Efficacy of Loan Waiver Programs

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Introduction	Theory	Empirics	Conclusion
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Introduction			

- Debt plays an essential role in the lives of agricultural households, with income fluctuations.
- Government intervention to provide easier access to credit.
- Loan issued for agriculture and allied activities from institutional sources increased from approximately 14 billion in 1981 to 1072 billion in 2012. (RBI, 2014)
- Most popular recent policy Debt Waiver Programs: National and State level

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Introduction	Theory	Empirics
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Research Question

- Understand the effectiveness of Debt Waiver Programs
- Evaluation of the 2012 UP Rin Maafi Yojana
 - Effect on consumption & decisions and productivity of agricultural households

Introduction	Theory	Empirics	Conclusion
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How effective are debt waivers?

Theory:

- Debt Laffer Curve: relationship between the magnitude of debt outstanding and expected repayment.
- Debt forgiveness could increase the adjustment effort and the ability to repay.

Evidence:

- Kanz, 2012 ADWDRS using Regression Discontinuity. No improvement in productivity.
- Sankar De & Prasanna Tantri, 2013: ADWDRS using 16000 agricultural loan accounts over 2005-12 in AP. Repayment falls in the post-waiver period.
- Gine, X., & Kanz, M. 2014: ADWDRS with no effect on productivity, wages or consumption and increase in defaults.

Theoretical Premise: Set up

- We consider a simple 2-period model of household decision making:
 - Trade off between consumption and investment in agriculture
- Assumptions:
 - No initial monetary endowment
 - But owns land which is used as collateral to borrow
 - Borrows in period 1 and decides how much to consume and invest.

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- Maximizes consumption but ensures that Land is not confiscated

Theoretical Premise: Implications

- Investment in period 1 generates income used for consumption and loan repayment in period 2
 - If the household invests more in period 1, consumption in period 1 falls.
- Investment is risky and probability of success depends on the amount of investment
 - If investment in period 1 falls, probability of success falls, and if net produce falls short of the total debt there is a fear of land confiscation in period 2.
- The household incorporates the possibility of confiscation in the event of a crop failure and maximizes expected utility in period 1
- Repeated loan waivers create expectations of weak contract enforcement amongst households - collaterals are not seized in case of default - leading to lower investment and higher consumption.

Introduction	Theory	Empirics	Conclusion
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UP Program Gramin Vikas Rin Maafi Yojana 2012

- Announced by UP government in Nov 2011
 - Eligibility: Farmers who had taken a loan up to 50000 from the Gramin Vikas bank and had repaid at least 10% of the total amount due.
 - Rolled out over 3 years, different districts received the relief at different times.
 - District of Lakhimpur did not receive the waiver when the primary data was collected.

Year	No. of	No. of	Total Loan	Avg waiver				
	farmers	districts	waived (cr)	received (cr)				
2012-13	419835	42	902.51	20.98				
2013-14	286617	28	747.42	26.68				
2014-15	25715	4	70.42	17.61				

Outline of UP Rin Maafi Yojana

Introduction	Theory	Empirics	Conc
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Secondary Data: UP Cooperative Bank

Figure: Time Line for the Uttar Pradesh Loan Waiver Program



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Loan Recovery Rate: Before Announcement



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Loan Recovery Rate: After Announcement



Primary Data

- Study Area:
 - The primary data was collected from a cross section of primarily rural households across 6 out of the 75 districts of U.P.
 - Some districts were chosen from each phase of program roll-out. Only one was a pure-control district with no program.
 - In each district about 5 villages were identified.
 - To oversample eligible households, names were randomly selected from a list of loan waiver beneficiaries released by the UP government
 - In addition to these households, data was collected from a random set of those households in the same districts which received no waiver.
- Sample Size:
 - The data collected was both at the household level and individual level.
 - The sample size is 5270 individuals from 770 households
 - Out of these, 65% are in the eligible households and 35% are not-eligible households
- The analysis in this paper is done at the household level.

Introduction	Theory	Empirics	Conclusion
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Program	Eligibility		

- The primary objective is to identify if households change their behaviour if they expect a debt waiver.
- We define 3 types of waiver status: Actual Waiver Received (LW), Eligibility (Own Calculation) & Knowledge of Waiver.

Eligibility Criteria:

- Loan Amount <= 50000
- Household should have repaid at least 10% of borrowed loan
- Loan source = Formal Source

	Eligible		Not E	Not Eligible		
Received LW	463	92.2%	39	7.8%	502	
Not Received LW	108	40.4%	159	59.6%	267	
	571		198		769	

Introduction	Theory	Empirics	Conclus
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Waiver Status and Household Behavior

Outcome Variable by Waiver Status

	Received LW	Not-Received LW	Eligible	Not-Eligible	Knowledge	No-Knowledge
Consumption	41479	32728	38747	37531	42502	30725
Productivity	29397	38690	29913	40131	29491	38691
Income	52623	59051	51690	63956	52864	58642
HH Loan	24268	53967	22401	69621	25808	51273
Wedding	0.22	0.27	0.14	0.10	0.06	0.27
Bulk Purchases	0.14	0.11	0.26	0.16	0.09	0.14
Frequency	502	268	571	199	504	266

- Households who have received loan waiver have 21% higher consumption, 24% lower productivity & 12% lower income as compared to those who did not receive the waiver.
- Similarly households with 'knowledge of waiver' have 27% higher consumption in spite of lower income. They also have lower productivity.

Empirical Framework

• Do households alter their consumption, social spending and investment pattern based on their waiver status?

$$Y_i = \alpha_1 + \alpha_2 WS_i + \sum_{i=4}^k \alpha_i X_i + \varepsilon_i$$

• where *Y_i* could be Consumption: defined as the yearly consumption; or Social Spending: which is the monthly amount a household spends on social functions or Productivity: which is calculated as total production/land cultivated

The parameter of interest is α_2 which captures any difference in consumption, social spending or productivity of households caused by their waiver status.

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Effect of Loan Waiver status

Household Consumption

Dependent Variable: Consumption (Yearly)				
	Loan Waived	Eligibility	Knowledge of Waiver	
Received Waiver	6,838***	5,809***	9,544***	
	(1,991)	(2,196)	(1,950)	
Observations	634	634	634	
R-squared	0.171	0.165	0.187	

Social Spending

Dependent Variable: Social Spending (Monthly)				
	Loan Waived	Eligibility	Knowledge of Waiver	
Received Waiver	243.1***	175.9***	205.3***	
	(56.26)	(62.36)	(55.83)	
Observations	634	634	634	
R-squared	0.223	0.210	0.217	

*** Control Variables: Income, Loan Amount, Interest Rate, Religion, Sex, Employment 🗇 🔖 ፋ 🚊 🕥 🤄 🖓

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Effect of Loan Waiver status

Productivity

Dependent Variable: Productivity (Yearly)				
	Loan Waived	Eligibility	Knowledge of Waiver	
Received Waiver	-9,741***	-9,715***	-9,680***	
	(3,101)	(3,315)	(3,095)	
Observations	420	420	420	
R-squared	0.047	0.044	0.046	

*** Control Variables: Income, Loan Amount, Interest Rate, Religion, Sex, Employment

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Identification Challenges

- Knowledge of Waiver could be endogenous.
- Actual Waiver Status could be endogenous.
- Eligibility criteria is based on the specific formula announced depends on income and the percentage of loan repaid.
- We use the self constructed potential eligibility status to conduct a difference in differences analysis.

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Difference in Differences

- Difference in behaviour between potentially eligible and potentially non-eligible households
- Since eligibility depends on income and repayment rate, households characteristics could affect the potential eligibility status.
- To eliminate this inherent difference between eligible and non eligible households we exploit the fact the waiver program was not rolled out in all the districts at the time the survey was done.
- Specifically, the difference in differences analysis captures the following effect:

$$(E-NE)^{WD}-(E-NE)^{NWD}$$

Which is captured by the following regression:

$$Y_{id} = \alpha_1 + \alpha_2 Eligible * WD_{id} + D_d + D_{Eligible} + \sum_{i=3}^k \alpha_i X_{id} + \varepsilon_{id}$$

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- where Y_{id} is consumption, productivity and social spending;
- WD denotes Waiver District

DID Estimates

Dependent Variable			
•	Consumption	Productivity	Social Spending
DID (WD * Eligible)	7 890*	-9.378	208*
DID (WD Eligible)	(4,445)	(7,280)	(118)
Eligibility	-940 6	-576.0	1 874
Englointy	(3 381)	(5.067)	(90.06)
Income (Yearly)	0 153***	0.020	0.005***
moonio (roung)	(0.020)	(0.033)	(0.001)
Loan Amount (Rs)	0.099***	0.013	0.001
	(0.020)	(0.035)	(0.001)
Interest Rate (Yearly)	128.64	48.62	-0.241
	(116.6)	(199.4)	(3.106)
Hindu	2,259	490.5	85.06
	(4,165)	(6,441)	(110.9)
Sex	-1,512	5,366	-183.05
	(7,031)	(14,422)	(187.3)
Unemployed	-9,757	-5,261	-192.9
	(6,416)	(12,972)	(170.9)
Self Employed	-11,340*	8,121*	-211.9
	(5,968)	(4,635)	(158.9)
Constant	26,057**	23,070	584.9*
	(11,199)	(17,390)	(298.2)
District Fixed Effects	Yes	Yes	Yes
Observations	634	420	634
R-squared	0.223	0.067	0.353

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Introduction

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Matching

 Propensity Score Matching: To further alleviate concerns about unobserved differences between Eligible and Not-Eligible groups I match households on the basis of a rich set of observed characteristics.

Outcome Variable	Unmatched	Matched
	T-stat	T-stat
Income	-3.09	-1.4
HH Size	1.33	1.75
Loan Amount (Rs)	-9.43	0.02
Interest Rate (Yearly)	-0.69	0.84
Sex	1.33	1
Land cultivated	-4.86	0.82
Hindu	1.94	-1.4
Self Employed	2	0
Regional Rural Banks	-2.38	0.73

 Matching Variables: Household income, Source of Borrowing, Employment Status, Religion, Age of the Household Head, Sex of the Household Head, Loan amount borrowed, Monthly Interest Rate. Introduction

DID on Matched Sample

Dependent Variable			
	Consumption	Productivity	Social Spending
DID (WD * Eligible)	16,632***	6,045	352**
	(6,013)	(6,645)	(156)
Fligibility	-3 324	1 067	24.6
2.19.5	(3,438)	(3 799)	(89)
Income (Vearly)	0 1/8***	-0.003	0.005***
income (rearry)	(0.030)	(0.033)	(0.001)
Loan Amount (Bs)	0 151	0.037	0.001)
Loan Anount (113)	(0.118)	(0.131)	(0.003)
Interest Pate (Vearly)	155.0	151 4	2 4 4 9
interest nate (really)	(159 501)	(176.262)	(4 150)
Llindu	(139.301)	(170.203)	150.0
HINGU	-1,709	-037.2	(122.4)
Carr	(3,079)	(3,613)	(132.4)
Sex	-4,891	2,093	-12.22
the encoder of	(17,217)	(19,027)	(448.9)
Unemployed	15,058	3,531	-138.5
0 K E 1 1	(17,924)	(19,808)	(467.3)
Self Employed	15,960.9	10,787	-24.92
_	(17,408)	(19,237)	(115.5)
Constant	6,076	17,877	152.4
	(26,091)	(28,833)	(504.1)
District Fixed Effects	Yes	Yes	Yes
Observations	151	151	151
R-squared	0.362	0.144	0.506

Introduction	Theory	Empirics	Conclusion
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Additional Evidence

- Lakhimpur district was still expecting a waiver at the time of the survey

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- We find a much higher fraction of repayment for informal loans as compared to formal loans.

District: Lakhimpur		
	Formal Loans	Informal Loans
Fraction of Loan Repaid	11.5%	27.1%

Introduction		Theory OO	Empirics 00000000000000	Conclusion •

Conclusion

- Understand the impact of debt waivers on consumption and productivity decision of households.
- Debt waiver programs alter expectations about enforcement of formal borrowing contracts. Weak enforcement of borrowing contracts could generate moral hazard.
- The UP Rin maafi Yojana altered the consumption, productivity and social spending patterns of households.
- Findings are in line with previous literature that evaluated National Loan Waiver Program.
- It is important to note that our findings do not speak against loan waiver programs in general. What we suggest is that repeated waiver schemes might be ineffective in addressing the desired goal of productivity increase and encourage unproductive consumption and willful default.