes	Yes	Yes
Observations	11,639	4,793	6,034
Number of Accounts	4,913	2,145	2,360
R <sup>2</sup>	0.11	0.18	0.4

*Multivariate tests based on the last loan before and all loans after*

**Table 3C: Within Group Comparison: Days outstanding in pre and post-waiver periods**

	Full Waiver	Partial Waiver	No waiver
VARIABLES	Days	Days	Days
Post08	72.0**	214.9***	397.5***
	[2.1]	[7.5]	[5.0]
Loan	0.0	0.0	0.0
	[1.1]	[1.2]	[0.67]
Land	-15.7	0.0***	
	[-0.8]	[3.5]	
Production	-0.5***	-0.3***	0.1
	[-8.4]	[-5.1]	[0.3]
Rain	Yes	Yes	Yes
Credit	Yes	Yes	Yes
Inflation	Yes	Yes	Yes
BranchFE	Yes	Yes	Yes
Observations	8,524	3,586	4,569
Number of Accounts	4,913	2,145	2,360
R <sup>2</sup>	0.15	0.21	0.45

*Multivariate tests based on last loan before and first loan after waiver*



**Table 3D: Within Group Comparison: Days outstanding in pre and post-waiver periods**

	Full waiver	Partial waiver	No Waiver
VARIABLES	Days	Days	Days
Post08	-84.0	52.0	172.2***
	[-1.3]	[1.2]	[4.0]
Loan	-0.0	-0.0	0.0**
	[-.68]	[-0.04]	[2.2]
Land	10.6	-.03**	
	[-.58]	[-1.83]	
Production	-0.4***	-0.3***	0.2
	[-5.7]	[-5.8]	[1.2]
Rain	Yes	Yes	Yes
Credit	Yes	Yes	Yes
Inflation	Yes	Yes	Yes
Branch FE	Yes	Yes	Yes
Observations	6,982	3,018	3,798
Number of Accounts	4,217	1,941	2,342
R <sup>2</sup>	0.36	0.4	0.24

*Multivariate tests based on last loan before and last loan after waiver*

Days outstanding in pre and post waiver periods

	(1)	(2)	(3)	(4)
VARIABLES	Days	Days	Days	Days
Post08	278.3***	306.9***	384.2***	228.1***
	[5.4]	[7.2]	[7.0]	[2.8]
Fullwaiver	160.1***	241.5***	186.4***	174.7***
	[6.8]	[6.3]	[3.5]	[4.5]
Partialwaiver	145.2***	233.7***	180.1***	172.0***
	[5.1]	[5.5]	[3.0]	[4.0]
FullWaiver*Post08	-184.7***	-259.0***	-266.5***	-245.3***
	[-3.6]	[-5.6]	[-7.2]	[-6.7]
Partialwaiver*Post08	-165.6***	-248.7***	-243.6***	-208.4***
	[-3.0]	[-4.8]	[-6.3]	[-4.4]
Loan	-0.0	-0.0	0.0 ***	0.0 ***
	[-0.55]	[-0.56]	[5.12]	[2.6]
Production	-0.0	-0.1	-0.3*	-0.2*
	[-0.6]	[-0.7]	[-1.9]	[-1.7]
Rain	Yes	Yes	Yes	Yes
Credit	Yes	Yes	Yes	Yes
Inflation	Yes	Yes	Yes	Yes
Branch FE	Yes	Yes	Yes <sub>34</sub>	Yes
Observations	35,253	29,795	22,061	18,214
Number of Accounts	12,630	12,630	12,630	11,291
R <sup>2</sup>	0.15	0.23	0.14	0.37

**Table 5: Between group comparison:  
Probability of default pre and post waiver**

	(1)	(2)	(3)	(4)
VARIABLES	Default	Default	Default	Default
Post08	0.3***	0.5***	0.6***	0.5***
	[4.2]	[7.6]	[7.3]	[6.7]
Fullwaiver	0.5***	0.8***	0.7***	0.7***
	[11.0]	[14.9]	[8.0]	[9.9]
Partialwaiver	0.5***	0.8***	0.7***	0.7***
	[8.9]	[13.5]	[6.6]	[8.5]
Fullwaiver*Post08	-0.5***	-0.8***	-0.8***	-0.7***
	[-6.3]	[-10.9]	[-16.1]	[-13.6]
Partialwaiver*Post08	-0.5***	-0.8***	-0.8***	-0.7***
	[-6.8]	[-14.1]	[-14.5]	[-9.7]
Loan	-.0.0	-.0.0	-.0.0	-.0.0
	[-.67]	[-.83]	[-.45]	[-1.12]
Production	Yes	Yes	Yes	Yes
Rain	Yes	Yes	Yes	Yes
Credit	Yes	Yes	Yes	Yes
Inflation	Yes	Yes	Yes	Yes
Branch FE	Yes	Yes	Yes	Yes
Observations	35,253	29,795	22,061	18,214
Number of Accounts	12,630	12,630	12,630	11,291
R <sup>2</sup>	0.19	0.24	0.29	0.41

**Table 6: Between group comparison for farmers with similar average loans: Days outstanding in pre- and post-waiver periods**

	Group 1	Group 2	Group 3	Group 4
VARIABLES	Days	Days	Days	Days
Post08	323.8***	329.0***	263.6***	235.9***
	[8.9]	[6.1]	[4.0]	[3.8]
Fullwaiver	180.3***	179.8***	151.2***	91.2***
	[6.9]	[6.4]	[6.6]	[3.2]
Partialwaiver	161.7***	126.0***	127.0***	142.4***
	[6.0]	[3.1]	[4.4]	[8.8]
Fullwaiver*Post08	-231.0***	-233.8***	-176.9***	-93.4**
	[-4.8]	[-4.1]	[-2.9]	[-2.4]
Partialwaiver*Post08	-167.1***	-113.1*	-142.4**	-133.6***
	[-3.2]	[-1.7]	[-2.1]	[-3.2]
Loan	-0.0	-0.0	-0.0	0.0
	[-0.3]	[-1.0]	[-0.68]	[0.27]
Production	-0.1	0.0	-0.0	-0.1**
Rain	Yes	Yes	Yes	Yes
Credit	Yes	Yes	Yes	Yes
Inflation	Yes	Yes	Yes	Yes
Observations	7,269	7,886	7,912	8,828
Number of Accounts	2,598	2,590	2,452	2,754
R <sup>2</sup>	0.14	0.17	0.17	0.17

Table 7A: Comparison between full-waiver and partial-waiver groups:  
Days outstanding pre and post waiver

	1	2	3	4
VARIABLES	Days	Days	Days	Days
Post08	128.3**	85.8	85.2**	-70.0
	[2.0]	[1.1]	[2.2]	[-1.1]
Partialwaiver	10.4	21.9	-9.5	-11.3
	[0.4]	[0.8]	[-1.1]	[-1.3]
Partialwaiver*Post08	-8.2	-16.9	42.7	74.6**
	[-0.2]	[-0.4]	[1.2]	[2.5]
Loan	-0.0	-0.0	-0.0	0.0
	[-0.69]	[-0.83]	[-0.69]	[1.1]
Land	0.0	0.0***	0.0	-0.1***
	[0.3]	[3.9]	[1.1]	[-3.3]
Production	-0.1	-0.2	-0.4***	-0.3***
	[-1.6]	[-1.5]	[-6.9]	[-6.0]
Rain	Yes	Yes	Yes	Yes
Credit	Yes	Yes	Yes	Yes
Inflation	Yes	Yes	Yes	Yes
Brnach FE	Yes	Yes	Yes	Yes
Observations	18,576	16,431	12,109	9,999
Number of accno	7,057	7,057	7,057	6,157
R <sup>2</sup>	0.09	0.12	0.14	0.37

**Table 7B: Comparison between full and partial-waiver groups with similar landholdings: Days outstanding in pre- and post-waiver periods (based on all loans pre and post waiver)**

	1.8-2.2	1.75-2.25	1.7-2.3
	(1)	(2)	(3)
VARIABLES	Days	Days	Days
Post08	81.6	90.8	107.2
	[1.2]	[1.3]	[1.4]
Partialwaiver	-17.0	-12.8	-6.5
	[-0.5]	[-0.4]	[-0.2]
Partialwaiver*Post08	50.8	43.0	32.2
	[1.0]	[0.9]	[0.7]
Loan	0.0	0.0	0.0
	[0.21]	[0.21]	[0.37]
Production	-0.1	-0.1	-0.0
	[-1.6]	[-1.4]	[-0.9]
Rain	Yes	Yes	Yes
Credit	Yes	Yes	Yes
Inflation	Yes	Yes	Yes
Branch FE	Yes	Yes	Yes
Observations	2,257	2,321	2,461
No. of accounts: Full/Partial/Total	387/404/791	392/427/819	429/443/872
R <sup>2</sup>	0.09	0.09	0.09

Table 8A: Between group comparison:  
 New loan rejection rate in the post-waiver period

	1	2
VARIABLES	Reject	Reject
Full waiver	0.5***	
	[2.8]	
Partial waiver	1.0***	
	[4.4]	
Default		0.7***
		[4.3]
Branch FE	Yes	Yes
Observations	12,612	12,612
Pseudo R <sup>2</sup>	0.12	0.09

**Table 8B: Comparison between full and partial-waiver farmers:  
New loan rejection rate in the post-waiver period**

	(1)	(2)	(3)
VARIABLES	Reject	Reject	Reject
Partial waiver	0.546**	0.529**	0.533**
	[2.150]	[2.286]	[2.310]
Days	0.001***	0.000	-0.001***
	[2.881]	[0.666]	[-5.350]
Land		-0.002	-0.002
		[-1.541]	[-1.531]
Days <sup>2</sup>			0.000***
			[3.933]
Branch FE	Yes	Yes	Yes
Observations	10,362	5,545	5,545
Pseudo R <sup>2</sup>	0.23	0.25	0.26



**Table 9: Within group comparison:  
Average loan amount pre and post-waiver**

	Full-waiver	Partial-waiver	No-waiver
	(1)	(2)	(3)
VARIABLES	Loan	Loan	Loan
Post08	2,673.0	614.5	-10,907.3
	[1.5]	[0.1]	[-1.3]
Production	Yes	Yes	Yes
Rain	Yes	Yes	Yes
Credit	Yes	Yes	Yes
Inflation	Yes	Yes	Yes
Branch FE	Yes	Yes	Yes
Observations	20,748	5,662	8,845
R <sup>2</sup>	0.11	0.09	0.12