Is Bank Debt Special for the Transmission of Monetary Policy? Evidence from the Stock Market

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-
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-

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Overview of Results

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   - Beyond a simple reallocation between firms and lenders

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  - Control for firm financial constraints and other firm characteristics

Data Sources and Sample (II)

- Sample: U.S. publicly listed firms, 2003-2008
  - No detailed firm debt structure data pre 2003
  - No conventional monetary policy post 2008
- Firm characteristics: Capital IQ and Compustat, annual level
- Stock returns: CRSP
- Monetary policy surprises: calculated as in Kuttner (2001) and Bernanke and Kuttner (2005)

Effect of Monetary Policy Surprises Across Subsamples

	(1) Daily Value-weighted Index 1994-2008	(2) Daily Panel All Firms 1994-2008	(3) Daily Panel All Firms 1994-2002	(4) Daily Panel All Firms 2003-2008	(5) Daily Panel Our Sample 2003-2008
Expected	0.421	0.209***	0.193***	0.133***	0.234***
	(1.00)	(8.40)	(5.73)	(3.90)	(5.49)
Surprise	-3.359**	-2.704***	-2.424***	-4.665***	-4.401***
	(-2.05)	(-32.46)	(-25.67)	(-25.64)	(-21.22)
# Observations	115	536,357	363,290	173,067	99,047

Similar response of stock prices to Federal funds rate surprises across sample periods

1. Is Bank Debt Special?

Is Bank Debt Special?

- Specification

$$
\begin{aligned}
Ret_{i,t} \quad = \quad & \beta_0 + \beta_1 Surprise_t + \beta_2 \left(BankDebt\,/\,At\right)_{i,t-1} \\
& + \beta_3 Surprise_t * \left(BankDebt\,/\,At\right)_{i,t-1} \\
& + \gamma Controls_{i,t-1} + \lambda Surprise_t * Controls_{i,t-1} + \varepsilon_{i,t},
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- Bank debt specialness: $\beta_3 \neq 0$

Is Bank Debt Special?

	(1) No Controls	(2) With Controls	(3) Controls and Ind. FE	(4) Event-indust. Clustering	(5) Including Credit Lines	(6) Other Controls	(7) Firm Fixed Effects	(8) Instrumental Variable
Surprise	-4.97***	-8.02***	-7.44***	-7.44	-8.07	-9.09	-8.04***	-8.06***
	(-13.03)	(-17.72)	(-3.99)	(-0.83)	(-0.90)	(-1.02)	(-3.33)	(-17.12)
Surprise*(BankDebt/At)	-14.10***	-16.34***	-16.77***	-16.77***	-14.62***	-13.66***	-16.37***	-14.62
	(-4.35)	(-4.17)	(-4.10)	(-3.82)	(-3.10)	(-3.02)	(-2.69)	(-0.59)
Surprise*LnAssets		-0.95***	-1.12***	-1.12***	-1.06***	-1.06***	-0.94***	-1.00**
		(-3.67)	(-3.99)	(-4.19)	(-3.99)	(-3.39)	(-2.64)	(-2.07)
Surprise*Book Leverage		3.28**	3.83**	3.83*	2.59	4.07*	3.15	2.47
		(1.96)	(2.18)	(1.85)	(1.32)	(1.89)	(1.28)	(0.41)
Surprise*Profitability		-16.10***	-11.49***	-11.49**	-11.08**	-9.26	-15.36**	-15.66***
		(-6.10)	(-3.73)	(-2.19)	(-2.13)	(-1.51)	(-2.08)	(-4.06)
Surprise*M/B		-0.02	-0.41	-0.41	-0.41	-0.64	0.01	0.10
		(-0.08)	(-1.35)	(-0.77)	(-0.78)	(-1.17)	(0.01)	(0.24)
Surprise*Int Rate Sensitivity						-7.13**		
						(-2.24)		
Surprise*Cash-Flow Volatility						-82.24		
						(-0.58)		
Surprise*Beta						1.52**		
						(2.23)		
Surprise*Cash Holdings						4.62		
						(1.35)		
Firm FE	NO	NO	NO	NO	NO	NO	YES	YES
FF48 Industry FE	NO	NO	NO	YES	YES	YES	NO	NO
Year FE	NO	YES	YES	YES	YES	YES	YES	YES
Interacted FF48 Industry FE	NO	NO	NO	YES	YES	YES	NO	NO
Cluster (Fed event*IndustryFF48)	NO	NO	YES	YES	YES	YES	YES	NO
Observations	64,682	64,428	62,871	62,871	62,746	55,506	64,428	64,428

Bank debt using firms are more responsive to monetary policy shifts

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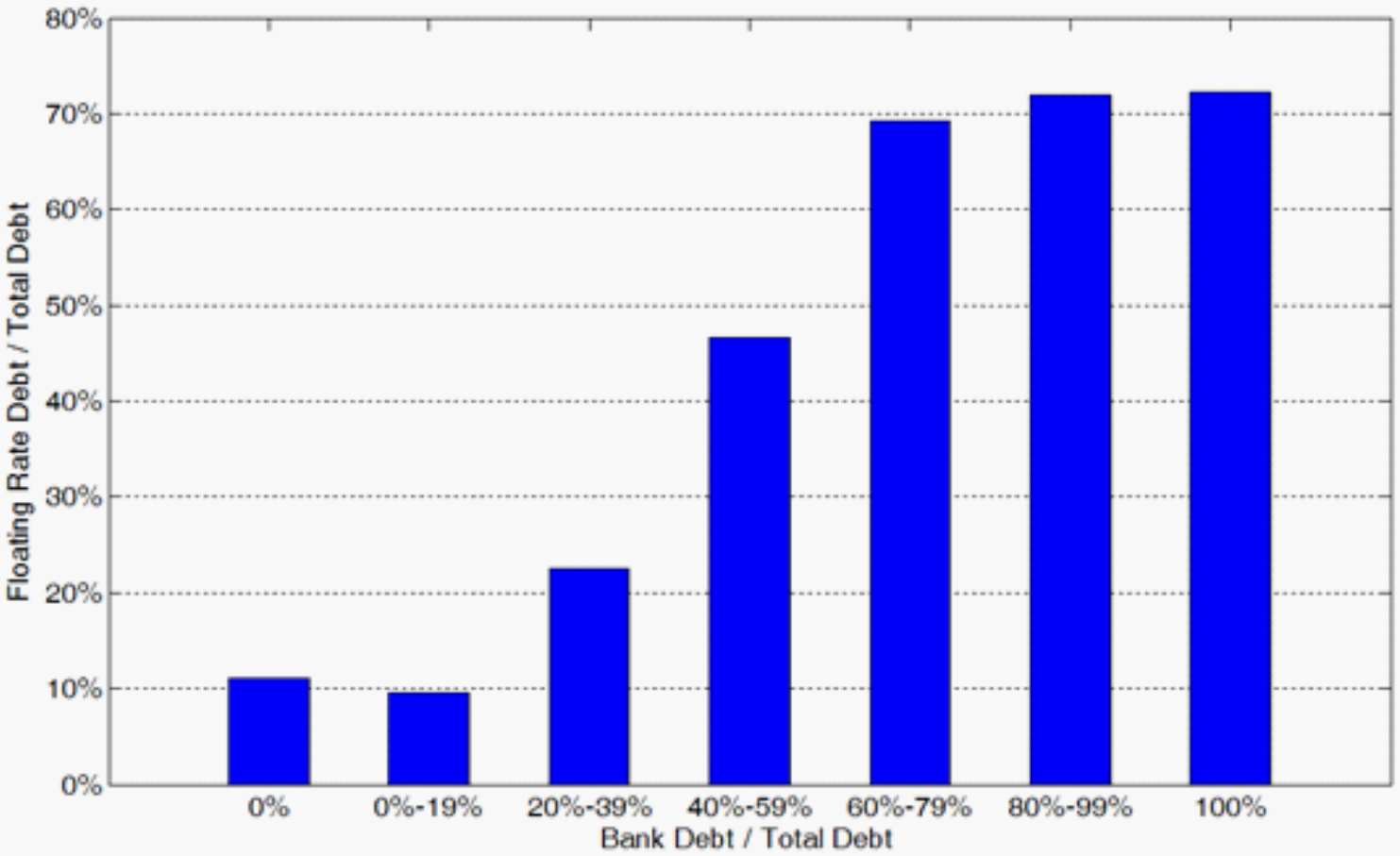
- Maybe it is a simple interest channel because bank debt is relatively short term. But higher short-term debt does not imply higher responsiveness.

2. The Interest Rate Pass-Through Channel

Interest Rate Pass-Through Channel

- Floating vs. fixed-rates
  - Widespread use of floating-rates in **bank loans**
    - floating rates: 72% (our sample), 90% (Faulkender (2005))
  - Prevalence of fixed-rates in **nonbank** liabilities
    - floating rates: 10% (our sample), 7% (Faulkender (2005))

Interest Rate Pass-Through Channel



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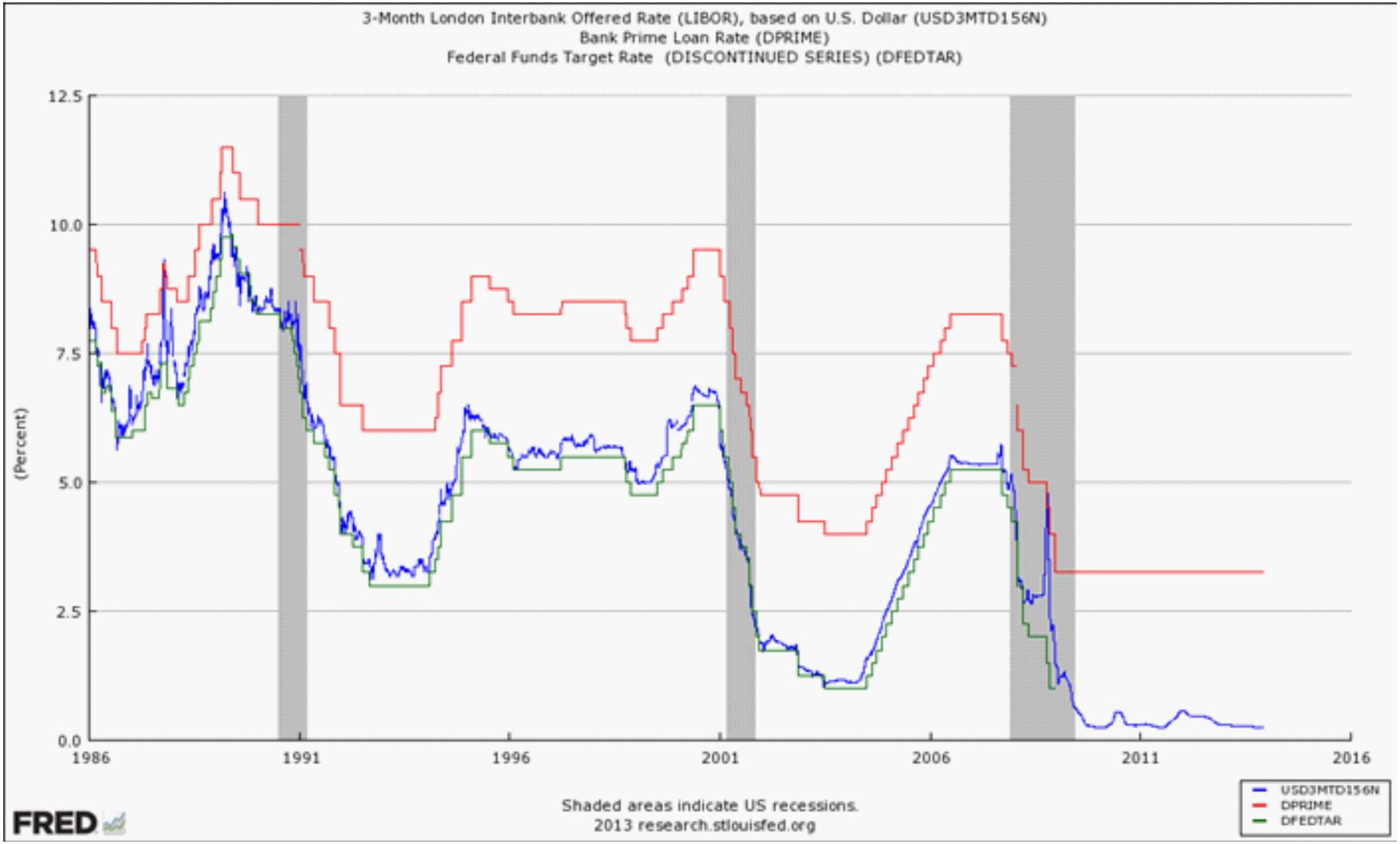

Interest Rate Pass-Through Channel: Testing Strategy

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- Example

COMPANY NAME: NETSMART TECHNOLOGIES INC
"The term loan bears interest at LIBOR plus 2.25%. We have entered into an interest rate swap agreement with the Bank for the amount outstanding under the term loan whereby we **converted our variable rate on the term loan to a fixed rate** of 7.1% in order to reduce the interest rate risk associated with these borrowings."

Interest Rate Pass-Through Channel: Empirical Specification

- Test: all else equal, bank debt using firms that engage in interest rate risk hedging should be less responsive to monetary policy
- Run same regression as before that tested for bank debt specialness, but for subsamples of hedgers and non-hedgers
- Pass-through channel: coefficient β_3 in

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  is significantly lower for non-hedgers

Pass-through Channel - The Role of Hedging

	(1) Non-Hedgers	(2) Hedgers	(3) Non-Hedgers	(4) Hedgers
Surprise	-5.08*	-6.83**	-5.76**	-6.34**
	(-1.91)	(-2.35)	(-2.20)	(-2.16)
BankDebt/At	0.13	1.94***		
	(0.13)	(3.12)		
FloatingRateDebt /At			0.77	1.19**
			(0.84)	(2.14)
Surprise *(BankDebt/At)	-38.02***	3.45		
	(-3.09)	(0.38)		
Surprise *(FloatingRateDebt /At)			-30.79**	-3.71
			(-2.36)	(-0.40)
Difference (Double Interaction Terms)		41.71***		26.12*
		14.37		15.28
Firm Controls	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Surprise*Firm Controls	YES	YES	YES	YES
Industry-Date Clustering	YES	YES	YES	YES
Observations	11,788	12,335	11,788	12,335

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Robustness: Instrumental Variables Analysis

- Instrument for hedging: tax convexity (Graham and Smith (1999), Campello, Lin, Ma, and Zou (2011))
- Relevance condition
  - convex corporate income tax schedule $\longrightarrow$ incentive to hedge
- Exclusion restriction
  - tax convexity unlikely to have direct first-order effect on sensitivity of stock prices to monetary policy shocks
- Tax convexity a function of volatility of taxable income, serial correlation of taxable income, investment tax credits, net operating losses, and presence of small negative (positive) taxable income

Robustness: Instrumental Variables Analysis

	(1)	(2) IV1	(3) IV2	(4) IV3
Surprise	-5.79***	-3.43*	-3.92**	-3.31*
	(-3.34)	(-1.73)	(-1.97)	(-1.67)
Surprise*(BankDebt/At)	-49.30***	-122.79***	-104.77***	-123.59***
	(-3.72)	(-3.82)	(-3.18)	(-3.79)
Surprise*(BankDebt/At)*Hedging	59.25***	175.73***	147.08***	176.92***
	(3.55)	(3.56)	(2.90)	(3.53)
Hausman test (p-value)		1.000	0.999	0.995
Firm FE	YES	YES	YES	YES
Firm Controls	YES	YES	YES	YES
Surprise*Firm Controls	YES	YES	YES	YES
Observations	20,298	20,298	20,298	20,298

Hausman test cannot reject hypothesis of exogeneity, suggesting endogeneity of hedging not a big concern. Similar results hold if we use variable rate debt.

Hedging and Financial Constraints

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- Regression specification:

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\begin{aligned}
Ret_{i,t} = \beta_0 + \beta_1 Surprise_t \\
&+ \beta_2 Surprise_t * (BankDebt/At)_{i,t-1} * Hedge_{i,t-1} \\
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&+ (\text{second order terms}) \\
&+ \gamma Controls_{i,t-1} + \lambda Surprise_t * Controls_{i,t-1} + \varepsilon_{i,t}
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Pass-through channel: $\beta_2 > 0$

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  Pass-through channel: $\beta_2 > 0$
- Is the effect of hedging greater for financially constrained firms as well? Or is it a simple reallocation between firms and lenders?

Hedging and Financing Constraints

VARIABLES	(1) ALL	(2) OLD	(3) YOUNG	(4) LOW HP	(5) HIGH HP
Surprise	-2.36*	-4.20**	1.24	-2.11	-0.88
	(-1.72)	(-2.38)	(0.53)	(-1.14)	(-0.37)
Surprise*(BankDebt/At)	-30.26**	-26.18*	-43.76**	-22.98	-46.71**
	(-2.51)	(-1.91)	(-2.37)	(-1.62)	(-2.41)
Surprise*(BankDebt/At)*Hedging	34.95***	30.34*	48.75**	24.29	59.60***
	(2.77)	(1.86)	(2.37)	(1.52)	(2.63)
Surprise*(BankDebt/At)*Young	6.30				
	(0.57)				
Surprise*(BankDebt/At)*HP	-1.99				
	(-0.18)				
Surprise*(BankDebt/At)*Bank Size	-0.86	-0.29	-2.57	0.89	-5.48
	(-0.34)	(-0.07)	(-0.70)	(0.29)	(-1.09)
Surprise*(BankDebt/At)*T1 Cap Ratio	5.68	14.59	-3.64	12.64	-2.92
	(0.70)	(1.35)	(-0.28)	(1.15)	(-0.22)
Constant	0.55***	0.64***	0.50***	1.05***	-0.05
	(4.61)	(3.64)	(2.67)	(4.83)	(-0.17)
Observations	18,608	11,300	7,308	12,521	6,087
R-squared	0.01	0.02	0.01	0.02	0.01
Number of gvkey	970	585	457	619	429

The pass-through channel is more than a simple reallocation of cashflows between firms and lenders.

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Hedging and Financing Constraints

VARIABLES	(1) ALL	(2) OLD	(3) YOUNG	(4) LOW HP	(5) HIGH HP
Surprise	-2.36*	-4.20**	1.24	-2.11	-0.88
	(-1.72)	(-2.38)	(0.53)	(-1.14)	(-0.37)
Surprise*(BankDebt/At)	-30.26**	-26.18*	-43.76**	-22.98	-46.71**
	(-2.51)	(-1.91)	(-2.37)	(-1.62)	(-2.41)
Surprise*(BankDebt/At)*Hedging	34.95***	30.34*	48.75**	24.29	59.60***
	(2.77)	(1.86)	(2.37)	(1.52)	(2.63)
Surprise*(BankDebt/At)*Young	6.30				
	(0.57)				
Surprise*(BankDebt/At)*HP	-1.99				
	(-0.18)				
Surprise*(BankDebt/At)*Bank Size	-0.86	-0.29	-2.57	0.89	-5.48
	(-0.34)	(-0.07)	(-0.70)	(0.29)	(-1.09)
Surprise*(BankDebt/At)*T1 Cap Ratio	5.68	14.59	-3.64	12.64	-2.92
	(0.70)	(1.35)	(-0.28)	(1.15)	(-0.22)
Constant	0.55***	0.64***	0.50***	1.05***	-0.05
	(4.61)	(3.64)	(2.67)	(4.83)	(-0.17)
Observations	18,608	11,300	7,308	12,521	6,087
R-squared	0.01	0.02	0.01	0.02	0.01
Number of gvkey	970	585	457	619	429

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- Use a shock measure for the unconventional period (Wright, 2014)