Finance Lease: A Hidden Channel of China's Shadow Banking System

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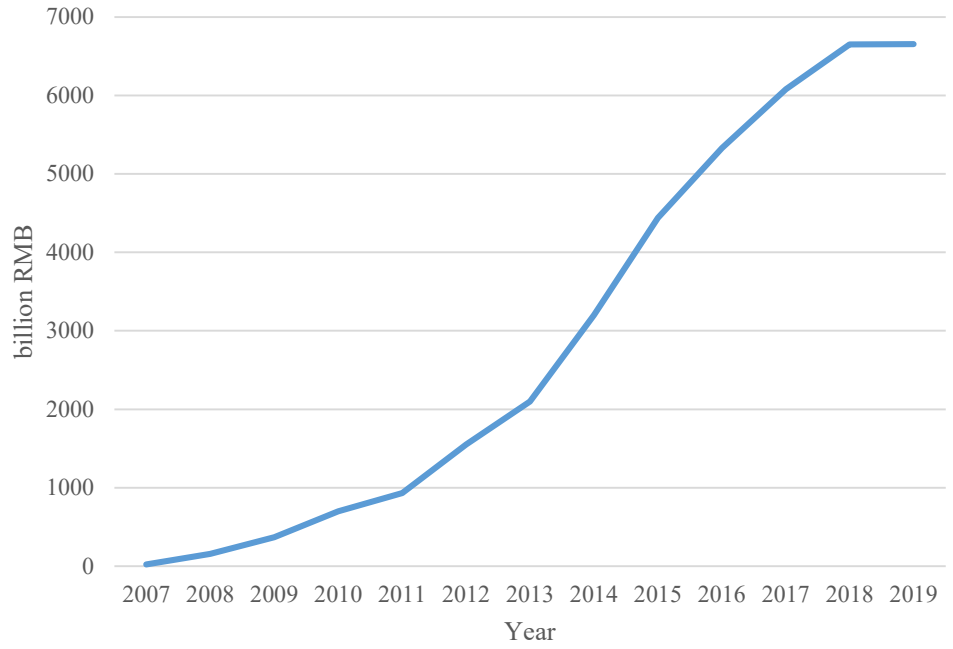
Background

- Shadow banking
  - The size of the sector has doubled since 2011 and was equivalent to 73% of the country's GDP by 2017 according to Moody's calculation (Moody's, 2018)
  - Channel
    - Asset
      - Trusts (22.7 trillion RMB, 2018)
      - Entrusted loans (12.4 trillion RMB, 2018)
      - Finance leases (6.7 trillion RMB, 2018)
    - Liability
      - Wealth management products (22.04 trillion RMB, 2018)
      - Firm's cash and bank capital
      - Bank capital and capital market

Background

- Second largest leasing market in the world
  - China's outstanding leases reached 6.7 trillion RMB (about 1 trillion USD) in 2019
  - The new leases stood at $254.4bn (1.9% of GDP) vs US $428.4bn in US (2.08% of GDP)
- Two striking characteristics of China's leasing industry make leases essentially the collateralized debt in China
  - Finance lease vs operating lease
    - In China, finance leases account for 90% of total leases
    - In US, operation leases account for 92% of total leases
  - Direct lease vs sale-and-leasebacks (SLB)
    - SLB accounts for 84% of the total leases in China
    - SLB is very small in the US



Main Findings

- Banks use their affiliated leasing firms to extend credit to firms
  - Finance leases provide a channel for banks' shadow banking activities
  - Banks use finance leases to circumvent the targeted monetary tightening policy
- Banks do not take excessive risk, but provide support to their high quality clients through leases
  - Bank-affiliated vs nonbank-affiliated leases
    - lower leasing rate (about 1%).
    - lower realized credit risk
    - more efficient credit risk pricing
    - lower funding cost due to implicit guarantee
    - The stock market take bank-affiliated leases as positive news
      - The existence of bank endorsement

Contributions

- The channel of shadow banking in China
  - Existing studies: WMP, trust products, and entrusted loans.
    - Chen, Ren, and Zha (2018), Hachem and Song (2017), Chen, He, and Liu (2020), Acharya, Qian, Su and Yang (2019), Allen, Qian, Tu, and Yu (2018) and Chen, Ren, and Zha (2018), Wang, Wang, Wang, and Zhou (2019), Allen, Gu, Qian and Qian (2018)
  - This paper:
    - Finance lease as a channel of shadow banking
    - Better identification of bank's regulatory arbitrage
    - Banks put good, instead of bad asset through the shadow banking , Chang and Liu (2021)
- The leasing literature
  - Existing studies: lease vs debt, and finance lease vs operation lease.
  - This paper: bank-affiliated lease vs nonbank-affiliated lease
- The relationship banking literature
  - Existing studies: bank-firm relationship on loan accessibility and rate
  - This paper: bank-firm relationship on bank-affiliated leases

Data

- Hand-collected finance leases
  - Compulsory disclosure of finance lease
  - Jan 2007-Dec 2019
  - 1301 leases made by 430 unique firms (2470 unique firms in stock market)
  - Lessor name, leasing amount, rate, leased asset and etc.
- Firm characteristics
  - CSMAR
- Bond issuance of leasing firms
  - Jan 2007-Dec 2019
  - 1016 bond issuance

Finance lease and shadow banking

- The 2008 global financial crisis shocked the Chinese economy
  - GDP growth: 12.9% in 2007Q4 vs 6.2% in 2009Q1
- Chinese government responded by launching large scale stimulus plan
  - RMB 4 trillion fiscal stimulus (about 12% of 2008 GDP) at the end of 2008
  - Loosened credit supply (bank RRR drop from 17.5% to 15.5% for large banks and 13.5% for other banks)
  - Overcapacity
    - domestic pressure: China's average capacity utilization 80% in 2007 vs 60% in 2011 according to IMF estimation.
    - foreign pressure: "Overcapacity has been a blight on China's industrial landscape for many years now, affecting dozens of industries and wreaking far-reaching damage on the global economy." according to EU report

Finance lease and shadow banking

- Chinese authority launched policies to constrain the rapid expansion of overcapacity industries.
  - To implement the State Council's policy, on Dec.22, 2009, the People's Bank of China (PBOC) and the China Banking Regulatory Commission (CBRC) jointly issued the **Policy Note No. 386 [2009]**
    - Overcapacity industries include "**Steel, Electrolytic aluminum, Coal, Ships, Cement, Flat glass, Fertilizer, Polysilicon, Wind power equipment, Soybean crushing and Large forgings."**
    - "For the projects in the industries with overcapacity, the loans must be strictly examined…and the scale of loan extension in the overcapacity industries must be tightly controlled."
  - The policy was effective till March 2014, when a major adjustment of the overcapacity industry list was made (the CBRC Policy Note No. 55 [2014] in March 13, 2014).
    - "Steel, Cement, Electrolytic aluminum, Flat glass and Ships"

Finance lease and shadow banking

- Our difference-in-differences analysis uses a 7-year window from 2007 to 2013 centering the year 2010, when the targeted credit policy took effect.

$$Dep_{i,t} = \theta_0 + \alpha_0 Policy_{i,t} + Control_{i,t} + Firm\ FE + Year\ FE + \varepsilon_{i,t}$$

The shadow banking and regulatory arbitrage

- The estimate for the coefficient of *Policy* implies that the policy shock would make a treatment group firm's probability of engaging in bank-affiliated finance lease increasing from 0.49% to 1.09%

Panel A: Impacts of credit tightening policy to bank-affiliated leases				
	Bank-affiliated dummy		Ln (Bank-affiliated lease+1)	Bank-affiliated lease/assets (%)
	OLS	Logit	OLS	OLS
	(1)	(2)	(3)	(4)
Policy	0.053***	0.813***	1.009***	0.085***
	(3.72)	(2.81)	(3.71)	(3.53)
Ln(assets)	0.013***	0.644***	0.247***	0.021**
	(2.62)	(6.05)	(2.63)	(2.48)
ROA	-0.034	-2.050	-0.638	-0.036
	(-1.47)	(-1.22)	(-1.46)	(-0.95)
Sales growth	0.002	0.279	0.039	0.002
	(0.59)	(1.62)	(0.61)	(0.42)
Tobin's Q	0.001	-0.406*	0.020	0.002
	(0.89)	(-1.70)	(0.90)	(0.82)
Debt/assets	0.001	0.084***	0.011	0.001
	(0.83)	(2.93)	(0.83)	(0.91)
Cash/assets	-0.026*	-2.196**	-0.498*	-0.041
	(-1.79)	(-2.21)	(-1.80)	(-1.60)
Firm FE	Yes	-	Yes	Yes
Industry FE	-	Yes	-	-
Year FE	Yes	Yes	Yes	Yes
N	8825	7234	8825	8825
adj. R^2	0.152		0.153	0.136
pseudo R^2		0.230		

The shadow banking and regulatory arbitrage

- The nonbank-affiliated leases for firms in the treatment group do not respond to the credit constraint shock as significantly as bank-affiliated leases

Panel B: Impacts of credit tightening policy to nonbank-affiliated leases

	Nonbank-affiliated dummy		Ln (Nonbank-affiliated lease+1)	Nonbank-affiliated lease/Asset (%)
	OLS	Logit	OLS	OLS
	(1)	(2)	(3)	(4)
Policy	0.012	0.164	0.234	0.037
	(0.88)	(0.53)	(0.91)	(1.04)
Ln(assets)	0.014*	0.207*	0.254*	0.007
	(1.81)	(1.90)	(1.83)	(0.46)
ROA	0.024	-2.415**	0.351	0.048
	(0.82)	(-2.00)	(0.67)	(0.63)
Sales growth	-0.000	0.247**	0.009	0.008
	(-0.01)	(2.19)	(0.12)	(0.82)
Tobin's Q	0.002	-0.201	0.031	0.000
	(0.96)	(-1.26)	(0.94)	(0.05)
Debt/assets	0.001	0.038*	0.023	0.002
	(1.38)	(1.83)	(1.36)	(1.23)
Cash/assets	0.005	-2.685***	0.095	0.004
	(0.25)	(-3.06)	(0.26)	(0.08)
Firm FE	Yes	-	Yes	Yes
Industry FE	-	Yes	-	-
Year FE	Yes	Yes	Yes	Yes
N	8825	8440	8825	8825
adj. R^2	0.169		0.171	0.112
pseudo R^2		0.082		

The dynamic effects of the credit tightening

- Model

$$Dep_{i,t} = \alpha_0 + \alpha_{-2}Policy_{i,t}^{-2} + \alpha_{-1}Policy_{i,t}^{-1} + \alpha_0 Policy_{i,t}^{0} + \alpha_1 Policy_{i,t}^{+1} + \alpha_2 Policy_{i,t}^{+2} + \alpha_3 Policy_{i,t}^{+3} + \gamma Control_{i,t} + Firm\ \ FE + Year\ \ FE + \ \varepsilon_{i,t}$$

- The estimation results imply that our setting satisfies the parallel trends assumption before the policy shock.

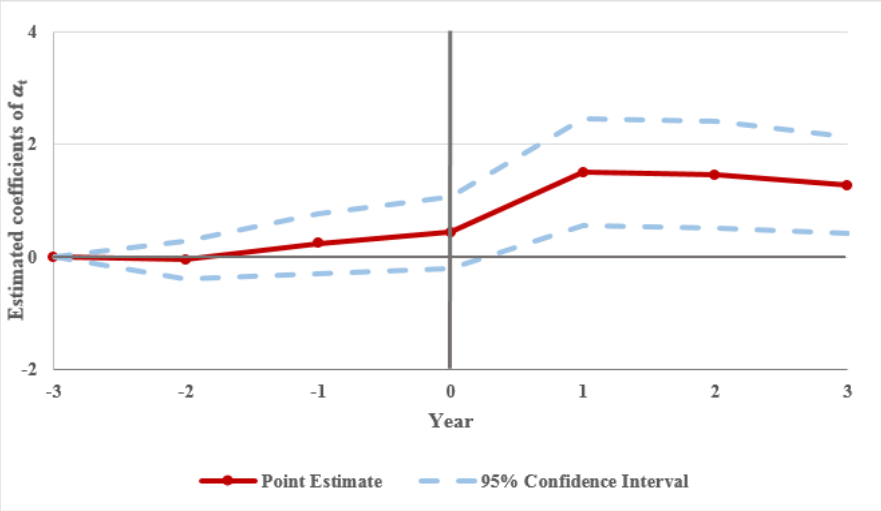
- The increases in the dependent variables emerges only after the adoption of the policy.

	Ln (Lease amount+1)	Ln(Bank-affiliated lease+1)	Ln(Bank-customer lease+1)	Ln(Nonbank-affiliated lease+1)
	OLS	OLS	OLS	OLS
	(1)	(2)	(3)	(4)
$Policy^{-2}$	0.222	-0.049	-0.003	0.297
	(0.63)	(-0.29)	(-0.06)	(0.96)
$Policy^{-1}$	0.179	0.234	0.237	-0.189
	(0.46)	(1.49)	(1.24)	(-0.70)
$Policy^{0}$	0.406	0.436	0.361*	-0.037
	(0.94)	(1.34)	(1.73)	(-0.13)
$Policy^{1}$	1.905***	1.500***	0.779**	0.470
	(3.00)	(3.09)	(2.42)	(1.07)
$Policy^{2}$	1.854***	1.451***	0.621**	0.328
	(3.14)	(3.01)	(2.06)	(0.87)
$Policy^{3}$	1.341**	1.270***	1.069***	0.284
	(2.32)	(2.90)	(2.72)	(0.70)
Ln(assets)	0.430***	0.239**	0.139*	0.260*
	(2.59)	(2.58)	(1.89)	(1.87)
ROA	-0.229	-0.610	-0.165	0.362
	(-0.35)	(-1.38)	(-0.85)	(0.68)
Sales growth	0.048	0.037	0.046	0.008
	(0.54)	(0.56)	(0.92)	(0.11)
Tobin's Q	0.041	0.020	0.021	0.033
	(1.06)	(0.95)	(1.57)	(1.02)
Debt/assets	0.035	0.012	0.010	0.024
	(1.31)	(0.95)	(1.23)	(1.38)
Cash/assets	-0.399	-0.475*	0.061	0.101
	(-0.90)	(-1.72)	(0.39)	(0.28)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	8825	8825	8825	8825
adj. R^2	0.218	0.156	0.112	0.171

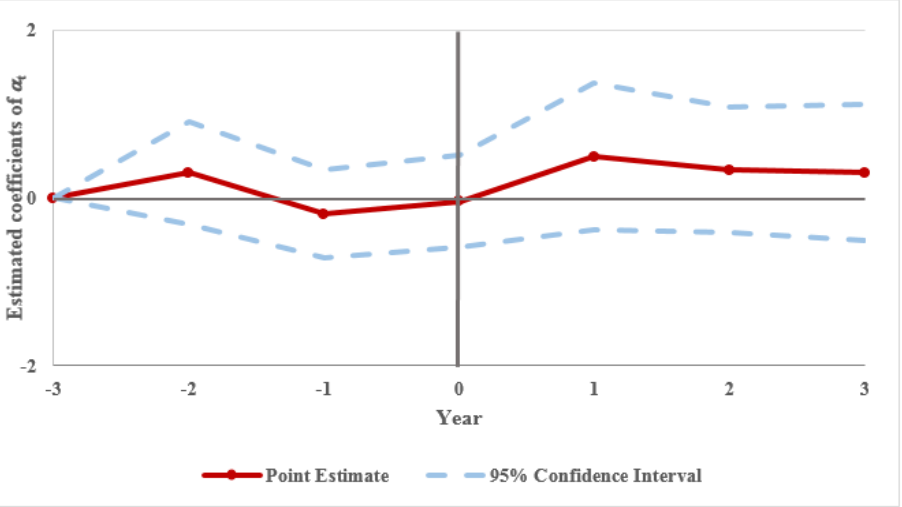
The dynamic effects of the credit tightening

$$Dep_{i,t} = \alpha_0 + \alpha_{-2}Policy_{i,t}^{-2} + \alpha_{-1}Policy_{i,t}^{-1} + \alpha_0 Policy_{i,t}^{0} + \alpha_1 Policy_{i,t}^{+1} +$$

$$\alpha_2 Policy_{i,t}^{+2} + \alpha_3 Policy_{i,t}^{+3} + \gamma Control_{i,t} + Firm\ \ FE + Year\ \ FE + \ \ \varepsilon_{i,t}$$



(b) Amount of bank-affiliated leases



(d) Amount of nonbank-affiliated leases

The risk of finance lease

- The leasing rate and other leasing characteristics

Variable	All sample	Bank-affiliated leases	Nonbank-affiliated leases	Difference
	(1)	(2)	(3)	(3)-(2)
Leasing rate (%)	6.2	5.7	6.5	0.8***
Adjusted leasing rate (%)	0.6	-0.1	1.0	1.1***
Lease amount(millions of RMB)	237.5	329.8	210.5	-119.3***
Maturity（years）	3.8	4.5	3.4	-1.1***

The bank-affiliated leasing rate is much lower than nonbank-affiliated leasing rate

The risk of the finance lease

- The realized credit risk and pricing efficiency

	Number of ST/default leases (% of total leases in the class) (1)	ST/default leases adjusted rate (%) (2)	Non-ST/default leases adjusted rate (%) (3)	Difference (2)-(3)
Bank-affiliated	29 (7.5%)	0.4	-0.1	0.5**
Nonbank-affiliated	82 (9.0%)	0.9	1.0	-0.1
All sample	111 (8.5%)	0.7	0.6	0.1

The bank-affiliated leases have lower credit risk and more efficient pricing

The risk of finance lease

- The funding cost of the leasing firm
  - The bank-affiliation and parent bank underwriting are all associated with lower leasing cost, after controlling for other financial variables of the issuer, implying the implicit guarantee from parent bank.

	Adjusted yield (%)
	(1)
Bank-affiliated dummy	-0.786***
	(-7.43)
Issue maturity	0.182***
	(7.78)
Issue amount/assets	-2.896
	(-1.39)
Ln(asset)	-0.078
	(-1.23)
Debt/assets	1.481*
	(1.81)
ROA	-0.012
	(-0.00)
AAA dummy	-0.792***
	(-3.51)
AA+ dummy	-0.258
	(-1.20)
AA dummy	-0.109
	(-0.43)
Monthly fixed effect	Yes
N	925
adj. R^2	0.176

The risk of the finance lease

- The market takes bank-affiliated leases as positive news, which create value for firms, while the nonbank-affiliated leases as neutral to firm value.

Panel A: CAPM model

Type of leases	CAR [-1,+1] (%) (Market return=All stock average)	CAR [-1,+1] (%) (Market return=Hushen 300)
Bank-affiliated leases (N=50)	1.67***	1.93***
	(2.81)	(2.96)
Nonbank-affiliated leases (N=276)	0.33	0.35
	(1.13)	(1.18)

Panel B: Excess return

Type of leases	CAR [-1,+1] (%) (Market return=All stock average)	CAR [-1,+1] (%) Market return=Hushen 300
Bank-affiliated leases (N=50)	1.66***	1.79***
	(2.90)	(2.92)
Nonbank-affiliated leases (N=276)	0.26	0.24
	(0.89)	(0.80)

Panel C: Three factor model

Type of leases	CAR [-1,+1] (%)
Bank-affiliated leases (N=50)	1.52***
	(2.69)
Nonbank-affiliated leases (N=276)	0.44
	(1.52)

Conclusions

- Credit tightening policy targeting the “overcapacity industry” has driven the affected firms to engage more in finance leases.
- Banks use their affiliated leasing firms to circumvent the regulation and keep extending credit.
- Bank-affiliated leases are less risky than nonbank-affiliated leases, indicating banks’ purpose of client support through shadow banking
  - cheaper in leasing rate
  - lower credit risk exposure
  - more efficient pricing
  - lower funding cost