Does Informal Finance Help Formal Finance? Evidence from Third-party Loan Guarantee

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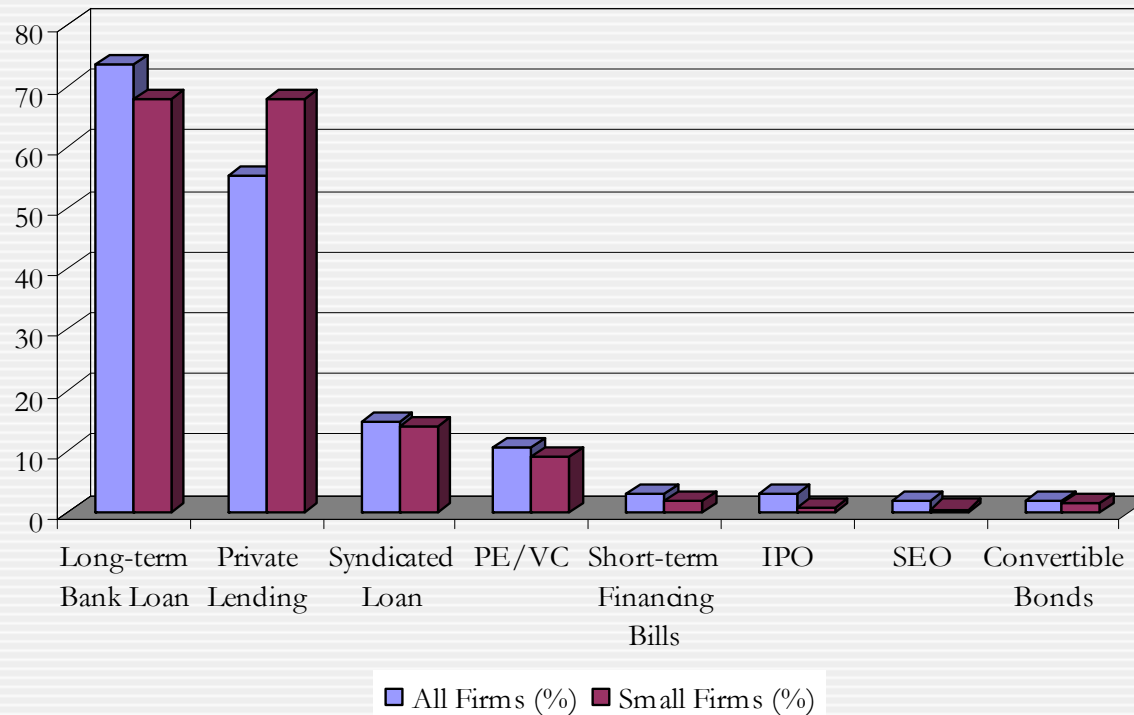
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Major Financing Channels in China

Chart: All Firms (%) and Small Firms (%) across Long-term Bank Loan, Private Lending, Syndicated Loan, PE/VC, Short-term Financing Bills, IPO, SEO, Convertible Bonds

❖ Survey by CESS (2010): Chinese enterprises largely rely on bank loan and private lending

❖ 73.5% firms chose bank loan as the major financing source in the past three years

Financing Difficulties for SMEs

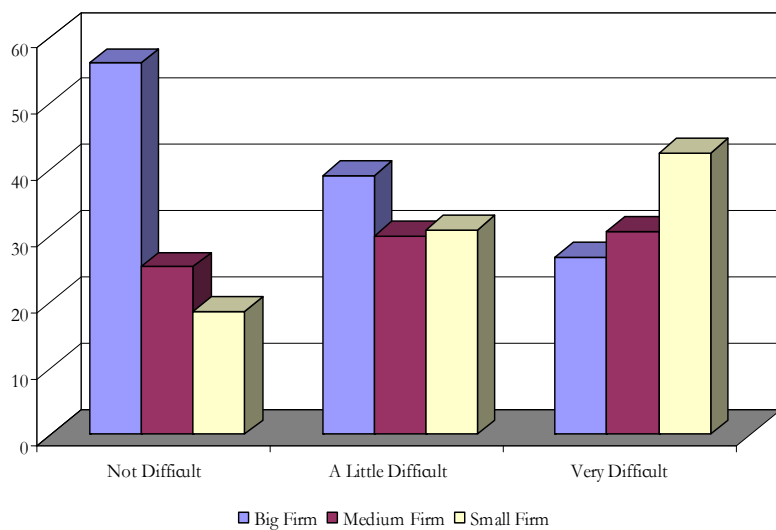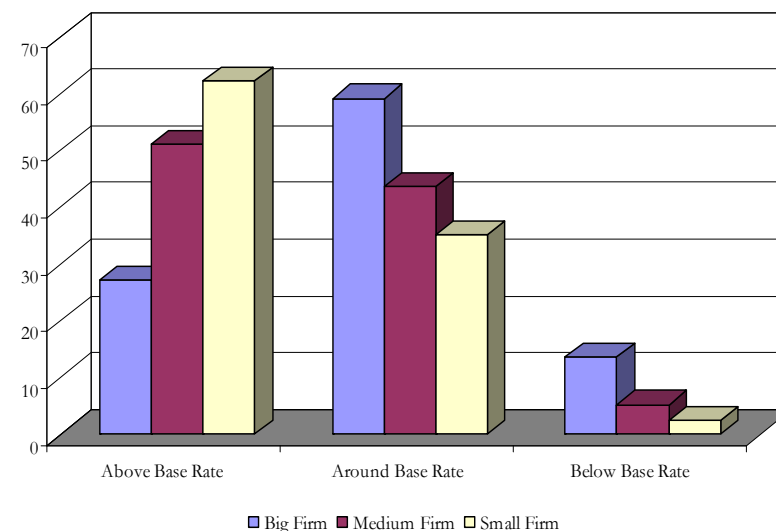Figure II. Difficulties Faced by Chinese Firms to Get Bank Loan

Figure III. Loan Rate Faced by Chinese Firms

❖ Survey by CESS (2010): 56% of big firms in China find it "easy" to get bank loans, while the percentage in small firms is 16.8%

❖ 42.5% of small firms find it "difficult" to get bank loans, 24% of big firms

❖ 62.5% of small firms are charged a loan rate higher than base rate, 27.2% of big firms

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A Solution: Loan Guarantee

- First guarantee fund: Shanghai, 1992
- Loan guarantee has grown to be a large market in China
- By May 20, 2011, 6030 guarantee firms in China. Total outstanding guaranteed loans RMB 893 billion, 77% goes to 166,000 SMEs
- A number of SMEs and start-up firms which were financed by guaranteed loans go public or become industry leaders (Huawei华为，BYD比亚迪).

Figure: Development of Credit Guarantee Market in China

No. of Guarantors

But...
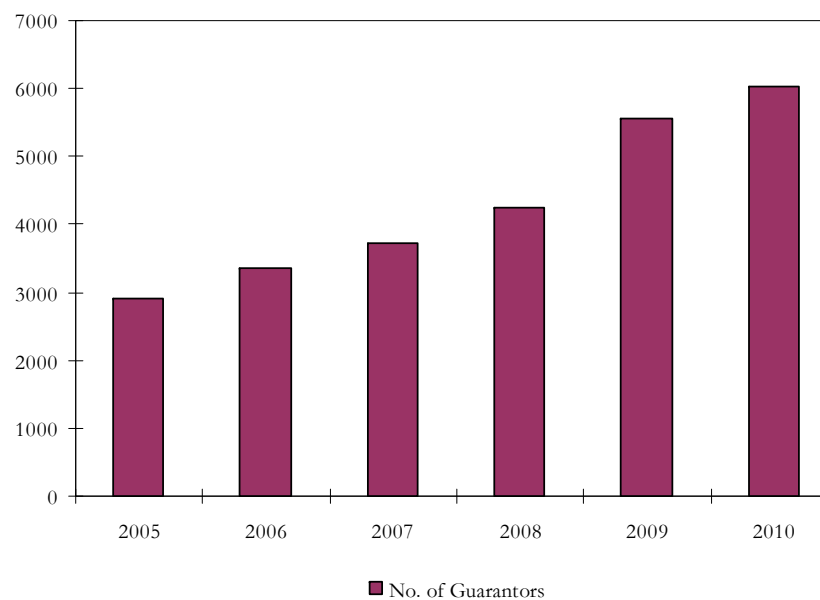
- **Prominent features of guarantee firms in China:**
  - High leverage (10 times by regulation)
  - Insufficient capital

    (Threshold: book equity > 50 million; 1892 out of 6030 > 100 million)
  - Limited techniques for risk assessment
  - Lack of talents .. etc

- **News about China guarantee market:**
  - Nov 5, 2008: *"浙江民企深陷担保利益链，倒闭逃跑成风"*
  - March 11, 2009: *"南京助业投资担保公司倒闭"*
  - Jan 3, 2010: *"郑州担保公司倒闭，金邦担保老板消失"*
  - June 17, 2011: *"厦门担保业乌云密布：3家担保公司报出坏账"*

- **Recent regulation: by China Banking Regulatory Commission (CBRC) and 6 other government sectors**

- ## Guaranteed Loans:

  - ➤ Help loosen credit constraint and facilitate borrowing?

  - ➤ Act as additional barrier and raise financing cost further?

  - ➤ Supplement or substitute for bank loans?

This paper

- Research Question: What's the role of loan guarantee?

- To answer this, we examine the following issues:
  - Relations between risk measure by bank and by guarantor
  - Which can predict loan default better: bank or guarantor?
  - Interaction between loan rate, guarantor's risk measure and collateralization

- Key Variables:
  - Guarantor's Risk Measure: ranges from 0 to 1; higher value, higher risk
  - Loan Rate: set by lending banks
  - Collateralization Rate: Collateral Value/Loan Amount

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Main Findings

- **Puzzling fact: Guarantor and bank disagree on the risk/pricing of loans**
  - Guarantor's risk measure inconsistent with loan rate
  - Loan rate has predictive power on loan default

- **Potential Explanations**
  - Collateral channel – "lazy" guarantor?
  - Regulatory arbitrage

- **Other determinants of loan default**
  - Borrower Age, Abnormal Book Value, Loan History, Guarantee Officer's Capability, etc

The Model

- Direct Bank Loan vs. Guaranteed Loan
- π: default probability; c: collateralization rate; X: future cash flow; I: investment (loan amount)
- Loan guarantee increases bank lending and improves SMEs' debt capacity
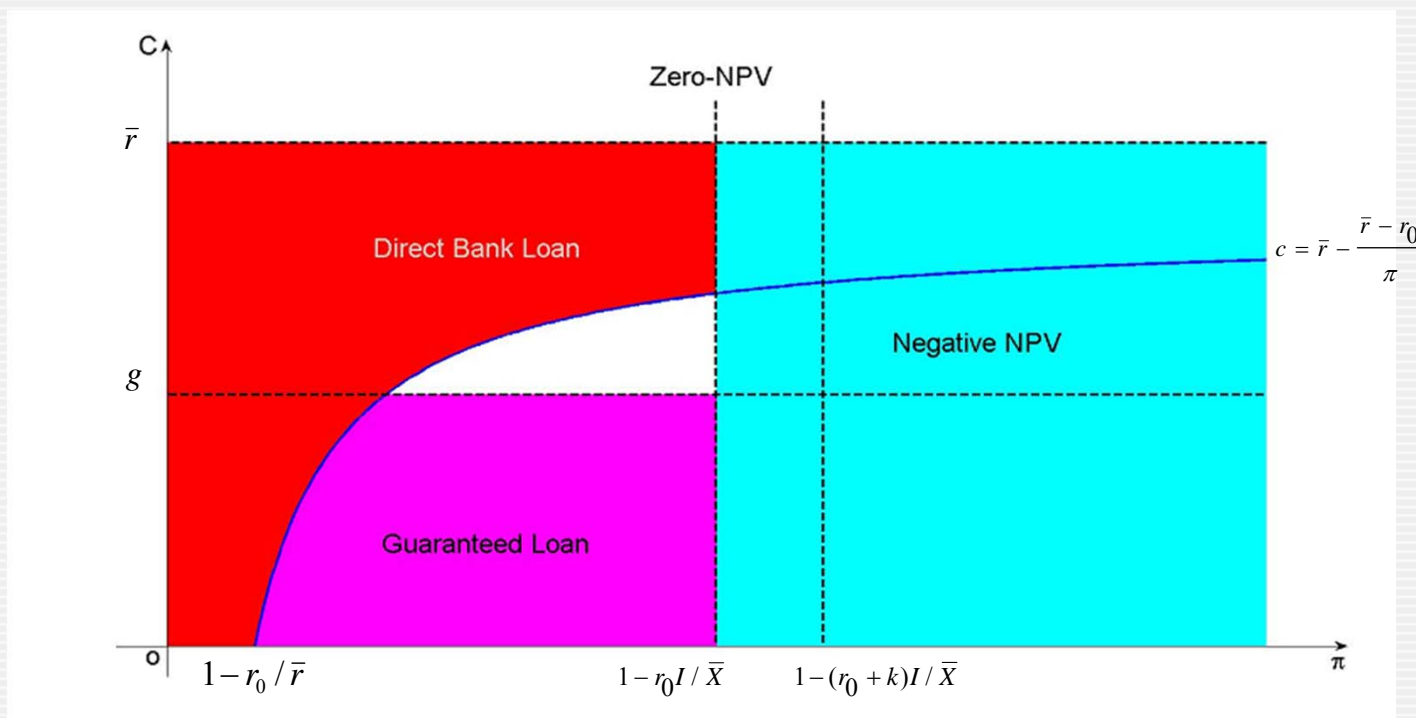
Data

- A proprietary database of third party loan guarantees

- From 2006 to the first half of 2009

- 1076 loan guarantees, 16 defaults.

- Guarantee maturity: one year

- Categories:
  - Loan Characteristics; Loan Guarantee Characteristics
  - Public Information: Borrower's accounting data
  - Guarantor's Private Information: No. of shareholders, borrower manager's political background, etc
  - Guarantee Officer Characteristics: age, working years, marital status, education background, etc

Sample Description

Summary Statistics by Year – All Sample

Year	No. of Loans	No. of Loan Defaults	Default Probability Measure	Rate of Guarantee Fee (%)	Loan Rate (%)	Loan Amount (RMB 10,000)	Collateralization	Default Rate
2006	240	1	59.64%	1.910	0.995	445.375	78.85%	0.42%
2007	343	11	49.34%	1.797	5.876	607.184	69.96%	3.21%
2008	310	3	43.30%	1.660	5.496	528.597	84.99%	0.97%
2009	159	0	45.87%	1.470	3.891	486.226	80.36%	0.00%
Total	1052	15	49.39%	1.733	4.350	528.830	77.97%	1.43%

❖ Loans initiated in 2007 has highest default rate

❖ A prominent feature of guaranteed loan: lack of collateral

❖ 280 special government loans and entrusted loans are incorporated, lowering average loan rate

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Borrower Characteristics

variable	Mean				Median			
	All	Non-default	Default	Difference	All	Non-default	Default	Difference
Total Asset	7000.45	7014.70	6078.73	935.969	3792.00	3792.00	3241.50	550.500
	(788)	(776)	(12)		(788)	(776)	(12)	
Collateral/Loan Amount	0.780	0.778	0.875	-0.097	0.627	0.628	0.615	0.013
	(1048)	(1033)	(15)		(1048)	(1033)	(15)	
No. of Employee	329.431	329.532	322.071	7.460	200.000	200.000	275.000	-75.000
	(1041)	(1027)	(14)		(1041)	(1027)	(14)	
Rate of Guarantee Fee	1.733	1.735	1.560	0.175	2.000	2.000	2.000	0.000
	(1052)	(1037)	(15)		(1052)	(1037)	(15)	
Loan Rate	4.350	4.322	6.340	-2.018**	5.841	5.841	7.655	-1.814***
	(1052)	(1037)	(15)		(1052)	(1037)	(15)	
Leverage	0.353	0.353	0.323	0.030	0.345	0.346	0.322	0.024
	(782)	(770)	(12)		(782)	(770)	(12)	
Guarantor's Risk Measure	0.494	0.494	0.504	-0.010	0.480	0.480	0.470	0.010
	(1048)	(1033)	(15)		(1048)	(1033)	(15)	
ROA	0.190	0.189	0.214	-0.025	0.164	0.164	0.171	-0.007
	(786)	(774)	(12)		(786)	(774)	(12)	
Sales	9855.36	9876.06	8517.35	1358.71	5414.50	5444.00	5037.18	406.820
	(788)	(776)	(12)		(788)	(776)	(12)	

❖ Ex-post default borrowers are charged 2 percent higher loan rate

Starting Point: Risk Measure by Bank vs. Guarantor

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- **Puzzling fact: Guarantors and banks disagree on the pricing of loans**
  - ➤ Guarantor's risk measure inconsistent with loan rate
  - ➤ Loan rate has predictive power on loan default

Variable	Model 1	Model2	Model3	Model4	Model5	Model6
Guarantor's Risk Measure	-1.6074	-2.0999	-2.5424	-2.5312	-2.4749	-2.4749
	(0.0000)***	(0.0000)***	(0.0000)***	(0.0000)***	(0.0000)***	(0.0000)***
Borrower Characteristics						
Size			-0.0942	-0.1743	-0.2989	-0.2989
			(0.1414)	(0.0254)**	(0.0030)***	(0.0018)***
ROA			-0.1913	-0.2529	-0.7103	-0.7103
			(0.6218)	(0.5149)	(0.1963)	(0.1575)
Loan Characteristics						
log (Loan Amount)				0.1307	0.2085	0.2085
				(0.0721)*	(0.0244)**	(0.0124)**
Credit History						
Loan History					0.3394	0.3394
					(0.1058)	(0.0512)*
Adjusted R-square (%)	14.24	3.59	14.63	15.33	42.21	9.96

❖ Dependent variable: **Loan Rate**

❖ Control for Borrower Characteristics, Loan Characteristics, Credit History

❖ Model 2-6: Fixed time and industry controls; Model 2 and 6: Correction for heteroskedasticity

Disagreement between Guarantors and Banks

Variable	Model 1	Model2	Model3	Model4	Model5	Model6
Guarantor's Risk Measure	-0.4888	-0.6597	-0.9162	-0.9069	-1.1535	-1.1535
	(0.0278)**	(0.0008)***	(0.0004)***	(0.0004)***	(0.0005)***	(0.0002)***
Borrower Characteristics						
Size			-0.1499	-0.2164	-0.2255	-0.2255
			(0.0005)***	(0.0000)***	(0.0013)***	(0.0005)***
ROA			-0.3357	-0.3868	-0.5695	-0.5695
			(0.1924)	(0.1329)	(0.1441)	(0.1260)
Loan Characteristics						
log (Loan Amount)				0.1085	0.1560	0.1560
				(0.0243)**	(0.0114)***	(0.0144)**
Credit History						
Log (Current Loan)					-0.0241	-0.0241
					(0.6432)	(0.6150)
Adjusted R-square (%)	0.63	5.34	13.93	14.74	11.69	11.69

- ❖ Dependent variable: **Credit Spread**
- ❖ Control for Borrower Characteristics, Loan Characteristics, Credit History
- ❖ Model 2-6: Fixed time and industry controls; Model 2 and 6: Correction for heteroskedasticity

Who is Correct?

Variable	Model 1	Model2	Model3	Model4	Model5
Loan Rate	0.2831	0.3280	0.4882	0.4881	0.6166
	(0.0264)**	(0.0307)**	(0.0258)**	(0.0252)**	(0.0154)**
Borrower Characteristics					
Size			0.0862	0.2166	0.2417
			(0.7163)	(0.4845)	(0.4603)
ROA			-1.2648	-1.3338	-1.6003
			(0.4528)	(0.4344)	(0.3883)
Firm Age			-0.1255	-0.1240	-0.1286
			(0.0596)*	(0.0590)*	(0.0846)*
Credit History					
Loan History					-1.1016
					(0.0169)**
Adjusted R-square (%)	9.94	17.93	35.46	36.24	53.56

- ❖ Probit Regression
- ❖ Dependent variable: Loan Default Dummy
- ❖ Control for Borrower Characteristics, Loan Characteristics, Credit History
- ❖ Model 2-5: Fixed time and industry controls
- ❖ Similar regression for guarantor's risk measure: no significant results

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- ## The linkage: Collateralization Rate

  - Loan rate is positively correlated with collateralization

  - Guarantor's risk measure is negatively correlated with collateralization

Collateralization and Loan Rate

Variable	Model 1	Model 2	Model 3	Model 4
Collateralization	0.0854	0.0799	0.0972	0.0908
	(0.0399)**	(0.0546)*	(0.0286)**	(0.0143)**
Borrower Characteristics				
Size	-0.0883	-0.1685	-0.2652	-0.3111
	(0.1876)	(0.0389)**	(0.0102)***	(0.0003)***
Cash/Total Asset	0.9138	0.8464	1.8408	1.7018
	(0.1520)	(0.1842)	(0.0179)**	(0.0087)***
Loan Characteristics				
log (Loan Amount)		0.1311	0.1936	0.1711
		(0.0849)*	(0.0429)**	(0.0321)**
Credit History				
Rating			-0.1791	-0.1812
			(0.1453)	(0.0776)*
State-owned Bank				0.3029
				(0.0071)***
Adjusted R-square (%)	14.24	14.63	12.84	39.10

❖ Dependent variable: Loan Default dummy
❖ When bank sees high-risk borrowers, it requires more collateral and sets a higher loan rate
❖ State-owned Bank dummy and Crisis period dummy have positive effect
❖ Control for Borrower Characteristics, Loan Characteristics, Credit History
❖ Model 2-4: Fixed time and industry controls

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Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Firm Specific Collateral	0.6913	0.7172	0.7635	0.9401	0.9947
	(0.0000)***	(0.0006)***	(0.0004)***	(0.0013)***	(0.0008)***
Borrower Characteristics					
Size		0.2088	0.1369	0.0782	0.0704
		(0.0136)**	(0.2087)	(0.6285)	(0.6642)
Asset Turnover		-0.0141	-0.0223	-0.1367	-0.1428
		(0.7721)	(0.6502)	(0.0931)*	(0.0807)*
Firm Age		-0.0262	-0.0269	-0.0205	-0.0229
		(0.1084)	(0.0999)*	(0.4068)	(0.3564)
Loan Characteristics					
log (Loan Amount)			0.1043	0.1308	0.1321
			(0.2963)	(0.3676)	(0.3645)
Credit History					
Loan History				-0.5478	-0.5850
				(0.0866)*	(0.0693)*
Adjusted R-square (%)	3.79	5.33	5.35	7.57	7.49

❖ Dependent variable: Collateralization Rate (Collateral Value/Loan Amount)

❖ Benmelech and Bergman (2009, JFE)

❖ Loan History dummy has positive effect

❖ Model 2-5: Fixed time and industry controls

Collateralization and Guarantor's Risk Measure

Variable	Model 1	Model2	Model3	Model4	Model5	Model6
Collateralization	-0.0230	-0.0231	-0.0242	-0.0250	-0.0254	-0.0252
	(0.0000)***	(0.0000)***	(0.0000)***	(0.0000)***	(0.0000)***	(0.0000)***
Borrower Characteristics						
Size			-0.0035	-0.0016	-0.0014	-0.0016
			(0.6522)	(0.8354)	(0.8572)	(0.8819)
ROA			-0.1257	-0.1185	-0.1250	-0.1212
			(0.0076)***	(0.0121)**	(0.0076)***	(0.0083)***
Leverage			0.1010	0.0940	0.0877	0.0891
			(0.0044)***	(0.0087)***	(0.0142)**	(0.0114)***
Asset Turnover			-0.0119	-0.0113	-0.0111	-0.0110
			(0.0121)**	(0.0186)**	(0.0200)**	(0.1007)*
Guarantor's Private Information						
Political Background				-0.0238	-0.0237	-0.0237
				(0.0424)**	(0.0438)**	(0.0506)**
Adjusted R-square (%)	2.91	5.00	11.59	11.72	11.73	11.34

❖ Dependent variable: Guarantor's Risk Measure
❖ Consistent ex-ante theory: Liberti (2010)
❖ Control for Borrower Characteristics, Loan Characteristics
❖ Model 2-6: Fixed time and industry controls

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Competing Views on Collateral

- Rationale for loan guarantee: lack of collateral
- "Lazy Lender": does guarantor rely on collateral too much?
  - Manove, Padilla and Pagano (2001): a bank may be in a good position to evaluate the profitability of a planned investment project, but a high level of collateral will weaken the bank's incentive to do so
- Commitment view on collateral
  - Collateral is used as a signal or a borrower's credit quality
  - Collateral is negatively associated with borrower risk
- Hedging view on Collateral
  - Lenders require collateral for loans granted to borrower with lower credit quality
  - Observably riskier borrowers are more likely to be required to pledge collateral

Then, What is the Role of Guarantor?

- Regulatory Arbitrage

  - Honohan (2008): Guarantee premium is used to bring the total servicing charge for the loan above a regulated ceiling on lending interest rates and thus closer to a market-determined interest rate

  - Thorsten (2010): Guarantee schemes can emerge to exploit regulatory arbitrage if the guarantor is not subject to the same regulatory requirements as the lender

Summary

- First study of loan-level data on guarantee in China

- Over-reliance on collateral may reduce guarantors' incentive to evaluate real business risk, resulting in "lazy lender" problem

- Advocate more cautions when resorting to reputation and relationship-based informal finance

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