Fixing Market Failures or Fixing Elections? Agricultural Credit in India

Shawn Cole

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Introduction

- How does capture work? What explains the temporal and cross-sectional variation in capture? Is it costly?
- This paper presents evidence that government-owned banks in India serve the electoral interests of politicians, and analyzes how resources are strategically distributed. It also looks at whether the redistribution is costly or not.

Preview of Results

- ▶ The author finds compelling evidence of political capture; agricultural credit lent by public banks is substantially higher in election years.
- ▶ More loans are made in districts in which the ruling state party had a narrow margin of victory (or a narrow loss), than in less competitive districts.
- ▶ This targeting is not observed in off-election years or in private bank lending.
- ▶ Political interference is costly: defaults increase around election time; agricultural lending booms do not affect agricultural investment or output.

Literature Review

- Evaluation of how government ownership of banks affects financial development and economic growth
    - Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer (2002): government ownership of banks is associated with slower financial development and slower growth.
    - Asim Ijaz Khwaja and Atif Mian (2005): Pakistani politicians enrich themselves and their firms by borrowing from government banks and defaulting on loans.
- Examining the political budget cycle
    - Serdar Dine (2005): In election years, the growth rate of credit from private banks slows, while the growth rate of government-owned banks remains constant
- Examining politically motivated/tactical redistribution
    - Akhmed Akhmedov and Ekaterina V. Zhuravskaya (2004): politicians pay back wages prior to elections.

Banking in India: An Attractive Target for Government Capture?

- Government planning and regulation were key components of India's post-independence development strategy, particularly in the financial sector:
  - Nationalization of many private banks in 1969 and 1980
  - Requirement of both public and private banks to lend at least a certain percentage of credit to agriculture and small-scale industry.
  - A branch expansion policy that obliged banks to open four branches in unbanked locations for every branch opened in a location in which a bank was already present.

Political Context

- The constitution requires that elections for state and national parliaments be held at five year intervals, though elections are not synchronized across states.
  - The central government can declare "President's rule" and dissolve a state legislature, leading to early elections: meant to occur only if the state government is nonfunctional or if the ruling coalition loses control, but there may be political reasons.
- Vibrant political competition: in the period of study, 1992-1999, a dozen distinct parties were in power, at various times, in various states

Political Influence

- The ruling state government appoints members of the "State Level Bankers Committees," who coordinate lending policies and practices in each state with a particular focus on lending to the "priority sector" (agriculture and small-scale industry). The committees meet quarterly, and are composed of state government politicians and appointees, public and private sector banks, and the Reserve Bank of India. The committees often set explicit targets for levels of credit to be delivered. Their membership typically turns over when the state government changes. These committees are the most direct channel for political influence and thus we focus on state rather than national elections.

Other Channels of Political Influence

- Governments may influence credit activities by pressurizing banks to cancel/forgive loans (John Harris' account in Besley (1995))

- Appointment of board members to public sector banks is highly politicized, and that board members are often involved in credit decisions (former RBI governor, quoted in TOI 1999)

- State politicians are not hesitant to promise loans during elections. (Financial Express 2003)

- Benefits of agricultural credit are transparent while costs may be not: more difficult for opposition to criticize those in power; majority of the population dependent on agriculture; approx. 40% loans made by public sector banks are agricultural loans.

Political Cycles and Politically Motivated Redistribution: Theory

- Theories of political cycles predict that politicians manipulate policy tools around elections either to fool voters or to signal their ability (literature tests for cycles in fiscal and monetary variables)
  - Lower tax collection or increased spending could differ systematically prior to elections for several reasons: spending patterns may reflect politicians' learned ability to get things done
  - Less of a concern in case of agricultural credit: most significant factor influencing farmers' agricultural credit needs is almost certainly weather, inarguably out of the politicians' control
- The literature on targeted redistribution distinguishes between patronage, which involves rewarding supporters, and tactical redistribution, which is made to achieve electoral or political goals (Avinash K. Dixit and John B. Londregan 1996, James M. Snyder 1989, and Gary W. Cox and Matthew D. McCubbins 1986). "

Data

- Unit of observation is district: aggregated data regarding loans published in "Banking Statistics" by RBI.
- Sample studies credit from 1992-1999 for 412 districts in 19 states, yielding 3,296 observations.
- Election data for state legislative elections are available at the constituency level from 1985-1999. These data, from the Election Commission of India, include the identity, party affiliation, and share of votes won for every candidate in a state election from 1985 to 1999; for the analysis, vote shares are aggregated to the district level.

Summary Statistics

TABLE 1—SUMMARY STATISTICS

	Mean	Standard deviation	
Panel A: Summary statistics for			
lending cycle regressions (19 states)			*N*
Credit variables			
Log real credit, all banks	14.369	1.472	3,296
Log real credit, public banks	14.181	1.481	3,296
Log real credit, private banks	11.868	1.857	1,761
Log real agricultural credit, all banks	12.992	1.350	3,296
Log real agricultural credit, public banks	12.751	1.379	3,296
Log real agricultural credit, private banks	9.306	2.507	1,640
Political variables			
Election year	0.207	0.405	3,296
Scheduled election in 4 years	0.229	0.420	3,296
Scheduled election in 3 years	0.251	0.433	3,296
Scheduled election in 2 years	0.248	0.432	3,296
Scheduled election in 1 years	0.152	0.359	3,296
Scheduled election year	0.121	0.327	3,296
District characteristics			
Share of agricultural loans late	0.133	0.104	3,296
Share of all loans late	0.133	0.072	3,296
Percent of population rural	0.785	0.149	3,296
Share literate	0.413	0.132	3,296
Share primary graduates or above	0.305	0.114	3,296
Panel B: Summary statistics for			
targeted redistribution regressions (19 states)			
Credit variables			
Log real credit, all banks	14.293	1.536	3,408
Log real credit, public banks	14.111	1.537	3,408
Log real credit, private banks	11.874	1.851	1,777
Log real agricultural credit, all banks	12.900	1.434	3,408
Log real agricultural credit, public banks	12.666	1.450	3,408
Log real agricultural credit, private banks	9.273	2.518	1,656
Political variables			
Election year	0.206	0.405	3,408
Scheduled election in 4 years	0.225	0.418	3,408
Scheduled election in 3 years	0.249	0.432	3,408
Scheduled election in 2 years	0.248	0.432	3,408
Scheduled election in 1 years	0.155	0.362	3,408
Scheduled election year	0.123	0.329	3,408
Margin of victory of ruling party	−0.001	0.167	2,730
Absolute value of margin of victory	0.195	0.114	2,730

Notes: The unit of observation is the district-year. The sample used to estimate political cycles (Tables 4 and 5) contains data from 412 districts in 19 states over the period 1992–1999, for a total of 3,296 observations. Political data were not available for all districts, so the analysis which includes "Margin of Victory" contains data from 348 districts in 19 states over the period 1992–1999. The credit variables are the log value of the amount of credit issued by the specified group of banks (all credit, public credit only, or private credit). Private banks are not present in all districts thus, the number of observations is lower. Margin of Victory is defined as the average share by which the majority party in the state won the district in the previous election. If there was no majority, then all parties in the ruling coalition are coded as "majority" party. Margin ranges from −1 to 1. Scheduled Election in *k* Years is a dummy indicating whether the next scheduled election will occur in *k* years.

Political Cycle: Identification

- Simple OLS approach: compare the amount of credit issued in election years to the amount issued in nonelection years; include district fixed effects to control for time-invariant characteristics in a district that affect credit; RBI divides states in India into six regions: region-year fixed effects (γ_{rt}) control for macroeconomic fluctuations; include the average rainfall in the previous 12 months in district d $(Rain_{dt})$.

$$(1) \qquad y_{dt} = \alpha_d + \gamma_{rt} + \delta Rain_{dt} + \beta E_{st} + \varepsilon_{dt}$$

- y_{dt} is the log level of credit, a_d is a district fixed effect, and E_{st} is a dummy variable taking the value of 1 if the state s had an election in year t

Political Cycle: Identification

- While the constitution mandates elections be held every five years, the timing is subject to some slippage. If parties in power call early elections when the state economy is doing particularly well, one may observe a spurious correlation between credit and election years.

- Following Khemani (2004), the author uses an instrument for election year : a dummy, S_{st}^o, for whether 5 years have passed since the previous election. (The superscript on S_{st} denotes the number of years until the next scheduled election)

Political Cycle: Identification

(2)
$$E_{st} = \alpha_d + \gamma_{rt} + \delta Rain_{dt} + \beta^0 S_{st}^0 + \varepsilon_{dt}$$

- S_{st}^o is a powerful predictor of elections: in the first-stage regression, the estimated coefficient is 0.99 with a standard error of 0.01.

- Alternative IV strategy: denote by t_s the first election after 1985 in state s; this instrument assigns elections to years t_s, t_{s+5}, t_{s+10}, t_{s+15} and so on; provides substantially less power

Political Cycle: Results

TABLE 2—THE EFFECT OF ELECTIONS ON CREDIT

	All bank credit	Public bank credit	Private bank credit
Panel A: OLS			
Total credit	0.019	0.015	0.034
	(0.012)	(0.013)	(0.082)
Agricultural credit	0.044***	0.047***	−0.127
	(0.017)	(0.016)	(0.139)
Nonagricultural credit	0.012	0.007	0.053
	(0.014)	(0.015)	(0.080)
Panel B: Reduced form			
Total credit	0.029**	0.031**	0.040
	(0.013)	(0.013)	(0.053)
Agricultural credit	0.046***	0.060***	−0.021
	(0.017)	(0.019)	(0.087)
Nonagricultural credit	0.021	0.020	0.061
	(0.015)	(0.014)	(0.055)
Panel C: Instrumental variables			
Total credit	0.028**	0.031**	0.039
	(0.013)	(0.014)	(0.055)
Agricultural credit	0.046***	0.060***	−0.020
	(0.018)	(0.020)	(0.092)
Nonagricultural credit	0.021	0.020	0.060
	(0.016)	(0.015)	(0.058)
Panel D: Alternative IV strategy			
Total credit	0.008	0.012	0.044
	(0.013)	(0.014)	(0.029)
Agricultural credit	0.028**	0.040***	−0.065
	(0.011)	(0.013)	(0.053)
Nonagricultural credit	0.002	0.003	0.063
	(0.015)	(0.016)	(0.033)
N	3296	3296	1640
States	19	19	19

Notes: Each cell represents a regression. The coefficient reported is a dummy for election year (panel A), scheduled election year (panel B), and election year instrumented with scheduled election year (panel C). The dependent variable is annual change in log real levels of credit. In addition to the indicated dependent variable of interest, all regressions include district and region-year fixed effects, and a measure of annual rainfall. The unit of observation is district-year. There are data for 348 districts from 1992–1999, though private banks do not operate in all districts. Standard errors are clustered by state-year. The first stage of the IV regression in panel C is $E_{sdt} = \alpha_d + \gamma_{rt} + \delta Rain_{dst} + \beta^0 S_{st}^0 + E_{dst}$, where E_{sdt} is a dummy variable indicating an election occurs in year t in state s in district d, γ_{rt} are region-year fixed effects, and S_{st}^0 is a dummy variable indicating that five years prior to that year there was an election. The coefficient on S_{st}^0 is 0.99 with standard error of 0.01. The R^2 is 0.86.
*** Significant at the 1 percent level.
** Significant at the 5 percent level.

Political Cycle: Results

- Both the IV and reduced form estimates indicate that the lending by public sector banks is about 6 percentage points higher in election years than in nonelection years

- This is not due to aggregate annual shocks (region-year fixed effects) or due to budgetary manipulation (Khemani 2004)

- IV and OLS estimates are relatively similar, suggesting that the endogeneity of election years should not be a large concern

- No relationship between credit and elections is observed for private banks.

- Extension: how credit comoves with the entire election cycle: Define S_{st}^{-k}, k = 0,..., 4, as dummies that take the value 1 if the next scheduled election is in k years for state s at time t. For example, if Karnataka had elections in 1991, 1993, and 1998, S_{st}^{-4} would be one for years 1992, 1994, and 1999, while S_{st}^{-3} would be one in 1995, and S_{st}^{0} would be one in 1998.

Political Cycle: Results

$$(3) \quad y_{dt} = \alpha_d + \gamma_{rt} + \delta Rain_{dt} + \beta_{-4}S_{st}^{-4} + \beta_{-3}S_{st}^{-3} + \beta_{-2}S_{st}^{-2} + \beta_{-1}S_{st}^{-1} + \varepsilon_{dt}$$

TABLE 3—LENDING CYCLES BY INDUSTRY AND BANK OWNERSHIP

	Years until next scheduled election			
	Four	Three	Two	One
Panel A: All banks				
All credit	−0.033**	−0.029**	−0.035**	−0.009
	(0.015)	(0.014)	(0.014)	(0.016)
Agriculture	−0.023	−0.045**	−0.061***	−0.022
	(0.022)	(0.020)	(0.020)	(0.026)
Nonagricultural credit	−0.029*	−0.024	−0.026*	0.004
	(0.017)	(0.015)	(0.016)	(0.018)
Panel B: Public banks				
All credit	−0.033**	−0.030**	−0.040***	−0.011
	(0.015)	(0.015)	(0.015)	(0.016)
Agriculture	−0.032	−0.056**	−0.081***	−0.034
	(0.024)	(0.024)	(0.021)	(0.026)
Nonagricultural credit	−0.026	−0.022	−0.028*	0.004
	(0.017)	(0.015)	(0.016)	(0.018)
Panel C: Private banks				
All credit	0.022	−0.033	−0.027	−0.156*
	(0.097)	(0.088)	(0.058)	(0.089)
Agriculture	0.079	0.035	0.014	−0.003
	(0.141)	(0.121)	(0.093)	(0.156)
Nonagricultural credit	−0.001	−0.058	−0.045	−0.173*
	(0.098)	(0.090)	(0.059)	(0.090)

Notes: Each row represents a regression. The coefficients reported are dummies for the number of years until the next scheduled election. The dependent variable is log credit. All regressions include district and region-year fixed effects, as well as annual rainfall. Standard errors are clustered by state-year.
*** Significant at the 1 percent level.
** Significant at the 5 percent level.

Political Cycle: Results

- Agricultural credit issued by banks is lower in off election years (four, three, and two years prior to an election) than the year prior to an election or an election year.

- The difference, of up to 8 percentage points, is substantial given that the average growth rate of real agricultural credit issued by public sector banks was 0.5 percent over the sample period.

- While cycles are not observed for private banks, the SEs on the cycle dummies are much larger than those for public sector banks: cycles in private banks cannot be ruled out: does public-sector lending crowd out private sector lending in election years?

- Private sector banks issue approximately 10% of credit in India; an 8% decline in the amount of agricultural credit issued by public sector banks would have to be met by an almost doubling of the amount of agricultural credit issued by private sector banks

Extensive and Intensive Margin Effects

- An increase in lending could be due to changes on the extensive margin, with banks lending to additional borrowers, and the intensive margin, with banks making larger loans: author finds evidence for both.

- The off-election cycle dummies are negative for the average agricultural loan size and the number of agricultural loans.

- Because the size of the decline of each component is mechanically smaller than the decline in volume, the components are not always statistically distinguishable from zero.

- There is no systematic variation in loan size or number of loans for private banks.

Extensive and Intensive Margin Effects

TABLE 4—LOAN CHARACTERISTICS OVER THE ELECTION CYCLE

| | Years until next scheduled election | | | |
	Four	Three	Two	One
Panel A: All banks				
Log (avg. agricultural loan size)	−0.028	−0.011	−0.023	−0.058**
	(0.034)	(0.030)	(0.027)	(0.028)
Log (number of aricultural. loans)	0.005	−0.034	−0.038	0.036
	(0.028)	(0.022)	(0.027)	(0.029)
Interest rate—agricultural	−0.000	−0.000	0.001	−0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Panel B: Public banks				
Log (avg. agricultural loan size)	−0.030	−0.013	−0.027	−0.055*
	(0.037)	(0.033)	(0.031)	(0.029)
Log (number of agricultural loans)	−0.003	−0.042*	−0.053*	0.021
	(0.030)	(0.024)	(0.028)	(0.026)
Interest rate—agricultural	−0.000	−0.000	0.000	−0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Panel C: Private banks				
Log (avg. agricultural loan size)	0.129	−0.001	0.034	0.070
	(0.139)	(0.134)	(0.098)	(0.158)
Log (number of agricultural loans)	−0.050	0.037	−0.020	−0.073
	(0.094)	(0.091)	(0.052)	(0.091)
Interest rate—agricultural	0.004*	0.003**	0.005***	0.003
	(0.002)	(0.001)	(0.001)	(0.003)

Notes: Each row represents a regression. The coefficients reported are dummies for the number of years until the next scheduled election. The dependent variable is log credit. All regressions include district and region-year fixed effects, as well as annual rainfall. Standard errors are clustered at the state-year level.

   *** Significant at the 1 percent level.
   ** Significant at the 5 percent level.
   * Significant at the 10 percent level.

Extensive and Intensive Margin Effects

- Interest rates from public banks do not change with the increase in lending but private sector banks seem to charge higher rates for agricultural loans in nonelection years
- It may be that in election years private banks lower the interest rate they charge for agricultural loans in order to attract borrowers who might otherwise find credit on more favorable terms from public sector banks.

Political Cycles and Loan Default

- Khwaja and Mian (2005) document that loans made by public sector banks to firms controlled by politicians are much more likely to end up in default: does it hold in the context of the general public as well?
- The author investigates whether the electoral cycle affects the rate of default on agricultural loans.
- The author estimates the reduced form relationship between agricultural credit default rates and the electoral cycle.
- 3 measures of default rate: the log volume of late credit, the share of loans late, and the share of credit late; loans are coded as late if they are past due by at least six months.

Political Cycles and Loan Default

TABLE 5—LENDING CYCLES AND NONPERFORMING LOANS

	Years until next scheduled election			
	Four	Three	Two	One
Panel A: All banks				
Volume of late agricultural loans	−0.063	−0.099	−0.150**	−0.127
	(0.087)	(0.067)	(0.067)	(0.098)
Share of agricultural loans late	−0.034***	−0.026**	−0.017	−0.022*
	(0.012)	(0.011)	(0.011)	(0.013)
Share of agricultural credit late	−0.022	−0.009	−0.004	−0.006
	(0.011)	(0.009)	(0.010)	(0.011)
Panel B: Public banks				
Volume of late agricultural loans	−0.074	−0.102	−0.162**	−0.134
	(0.089)	(0.074)	(0.072)	(0.105)
Share of agricultural loans late	−0.035***	−0.027***	−0.019*	−0.017
	(0.012)	(0.010)	(0.011)	(0.013)
Share of agricultural credit late	−0.025**	−0.011	−0.008	−0.004
	(0.011)	(0.009)	(0.010)	(0.011)
Panel C: Private banks				
Volume of late agricultural loans	0.030	0.201**	−0.102	0.038
	(0.187)	(0.094)	(0.203)	(0.170)
Share of agricultural loans late	−0.015	−0.014	−0.021	−0.040**
	(0.016)	(0.012)	(0.014)	(0.019)
Share of agricultural credit late	−0.002	0.003	0.008	−0.025
	(0.018)	(0.015)	(0.016)	(0.020)

Notes: Each row represents a single regression. The unit of observation is a district-year. The independent variables of interest are a set of dummy variables indicating the number of years until the next scheduled election. Panels A and B contain data from 412 districts. Panel C contains data from 180 districts.

*** Significant at the 1 percent level.
** Significant at the 5 percent level.
* Significant at the 10 percent level.

Political Cycles and Loan Default

- Large cycle in the volume of late agricultural loans: the amount increases 16% in government-owned banks in scheduled election years relative to the trough two years prior to the election

- The size of the cycle in default is much larger than the credit cycle: the difference from peak to trough in credit volume is 8%, but it is 15% for the volume of loans in default

- It is unlikely that this 8% expansion in credit volume would lead to such high default, if loans were made purely on a commercial basis

- The share of agricultural credit marked late from public banks drops following the election year: perhaps politicians induce banks to write off loans following elections

What Determines the Size of the Cycle?

- Examining whether the quality of corporate governance of the banks in a district is relevant, but no measure of the quality of corporate governance of banks is available: use the share of loans late in a given district in 1992 as a proxy.

$$(4) \qquad y_{dt} = \alpha_d + \gamma_{rt} + \delta Rain_{dt} + \beta S_{st} + \chi(E_{dt}C_d) + \varepsilon_{dt}$$

- The point estimates on χ are negative but insignificant
- Shi and Svensson (2006) present a model in which the share of informed voters affects the size of the observed election cycles: test whether greater education and more urbanization are correlated with the size of the cycle.

What Determines the Size of the Cycle?

TABLE 6—DISTRICT CHARACTERISTICS AND CYCLES IN AGRICULTURAL CREDIT

	Public banks		Private banks	
	Scheduled election (1)	Interaction (2)	Scheduled election (3)	Interaction (4)
No interaction	0.04**		−0.04*	
	(0.02)		(0.08)	
Quality of intermediation				
Share of agricultural loans late in 1992	0.05**	−0.08	0.04	−0.62
	(0.02)	(0.08)	(0.11)	(0.90)
Share of all loans late in 1992	0.06**	−0.08	−0.09	0.40
	(0.03)	(0.15)	(0.15)	(1.23)
Population characteristics				
Percent of population rural, 1991	−0.05	0.12**	0.02	−0.09
	(0.04)	(0.05)	(0.29)	(0.35)
Share literate, 1991	0.18***	−0.30***	−0.03	−0.02
	(0.05)	(0.11)	(0.22)	(0.40)
Share primary graduates or above, 1991	0.15***	−0.32**	−0.02	−0.07
	(0.05)	(0.13)	(0.18)	(0.41)

Notes: Each row of this table presents two regressions. Columns 1 and 2 present regressions for public banks, while columns 3 and 4 present regressions for private banks. The dependent variable is log agricultural credit, at the district level. All regressions include district and region-year fixed effects, as well as annual rainfall. Standard errors are clustered at the state-year level. The regressions using lending from public banks have 3,408 observations from 426 districts in 22 states over 8 years.

 *** Significant at the 1 percent level.
  ** Significant at the 5 percent level.
   * Significant at the 10 percent level.

What Determines the Size of the Cycle?

- The share of the population that is rural strongly affects the size of the cycle.
- Cycles are significantly smaller in areas with higher literacy and where a higher share of the population has graduated from primary school.
- No evidence that the size of the lending cycle depends on whether the state government is affiliated with the central ruling party

How are Resources Targeted?

- Examine whether agricultural credit varies with the margin of victory enjoyed by the current ruling party in each district
- Define M_{dt} as the average (constituency-weighted) margin of victory of the incumbent ruling party
- Assign to M_{dt} the margin of victory of the ruling party in the years immediately following the election; for the 2 years just prior to the election, use the realized margin of victory of the ruling party in the upcoming election for M_{dt}
- The simplest model of patronage would posit that greater support for the majority party leads to increased credit

$$(5) \qquad y_{dt} = \alpha_d + \pi M_{dt} + \beta_{-4} S_{st}^{-4} + \beta_{-3} S_{st}^{-3} + \beta_{-2} S_{st}^{-2} + \beta_{-1} S_{st}^{-1} + \varepsilon_{dt}$$

TABLE 7—TARGETED LEVELS OF CREDIT OVER TIME AND ACROSS DISTRICTS

Cycle dummies	Baseline (1)	With margin (2)	Unrestricted margin and unrestricted interactions (3)	Abs (margin) and Abs (interactions) (4)
Panel A: Public banks				
Number of years until next election				
Four	−0.02 (0.02)	−0.04* (0.02)	−0.07*** (0.03)	−0.13*** (0.04)
Three	−0.04* (0.02)	−0.07*** (0.03)	−0.01*** (0.03)	−0.17*** (0.04)
Two	−0.07*** (0.02)	−0.06*** (0.02)	−0.01*** (0.03)	−0.14*** (0.04)
One	−0.01 (0.03)	−0.03 (0.03)	−0.07** (0.03)	−0.10** (0.04)
Margin of victory		−0.051 (0.032)		
Abs (margin of victory)				−0.51*** (0.10)
Positive margin of victory			−0.340*** (0.083)	
Negative margin of victory			0.428*** (0.104)	
Positive margin × cycle dummy				
Positive margin × four years until election			0.153 (0.103)	
Positive margin × three years until election			0.143 (0.153)	
Positive margin × two years until election			0.132 (0.106)	
Positive margin × one year until election			0.245** (0.097)	
Negative margin × cycle dummy				
Negative margin × four years until election			−0.340*** (0.123)	
Negative margin × Three Years until Election			−0.289** (0.134)	
Negative Margin × two years until election			−0.365*** (0.124)	
Negative margin × one year until election			−0.421*** (0.146)	
Absolute margin × cycle dummy				
Absolute(margin) × four years until election				0.41*** (0.13)
Absolute(margin) × three years until election				0.50*** (0.14)
Absolute (margin) × two years until election				0.36*** (0.14)
Absolute(margin) × one year until election				0.35** (0.14)
R^2	0.98	0.98	0.98	0.98
N	3,408	2,730	2,730	2,730
Number of states	19	19	19**	19

How are Resources Targeted?

TABLE 7—Continued.

Cycle dummies	Baseline (1)	With margin (2)	Unrestricted margin and unrestricted interactions (3)	Abs (margin) and Abs (interactions) (4)
Panel B: Private banks				
Number of years until next election				
Four	0.09	−0.02	−0.06	−0.35
	(0.14)	(0.14)	(0.15)	(0.24)
Three	0.04	−0.04	0.01	−0.20
	(0.11)	(0.12)	(0.12)	(0.22)
Two	0.05	−0.01	−0.02	−0.29
	(0.09)	(0.01)	(0.12)	(0.21)
One	−0.01	−0.10	−0.15	−0.44
	(0.14)	(0.16)	(0.17)	(0.31)
Margin of victory		0.634***		
		(0.236)		
Abs (margin of victory)				−0.65
				(0.78)
Positive margin of victory			0.590	
			(0.582)	
Negative margin of victory			−0.464	
			(0.761)	
Positive margin × cycle dummy				
Positive margin × four years until election			1.353	
			(0.912)	
Positive margin × three years until election			−1.462	
			(1.219)	
Positive margin × two years until election			0.909	
			(0.833)	
Positive margin × one year until election			1.196	
			(1.008)	
Negative margin × cycle dummy				
Negative margin × four years until election			0.620	
			(0.789)	
Negative margin × three years until election			1.250	
			(0.986)	
Negative margin × two years until election			0.619	
			(0.863)	
Negative margin × one year until election			0.435	
			(0.942)	
Absolute margin × cycle dummy				
Absolute(margin) × four years until election				1.58*
				(0.82)
Absolute(margin) × three years until election				0.57
				(1.08)
Absolute(margin) × two years until election				1.49*
				(0.84)
Absolute(margin) × one year until election				1.40
				(0.99)
R^2	0.92	0.92	0.92	0.92
N	1,656	1,393	1,393	1,393
Number of states	19	19	19	19

Notes: Each column represents a separate regression. Log agricultural credit is the dependent variable. panel A gives the results for public sector banks. Panel B gives the results for private banks. The independent variables of interest are a set of dummy variables indicating the number of years until the next scheduled election, and the average margin by which candidates from the party (or coalition) currently in power in the state won (or lost) in the specific district. Each regression also includes district and region-year fixed effects, and average annual rainfall in the district. Standard errors are clustered by state-year.
*** Significant at the 1 percent level; ** Significant at the 5 percent level; * Significant at the 10 percent level.

How are Resources Targeted?

- For public sector banks, the coefficient on M_{dt} is estimated at zero: strong evidence against a model of constant patronage, in which the majority party rewards districts that voted for it while punishing districts that voted for the opposition

- This model has to be modified to detect tactical distribution: If there were tactical distribution, then politicians might target 'swing' districts where the margin of victory is close to zero

$$(6) \qquad y_{dt} = \alpha_d + \beta_{-4}S_{st}^{-4} + \beta_{-3}S_{st}^{-3} + \beta_{-2}S_{st}^{-2} + \beta_{-1}S_{st}^{-1} + \pi^+M_{dt}^+ + \pi^-M_{dt}^-$$
$$+ \sum_{k=-4}^{-1} \theta_k^+(M_{dt}^+S_{st}^k) + \sum_{k=-4}^{-1} \theta_k^-(M_{dt}^-S_{st}^k) + \varepsilon_{dt}.$$

- Observe the following figure which graphs how levels of credit vary across time and with the margin of victory
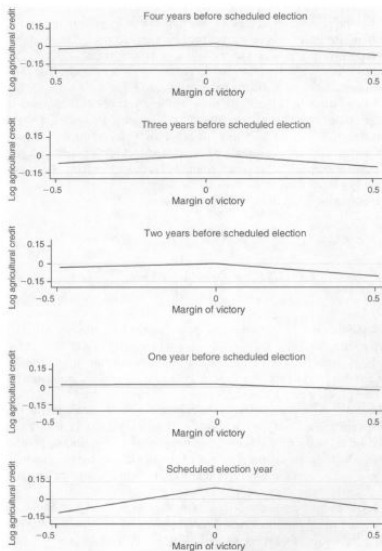
How are Resources Targeted?

FIGURE 1. TARGETED LENDING LEVELS OVER THE ELECTION CYCLE

Notes: The panels in the figure graph the predicted relationship between agricultural credit levels from public sector banks and political support of the state majority party. Each panel gives the relationship for a different year in the electoral cycle.

How are Resources Targeted?

- The slightly negative slope for positive margins of victory and positive for negative margins of victory indicate that districts in which the average margin of victory is different from zero received slightly less credit

- The slopes of the lines are not statistically distinguishable from zero for all non-election years

- A district in which the ruling party won (or lost) an election by 15 percentage points will receive approximately 5-6 percent less credit than a district in which the previous election was narrowly won or lost

- There is no evidence of a patronage effect. A patronage effect would show up if π^- or π^+, or the respective sums of main effect and interaction ($\pi^- + \theta^-_{-k}$ and $\pi^+ + \theta^+_{-k}$) were positive.
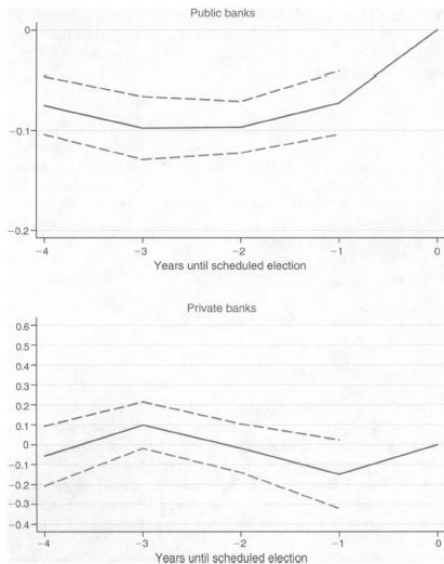
How are Resources Targeted?

FIGURE 2. CYCLES IN LEVEL OF CREDIT, SWING DISTRICT

Notes: Predicted agricultural credit for a notional district in which the margin of victory in the previous election was zero. Dotted lines give the 95 percent confidence interval.
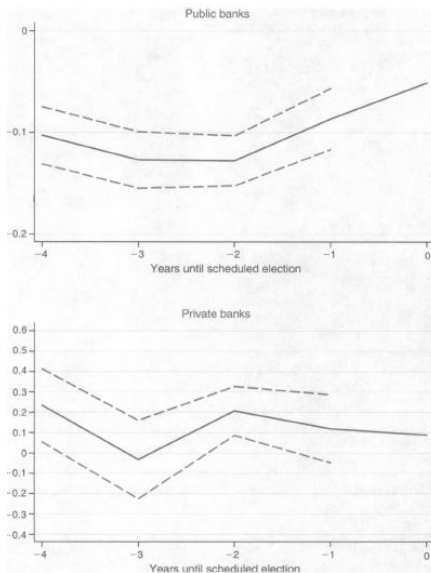
How are Resources Targeted?

FIGURE 3. CYCLES IN LEVEL OF CREDIT, NONSWING DISTRICT

Notes: Predicted agricultural credit for a notional district in which the margin of victory in the previous election was 15 percentage points. Dotted lines give the 95 percent confidence interval.

How are Resources Targeted?

$$M_{dt}^A = \sum_{c=1}^{k_d} \frac{1}{N_d} |M_{cdst}|$$

▶ This is how we define "Absolute Margin", where M_{cdst} is the margin of victory in constituency c, in district d, in state s in the most recent election in year t

$$(7) \qquad y_{dt} = \alpha_d + \beta_{-4}S_{st}^{-4} + \beta_{-3}S_{st}^{-3} + \beta_{-2}S_{st}^{-2} + \beta_{-1}S_{st}^{-1} + \pi^A M_{dt}^A$$

$$+ \theta_{-4}^A(M_{dt}^A S_{st}^{-4}) + \theta_{-3}^A(M_{dt}^A S_{st}^{-3}) + \theta_{-2}^A(M_{dt}^A S_{st}^{-2}) + \theta_{-1}^A(M_{dt}^A S_{st}^{-1}) + \varepsilon_{dt}$$

Robustness

- Results in Table 7 are robust to using year rather than region-year fixed effects and to restricting the sample to the major states of India
- The author estimated quadratic specifications but found no strong evidence of nonlinearities
- The author calculates average positive and negative margins of victories in a district separately for constituencies where incumbent enjoys positive and negative margins of victories respectively: this measure would be more appropriate if political parties can target lending resources to specific constituencies; results are similar but less precisely estimated.

Targeted Loan Enforcement and Forgiveness

- Equation (6) can be used to relate the volume and share of agricultural credit marked late to electoral competitiveness
- 2 dependent variables are considered: total amount of credit marked late and share of credit marked late

Targeted Loan Enforcement and Forgiveness

Cycle dummies	Volume of late agricultural credit		Share of late agricultural credit	
	Public banks (1)	Private banks (2)	Public banks (3)	Private banks (4)
Number of years until next election				
Four	−0.05 (0.11)	−0.03 (0.24)	0.00 (0.01)	−0.02 (0.03)
Three	−0.07 (0.01)	0.32* (0.19)	0.00 (0.01)	0.01 (0.02)
Two	−0.12 (0.09)	0.05 (0.26)	−0.01 (0.01)	0.01 (0.03)
One	−0.26* (0.14)	0.03 (0.23)	0.00 (0.02)	−0.01 (0.03)
Margin of victory				
Abs (margin of victory)				
Positive margin of victory	0.183 (0.328)	0.878 (1.545)	0.134** (0.061)	−0.078 (0.170)
Negative margin of victory	−0.075 (0.364)	−1.178 (0.774)	−0.129** (0.063)	0.095 (0.130)
Positive margin × cycle dummy				
Positive margin × four years until election	−1.839*** (0.629)	0.783 (1.698)	−0.236** (0.010)	0.144 (0.226)
Positive margin × three years until election	−0.927** (0.451)	−0.096 (1.822)	−0.085 (0.079)	−0.001 (0.186)
Positive margin × two years until election	−0.427 (0.348)	−1.380 (1.726)	−0.098 (0.069)	−0.384 (0.316)
Positive margin × one year until election	0.604 (0.407)	1.534 (1.732)	−0.063 (0.080)	−0.175 (0.244)
Negative margin × cycle dummy				
Negative margin × four years until election	0.712 (0.584)	−0.050 (1.036)	0.087 (0.084)	−0.217 (0.146)
Negative margin × three years until election	0.440 (0.455)	1.058 (0.906)	0.118 (0.079)	−0.019 (0.135)
Negative margin × two years until election	−0.472 (0.540)	0.252 (1.030)	0.051 (0.077)	−0.070 (0.174)
Negative margin × one year until election	−0.995* (0.590)	0.349 (0.896)	0.110 (0.086)	0.017 (0.147)
R^2	0.92	0.83	0.59	0.64
N	2,654	1,026	2,717	1,253
Number of states	19	19	19	19

Notes: Each column represents a separate regression. In columns 1 and 2, the dependent variable is volume of delinquent agricultural credit. In columns 3 and 4, the dependent variable is share of agricultural credit that is delinquent. The independent variables of interest are a set of dummy variables indicating the number of years until the next scheduled election and the average margin by which candidates from the party (or coalition) currently in power in the state won (or lost) in the specific district. Each regression also includes district and region-year fixed effects and average annual rainfall in the district. Standard errors are clustered by state-year.

*** Significant at the 1 percent level.
** Significant at the 5 percent level.
* Significant at the 10 percent level.

Targeted Loan Enforcement and Forgiveness

- The coefficient on positive margin X (four years before an election) is negative and statistically significant at the 1 percent level, while the interaction positive margin X (three years before an election) is negative (but smaller).

- This suggests that politicians reward their supporters immediately following elections by causing banks to write off loans to borrowers in constituencies in which politicians enjoyed the greatest support.

- In an election year, districts in which elections are close experience a lower share than noncompetitive districts. While this may be at least partially driven by the aggregate increase in lending in districts with close elections,the size of the drop is too large

- These patterns stand in contrast to those for lending, where only marginal districts were rewarded: following the election, politicians focus rewards on their supporters.

Is Redistribution Costly?

- ▶ The best way to evaluate the cost of cycles may be to measure whether the loans are put to productive use: does credit affect agricultural output?

- ▶ Omitted factors, such as agricultural productivity, crop prices or idiosyncratic shocks will almost surely bias any estimate: electoral lending booms suggest an instrument for the efficacy of politically-induced lending.

- ▶ 2 measures of agricultural output at the district level: log aggregate agricultural revenue (using only the set of crops for which there are no missing values from 1992-1999 for each district), average yield across crops weighted by acres planted

Is Redistribution Costly?

TABLE 9—LENDING, AGRICULTURAL INVESTMENT, AND OUTPUT

	Years until next scheduled election			
	Four	Three	Two	One
Panel A: Reduced form				
Agricultural credit, government banks	−0.154**	−0.179***	−0.176***	−0.073
	(0.069)	(0.064)	(0.060)	(0.048)
Agricultural credit, all banks	−0.120*	−0.138**	−0.159***	−0.067
	(0.068)	(0.063)	(0.054)	(0.045)
Revenue	0.026	−0.208	0.014	−0.483***
	(0.112)	(0.159)	(0.146)	(0.146)
Output (index)	0.058	−0.217**	0.030	−0.152
	(0.085)	(0.101)	(0.091)	(0.113)
Dependent variable		Revenue		Output (index)
Panel B: Instrumental variables estimates of the effect of credit				
OLS		0.097		−0.091
		(0.070)		(0.638)
IV		0.024		0.027
		(0.047)		(0.409)

Notes: Panel A: Each row represents a single regression. Data are available for 106 districts in 6 states for the period 1992–1999. The dependent variables of interest are dummy variables indicating the number of years until the next scheduled election. Standard errors are clustered at the state-year level. Panel B: Each cell represents a single regression. Data are available for 106 districts in 6 states for the period 1992–1999. The dependent variables of interest are revenue (column 1) and output (column 2). The OLS relationship is given in the first row. An instrumental variables estimate is given in the second row. Four dummies for the election schedule, along with the absolute value of the margin of victory enjoyed by the ruling party (interacted with each election cycle dummy) serve as instruments. The null hypothesis that the instruments do not predict aggregate credit can be rejected at the 0.1 percent level. All regressions include district fixed effects, year fixed effects, and rainfall.
*** Significant at the 1 percent level.
 ** Significant at the 5 percent level.
  * Significant at the 10 percent level.

Is Redistribution Costly?

- For both measures of output, the point estimate of the effect of credit on output is very close to zero: there is no systematic relationship between credit and output
- While credit does go up in election years, there is no evidence that agricultural output does the same.

Conclusion

▶ The author finds evidence of political lending cycles. Moreover, credit is targeted toward districts in which the majority party just won or just lost the election. This targeting is observed only in election years. A separate pattern of targeting is observed for loan write-offs than for lending. Write-offs are greatest in the districts in which the winning party enjoyed the most electoral success. This pattern is observed only following an election, not prior to it.

Conclusions

- Election cycles induced credit booms in election years led to substantially higher default rates. Electoral cycles serve as an instrument for identifying the effect of marginal loans on output, providing evidence that increased levels of credit from public sector banks do not affect aggregate agricultural output at the state level

- The finding of targeting toward "swing districts" suggests why approaches using regression discontinuity design (e.g., Miguel and Zaidi 2003) find no effect of politics on the allocation of goods. If resources are targeted toward swing districts, there will be no discontinuity between a constituency in which the ruling party just won the previous election or just lost it.