Bank corporate loan pricing following the subprime crisis

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Motivation (1)

- The financial condition of banks is important because it affects the stability of the financial system, and because it may influence banks' ability to lend.

- Determining the importance of the link between banks' financial condition and their lending behavior has proven difficult

- The recent crisis provides a good opportunity to investigate the importance of that link.

- That is the purpose of this paper.

Motivation (2)

- Early empirical studies, including Bernanke (1983) , looked for evidence of the bank lending channel by investigating whether bank lending was correlated with measures of economic activity.

- These correlations were questioned because they could be driven by demand shocks as opposed to supply chocks.

- The recession which accompanied the introduction of the first Basel accord in the U.S. brought renewed interest to the importance of bank lending to the wider economy.

- The difficulties in disentangling demand from supply effects resulted again in different views.

Motivation (3)

- The recent financial crisis brought the debate on the importance of bank lending to the economy to the forefront.

- The crisis started in the summer of 2007 with the meltdown of subprime mortgages and their related securitized products.

  – US government took over Fannie Mae, Freddie Mac, and AIG, while JPMorgan acquired Bear Sterns, and Wells Fargo acquired Wachovia.

  – Lehman Brothers, Washington Mutual and many other smaller banks all failed of losses related to the subprime meltdown.

  – Many of the largest banks reported huge write downs in connection with their subprime business.

  – By the end of 2007, the largest U.S. banks had already announced writedowns in excess of $100 billion.

- As writedowns continued to mount, a debate emerged on whether banks' subprime losses would hamper their ability to lend.

Related literature

- Ivashina and Scharfstein (2008) show that bank loans fell by 68% during the peak of the financial crisis relative to the peak of the credit boom and argue that this decline is supply driven.

- Chari, Christiano, and Kehoe (2008) dispute the claim that bank lending had declined sharply, and even argue that bank lending had been increasing during the crisis.

Objective of our paper

- We attempt to contribute to the debate on the availability of bank credit during the crisis.

- In contrast to earlier studies we focus on the loan pricing policies of banks during the subprime crisis.

Hypotheses

- We hypothesize that those banks which incurred large losses in the subprime crisis increase the interest rates on their loans to corporate borrowers.
  - These banks are likely to face an increase in the cost of funding.
  - They are likely to be pressured by the market to improve their performance and capital ratios.

- We hypothesize, following the theories of Sharpe (1990) and Rajan (1992) on bank information monopoly, that those banks which incurred large losses will increase the interest rates on their loans to bank dependent borrowers by more than they do it to non-bank dependent borrowers.

Testing Hypothesis 1

$$LOANSPD_{b,f,l,t} = c + \alpha\, CRISIS_t + \beta\, CHAROFFS_{b,t-1} + \gamma\, CRISIS_t \cdot CHAROFFS_{b,t-1}$$

$$+ \sum_{i=1}^{I} \psi_i B_{i,b,t-1} + \sum_{j=1}^{J} \zeta_j F_{j,f,t-1} + \sum_{k=1}^{K} \nu_k L_{k,l,t} + \epsilon_{f,t}. \tag{1}$$

- $\alpha > 0$
- $\beta > 0$
- $\gamma > 0$

Methodology: Controls (1)

- Firm controls:
  - AGE
  - SALES
  - TANGIBLES
  - R&D
  - ADVERTISING
  - MKTBOOK
  - PROFMARGIN
  - INTCOVERAGE
  - LEVERAGE
  - STOCK RETURN
  - STOCK VOLATILITY
  - CREDIT RATING

Methodology: Controls (2)

- Loan controls:
  - Loan purpose and credit-contract type dummies
  - LOAN AMOUNT
  - DIVIDEND RESTRICTIONS
  - SENIOR
  - SECURED
  - RENEWAL
  - GUARANTOR
  - LENDERS
  - MATURITY
  - LENDING RELATIONSHIP

Methodology: Controls (3)

- Bank controls:
  - CAPITAL TO ASSETS RATIO
  - ASSETS
  - ROA VOLATILITY
  - NET CHARGEOFFS
  - LIQUIDITY
  - SUBDEBT

Data

- LPC's Dealscan database

- SDC's Domestic New Bond Issuances database

- Compustat

- CRSP's stock prices database

- Call report data

Impact of the crisis on loan spreads: Univariate analysis

Table 2. Differences between loan spreads across banks during the subprime crisis[a]

Impact of subprime crisis on banks' loan pricing policies				
Loan date	Banks with low chargeoffs	Banks with high chargeoffs	Difference	t-statistic
During the crisis	135.943	182.351	-46.408***	3.09
Before the crisis	158.130	176.453	-18.323***	7.99
Difference	-22.187*	5.898	28.085*	
t-statistic	1.83	0.84	1.92	

Impact of the crisis on loan spreads: Multivariate analysis

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
CRISIS	46.4***	36.9***	34.5***	21.1***	19.4***	15.6***
FIRM	IN	IN	IN	IN	IN	IN
BANK			IN	IN	IN	IN
LOAN					IN	IN
TREND						IN
Firm fixed effects	NO	YES	YES	NO	NO	NO
Firm-bk fix effects	NO	NO	NO	YES	YES	YES

Impact of bank losses on loan spreads

Variables	(9)	(10)	(11)	(12)
CRISIS	-7.162	-4.892	6.463	2.390
	(0.70)	(0.49)	(0.55)	(0.33)
CRISIS x CHAROFFS^b	18.735**	19.162**	29.714***	
	(2.28)	(2.29)	(2.75)	
CHAROFFS^b	2.815**	8.172***	10.949*	
	(2.23)	(3.13)	(1.82)	
CRISIS x $CHAROFFS_{23}$				23.453**
				(2.15)
CRISIS x $CHAROFFS_3$				-13.574
				(1.19)
$CHAROFFS_{23}$				2.730
				(0.99)
$CHAROFFS_3$				9.642***
				(3.30)
FIRM CONTROLS	IN	IN	IN	IN
BANK CONTROLS	IN	IN	IN	IN
LOAN CONTROLS	IN	IN	IN	IN
TREND	4.223***	1.139	-3.241	4.337***
	(5.03)	(0.71)	(0.83)	(5.17)
Firm-Bk Fixed Effects	YES	YES	YES	YES
CONSTANT	179.949***	126.511	499.238***	171.341***
	(5.26)	(1.53)	(2.86)	(5.09)
Observations	18863	4623	5306	18863
R-squared	0.88	0.87	0.89	0.88

Bank loan policies across borrowers

Variables	(1)	(2)	(3)	(4)
CRISIS	-3.707	-24.899**	-18.953	-18.736
	(0.22)	(1.97)	(1.59)	(1.57)
CHAROFFS[b]	0.921	2.223	1.686	1.850
	(0.46)	(1.37)	(1.14)	(1.25)
CRISIS x CHAROFFS[b]	19.067	39.630***	33.165***	30.119***
	(1.42)	(3.85)	(3.40)	(3.09)
RAT	-13.157**			
	(2.14)			
RAT x CHAROFFS[b]	4.443*			
	(1.72)			
CRISIS x RAT	-10.238			
	(0.47)			
CRISIS x RAT x CHAROFFS[b]	10.061			
	(0.58)			
BOND		-10.651***	-10.030***	-9.853***
		(2.74)	(2.79)	(2.75)
BOND x CHAROFFS[b]		2.574	2.077	2.357
		(1.06)	(0.93)	(1.06)
CRISIS x BOND		39.518*	32.413	30.733
		(1.69)	(1.51)	(1.42)
CRISIS x BOND x CHAROFFS[b]		-36.813**	-30.157*	-29.575*
		(2.07)	(1.84)	(1.80)
TREND				4.192***
				(4.96)

Conclusions (1)

- As banks announced large writedowns, concerns with the availability of bank credit began to grow.

  – This could amplify what was perceived to be a crisis in the real estate market into a full recession.

  – These concerns gave rise to a lively debate in which some claimed that banks were cutting down on their lending, while others disputed the claim that bank lending had declined sharply.

- We attempt to contribute to this debate. We focus on banks' loan pricing policies.

- This approach gives us only an indirect information on bank lending activity. But, it makes it easier to identify changes in bank lending policies that are bank driven.

Conclusions (2)

- We find strong evidence that loan spreads have gone up since the onset of the subprime crisis and this increase was driven by banks that have incurred large losses during the crisis.

- We also find evidence that these banks have applied this interest rate premium predominantly to their borrowers that are more likely dependent on them for bank credit.

- These findings show that the cost of bank credit has gone up since the onset of the subprime crisis and this increase was driven by bank losses.

- Our findings provide support to the concerns raised with the availability of bank credit following banks' subprime losses

- It also provides evidence on the importance of bank capital for bank lending.