

The Loan Covenant Channel: How Bank Health Transmits to the Real Economy

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Tepper-LAEF 2017

September 22, 2017

Summary

- ▶ Underlying question: what are transmission mechanisms between financial and non-financial sectors?
- ▶ Literature examines covenant violations → firm outcomes:
 - ▶ Roberts and Sufi, 2009; Nini et al., 2012, Chava and Roberts, Falato and Liang, 2016
- ▶ Focus here: Do *financially distressed* banks limit lending to firms violating loan covenants?
- ▶ Evidence: Covenant violation triggers loan renegotiation for firms matched to bad banks:
 - ▶ Lower loan balances (24 percentage points)
 - ▶ Drops in loan commitments (23%) not replaced by other sources
 - ▶ Back of the envelope: loan covenant channel accounts for 11.4% of decline in stock of credit

Implications on Loan Covenant Channel

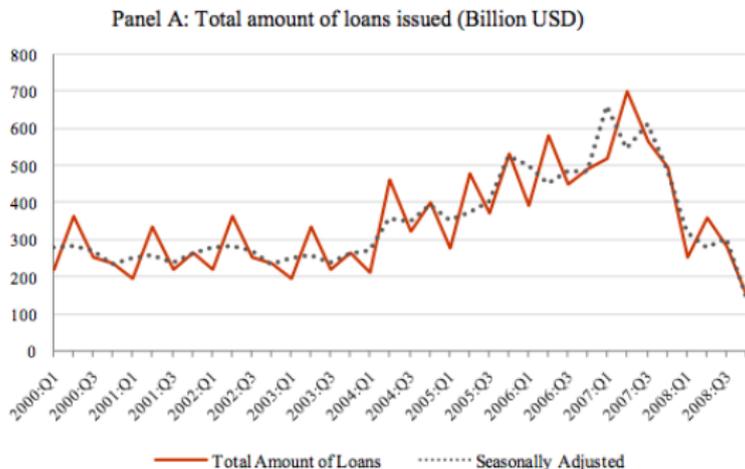
- ▶ Novel channel of transmission between health of financial system → real economy:
 - ▶ Changes in financial terms and credit line access for pre-committed credit
 - ▶ Effects concentrated among covenant violators; ie firms already facing financial difficulty
- ▶ Suggests bank insurance function can fail exactly when it is most needed
 - ▶ Even for firms we don't think of as credit constrained; but rely on stable long-term financing or credit line insurance
 - ▶ Long-term lending can prove fragile through this mechanism

Setting: Holders of Mortgage Debt Pre-Crisis

	Loans	HELOC	Agency MBS	Non-Agency AAA	CDO subord	Non CDO subord	Total	
Banks & Thrifts	2,020	869	852	383	90		4,212	39%
GSEs & FHLB	444		741	308			1,493	14%
Brokers/dealers			49	100	130	24	303	3%
Financial Guarantors		62			100		162	2%
Insurance Companies			856	125	65	24	1,070	10%
Overseas			689	413	45	24	1,172	11%
Other	461	185	1,175	307	46	49	2,268	21%
Total	2,925	1,116	4,362	1,636	476	121	10,680	
	27%	10%	41%	15%	4%	1%		

Securitization was incomplete: Banks held \$2tr in mortgage exposure as well as \$1.3tr of MBS out of total mortgages of \$10.7tr

Setting: Syndicated Lending and Covenant Violations



- ▶ Total size of syndicated loan market: \$2.1tr in 2013
- ▶ Covenants are prevalent tool for managing incentive conflicts by pledging state-contingent rights prior to default
- ▶ Violations are prevalent: 1/3 yearly hazard during crisis years
- ▶ Can be waived

Identification

$$Y_{l,b,f,t} = \beta_0 + \beta_1[\text{Bad Lender}_b] + \beta_2[\text{Bind}_{l,t-1:t}] \\ + \beta_3[\text{Bad Lender}_b \times \text{Bind}_{l,t-1:t}] + \text{controls} + \text{error}$$

Where:

Bad Lender: static rank of lead lender's financial health

Bind: loan breaches any covenant in this or previous year

Identifying assumption: covenant violators are exogenously assigned to banks regardless of financial health conditional on observables

Not much evidence of bank sorting among all firms, or covenant violators

Table 2: Balancing

	All borrowers			$Bind_{t-1:t} = 1$		
	Less healthy lenders	Healthier lenders	t-stat. of equality	Less healthy lenders	Healthier lenders	t-stat. of equality
<i>Variable mean:</i>						
$100 \times Bind_{t-1:t}$ (crisis)	37.96	36.59	0.82			
Log assets (pre-crisis)	12.72	12.81	1.17	10.98	11.11	0.35
Leverage (pre-crisis)	0.50	0.49	1.21	0.54	0.53	0.93
Risk rating (pre-crisis)	70.04	71.51	0.56	42.20	44.69	0.93
Observations (crisis)	1,673	1,747	3,420			
Observations (pre-crisis)	1,215	1,263	2,478	358	335	693

Suggestion: Relatively easy to pass this test. Should plot/regress whole distribution of bank health against (larger set of) firm-level characteristics (Compustat sample), covenant characteristics

Really, Two Assumptions of Bank-Firm Sorting and Covenant Violation

- ▶ Assumption 1: Bank financial health uncorrelated with distress among companies through non-covenant channels.
 - ▶ Would seem to be in tension with the fact that banks are presumably in distress because they have picked poor quality borrowers in the past.
 - ▶ Presumably, authors would say it's the CRE/MBS warehousing that's causing the problem, not the corporate loan group.
 - ▶ Literature (ie, Schwert 2015) on firm-bank matching?
- ▶ Matters since: if bad firms matched with bad banks would have experienced worse outcomes post-covenant violation anyway; harder to draw causal link between bank financial health and these poor outcomes

Really, Two Assumptions of Bank-Firm Sorting and Covenant Violation

- ▶ Assumption 2: When violating covenant, firms do not take the financial health of their lender into account.
 - ▶ In tension with the fact that ex post consequences of this myopia are quite large
 - ▶ Maybe firms are very constrained: little choice in financial slack but breaking covenants, regardless of consequences?
 - ▶ Maybe lack of sophistication among CFOs (Bloom et al. 2013, Malmendier Tate 2015)?
- ▶ Some tests:
 - ▶ Does $\Pr(\text{Bind}|\text{controls})$ differ based on lender financial health?
 - ▶ Do firms use line of credit less if matched with bad lender?

Main Results

Table 4: Loan Commitment Terminated or Reduced

	Dependent variable: <i>Credit reduced</i>			
	(1)	(2)	(3)	(4)
<i>Bad Lender</i>	-4.1 (5.8)	-3.0 (5.6)	-3.2 (5.7)	-0.8 (5.2)
<i>Bind</i>	6.1** (2.6)	4.6 (3.1)	4.2 (2.9)	5.2** (2.6)
<i>Bad Lender</i> × <i>Bind</i>	23.9*** (6.4)	25.2*** (6.5)	25.1*** (6.5)	23.7*** (6.3)
Year, Industry FE	No	Yes	Yes	Yes
Borrower controls	No	No	Yes	Yes
Loan controls	No	No	No	Yes
R^2	0.066	0.085	0.087	0.116
Observations	3,420	3,420	3,420	3,420

Bad Lender Effects

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Even firms matched to bad lenders can avoid credit shutoff by not breaching covenants

Lost Funding Due to Covenant Violation Not Replaced

Table 9: Effect on Total Credit Available

Dependent variable:	% Δ (Total committed)			Δ <u>Non-SNC debt</u> Assets	Δ <u>Debt issuance</u> Assets
	Loan intensive margin	Loan all margins	Borrower	Borrower	Borrower
Aggregation:	(1)	(2)	(3)	(4)	(5)
<i>Bad Lender</i>	1.1 (2.0)	0.2 (4.4)	12.4 (9.4)	-0.3 (6.3)	1.3 (1.5)
<i>Bind</i>	-2.6** (1.1)	-3.2 (4.0)	-8.1*** (2.5)	4.4 (3.7)	0.1 (0.5)
<i>Bad Lender</i> \times <i>Bind</i>	-13.2*** (3.2)	-22.9*** (7.5)	-26.0*** (8.9)	-8.8 (9.1)	-4.5** (2.0)
Year, Industry FE	Yes	Yes	Yes	Yes	Yes
Borrower controls	Yes	Yes	Yes	Yes	Yes
Loan controls	Yes	Yes	No	No	No
Frequency	Annual	Annual	Annual	Annual	Long-difference
Dep. var. source	SNC	SNC	SNC	SNC	Compustat
Observations	2,289	3,420	1,803	1,525	376

(3) > (2) \rightarrow Additional feedback effect on other loan commitments
 (5): Other debt does not replace

Firm Heterogeneity

- ▶ Paper focuses on bank-level heterogeneity in financial health
- ▶ But firm level heterogeneity would also be interesting to examine:
- ▶ For which firms is the loss in credit due to lender financial health most binding?
- ▶ Should be testable in the Compustat sample
- ▶ Why not plot full distribution of outcomes after covenant breach by: (firm health v. bank health)?

Comparison with Acharya Almeida Ippolito Perez (2014)

Do firms that borrow from healthy lenders perform better following a covenant violation?

This table presents instrumental variables regression results to study the relation between the financial health of a firm's lenders and the performance of the firm following a debt covenant violation. The waiver decision is instrumented using *Change in Lender Capital Ratio* and *Change in Lender Liquidity Ratio* in the year before the covenant violation. The sample consists of firm-years in which a firm suffered a covenant violation on any debt product during the crisis period between August 2007 and May 2010. All control variables are lagged. Robust standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Dep Var: Performance Measure	Sales Growth _{t-1}		Change in Profitability _{t-1}		Workforce Growth _{t-1}		Investment _{t-1}	
	(1)	(2)	(3)	(4)	(3)	(4)	(3)	(4)
	Firms with LC	LC>15% Assets	Firms with LC	LC>15% Assets	Firms with LC	LC>15% Assets	Firms with LC	LC>15% Assets
Waiver _{t,1}	1.072** (2.403)	0.786* (1.882)	0.0837* (1.741)	0.109 (1.606)	0.201 (1.427)	0.264** (2.037)	0.409* (1.670)	0.0272 (0.158)

Here, focus only on firms waiving covenants;

First stage: $Waiver_{it} = \beta LenderHealth_{it-1} + \varepsilon_{it}$

Second stage: $Outcome_{it+1} = \gamma \hat{W}aiver_{it} + \varepsilon_{it}$

Comparison with Acharya Almeida Ippolito Perez (2014)

- ▶ Data difference: Acharya et al. (2014) use Compustat (so restrict to public firms)
- ▶ Treatment difference here: different measure of lender health
- ▶ Here consider both lines of credit + loans
- ▶ Higher likelihood of breaching covenants: $\sim 30\%$ instead of $\sim 10\%$ than in the Compustat sample.
 - ▶ Reflects unreported violations in other datasets and higher rates in private firms
- ▶ Important points of differentiation; but Acharya et al. paper should be highlighted a little more prominently (not just footnote on p.5), since it does something very similar

Conclusion

- ▶ Standard bank channel: external financing important for credit-constrained firms
- ▶ However, bank loans commonly used, even by large firms, especially as insurance in the case of lines of credit
- ▶ Covenant violations, as well as waivers, common on these loans; depending on bank health
- ▶ Provides evidence on additional propagation mechanism of financial system health → real economy
- ▶ Would be interesting to see the impact of monetary policy on bank waiver policy of covenants
- ▶ Policy assessment on the role of covenants?

Thanks

Thank You!