WHO LENDS BEFORE BANKING CRISES?
EVIDENCE FROM THE INTERNATIONAL SYNDICATED LOAN MARKET

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Background

- Credit expansions often lead to banking crises with significant negative consequences for the real economy (Reinhart and Rogoff, 2009; Schularick and Taylor, 2012).

- Credit growth may also be driven by an increase in investment opportunities or by an improvement in the financial sector's ability to intermediate funds towards productive investment

  (Levine, 2005)

- Macroprudential policy faces a trade off between financial stability and financial deepening

This Paper

- Early-warning models are typically based on macro variables

- Finer predictions on the characteristics of credit booms that lead to financial crises could provide a useful barometer for macroprudential policies

- Which lenders take more risk during credit expansions that end up in banking crises?

Theoretical Background

- (Bad) credit booms arise because atomistic agents do not internalize the externalities of excessive debt on collateral prices and defaults
  - (e.g., Lorenzoni (2008), Farhi and Werning (2016), Korinek and Simsek (2016)).

- New lenders may face more information asymmetry during credit booms and, being less experienced, become victims of optimistic expectations, which end up being deluded when the boom ends up in a bust (Gennaioli, Shleifer and Vishny, 2015; Thakor, 2015)

- Our conjecture:
  - High-market-share banks internalize the negative spillovers of their actions on the rest of the economy because this will naturally impact their portfolios and future profits
  - Low-market-share banks and new entrants may be less informed

- Empirically, low-market-share lenders, foreign lenders and first-time lenders may originate more credit before banking crises

A Preview of the Results

- In the four years preceding banking crises (defined as in Baron, Verner and Xiong, 2021), low-market-share banks and foreign banks lend relatively more than other banks

- The differential behavior is not driven by low familiarity with the industry of the borrower
  - This suggests a different propensity to internalize externalities

Related Literature I

- Output growth, recession, and financial crises:
  - An increase in household debt to GDP ratio predicts lower GDP growth (Mian, Sufi and Verner, 2017)
  - A decrease in credit spread predicts financial crises (Krishnamurty and Muir, 2020)
  - Credit to nontradable sectors is also associated with a boom bust in output (Müller and Verner, 2021)
  - A deterioration in the average quality of firms with high bond issuance predicts poor performance of corporate bonds relative to Treasury bonds of similar maturity (Greenwood and Hanson, 2013).

- We focus on the type of lenders rather than on the quality of borrowers
  - Quality of lenders easier to ascertain ex ante in credit markets.

Related Literature II

- Geography of bank lending

  - Lenders' propensity to extend syndicated loans to foreign borrowers depend on the financing conditions in their home country (Giannetti and Laeven, 2012a).

  - Lenders experiencing a banking crisis in their home country exhibit rebalance their portfolios towards domestic borrowers-- flight home (Giannetti and Laeven, 2012b).

  - Domestic lenders in the US grant more loans to distant and lower quality entrepreneurs during US business cycles expansions if they face a strong competitive environment in their market of origin. (Granja, Leuz, and Rajan, 2019)

  - *While these studies focus on the lenders' portfolios, we focus on the host country*

Related literature III

- Banking structure matters for shock transmission and financial stability
    - Some lenders internalize negative spillovers

- Bank lending and renegotiation decisions have externalities
    - Housing market: foreclosures generate price discounts that may spillover to non-distressed neighboring houses
    - Firms and industries are interconnected. Financial constraints amplify distress within an an industry

- High-market-share banks internalize externalities
    - Renegotiate defaulting mortgages mitigating the effects of foreclosures on house price
        - Favara and Giannetti (Journal of Finance, 2017)
    - Provide more liquidity to borrowers in distressed industries as well as to their customers and suppliers
        - Giannetti and Saidi (Review of Financial Studies, 2019)

Data Identifying Banking Crises

- We identify periods of excessive lending ex post, using the chronology of crises of Baron, Verner, and Xiong (2021)

  - Episodes of bank equity returns declines in a country in excess of 30% during a year.

  - Banking crises include episodes with panics and government interventions and quieter periods of banking sector distress.

- *Our sample includes 64 banking crises in 46 affected countries during the 1986-2016 period.*

Data

- International syndicated loan market: Dealscan

Lending Growth around Banking Crisis
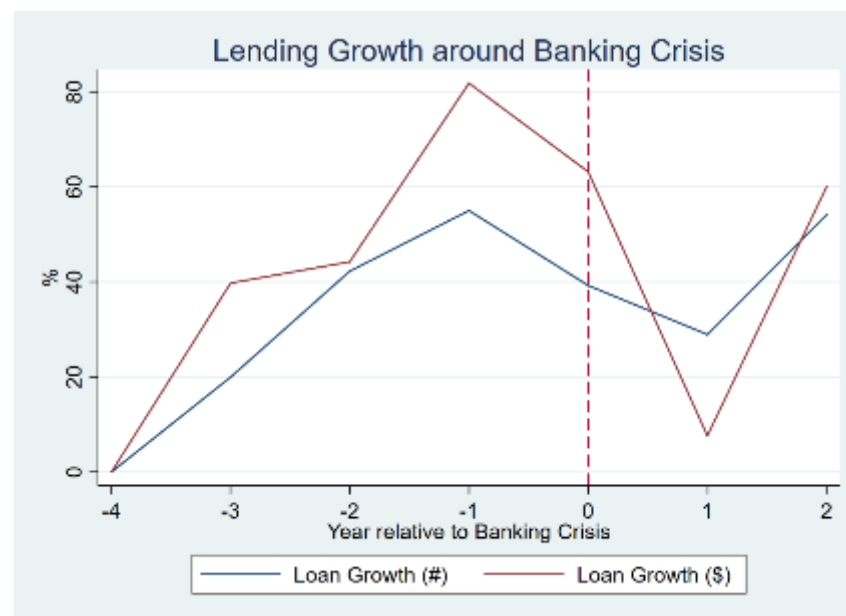
Empirical methodology

- Bank-country-year panel

$$y_{bct} = \beta_1 \times Lender\_char_{bct} \times Pre\_crisis_{c,t} + \beta_2 \times Lender\_char_{bct} + \delta_{ct} + \gamma_{bt} + \varepsilon_{bct}$$

Empirical model compares lender behavior in pre-crisis times and normal times

Lending in the Pre-crisis Period

Dep. Variable:	(1) ln(1+Loan Amount Arranged)	(2) Any Loan Arranged	(3) ln(1+Loan Amount Committed)	(4) Any Loan Committed
Foreign Lender	-3.606***	-0.182***	-4.775***	-0.244***
	(-28.01)	(-29.21)	(-34.70)	(-35.68)
Pre-crisis x Foreign Lender	0.984***	0.048***	1.320***	0.066***
	(7.86)	(7.65)	(9.66)	(9.28)
Lender-Year F				Y
Country-Year				Y
Observations				475,131
R-squared				0.436

Effects have high economic significance:
- In column1, the amount of loans arranged by foreign lenders almost doubles in pre-crisis periods
- In column 2, the probability that foreign lenders arrange any loans during pre-crisis periods increases by 50%
- Effects even larger in column 3 and 4 when we consider committed credit

Lending in the Pre-crisis Period

Market Share based on:	(1)	(2)	(3)	(4)
	Retained Share			
Dep. Variable:	ln(1+Loan Amount Arranged)	Any Loan Arranged	ln(1+Loan Amount Committed)	Any Loan Committed
Market Share	58.231***	2.677***	51.937***	2.329***
	(6.26)	(6.24)	(6.27)	(6.23)
Pre-crisis x Market Share	-20.387***	-0.952***	-21.561***	-1.046***
	(-2.58)	(-2.61)	(-3.04)	(-3.24)
Foreign Lender	-3.176***	-0.162***	-4.348***	-0.224***
	(-27.05)	(-28.40)	(-33.89)	(-35.12)
Lender-Year FE	Y	Y	Y	Y
Country-Year FE	Y	Y	Y	Y
Observations	458,137	458,137	458,137	458,137
R-squared	0.435	0.416	0.465	0.441

First-Time Lenders

Dep. Variable:	(1) First Arrange	(2) First Commit	(3) First Arrange	(4) First Commit
Pre-crisis	0.007***	0.021***	0.006***	0.012***
	(10.21)	(18.92)	(7.78)	(10.01)
Country GDP per Capita	0.000	-0.005***	0.002	-0.001
	(0.24)	(-3.51)	(1.33)	(-0.86)
Country GDP Growth	0.073***	0.142***	0.077***	0.111***
	(8.60)	(12.69)	(7.96)	(9.46)
Lender GDP per Capita	0.022***	0.028***		
	(9.98)	(9.99)		
Lender GDP Growth	0.033***	0.080***		
	(3.03)	(5.35)		
Lender-Country FE	Y	Y	N	N
Year FE	Y	Y	N	N
Lender-Year FE	N	N	Y	Y
Country FE	N	N	Y	Y
Observations	449,499	449,499	395,479	395,479
R-squared	0.030	0.016	0.130	0.180

Good Credit Booms – Foreign Lenders

Dep. Variable:	(1) ln(1+Loan Amount Arranged)	(2) Any Loan Arranged
Foreign Lender	-3.200***	-0.161***
	(-25.81)	(-26.76)
Credit Boom x Foreign Lender	-0.424***	-0.020***
	(-3.19)	(-3.01)
Lender-Year FE	Y	Y
Country-Year FE	Y	Y
Observations	421,832	421,832
R-squared	0.441	0.423

Good Credit Booms-Mkt Share

Market Share based on:	(1)	(2)	(3)	(4)
	Retained Share		Arranged Share	
Dep. Variable:	ln(1+Loan Amount Committed)	Any Loan Committed	ln(1+Loan Amount Arranged)	Any Loan Arranged
Market Share	52.745***	2.267***	36.846***	1.636***
	(7.23)	(6.94)	(8.61)	(8.30)
Credit Boom x Market Share	-1.366	0.035	7.888	0.393*
	(-0.17)	(0.10)	(1.59)	(1.76)
Foreign Lender	-4.086***	-0.211***	-3.083***	-0.157***
	(-31.13)	(-32.14)	(-26.62)	(-27.40)
Lender-Year FE	Y	Y	Y	Y
Country-Year FE	Y	Y	Y	Y
Observations	407,997	407,997	407,997	407,997
R-squared	0.482	0.457	0.454	0.433

Foreign lenders' propensity to lend to risky borrowers

Dep. Variable:	(1) % Arrange Nontradable	(2) % Arrange Low Distance to Default	(3) % Arrange Small	(4) % Arrange High Leverage	(5) % Arrange Low Interest Coverage	(6) % Arrange Unrated	(7) % Arrange Private	(8) % Arrange No Covenant	(9) % Arrange Unsecured
Foreign Lender	-0.008***	-0.007***	-0.009***	-0.007***	-0.006***	-0.008***	-0.008***	-0.008***	-0.008***
	(-10.80)	(-9.71)	(-10.20)	(-9.78)	(-9.73)	(-11.10)	(-11.55)	(-10.85)	(-10.70)
Pre-crisis x Foreign Lender	0.003***	0.004***	0.004***	0.004***	0.003***	0.003***	0.003***	0.003***	0.003***
	(4.56)	(5.91)	(4.18)	(4.85)	(4.75)	(4.20)	(3.49)	(4.30)	(4.90)
Lender-Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Country-Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	475,131	475,131	475,131	475,131	475,131	475,131	475,131	475,131	475,131
R-squared	0.072	0.080	0.082	0.097	0.095	0.159	0.144	0.173	0.168

Lender Mkt Share and Risky Loans

Market Share based on:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Arranged Share				
Dep. Variable:	% Arrange Low Distance to Default	% Arrange Small	% Arrange High Leverage	% Arrange Low Interest Coverage	% Arrange Unrated	% Arrange Private	% Arrange No Covenant	% Arrange Unsecured
Market Share	0.311***	0.369***	0.346***	0.308***	0.426***	0.383***	0.408***	0.405***
	(5.71)	(5.41)	(5.79)	(5.76)	(7.10)	(6.84)	(7.29)	(7.34)
Pre-crisis x Market Share	-0.197***	-0.176***	-0.162***	-0.183***	-0.213***	-0.181***	-0.195***	-0.198***
	(-4.27)	(-2.90)	(-2.95)	(-3.51)	(-3.83)	(-3.36)	(-3.60)	(-3.54)
Foreign Lender	-0.005***	-0.006***	-0.005***	-0.004***	-0.005***	-0.005***	-0.005***	-0.005***
	(-8.91)	(-9.82)	(-8.84)	(-8.42)	(-10.09)	(-10.35)	(-9.76)	(-9.33)
Lender-Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Country-Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Observations	458,137	458,137	458,137	458,137	458,137	458,137	458,137	458,137
R-squared	0.104	0.117	0.125	0.117	0.232	0.199	0.248	0.236

Does the Interest Rate Reflect Risk?

Dep. Variable:	(1) Avg Spread	(2) Avg Spread Nontradable	(3) Avg Spread Low Distance to Default	(4) Avg Spread Small	(5) Avg Spread High Leverage	(6) Avg Spread Low Interest Coverage	(7) Avg Spread Unrated	(8) Avg Spread Private
Foreign Lender	-1.456	29.178***	8.822	15.441**	4.536	4.520	17.516	-485.608
	(-0.42)	(2.72)	(1.21)	(2.57)	(0.66)	(0.81)	(0.10)	(-1.30)
Pre-crisis x Foreign Lender	6.138	-14.739	-17.738	9.326	-6.603	-14.908*	-315.260	293.357
	(1.08)	(-0.50)	(-1.10)	(0.79)	(-0.52)	(-1.73)	(-0.83)	(0.68)
Lender-Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Country-Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Observations	28,299	1,450	4,731	4,081	6,326	6,935	4,028	1,198
R-squared	0.663	0.778	0.813	0.789	0.802	0.784	0.419	0.598

Does the Interest Rate Reflect Risk?

Market Share based on:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
					Retained Share				
Dep. Variable:	Avg Spread	Avg Spread Low Distance to Default	Avg Spread Small	Avg Spread High Leverage	Avg Spread Low Interest Coverage	Avg Spread Unrated	Avg Spread Private	Avg Spread No Covenant	Avg Spread Unsecured
Market Share	-14.640	-34.109	-59.875	-56.727	-114.515	-766.349	483.937	10.218	-266.947
	(-0.41)	(-0.43)	(-0.75)	(-0.51)	(-1.32)	(-0.62)	(0.11)	(0.09)	(-0.28)
Pre-crisis x Market Share	29.588	293.108*	2.938	88.112	270.139***	870.297	5,144.397	560.203	2,021.855
	(0.40)	(1.78)	(0.02)	(0.47)	(2.83)	(0.43)	(1.35)	(1.40)	(1.25)
Foreign Lender	-0.739	5.669	14.560**	1.494	-1.702	-70.148	-325.918	-15.107	1.149
	(-0.20)	(0.74)	(2.11)	(0.16)	(-0.23)	(-0.44)	(-0.93)	(-0.77)	(0.01)
Lender-Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Country-Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	28,173	4,731	4,081	6,326	6,935	4,028	1,198	23,039	5,139
R-squared	0.663	0.813	0.789	0.802	0.784	0.419	0.598	0.111	0.430

Expectations or Externalities?

Expectations are more likely to matter if less established lenders extend loans to industries with which they have low familiarity worldwide

Market Share based on:	(1)	(2)	(3)	(4)
		Retained Share		
Dep. Variable:	ln(1+Loan Amount Arranged)	Any Loan Arranged	ln(1+Loan Amount Committed)	Any Loan Committed
Market Share	30.223***	1.567***	34.216***	1.815***
	(7.56)	(7.47)	(7.47)	(7.37)
Pre-crisis x Market Share	-17.874***	-0.931***	-21.191***	-1.133***
	(-4.66)	(-4.73)	(-5.07)	(-5.13)
Low Familiarity	-0.263***	-0.014***	-0.774***	-0.044***
	(-9.58)	(-10.14)	(-21.78)	(-22.89)
Pre-crisis x Low Familiarity	-0.248***	-0.013***	-0.420***	-0.022***
	(-7.68)	(-7.59)	(-8.86)	(-8.51)
Market Share x Low Familiarity	-30.779***	-1.593***	-34.626***	-1.831***
	(-8.20)	(-8.07)	(-7.96)	(-7.80)
Pre-crisis x Market Share x Low Familiarity	17.660***	0.919***	20.789***	1.110***
	(4.57)	(4.64)	(4.92)	(4.99)
Foreign Lender	-0.205***	-0.011***	-0.410***	-0.024***
	(-8.35)	(-8.84)	(-11.73)	(-12.53)
Lender-Year FE	Y	Y	Y	Y
Country-Year FE	Y	Y	Y	Y
Industry-Year FE	Y	Y	Y	Y
Observations	39,640,979	39,640,979	39,640,979	39,640,979
R-squared	0.079	0.076	0.109	0.105

Robustness

- Results hold within the same syndicate—that is, low market share lenders supply more credit to the very same loan

- Differential lending does not depend on bank relationships

- Different banks' propensity to lend during crisis periods similar to normal times

- Mkt share or distance? Mkt share does not merely capture distance

- Results are not driven by differences in regulation between the home country of the lender and the host country.

Mkt Share or Distance?

	(1)	(2)	(3)	(4)
Market Share based on:	Retained Share			
Dep. Variable:	ln(1+Loan Amount Arranged)	Any Loan Arranged	ln(1+Loan Amount Committed)	Any Loan Committed
Market Share	55.522***	2.539***	48.433***	2.147***
	(6.23)	(6.20)	(6.22)	(6.18)
Pre-crisis x Market Share	-18.645**	-0.864**	-19.325***	-0.932***
	(-2.44)	(-2.45)	(-2.87)	(-3.06)
Distance	-0.448***	-0.023***	-0.604***	-0.031***
	(-27.43)	(-29.05)	(-35.05)	(-36.80)
Pre-crisis x Distance	0.099***	0.005***	0.129***	0.006***
	(7.18)	(7.10)	(8.34)	(8.00)
Lender-Year FE	Y	Y	Y	Y
Country-Year FE	Y	Y	Y	Y
Observations	458,137	458,137	458,137	458,137
R-squared	0.442	0.422	0.473	0.449

Conclusions

- Supply of loans from foreign inexperienced lenders increases in the run up to banking crisis

- ....yet high-market-share banks cannot avoid economy-level over-lending as new lenders are free to enter—asymmetry with negative shocks

- Objective for macro-prudential policy: Consider who the lenders are
  - Useful not only for credit growth but also to evaluate whether capital inflows may be destabilizing