Finance Leases: A Hidden Channel of China's Shadow Banking System[*]

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Abstract

By analyzing a hand-collected transaction-level dataset on the finance leases of China's public firms for the period 2007-2019, this paper sheds light on China's financial leasing industry. We find that banks use their affiliated leasing firms to provide credit to constrained clients in order to circumvent the government's targeted monetary tightening policy. Finance Lease offsets the expected decline in traditional bank loans in affected industries, and therefore hampers the effectiveness of the monetary policy. Although this regulatory arbitrage may accumulate systemic risk at the macro level, bank-affiliated leasing firms charge lower leasing rate and exert tighter risk control than non-bank-affiliated leasing firms at the micro level. This finding indicates that banks use finance leases as a channel to keep low-risk clients rather than to make excessive profit.

1. Introduction

Shadow banking involves credit intermediation activities outside the traditional banking system. In contrast to the United States and Europe, where shadow banking activities have been under ever-increasing scrutiny since the 2008 Subprime Mortgage Crisis, China has witnessed tremendous shadow banking growth since that crisis. The size of the sector has doubled since 2011 and was equivalent to 82% of the country's GDP by 2017 according to Moody's calculations (Moody's, 2018)[1]. The rapid expansion of the shadow banking system has created widespread concerns, including from both the G20's Financial Stability Board and various Chinese authorities[2].

This paper investigates an important yet still understudied constituent of China's shadow banking system: finance leases. As shown in Figure 1, China's leasing industry experienced explosive growth from 2007 to 2019, with the outstanding amount of leases reached 6.7 trillion RMB (or 0.96 trillion US dollars) by 2018[3]. China has become the second-largest leasing market in the world. Leasing transactions in China stood at US $254.4 bn in 2018, accounting for approximately 19.7% of the world's leasing market, only after the United States at $428.4 bn[4].

The 6.7 trillion RMB leasing market is of a comparable order of magnitude to another major constituent of China's shadow banking system, entrusted loans, which

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[1] See Moody's report *Quarterly China Shadow Banking Monitor* issued in 2017.

[2] According to the *2014 Financial Stability Board Report* "The size and rapid growth of shadow banking in China warrants particular attention." Additionally, see The People's Bank of China's *Financial Stability Report* in 2014, which pointed to "a possibility of regulatory arbitrage exploited by banks" and expressed concerns of excessive risk-taking.

[3] The statistics on China's leasing industry come from the "2019 China Leasing Industry Development Report" jointly published by China's Leasing Alliance, United Research Center of Leasing, and Tianjin Binhai Leasing Research Institute https://finance.jrj.com.cn/2020/02/28152828914822.shtml.

[4] According to the *World Leasing Yearbook 2019* or White Clarke Group's *2020 Global Leasing Report*.

stood at 12.4 trillion RMB as of the end of 2018 (Allen et al., 2019). Although entrusted

loans have been carefully studied by academics, e.g., Chen, Ren and Zha, 2019 and

Allen et al., 2019, little is known about the leasing market in China.

By exploiting the mandatory disclosure requirements on public firms' finance

leases, we manually collected 1301 finance lease transactions from 16,952 public firms'

annual reports and numerous public announcements during the period of 2007 to 2019.

Because finance leases account for approximately 90% of all leases in China[5], they can

represent China's leasing market well. In our sample, leasing capital tends to flow from

China's three eastern coastal financial centers (Beijing, Shanghai, and Tianjin) to all

provinces and areas across China. The lessees were distributed broadly across industries.

Our primary finding is that banks use their affiliated leasing firms as a channel to

circumvent government targeted monetary policy. Financial leasing firms can be

classified as bank-affiliated and non-bank-affiliated based on whether the leasing firm

has a controlling parent bank.[6] Correspondingly, a finance lease is categorized into

bank-affiliated lease and non-bank-affiliated lease according to the classification of the

leasing firm[7]. By exploring the disparate responses of bank-affiliated and non-bank-

affiliated leases to the targeted monetary policy shock, we find evidence in support of

banks' regulatory arbitrage activities through their affiliated finance leasing firms.

The policy shock we exploit is the monetary authority and bank regulator's targeted

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[5] Please refer to *Huaxia Finance Lease Weekly* issued on Feb. 10, 2018, and *Financial Leasing Industry Report* issued on Mar. 9, 2016, by Orient Securities for more detailed information.
[6] In our sample, there are 30 bank-affiliated leasing firms compared to 233 non-bank-affiliated leasing firms. The full list of bank-affiliated leasing firms is provided in Table A2 of the Internet Appendix.
[7] Among the 1301 lease observations, bank-affiliated leases account for 29.6% of the number of leases and 41.1% of the leasing amount, which is consistent with practitioners' estimation in the interviews.

credit tightening toward the "overcapacity industries" during the period 2010-2014. China's loose monetary policy after the 2008 Subprime Crisis led to overcapacity issue in some industries. Under both domestic and foreign pressure, the People's Bank of China (PBOC) and China's Bank Regulatory Committee (CBRC) jointly launched the targeted credit tightening policy toward firms in "overcapacity industries" starting on December 22, 2009[8,9]. The policy lasted until March 13, 2014, when the authorities made major adjustment by delisting some industries from the overcapacity list[10].

This policy shock provides an opportunity to test the causal relationship between bank credit tightening and the increase in bank-affiliated finance leases. We use a difference-in-difference analysis to examine how the increase in finance leases varied between firms subject to the targeted credit tightening policy (treatment group) and firms that were not (control group). According to our hypothesis, when banks are restricted from granting loans to clients in overcapacity industries, they attempt to circumvent regulation by extending credit through their subsidiary leasing firms, thereby leading to an increase in the bank-affiliated leases.

Consistent with this analysis, we find that following the policy shock, the average treatment group firm, relative to the average control group firm, experienced an increase in the annual probability of initiating new bank-affiliated leases from 0.49%

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[8] See the People's Bank of China and China Banking Regulatory Commission (CBRC) jointly Policy Note No. 386 [2009]: *Guiding Opinions of the People's Bank of China, China Banking Regulatory Commission, China Securities Regulatory Commission and China Insurance Regulatory Commission on Further Doing a Good Job in Supporting the Restructuring and Revitalization of Key Industries and Curbing Overcapacity in Some Industries through Financial Services* issued on Dec. 22, 2009.

[9] The overcapacity industries are designated by the State Council including Steel, Electrolytic aluminum, Coal, Ships, Cement, Flat glass, Fertilizer, Polysilicon, Wind power equipment, Soybean crushing and Large forgings.

[10] See the CBRC Policy Note No. 55 [2014]: *Guiding Opinions of the General Office of the China Banking Regulatory Commission on Supporting Industrial Restructuring and Resolving Overcapacity* issued on Mar. 13, 2014. The updated list of overcapacity industries includes only "Steel, Cement, Electrolytic aluminum, Flat glass and Ships".

to 1.09%, assuming all other explanatory variables are at their means. At the same time, the policy caused an increase in the amount of annual bank-affiliated lease transaction by 174%.

In contrast, there is no similar significant increase for non-bank-affiliated leases. On the supply side, the bank-affiliated leasing firms have information advantage over non-bank-affiliated leasing firms due to their parent banks' loan extension in the "overcapacity industries". On the demand side, the treatment group firms prefer bank-affiliated leases to non-bank-affiliated leases not only for more favorable contract terms, including lower leasing rates, larger leasing amounts, and longer maturities, but also for the signaling effect of bank endorsement and relationship building with banks. For instance, we find that the announcement of bank-affiliated leases have positive effect on firms' stock return, while the announcement of non-bank-affiliated leases have no such effect.

One direct implication of our main finding is that banks should use their affiliated leasing firms to retain existing loan clients affected by the policy shock. We define a lease to be bank-customer lease if the borrower, the lessee, had received loans or credit lines from the lessor's parent bank within five years prior to the leasing transaction. Using the same difference-in-difference analysis framework as before, we indeed find that bank-customer leases increased significantly for firms affected by the targeted monetary tightening policy relative to those that are not.

We conduct additional analyses to corroborate our primary finding. In the dynamic effect analysis as shown in Figure 2, we confirm that the pretreatment trends in the

finance lease transactions of treated and control firms are statistically indistinguishable in all our DID analysis, which is central to a causal interpretation of the estimation results. In addition, we take advantage of the policy adjustment shock on March 13, 2014, when a couple of industries were delisted from the overcapacity list, to conduct another DID analysis. We find that both bank-affiliated leases and bank-customer leases decline for firms in the delisted industries compared to those stay on the list in the years following the delisting shock.

Our second finding is about banks' risk taking through finance leases. Different from the conventional view that banks use regulatory arbitrage to conceal high-risk investment and make excessive profit (Adrian and Ashcraft, 2016), we hypothesize that banks only employ regulatory arbitrage to keep high quality clients based on banks' information advantage, but not to make excessive profit. In fact, when a bank engages in regulatory arbitrage, the last thing it would want is to alert regulators with alarming defaults.

We find evidence in support of this hypothesis. First, bank-affiliated leases charge much lower leasing rates than non-bank-affiliated leases. The average adjusted leasing rates [11] for bank-affiliated and non-bank-affiliated leases are -0.1% and 1.0%, respectively. Second, the realized credit risk of bank-affiliated leases is lower than that of non-bank-affiliated leases. Due to the scarcity of lease defaults in the sample[12], we expand the lessees' defaults with their receipt of Special Treatment (ST)[13] from the

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[11] The adjusted leasing rate is calculated as the difference between the leasing rate and the official benchmark bank loan rate of a similar maturity.

[12] There are only 10 lease defaults in our sample, of which 2 are bank-affiliated and 8 are non-bank-affiliated.

[13] China's stock market regulator (CSRC), requires that listed firms experiencing significant financial and operational distress must put the prefix 'ST' in front of their trading stock's name. This special arrangement is

China Securities Regulatory Commission (CSRC) to construct our sample of realized credit risk. The Special Treatment (ST) indicates substantial operating risk and the possibility of forced delisting of the underlying firm. There are 29 out of 385 (7.5%) bank-affiliated finance leases end up with defaults or ST lessees, as compared to 82 out of 916 (9.0%) for non-bank-affiliated leases, indicating that bank-affiliated finance leases have lower realized credit risk. In addition, using the same DID analysis framework as before, we find that the realized credit risk of bank-affiliated leases did not increase for the treatment group firms in "overcapacity industries" after the targeted monetary tightening policy shock.

Third, the leasing rates of bank-affiliated leases are more efficient in terms of reflecting the credit risk of the lessees. For bank-affiliated leases, the average adjusted leasing rate for ST/default leases is 0.4%, compared to -0.1% for other non-ST/default leases. In contrast, for non-bank-affiliated leases, there is no significant adjusted leasing rate difference between ST/default leases (0.9%) and non-ST/default leases (1.0%).

Fourth, the bond issuance yield of bank-affiliated leasing firms is, on average, 70-80 bps lower than that of non-bank-affiliated leasing firms after controlling for bond and issuer characteristics, indicating the existence of implicit guarantee from parent banks. Another complementary evidence of the close relationship between bank-affiliated leasing firms and their parent banks is that as much as 56.6% of bank-affiliated leasing firms' bond issuance is underwritten by the parent banks. Due to the implicit

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designed to warn investors of a firm's substantial operating risk and the possibility of forced delisting. Due to the short history available and the lack of default observations for listed firms, prior research often use ST events as a proxy to study the credit default risk in China.

guarantee, banks have incentive to keep tight risk control of the affiliated leasing firms.

Last but not least, we explore the economic implications of finance leases for lessees. On the one hand, finance leases provide alternative low-cost financing, which tend to create value for firms. On the other hand, they may also signal high credit risk and financing difficulties from banks. We find that the announcement return is positive and significant for bank-affiliated leases, but is insignificant for non-bank-affiliated leases. The difference reflects that the capital market can fully differentiate between bank-affiliated leases and non-bank-affiliated leases, and regards bank-affiliated leases as valuable endorsement from banks.

Our study contributes to three streams of the finance literature. First, this research contributes to the rapidly growing literature on the formation and risk of shadow banking in China. Chen, Ren, and Zha (2018), Hachem and Song (2017) and Chen, He, and Liu (2020) link the rapid expansion of shadow banking to China's stimulus package after the Subprime Crisis and the overall monetary tightening thereafter. Acharya et al. (2020) explores the wealth management products (WMPs) issued by banks as a channel for China's shadow banking system. Allen et al. (2019) and Chen, Ren, and Zha (2018) study a second channel of shadow banking—entrusted loans. Our paper contributes to the literature in three aspects: 1. We shedding light on a third important channel of China's vast shadow banking system—finance leases; 2. In addition to documenting the correlation between tightening monetary policy and the growth of shadow banking activities as in the prior literature, we provide identification for the causal relationship between credit tightening and banks' regulatory arbitrage through finance lease; 3. We

show evidence that banks do not take excessive risk through finance leases. Instead, they use shadow banking to keep high quality clients affected by the policy.

Second, our paper connects to the literature on the economic impact of relationship banking. Theoretical and empirical research highlight both the positive and negative sides of bank-firm relationships. On the one hand, Sharpe (1990) and Von Thadden (2004) show that by granting loans to firms, banks obtain an informational advantage over competitors, providing them with informational rents later in the relationship. On the other hand, numerous studies have demonstrated the benefits of developing relationships with banks, including lower interest, less collateral requirements, easier access to credit in times of need, etc., e.g., Rajan (1992), Petersen and Rajan (1994), Berger and Udell (1995), Ivashina and Kovner (2011), Beck et al (2018). We contribute to the literature by illustrating an additional benefit of bank-firm relationship. Banks may support high-quality corporate clients through affiliated financial institutions, when direct lending is restricted by regulators.

Third, our paper also contributes to the economic understanding of leasing. The existing leasing literature has mostly focused on understanding firms' choice of leases versus debt, including Krishnan and Moyer (1994), Barclay and Smith (1995), Sharpe and Nguyen (1995), Graham et al. (1998), Yan (2006), Eisfeldt and Rampini (2009), and Rampini and Viswanathan (2013). Other studies also relate lease choice to tax benefits, see Graham et al. (1998) and Lewis and Schallheim (1992), and management's attempts to distort firm financial statements, see Beatty et al. (2010) and Zechman (2010). Our paper highlights the importance of bank ownership on the behavior of

leasing firms. The bank-affiliated leasing firms maintain close connection with their parent banks and inherit both parent banks' clients and prudential risk management. In contrast to non-bank-affiliated leases, the bank-affiliated leases represent endorsement from the parent banks and are complementary to bank loans.

The remainder of the paper is organized as follows. Section 2 introduces the institutional background of China's leasing industry and the targeted monetary tightening policy. Section 3 summarizes our data. Section 4 presents our main findings on finance leases as a channel of shadow banking. Section 5 analyzes the risk of finance leases. We conclude the paper in Section 6.

2. Institutional background

2.1 China's leasing industry

As the world's second-largest leasing market, there are two unique characteristics of leasing in China. The first is that finance leases dominate operating leases in China. Finance leases account for more than 90% of the market in China compared to only 30% in the US[14]. Leases are classified as finance leases or operating leases based on whether the lease transfers substantially all of the risks and rewards associated with the ownership of the leased assets to the lessee. If so, the lease is a finance lease. Otherwise, it is an operating lease (Imhoff et al., 1988; Cornaggia et al., 2013). Finance leases usually have longer maturity, with the leased assets being purchased by the lessee at the end of the lease, while the maturity of operating leases is usually much shorter and without transfer of ownership in the end.

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[14] Please refer to "Huaxia Finance Lease Weekly" issued on Feb. 10, 2018, and "Financial Leasing Industry Report" issued on Mar. 9, 2016, by Orient Securities for more detailed information.

The second striking characteristic of China's leasing market is the dominance of sale-and-leaseback (SLB), which accounts for approximately 84% of leases[15]. Leases can be divided into SLB and direct leases. A sale-and-leaseback (SLB) transaction occurs when the owner of the asset (the lessee) contracts to sell the asset to the lessor and to immediately lease it back. The asset would usually be bought back by the lessee at the end of the leasing contract. In contrast, a direct lease refers to a normal arrangement between a lessor and a lessee where the lessor leases out some property purchased from a third party to the lessee. US firms only engage in SLB when facing serious liquidity and credit constraints, as discussed in Whitby (2013) and Wells and Whitby (2012). Therefore, SLB only accounts for a marginal fraction of leases in the US[16] (Wells and Whitby, 2012).

Taken the two characteristics together, it is clear that Chinese firms do not have the same incentives to engage in leases as US firms, which usually seek to reduce their debt-to-equity ratio, avoiding the risk of ownership and acquiring accounting earnings and tax benefits (Schallheim et al., 2013). In China, the dominance of finance leases and SLB essentially makes leasing very similar to collateralized lending, where leasing firms play the role of non-bank lending platforms with leased assets as collaterals.

2.2 China's targeted monetary tightening policy

The 2008 Global Financial Crisis shocked the Chinese economy, causing an unprecedented slowdown since the 1990s, with the GDP growth rate decreasing from

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[15] See the "The Analysis of China's leasing industry" issued in 2015, by the Ministry of Commerce of PRC.
[16] Examples include the sale-and-leaseback of several hotel properties by Hilton in 2002 in the amount of $520 million and the sale-and-leaseback of a distribution center for $24 million by Nike in 1994.

13.9% in 2007Q4 to only 6.2% in 2009Q1. The Chinese government responded by launching an RMB 4 trillion stimulus plan (approximately 12% of 2008 GDP) at the end of 2008, which included massive investment projects, such as in infrastructure, energy, and environmental protection. To support these investment projects, the nation's monetary authority and banking system loosened credit supply, with banks' required reserve ratio dropping from 17.5% before the crisis to 15.5% for large banks and 13.5% for small and medium-sized banks.

Although the proactive fiscal and monetary policy avoided a significant economic recession, the stimulus plan led to overcapacity issues. According to IMF estimates[17], China's average capacity utilization dropped from 80% at the end of 2007 to approximately 60% by the end of 2011. Overcapacity attracted widespread criticism from China's trading partners and caused ever-growing trade frictions[18].

To address the overcapacity issue, On September 22, 2009, the State Council of China issued State Council Policy Note No. 38 [2009][19], calling for "curbing the growth of overcapacity industries". The overcapacity industries were explicitly listed, including steel, electrolytic aluminum, coal, ships, cement, flat glass, fertilizer, polysilicon, wind power equipment, soybean crushing and large forgings.

To implement the State Council's policy, the Chinese monetary and banking

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[17] See "IMF China Article IV assessment", IMF 2013.

[18] See "*Overcapacity in China: An Impediment to the Party's Reform Agenda*", issued in Feb. 2016, by the European Chamber of Commerce in China. The report claims the following: "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." The report came a week after steel workers took to the streets of Brussels to demand swift action against Chinese "dumping," alongside a European Commission meeting with industry leaders discussing possible tariff measures.

[19] See "*Notice of the State Council on Some Guiding Points on Resolving some industries' Overcapacity Problems*", No.38, [2009] of the State Council of China, Sep. 26, 2009.

authorities launched a targeted monetary policy. On December 22, 2009, the People's Bank of China (PBOC) and the China Banking Regulatory Commission (CBRC) jointly issued the PBOC and CBRC Joint Policy Note No. 386 [2009] requiring that "all banks shall actively cooperate with the national industrial policy, and the credit extension shall reflect the principle of differential treatments with encouragements and discouragements…. For investment 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 overhauled in October 2013, when the State Council delisted some industries from the overcapacity list and left only "Steel, Cement, Electrolytic aluminum, Flat glass and Ships" still on the list[20]. Subsequently, the CBRC revoked its credit tightening toward those delisted industries through its policy note CBRC No. 55 [2014] on March 13, 2014.

3. Sample and data

3.1 Data Collection

We hand-collected detailed contractual information on finance leases disclosed by listed firms in China's A-share market. According to Article 39 of China's Accounting Standards for Enterprises-No. 21 Leasing, firms have to disclose the important contract terms of finance leases. In all cases, the lease amount and lessor name are disclosed, but other transaction characteristics are disclosed voluntarily. Due to the dominance of finance leases in China and data availability, we focus on finance leases in this paper.

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[20] See "*Instructions of the State Council on solving the overcapacity problem*", No.41, [2013] of the State Council of China, Oct. 18, 2013.

Specifically, we collect our sample data by keyword searching the listed firms' annual reports during the period 2007-2019. Due to the complexity and variability of Chinese expressions, the keywords we used included a series of words related to leasing, such as lease, finance lease, sale-and-leaseback, etc. We then read the context around these words and hand-collected all the lease characteristics, which sometimes are disclosed in footnotes, including the lease amount, the lessor name, the leasing rate, the maturity, etc.

We also supplement the annual report data with lease announcements. Not all firms make interim announcements about leases. Firms make announcements when the leases are considered to be material events, but the standard for judging materiality is vague. When lease announcements are available, we use them to cross-check data from annual reports and to fill in any missing information. Knowing the announcement dates also allows us to examine stock price reactions to these leases.

We obtain additional information about the lessees from the CSMAR Database, which provides accounting, stock return data and locations for listed firms. We also collect data on lessors' bond issuance information and financial variables from the WIND database.

Following Sharpe and Nguyen (1995), we exclude several industries, including finance, agriculture and fisheries, due to the lack of leases in these industries. Our sample contains 1301 leases made by 430 unique firms that correspond to 1000 firm-years during the period 2007-2019. In this period, the full sample we use includes 2470 unique firms that correspond to 16,952 firm-years.

Table 1 reports the number of listed firms that initiate new finance leases each year, the number of new leasing contracts and the total RMB amount of these new contracts. There is a clear trend of rapid growth in finance leases. The number of listed firms engaging in new leasing contracts grew from 11 in 2007 to 148 in 2019. The total RMB amount of leasing contracts increased more than thirty-fold in ten years, from 1.5 billion RMB in 2007 to 52.3 billion RMB in 2019.

3.2 The characteristics of the lessees

Table 2 reports the descriptive statistics of firms in this study. The detailed definitions of the variables are provided in Table A1 of the Internet Appendix. All continuous accounting variables are winsorized at the 1st and 99th percentiles to eliminate outliers. The first two columns report the mean values of variables for firm-years with and without leases. The lessees are larger and less profitable as measured by total assets and ROA. They tend to have higher leverage and lower cash, as indicated by debt/assets and cash/assets. The lessees also tend to have lower Tobin's Q and are more likely to be state-owned enterprises (SOEs).

Columns 3 and 4 further report the characteristics of firms engaging in bank-affiliated and non-bank-affiliated leases, respectively. The differences between the two types of lessees are reported in Columns (4)-(3). In general, the lessees of bank-affiliated leases are larger, more likely to be SOE firms, and with lower Tobin's Q.

3.3 The geographic distribution of the lessees and lessors

Table 3 presents the geographic distribution of the lessors and lessees. It shows the RMB amounts of lending and borrowing from each province or area for both bank-

affiliated and non-bank-affiliated leasing.

As shown in table 3, the top three capital outflow areas, Beijing, Shanghai and Tianjin, together account for approximately 76.6% of all leases in our sample. These three areas are also the top three net lending areas (lending minus borrowing amounts). Beijing and Shanghai are China's two most important financial centers. Tianjin is China's fifth largest city and has been dedicated to developing itself as the nation's leasing industrial center for many years[21].

A closer examination of the difference between bank-affiliated leases and non-bank-affiliated leases shows that the capital outflow of bank-affiliated leases is even more concentrated in Beijing, Shanghai and Tianjin. These three cities account for 90.4% of all bank-affiliated leases. Since these three cities are also the headquarters or at least regional centers for most banks with affiliated leasing firms, co-location in the same city between banks and their affiliated leasing firms implies a close relationship between banks and their leasing firms.

Regarding the distribution of the lessees, the three largest borrowing areas are Inner Mongolia (36.2 billion RMB), Hebei (41.9 billion RMB) and Jiangsu (26.1 billion RMB), which account for 30.4% of all leasing in the sample. These three areas are also the top three areas in terms of net borrowing (borrowing minus lending amounts).

The distribution of the lessees is much less concentrated, with leasing capital flowing into both less-developed provinces, such as Inner Mongolia and Hebei, and

[21] See *The 13th Five-Year Plan for the Development of the Financial Leasing Industry in Tianjin* issued in Oct. 2016 by Development and Reform Commission and Financial Work Bureau of Tianjin. (http://www.gov.cn/xinwen/2016-10/27/content_5124915.htm)

more prosperous eastern coastal areas, including Shandong, Jiangsu and Guangdong provinces.

It is also worth noting that non-bank-affiliated leases are more likely to occur between parties in the same province or area than bank-affiliated leases. Leases with their lessors and lessees co-located account for 20% of all non-bank-affiliated leases, but only about 5.2% of bank-affiliated leases. By locating in the same province as the lessee, the lessor is less likely to suffer from asymmetric information problems. Since the parent banks of leasing firms are usually large national banks with branches across the country, the difference between non-bank-affiliated and bank-affiliated leases implies that leasing firms may have received their parent banks' support to alleviate asymmetric information problem. This is consistent with our interviews with the practitioners, who unanimously think that leasing firms receive support from their parent banks.

4. Finance leases and shadow banking

4.1 Targeted monetary policy and the rise of bank-affiliated finance leases

We hypothesize that banks use their affiliated leasing firms as a channel to circumvent regulation and extend credit. One direct implication of our hypothesis is that bank-affiliated leasing firms will increase their leases to firms in the "overcapacity industries" in response to the targeted tightening monetary policy shock. As discussed in Section 2, firms in "overcapacity industries" started to face bank credit tightening in 2010 (due to the PBOC and CBRC Joint Policy Note No. 386 [2009]). The policy lasted until March 2014, when some of the "overcapacity industries" were delisted (CBRC

Policy Note No. 55 [2014]). The targeted monetary policy shock provides a natural experiment that is exogenous to banks' loan extension decisions but has cross-sectional implications for firms' finance lease decisions.

One potential concern is that banks may have recognized the risk in overcapacity industries themselves and would have limited their credit extension toward these industries even in the absence of the policy shock. We do not think that this is likely. If it were the case, the State Council and the top financial regulators, PBOC and CBRC, would not have needed to issue all these strict policy notes with strong wording and covering all banks in China in the first place. In fact, it is exactly the loose credit extension from the banks fueled overcapacity, forcing the central government to resort to unconventional targeted monetary policy to tighten credit control in overcapacity industries. PBOC and CBRC Joint Policy Note No. 386 [2009] explicitly calls for banks to "maximize their effort to strictly implement the state council's overcapacity industry regulation policy without any reservation and never loosen the credit control effort toward any overcapacity industries".

Why do banks keep extending loans to "overcapacity industries"? The literature has shown that the protectionism of the local government is the key reason[22] (Zhang et al., 2017, Lu and Tao, 2009). Since the promotion and benefit of government officials hinge on local economic performance in China and the "overcapacity industries" are often crucial for local GDP, taxes and employment, it is common that firms in "overcapacity industries" receive generous subsidies, policy supports and even implicit

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[22] See "*Overcapacity in China: An Impediment to the Party's Reform Agenda*", issued in Feb. 2016, by the European Chamber of Commerce in China.

guarantees from the local government.

We adopt a difference-in-differences approach to examine how the targeted monetary tightening policy shock would affect firms' engagement in bank-affiliated leases across different industries. Specifically, we take firms in the "overcapacity industries" as the treatment group and firms in other industries as control group. We expect that the targeted monetary tightening policy would increase the likelihood of new bank-affiliated lease transactions and the RMB amount of new bank-affiliated leases for firms in the treatment group compared to those in the control group. Our difference-in-difference analysis uses a 7-year window from 2007 to 2013 centering on the year 2010, when the targeted monetary policy was first introduced. The regression model also controls for firm and year fixed effects and a host of firm-year characteristics, as specified below:

$$Dep_{i,t} = \theta_0 + \alpha_0 Policy_{i,t} + \gamma Control_{i,t} + Firm\ FE + Year\ FE +\ \varepsilon_{i,t}, \qquad (1)$$

where $Policy_{i,t}$ is equal to 1 if firm i belongs to one of the overcapacity industries as determined by the State Council in year t and 0 otherwise. For instance, if firm i was in the fertilizer industry, $Policy_{i,t}$ would equal 0 from 2007 to 2009 before the credit tightening policy was implemented and would equal 1 from 2010 to 2013, when the fertilizer industry was deemed an overcapacity industry. The coefficient on $Policy_{i,t}$, α_0, captures the difference in response between the treatment group and the control group, which is our main variable of interest. Following previous studies, we include a vector of control variables as follows: firm size (Ln(assets)), leverage ($Debt/assets$), profitability (ROA), Tobin's Q, cash holding ($Cash/assets$), and sales growth ($Sales\ growth$). To account for the within-firm correlation among different observations, we

cluster the robust standard errors at the firm level.

We use two measures to describe a firm's engagement in bank-affiliated finance leases. The first variable is *Bank-affiliated dummy$_{i,t}$*, which equals 1 if firm i initiates any new bank-affiliated leases in year t and 0 otherwise. The second is *Ln(Bank-affiliated lease$_{i,t}$+1)*, the logarithm of the total amount of new bank-affiliated leases for firm i in year t. Similarly, we also construct *Non-bank-affiliated dummy$_{i,t}$* and *Ln(Non-bank-affiliated lease$_{i,t}$+1)* to describe a firm's involvement in non-bank-affiliated leases.

We begin by estimating the effect of bank credit tightening on firms' likelihood of initiating bank-affiliated leases. Our estimation results are reported in Table 4. Columns (1) and (2) use *Bank-affiliated dummy$_{i,t}$* as the dependent variable and conduct both OLS and logit regressions. The coefficients on *Policy* are both positive and statistically significant at the 1% levels, implying that the treatment group firms became more likely to engage in bank-affiliated finance leases than the control group firms after the targeted bank credit tightening policy was implemented. The coefficients are also economically significant. For instance, as shown in Column (2), the estimate for the coefficients of *Policy* implies that the policy shock would make a treatment group firm's probability of engaging in new bank-affiliated finance lease increase from 0.49% to 1.09%, assuming that all other explanatory variables are at their means.

We further use the logarithm of a firm's annual total leases, *Ln (Lease amount$_{i,t}$+1)*, as the dependent variable, and conduct OLS regression in Columns (3). The coefficient of *Policy* is both positive and statistically significant at the 1% level, which further confirms the positive effect of the targeted monetary tightening policy on firms' engagement in bank-affiliated finance leases. The coefficient of *Policy* in Column (3) implies that the policy shock caused the treatment group firms to increase their annual

RMB amount of new bank-affiliated leases by 174%.

In comparison, we conduct the same DID analysis for non-bank-affiliated leases by changing the dependent variables to be *Non-bank-affiliated dummy$_{i,t}$* and *Ln(Non-bank-affiliated lease$_{i,t}$+1)*. The results are reported in Column (4)-(6) of Table 4. The non-bank-affiliated leasing firms suffer more significant asymmetric information than bank-affiliated leasing firms due to the fact that their parent banks extend loans actively. Even if they do have incentives to expand business in the "overcapacity industries", the lessees would still prefer bank-affiliated leasing firms due to the bank-firm relationship and more favorable contract terms of bank-affiliated leases, e.g. lower leasing rate, larger leasing amount and longer leasing maturity[23]. Overall, the targeted monetary tightening policy should have much smaller impact on non-bank-affiliated leases. Consistent with this notion, we find that although the coefficients of *Policy* are all positive in Columns (4)-(6), they are not statistically significant.

4.2 Bank-firm relationship and finance lease

One implication of our main hypothesis is that banks would use their affiliated leasing firms to provide credit to their loan clients affected by the policy shock. For instance, Anyang Steel, a large firm in the overcapacity steel industry, acquired four collateralized loans from the Agricultural Bank of China (ABC) from 2006 to 2007 according to the annual reports. The total amount of these four loans reached 1.35 billion RMB, which would mature by the end of 2013[24]. The interest rates of these loans

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[23] We document the characteristics of bank-affiliated and non-bank-affiliated lease contracts in Section 5.

[24] According to the 2007 Annual Report of Anyang Steel, the firm received fours loans from the ABC on Dec. 27, 2006, Jan. 24, 2007, Mar. 27, 2007, and Apr. 19, 2007, in the amounts of RMB 400 million, 400 million, 450 million, and 100 million, respectively. All four of these loans are collateralized loans with the same maturity date of Dec. 26, 2013. No other ABC loans are reported during our sample period.

are the same as the benchmark central bank policy rate. Although ABC stopped granting new loans to Anyang Steel after the targeted monetary policy was implemented in 2010, its subsidiary financial leasing firm, the Agricultural Bank of China Financial Leasing Co. Ltd., initiated a 5-year finance lease of RMB 500 million to Anyang Steel on December 28, 2012, with the leasing rate still remaining the same as the loan rate. In this case, it is clear that the subsidiary leasing firm allows the parent bank, the Agricultural Bank of China, to circumvent bank loan restrictions and keep extending credit to affected clients. The goal of the bank is not to make excessive profit, but to keep business with existing clients.

To test this implication, we use the public firms' loan information to identify the existing relationship between the lessee and the lessor's parent bank. Our loan data are from the commercial data vendor CSMAR's China Listed Firm's Bank Loans Research Database, which includes both loan and credit line information collected from multiple sources, including firms' public announcements, annual reports, bond issuance disclosures, etc. Using these bank loan/credit line data, we define bank-customer lease as that for which the lessor's parent bank extends at least one loan or credit line to the lessee within five years prior to the underlying lease. Similar as before, we construct the dummy variable *Bank-customer dummy$_{i,t}$* for each firm and year, which is equal to 1, if firm *i* engages in at least one bank-customer lease in year *t*, and 0 otherwise. We also calculate the logarithm of firm *i*'s annual RMB amount of bank-customer leases, *Ln (Bank-customer lease$_{i,t}$+1)*.

By applying the difference-in-differences model (1) again and using *Bank-*

customer dummy$_{i,t}$ and *Ln(Bank-customer lease$_{i,t}$+1)* as the dependent variables, we test the causal impact of the targeted monetary tightening shock on bank-customer leases. The regression results are reported in Table 5. Consistent with our hypothesis, the coefficients of *Policy* are positive and significant in all tests. For instance, the coefficient of *Policy* in column (2) implies that the policy tightening shock caused a treatment group firm's annual probability of launching new bank-customer leases to increase from 0.19% to 0.59%, assuming all other explanatory variables are at their means. The coefficient of *Policy* in Column (3) implies that the treatment group firms' annual amount of new bank-customer leases increased by 89% due to the policy shock. These results lend further support to our hypothesis that finance leases provide a channel for banks to conduct regulatory arbitrage.

4.3 Further Analysis

4.3.1 The dynamic effects of targeted monetary tightening

Following Bertrand and Mullainathan (2003), in this section, we conduct tests using a 7-year window around the policy shock to alleviate endogeneity concerns related to reverse causality. Specifically, to address the possibility (although highly unlikely) that, for instance, the policy shock happens to affect firms that are more likely to expand their use of finance leases, we examine the timing of finance lease increases relative to the timing of the credit tightening policy as follows:

$$Dep_{i,t} = \alpha_0 + \alpha_{-2}Policy_{i,t}^{-2} + \alpha_{-1}Policy_{i,t}^{-1} + \alpha_0Policy_{i,t}^{0} + \alpha_1Policy_{i,t}^{+1} +$$

$$\alpha_2Policy_{i,t}^{+2} + \alpha_3Policy_{i,t}^{+3} + \gamma Control_{i,t} + Firm\ FE + Year\ FE + \ \varepsilon_{i,t} \qquad (2)$$

where we replace *Policy*, the main explanatory variable in Eq. (1) with dummy

variables: $Policy_{i,t}^{-2}$, $Policy_{i,t}^{-1}$, $Policy_{i,t}^{0}$, $Policy_{i,t}^{+1}$, $Policy_{i,t}^{+2}$ and $Policy_{i,t}^{+3}$,

which equal 1, if t is (1) two years before, (2) one year before, (3) the current year of,

(4) one year after, (5) two years after, or (6) three years after 2010, when the targeted

monetary tightening policy was first implemented, and firm i is in the treatment group,

and 0 otherwise. In this setting, the benchmark year is 2007, three years before the credit

policy shock. If there are pretreatment trends, the coefficients on $Policy_{i,t}^{-2}$, $Policy_{i,t}^{-1}$

will be significant.

In Table 6, Columns (1)-(3), we use *Ln(Bank-affiliated lease$_{i,t}$+1)*, *Ln(Nonbank-affiliated lease$_{i,t}$+1)* and *Ln(Bank-customer lease$_{i,t}$+1)* as the dependent variable

respectively. The estimation results imply that our setting satisfies the parallel trends

assumption before the policy shock, as indicated by the insignificant coefficients on

$Policy_{it}^{-2}$ and $Policy_{it}^{-1}$, and the increases in the bank-affiliated lease amount

(Column 1), and the bank-customer lease amount (Column 2) emerge only after the

adoption of the policy. Although there is also a weak increase for non-bank-affiliated

leases after the policy shock, the results are not statistically significant (Column 3).

These results indicate that our findings are unlikely to suffer from reverse causality.

Figure 2 shows clearly developing trends in the amount of leases before and after the

targeted credit tightening policy by plotting the coefficients α_{-2}, α_{-1}, α_0, α_1, α_2

and α_3.

4.3.2 The reversal of the targeted monetary tightening

To further corroborate the causal relationship between the targeted monetary

tightening policy and the growth of bank-affiliated/bank-customer finance leases, we

take advantage of the loosening of the policy in March 2014 as another natural experiment. As introduced in Section 2, the CBRC revoked the credit tightening toward "Coal, Fertilizer, Polysilicon, Wind power equipment, Soybean crushing and Large forgings" industries after the State Council removed them from the overcapacity industry list[25]. We take firms in the delisted industries as the treatment group and firms in the industries that remained on the overcapacity list as the control group. As a reversal process, one would expect that the bank-affiliated leases and bank-customer leases of the treatment group firms would decrease after the delisting shock relative to those of the control group firms, as the treatment group firms can return to borrow from banks. In comparison, similar results should not hold for non-bank-affiliated leases.

To test these predictions, we run a difference-in-differences analysis within an eight-year window from 2010 to 2017, including four years before the delisting and four years after. *Policy_delist*$_{i,t}$ is equal to 1, if firm i's industry is no longer on the State Council's overcapacity list in year t, and 0 otherwise. Both firm and year fixed effects are controlled. Columns (1) and (2) of Table 7 use *Bank-affiliated dummy*$_{i,t}$ and *Ln*(*Bank-affiliated lease*$_{i,t}$+1) as the dependent variable. As could be seen, the estimated coefficients of *Policy_delist*$_{i,t}$ are all negative and statistically significant at the 10% level, indicating that the treatment group's new bank-affiliated leases indeed declined after the delisting shock relative to control group firms. Similar results also hold in columns (3) and (4), where the dependent variables are *Bank-customer dummy*$_{i,t}$ and

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[25] Steel, Cement, Electrolytic aluminum, Flat glass and Ships remained on the overcapacity industry list.

Ln(*Bank-customer lease*$_{i,t}$+1). The estimated coefficients of *Policy_delist*$_{i,t}$ are negative and statistically significant at the 5% level. In contrast, when using *Nonbank-affiliated dummy*$_{i,t}$ and Ln(*Nonbank-affiliated lease*$_{i,t}$+1) to be the dependent variables, the estimated coefficients of *Policy_delist*$_{i,t}$ are not significant as shown in columns (5) and (6). All these results are consistent with our hypothesis.

5. The risk of bank-affiliated finance leases

At the macro level, our evidence shows that bank regulatory arbitrage through finance leases hampers the effectiveness of the targeted monetary policy and could lead to the accumulation of systemic risk in the economy. At the micro level, however, it is still not clear whether regulatory arbitrage would necessarily introduce excessive idiosyncratic risk into the finance lease market. Although the Subprime Crisis demonstrates that the shadow banking system could facilitate excessive risk taking by introducing high-risk assets into the market, we hypothesize that banks only bring low-risk leases into the leasing market. As a matter of fact, banks have strong incentives to minimize the credit risk of their leases to avoid alarming regulators of their regulatory arbitrage activities. We have the following five pieces of evidence in support of this hypothesis.

5.1 The leasing rate: bank-affiliated versus non-bank-affiliated leases

Our first evidence is that bank-affiliated leases command much lower leasing rates than non-bank-affiliated leases. In our sample, 412 finance leases disclose their leasing rates, among which bank-affiliated leases account for 34.5%. As shown in Table 8, the average leasing rate is 5.7% for bank-affiliated leases and 6.5% for non-bank-affiliated

leases. To account for differences in maturity and issuance time, we also calculate the adjusted leasing rate as the difference between the leasing rate and the official benchmark bank loan rate of similar maturity. The average adjusted rates for bank-affiliated and non-bank-affiliated leases are -0.1% and 1.0%, respectively. The difference in adjusted rates between bank-affiliated and non-bank-affiliated leases is statistically significant at the 1% level.

Admittedly, the leasing rate could be subject to disclosure bias. But if both bank-affiliated leases and non-bank-affiliated leases are subject to similar bias, the difference in adjusted leasing rates between bank-affiliated and non-bank-affiliated leases should not be affected. To corroborate the result, we further report the average adjusted leasing rates for bank-affiliated leases and non-bank-affiliated leases by industry in Table A3 of the Appendix. We find that the lower adjusted leasing rates of bank-affiliated leases exist in all industries, and therefore are very robust. These results imply that banks are not using their subsidiary leasing firms to make excessive profits.

In addition to the leasing rate, we also examine the difference in maturity and size between bank-affiliated and non-bank-affiliated leases. These results are also reported in Table 8. As can be seen, the bank-affiliated leases are much larger than the non-bank-affiliated leases (329.8 million RMB vs. 210.5 million RMB), and have longer maturity (4.5 years vs. 3.4 years). In general, the bank-affiliated leasing firms offer more favorable terms but charge lower leasing rate than non-bank-affiliated leasing firms.

5.2 The realized credit risk and pricing efficiency

Our second evidence is that bank-affiliated leases have much smaller realized

credit risk than non-bank-affiliated leases. A lessor could suffer loss if the lessee defaults on the leasing fee. As has been shown in some cases in China, the lessee may delay or even refuse to transfer the leased assets after default, which could then lead to lengthy and costly legal procedure to reclaim the asset. After the asset is reclaimed, the lessor still face the difficulty of disposing the asset. This is especially true for finance leases, where the leased assets often involve specialized equipment.

A direct measure of realized credit risk is the default on leasing fee. Among the 10 default cases in our sample, there are only 2 defaults out of the 385 bank-affiliated leases (0.52%) as compared to 8 defaults out of 916 non-bank-affiliated leases (0.87%). It is clear that bank-affiliated leases have lower realized credit risk than non-bank-affiliated leases. Due to the limited cases of defaults in our sample, for robustness, we also use the special treatment (ST) [26] of the lessee during the leasing period to supplement defaults as a new measure of the realized credit risk. ST is a special arrangement in China's stock market intended to warn investors of a listed firm's substantial operational risk and the possibility of forced delisting, which often leads to bankruptcy. We refer a lease to be a ST lease, if the non-ST lessee receives ST before the lease matures.

Under the expanded realized credit risk measure, Table 9 Panel A shows that the

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[26] A firm has to be designated ST before it can eventually be delisted. According to the 2012 Shanghai Stock Exchange and Shenzhen Stock Exchange regulation, a listed firm becomes an ST firm if any of the following six conditions hold: (1) The audited net profit of the company was negative in the last two consecutive fiscal years. (2) The audited net worth of the company was negative in the last fiscal year. (3) The audited operating income of the company was less than 10 million yuan in the last fiscal year. (4) The financial statements for the last fiscal year were subject to an adverse opinion or a disclaimer opinion from the auditing company. (5) The company was commanded to correct serious errors and false records by the China Securities Regulatory Commission (CSRC) but failed to address them within the specified time limit, and the company's stock has been suspended from trading for two months. (6) The company fails to disclose its annual report or semiannual report within the statutory time limit, and the company's stock has been suspended from trading for two months.

bank-affiliated leases still have lower risk than the non-bank-affiliated leases. As can be seen, 29 out of 385 (7.5%) bank-affiliated leases turn into ST or default leases (denoted as ST/default leases), compared to 82 out of 916 (9.0%) for non-bank-affiliated leases.

To test the causal impact of the targeted monetary tightening policy on the realized credit risk of bank-affiliated leases, we construct the dummy variable *ST/default dummy*$_{i,t}$ for each lease i in year t, which is equal to 1, if the lease i eventually turns into ST/default lease, and 0 otherwise. Since the test window is from 2007-2013, all the leases in this window has matured by the end of our sample, and therefore we know exactly whether a lease has turned into ST/default or not.

By applying the model (1) again and using *ST/default dummy*$_{i,t}$ as the dependent variable, we conduct the difference-in-differences test for the bank-affiliated leases in the column (1)(2) of Table 9 Panel B. The regression results show that the coefficients of *Policy* is insignificant, indicating that the targeted monetary tightening policy and the increase in bank-affiliated leases did not increase the credit risk of the bank-affiliated leases. For comparison, we conduct similar analysis for the non-bank-affiliated leases in the column (3)(4) of Table 9 Panel B, where the coefficients of *Policy* are insignificant as well. All these results lend further support to our hypothesis that banks do not use their affiliated leasing firms to take excessive risk.

A natural following question is whether bank-affiliated leasing firms can identify credit risk across lessees ex ante and price the credit risk more effectively than non-bank-affiliated leasing firms.

Our third piece of evidence provides a positive answer to this question. In contrast to non-bank-affiliated leasing firms, bank-affiliated leasing firms can price credit risk through the leasing rate more effectively. Table 9 compares the adjusted leasing rate between ST/default leases and non-ST/default leases. For bank-affiliated leases, the average adjusted leasing rate for ST/default leases is 0.4%, compared to -0.1% for non-ST/default leases. The difference in leasing rates is statistically significant at the 5% level. In contrast, there is no leasing rate difference between ST/default leases and non-ST/default leases (ST/default lease: 0.9% vs. non-ST/default lease: 1.0%) for non-bank-affiliated leases.

In summary, the second and third evidence indicate that the bank-affiliated leasing firms expose to lower credit risk. They can identify the risk and price it more effectively. These results are consistent with the information we collected from the industry practitioners that the bank-affiliated leasing firms often introduce the risk management protocols and experts directly from the parent banks, making the bank-affiliated leasing firms more prudential in risk control than non-bank-affiliated leasing firms.

5.3 The funding cost of leasing firms: bank-affiliated vs. non-bank-affiliated leases

Our fourth evidence is the lower funding cost of bank-affiliated leasing firms due to implicit guarantees from parent banks. Since the parent banks still expose to the default risk of their affiliated leasing firms, it is unlikely that banks would take excessive risk through finance leases.

The leasing firms' most important funding source is bank loan. Although there is window guidance against bank-affiliated leasing firms directly borrowing from their

parent banks, our interviews with the practitioners suggest that this regulation has often been circumvented by two banks crossly extending loans to each other's affiliated leasing firms.

Given the difficulty of collecting the bank loan data of leasing firms, we use the bond issuance yield as a proxy for a leasing firm's funding cost. The bond issuance information is from the data vendor WIND. We obtain all 1016 bonds issued by leasing firms from 2007 to 2019, among which 76 are issued by 17 bank-affiliated leasing firms and 940 are issued by 73 non-bank-affiliated leasing firms. One caveat of our data is that since only large and well-established leasing firms can issue bonds in China, our data do not cover small and medium-sized leasing firms.

Table 10 presents the average adjusted issuance yield of bonds, which is the issuance yield of the bond minus the official bank loan rate of similar maturity. The average adjusted issuance yield for all bonds is -10 bps, indicating that the funding cost of leasing firms is roughly the same as the bank loan rate. We divide the bond sample into bank-affiliated leasing firm's bonds (denoted as bank-affiliated bonds) and non-bank-affiliated leasing firm's bonds (denoted as non-bank-affiliated bonds). The bank-affiliated bonds have an average adjusted yield of -71 bps, which is 66 bps lower than that of the non-bank-affiliated bonds. This result cannot be easily explained by bank-affiliated leasing firms' stronger balance sheet and earnings, as bank-affiliated issuers tend to have higher leverage and lower profitability than non-bank-affiliated issuers.

Table 10 also reports other important differences between the bank-affiliated bonds and non-bank-affiliated bonds. The bank-affiliated bonds have significantly larger

issuance size (2561.8 million RMB vs. 887.4 million RMB) and much longer maturity (3.1 years vs. 2.0 years). We also convert credit rating letters to numerical values, with the variable *Rating* equal to 1, 2, 3, and 4 for AA-, AA, AA+ and AAA, respectively. The bank-affiliated bonds have higher credit ratings than the non-bank-affiliated bonds (4.0 vs. 3.4). All these results imply that bank-affiliated leasing firms receive more favorable treatment from the bond market.

To explore the reason for the lower funding cost of bank affiliated bonds, we run multivariate regressions to check whether bank affiliation has any explanatory power for the adjusted issuance yield. The variable of interest is the dummy *Bank-affiliated dummy*, which is equal to 1 if the issuer is a bank-affiliated leasing firm and 0 otherwise. As for control variables, we include all the common characteristics of the bond and issuer that are relevant to credit risk, including bond credit rating, issuer size, leverage, ROA, etc.

As reported in Table 11, the coefficient of *Bank-affiliated dummy* is negative and statistically significant at the 1% level. This result implies that bank-affiliated leasing firms can save approximately 78.6 bps in their financing cost compared to non-bank-affiliated leasing firms after controlling for other bond and firm characteristics. It is also worth noting that among the 76 bonds issued by bank-affiliated leasing firms, 56.6% are directly underwritten by the issuer's parent bank. All these results lend support to the notion that bank-affiliated leasing firms receive implicit guarantees from the parent banks, which will prevent banks to take excessive risk through finance leases.

5.4 The Wealth effect of leases

Last but not least, we examine the wealth effect of finance leases. On the one hand, since finance lease provides low-cost and long-term funding relative to other non-bank financing (Allan and et al., 2019), it tends to create value for a firm. On the other hand, finance lease may be taken as a negative signal reflecting a firm's difficulty in securing long-term loans from a bank. This is especially true for non-bank-affiliated leases, as bank-affiliated leases may imply an endorsement from a bank.

To address the question of whether leases create value for firms, we examine the stock price reactions to the lease announcements, assuming that the market is efficient in incorporating the value consequences of a lease. In this analysis, we focus on the 326 cases that were announced[27] by the firms before their annual reports. As before, the cases are divided into bank-affiliated leases (50 cases) and non-bank-affiliated leases (276 cases).

To examine the market responses to the events, we first estimate a CAPM market model over a 180-estimation window ending 10 days before the announcement date. A value-weighted average return of all stocks in China's A share market is adopted as the market return. For robustness, we also use the Hushen300 index as an alternative measure of market return. We then calculate cumulative abnormal return (CAR) over the 3-day (-1, 1) event window centered on the announcement day of a finance lease.

As shown in Table 12 Panel A, the average CAR reaches 1.67% in the 3-day event window and is statistically significant for bank-affiliated leases. In contrast, the average

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[27] Not all firms make interim announcements about their finance leases. The regulatory requirement on such announcements is vague. That is, firms need to make announcements about material investments and events, but no technical definition exists of what is considered material.

CAR is not significant for non-bank-affiliated leases. These results suggest that the market can distinguish between bank-affiliated leases and non-bank-affiliated leases. The stock market takes bank-affiliated lease as a strong endorsement of a firm's financial soundness from the leasing firm's parent bank.

For robustness, we also use the excess return, i.e., stock return minus market return, and the Fama-French three-factor model to measure CAR in Panel B and Panel C respectively. All these results are similar to the previous findings.

6. Conclusions

By conducting a large-sample transaction-level study of China's finance leases, we find strong evidence that banks play an important role in China's finance lease market through their affiliated leasing firms, which serve as a regulatory arbitrage channel for banks to supply credit to clients. Banks use finance leases to keep their high-quality clients, rather than to take excessive risk.

References:

Acharya, V., Qian, J., Su, Y. and Yang, Z. (2020): In the shadow of banks: Wealth management products and issuing banks' risk in China, unpublished working paper, *CEPR discussion paper* No. DP14957.

Adrian T., Ashcraft A.B. (2016): Shadow banking: A review of the literature. In: Jones G. (eds) Banking Crises. Palgrave Macmillan, London. https://doi.org/10.1057/9781137553799_29

Aghion, P., Cai, J., Dewatripont, M., Du, L., Harrison, A. and Legros, P. (2015): Industrial policy and competition, *American Economic Journal: Macroeconomics* 7, 1-32.

Allen, F., Qian, Y., Tu, G. and Yu, F. (2019): Entrusted loans: A close look at China's shadow banking system, *Journal of Financial Economics* 133, 18-41.

Barclay, M. J. and Smith, C. W. (1995): The priority structure of corporate liabilities, *The Journal of Finance* 50, 899-917.

Beatty, A., Liao, S. and Weber, J. (2010): Financial reporting quality, private information, monitoring, and the lease-versus-buy decision, *The Accounting Review* 85, 1215-1238.

Beck, T., Degryse, H., Haas, D. R. and Horen, V. N. (2018): When arm's length is too far. Relationship banking over the business cycle, *Journal of Financial Economics* 127, 174-196.

Berger, A. N. and G. F. Udell, (1995): Relationship lending and lines of credit in small firm finance, *Journal of Business* 68, 351-381.

Bertrand, M. and Mullainathan, S. (2003): Enjoying the quiet life? Corporate

governance and managerial preferences, *Journal of Political Economy* 111, 1043-1075.

Chen, K., Ren, J. and Zha, T. (2018): The nexus of monetary policy and shadow banking in China, *American Economic Review* 108, 3891-3936.

Chen, Z., He, Z. and Liu, C. (2020): The financing of local government in China: Stimulus loan wanes and shadow banking waxes, *Journal of Financial Economics* 137, 42-71.

Cornaggia, K. J., Franzen, L. A. and Simin, T. T. (2013): Bringing leased assets onto the balance sheet, *Journal of Corporate Finance* 22, 345-360.

Eisfeldt, A. and Rampini, A. (2009), Leasing, ability to repossess, and debt capacity, *Review of Financial Studies* 22, 1621-1657.

Graham, J. R., Lemmon, M. L., and Schallheim, J. S. (1998): Debt, leases, taxes, and the endogeneity of corporate tax status, *The Journal of Finance* 53, 131-162.

Hachem, K. and Song, Z. M. (2017): Liquidity regulation and credit booms: Theory and evidence from china, *NBER Working Paper Series* 21880.

Imhoff, Jr. E. A. and Thomas, J. K. (1988): Economic consequences of accounting standards: The lease disclosure rule change, *Journal of Accounting and Economics* 10, 277-310.

Ivashina, V. and Kovner, A. (2011): The private equity advantage: Leveraged buyout firms and relationship banking, *The Review of Financial Studies* 24, 2462-2498.

Lu, J. and Tao, Z. (2009): Trends and determinants of China's industrial agglomeration, *Journal of Urban Economics* 65, 167-180.

Krishnan, V. S. and Moyer, R. C. (1994): Bankruptcy costs and the financial leasing

decision, *Financial Management* 23, 31-42.

Lewis, C.M. and Schallheim, J. S. (1992): Are debt and leases substitutes? *Journal of Financial and Quantitative Analysis* 27, 497-512.

Petersen, M. A. and Rajan, R. G. (1994): The benefits of lending relationships: Evidence from small business data, *The Journal of Finance* 49, 3-37.

Rampini, A. A. and Viswanathan, S. (2013): Collateral and capital structure, *Journal of Financial Economics* 109, 466-492.

Rajan, R. G. (1992): Insiders and outsiders: The choice between informed and arm's-length debt, *The Journal of Finance* 47, 1367-1400.

Schallheim, J., Wells, K. and Whitby, R. J. (2013): Do leases expand debt capacity? *Journal of Corporate Finance* 23, 368-381.

Sharpe, S. A. (1990): Asymmetric information, bank lending, and implicit contracts: A stylized model of customer relationships, *The Journal of Finance* 45, 1069-1087.

Sharpe, S.A. and Nguyen, H. H. (1995): Capital market imperfections and the incentive to lease, *Journal of Financial Economics* 39, 271-294.

Von Thadden, E. L. (2004): Asymmetric information, bank lending and implicit contracts: the winner's curse, *Finance Research Letters* 1, 11-23.

Wells, K. S. and Whitby, R. J. (2012): Evidence of motives and market reactions to sale and leasebacks, *Journal of Applied Finance* 22, 57-76.

Whitby, R. J. (2013): Market responses to sale-and-leasebacks, *Real Estate Finance* 29, 1-7.

Yan, A. (2006): Leasing and debt financing: substitutes or complements, Journal of

Financial and Quantitative Analysis 41, 709-731.

Zhang, Y., Zhang, M., Liu, Y. and Nie, R. (2017): Enterprise investment, local government intervention and coal overcapacity: The case of China, *Energy Policy* 101, 162-169.

Zechman, S. L. C. (2010): The relation between voluntary disclosure and financial reporting: Evidence from synthetic leases, *Journal of Accounting Research* 48m 725-765.

Figure 1. China's Outstanding Leases

This figure plots the outstanding amount of finance leases in China from 2007 to 2019.
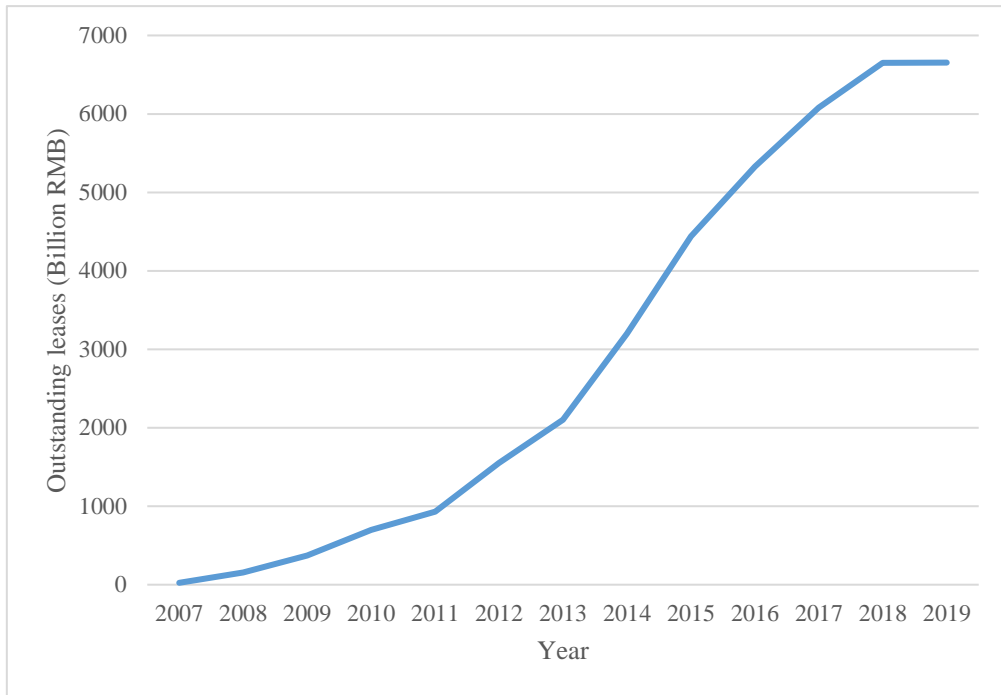
Figure 2. Dynamic Effects of Targeted Monetary Policy on Finance Leases

These figures show the impact of the targeted credit tightening policy on firms' total amount of bank-affiliated leases, amount of bank-customer leases and amount of nonbank-affiliated leases. The x-axis denotes the year to the actual implementation year of the policy; the y-axis denotes the estimated coefficients. The dots are estimated α_τ of the following regression $Dep_{it} = \alpha_0 + \sum_{\tau=-2}^{3} \alpha_\tau Policy_{it}^\tau + \gamma Controls_{it} + Firm\ FE + Year\ FE + \varepsilon_{it}$, where Dep_{it} is the log value of total amount of bank-affiliated leases as in (a), amount of bank-customer leases as in (b) and amount of nonbank-affiliated leases as in (c) for firm i in year t. The benchmark year is the one 3 years before the policy shock. The $Controls_{it}$ includes a vector of commonly used firm characteristics. The solid line connects all the estimated α_τ and the dashed lines describe the 95% confidence intervals.
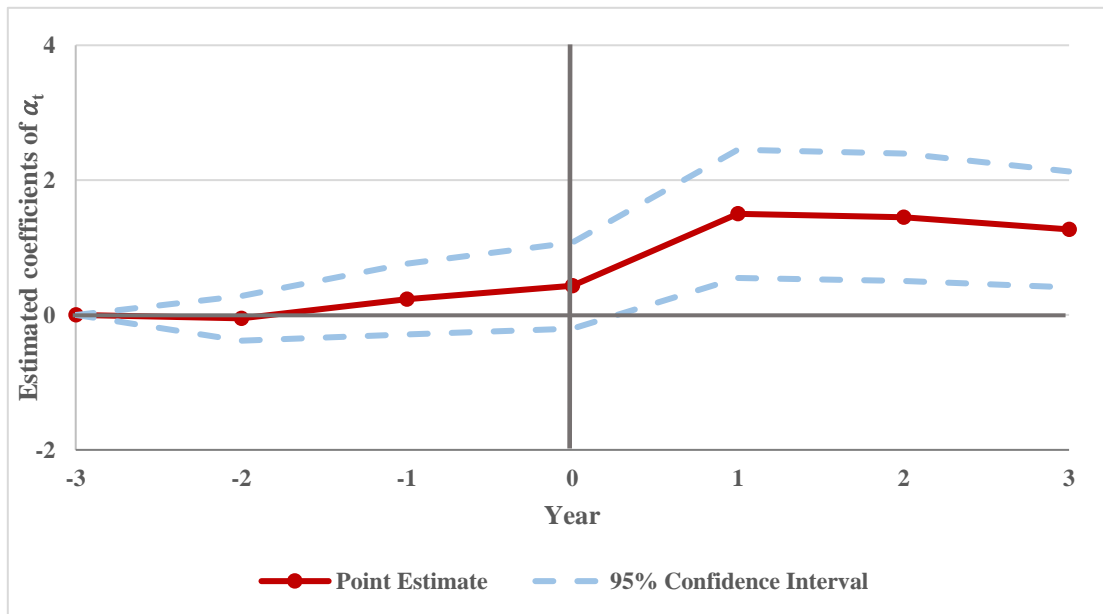
(a) Amount of bank-affiliated leases
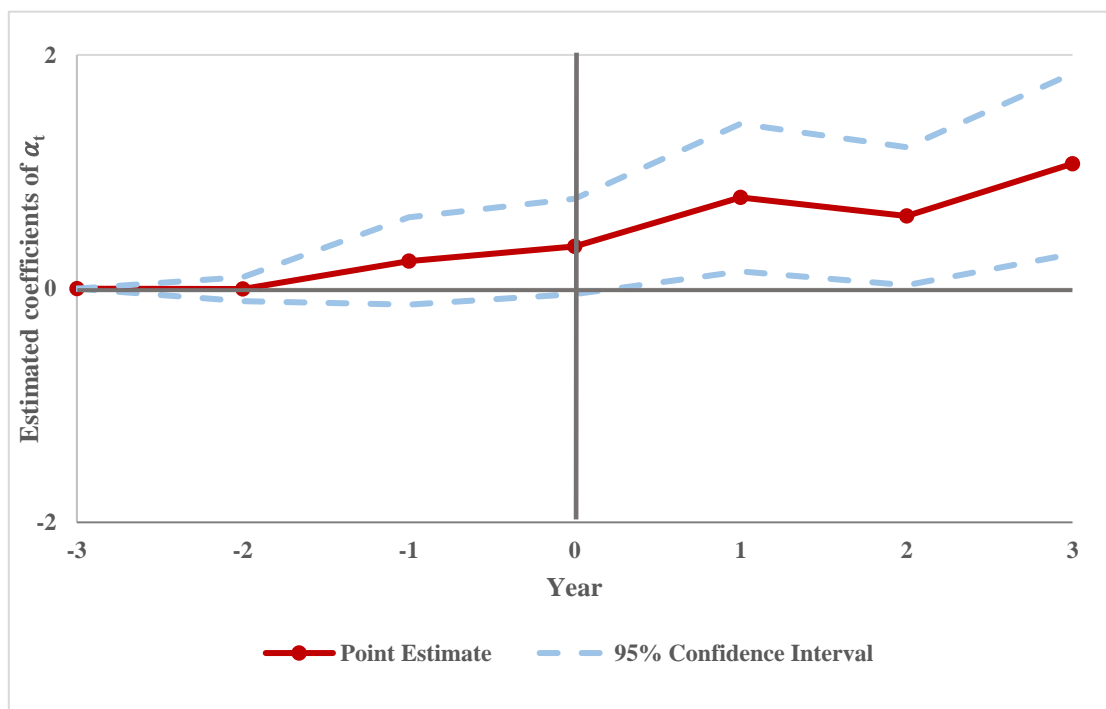
(b) Amount of bank-customer leases
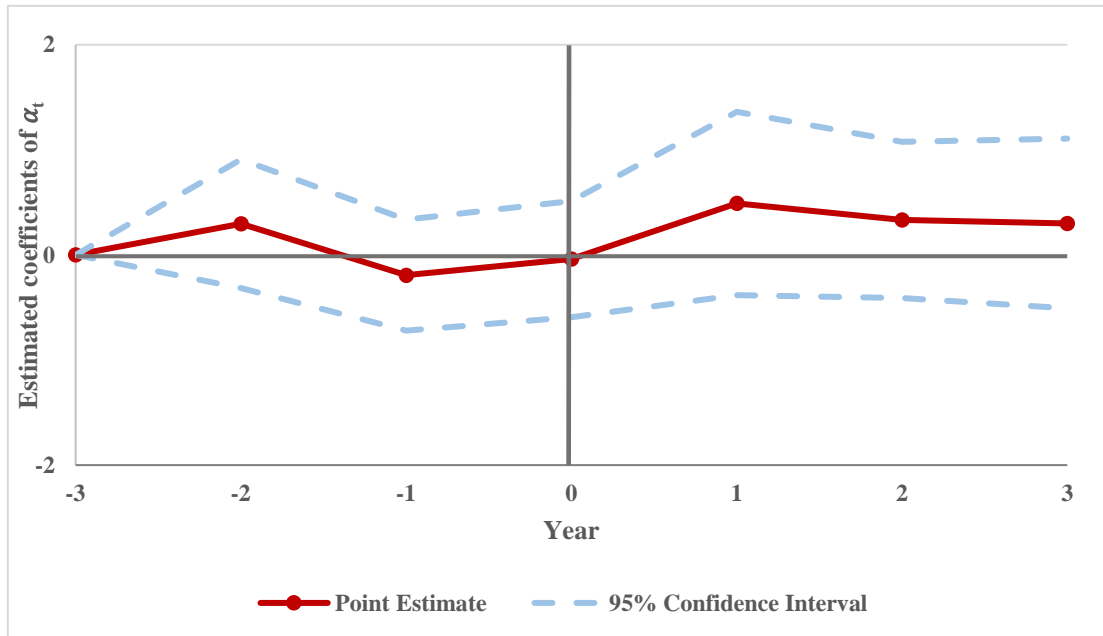
(c) Amount of nonbank-affiliated leases

Table 1. Finance Lease Transactions over Time

The table reports the developing trend of finance lease transactions in China. The sample contains 1301 new finance lease transactions during the period 2007-2019. The *Number of firms* refers to the number of firms engaging in new finance lease transactions in the specified year. *Number of leasing contracts* refers to the number of new leases launched in the specified year. *Annual amount* refers to the RMB (in billions) amount of finance leases launched in the specified year.

Year	07	08	09	10	11	12	13	14	15	16	17	18	19	Total
Number of firms	11	22	34	35	57	67	78	98	124	105	109	112	148	1000
Number of leasing contracts	13	27	35	43	75	77	104	141	185	159	122	146	174	1301
Annual amount (billions RMB)	1.5	7.0	8.6	9.7	22.7	19.3	26.6	33.2	53.3	45.1	38.9	38.0	52.3	356.2

Table 2. Firm Characteristics by Their Usage of Lease Financing

This table reports summary statistics of firm characteristics from 2007-2019. The sample contains the 16952 firm-year observations for the listed Chinese firms except for the industries including financial, utility, petroleum refining, mining, and agriculture and fishery. Variable definitions are in Appendix table A1. Financial variables are winsorized at 1% and 99%. We use t-test for differences in means. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Variable	Lease_ dummy=0 (N=15952)	Lease_ dummy=1 (N=1000)	Bank-affiliated leases (N=303)	Nonbank-affiliated leases (N=659)	(2)-(1)	(3)-(1)	(4)-(1)	(4)-(3)
	(1)	(2)	(3)	(4)				
Policy	0.07	0.16	0.28	0.13	0.09***	0.21***	0.06***	-0.15***
Assets (Billions RMB)	8.42	17.02	23.52	15.85	8.60***	15.10***	7.43***	-7.67***
ROA	0.04	0.02	0.02	0.02	-0.02***	-0.02***	-0.02***	0
Sales growth	0.20	0.23	0.20	0.23	0.03*	0	0.03*	0.03
Tobin's q	2.09	1.43	1.08	1.50	-0.66***	-1.01***	-0.59***	0.42***
Debt/assets	0.47	0.60	0.65	0.60	0.13***	0.19***	0.13***	-0.05***
Cash/assets	0.18	0.13	0.12	0.13	-0.05***	-0.06***	-0.05***	0.01***
SOE	0.43	0.48	0.67	0.44	0.05***	0.24***	0.01	-0.23***

Table 3. Geographic Distributions of Finance Leases

This table reports the geographic distributions of the 1301 finance lease transactions in our sample during the period 2007-2019. The amount of finance leases is in billions of RMB.

Province or area	Lessor			Lessee		
	All	Bank-affiliated leases	Nonbank-affiliated leases	All	Bank-affiliated leases	Nonbank-affiliated leases
Anhui	3.2	0.0	3.2	10.1	5.9	4.2
Beijing	57.3	26.7	30.6	14.8	5.8	9.0
Chongqing	7.3	0.3	7.0	9.8	4.0	5.8
Fujian	2.1	0.2	1.9	2.8	1.6	1.2
Gansu	9.3	0.0	9.3	1.3	0.3	1.0
Guangdong	20.2	2.7	17.5	23.1	9.1	14.0
Guangxi	0.6	0.0	0.6	4.4	2.3	2.1
Guizhou	0.2	0.0	0.2	3.5	0.7	2.8
Hainan	0.0	0.0	0.0	0.0	0.0	0.0
Hebei	3.6	0.7	2.9	41.9	19.3	22.6
Heilongjiang	0.0	0.0	0.0	1.1	0.7	0.4
Henan	0.2	0.2	0.0	19.7	10.4	9.3
Hubei	3.9	1.8	2.1	14.6	6.2	8.4
Hunan	0.1	0.0	0.1	9.6	3.0	6.6
Inner Mongolia	0.1	0.0	0.1	36.2	11.9	24.3
Jiangsu	3.6	1.1	2.5	26.1	5.1	21.0
Jiangxi	1.2	0.1	1.1	4.6	1.4	3.2
Jilin	0.0	0.0	0.0	17.9	8.7	9.2
Liaoning	1.1	0.0	1.1	11.3	3.2	8.1
Ningxia	0.0	0.0	0.0	3.2	1.2	2.0
Qinghai	0.0	0.0	0.0	6.5	2.4	4.1
Shaanxi	0.2	0.0	0.2	4.2	0.4	3.8
Shandong	3.5	0.0	3.5	20.6	13.2	7.4
Shanghai	122.3	65.3	57.0	5.7	2.0	3.7
Shanxi	0.3	0.0	0.3	15.2	5.7	9.5
Sichuan	0.6	0.5	0.1	9.1	2.2	6.9
Tianjin	83.1	32.9	50.2	7.7	2.3	5.4
Xinjiang	4.8	0.0	4.8	6.5	4.3	2.2
Yunnan	5.1	4.9	0.2	6.2	2.2	4.0
Zhejiang	9.2	0.8	8.4	5.4	2.7	2.7
Total	343.1	138.2	204.9	343.1	138.2	204.9

Table 4. Impacts of the Targeted Monetary Tightening Policy on Bank-Affiliated and Nonbank-Affiliated Leases

This table reports results of the difference-in-difference analysis of how the targeted monetary tightening policy affect the bank-affiliated leases and nonbank affiliated leases. The sample contains 8825 firm-year observations from 2007 to 2013, centering on 2010, the effective year of the policy. *Policy* equals 1 if the firm is in the overcapacity industry and the year is from 2010 to 2013, and 0 otherwise. Column (1) and (2) use *Bank-affiliated dummy* as dependent variable and run OLS and Logit regression respectively, while column (3) use *Ln(Bank-affiliated lease+1)* as dependent variable. Column (4) and (5) use *Nonbank-affiliated dummy* as dependent variable and run OLS and Logit regression respectively, while column (6) use *Ln(Nonbank-affiliated lease+1)* as dependent variable. Variable definitions are in Table A1 of the Internet Appendix. Financial variables are winsorized at 1% and 99%. T-values in parentheses are based on robust standard errors clustered by firm. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	Bank-affiliated lease			Nonbank-affiliated lease		
	Bank-affiliated dummy		Ln (Bank-affiliated lease+1)	Nonbank-affiliated dummy		Ln (Nonbank-affiliated lease+1)
	OLS	Logit	OLS	OLS	Logit	OLS
	(1)	(2)	(3)	(4)	(5)	(6)
Policy	0.053***	0.813***	1.009***	0.012	0.164	0.234
	(3.72)	(2.81)	(3.71)	(0.88)	(0.53)	(0.91)
Ln(assets)	0.013***	0.644***	0.247***	0.014*	0.207*	0.254*
	(2.62)	(6.05)	(2.63)	(1.81)	(1.90)	(1.83)
ROA	-0.034	-2.050	-0.638	0.024	-2.415**	0.351
	(-1.47)	(-1.22)	(-1.46)	(0.82)	(-2.00)	(0.67)
Sales growth	0.002	0.279	0.039	-0.000	0.247**	0.009
	(0.59)	(1.62)	(0.61)	(-0.01)	(2.19)	(0.12)
Tobin's Q	0.001	-0.406*	0.020	0.002	-0.201	0.031
	(0.89)	(-1.70)	(0.90)	(0.96)	(-1.26)	(0.94)
Debt/assets	0.001	0.084***	0.011	0.001	0.038*	0.023
	(0.83)	(2.93)	(0.83)	(1.38)	(1.83)	(1.36)
Cash/assets	-0.026*	-2.196**	-0.498*	0.005	-2.685***	0.095
	(-1.79)	(-2.21)	(-1.80)	(0.25)	(-3.06)	(0.26)
Firm FE	Yes	-	Yes	Yes	-	Yes
Industry FE	-	Yes	-	-	Yes	-
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	8825	7234	8825	8825	8440	8825
adj. R^2	0.152	-	0.153	0.169	-	0.171
pseudo R^2	-	0.230	-	-	0.082	-

Table 5. Impacts of the Targeted Monetary Tightening Policy on Bank-Customer Leases

This table reports results of the difference-in-difference analysis of how the targeted monetary tightening policy affects the bank-customer leases. The sample contains 8825 firm-year observations from 2007 to 2013, centering on 2010, the effective year of the policy. *Policy* equals 1 if the firm is in the overcapacity industry and the year is from 2010 to 2013, and 0 otherwise. Column (1) and (2) use *Bank-customer dummy* as dependent variable and run OLS and Logit regression respectively. Column (3) use *Ln(Bank-customer lease+1)* as dependent variable. Variable definitions are in Table A1 of the Internet Appendix. Financial variables are winsorized at 1% and 99%. T-values in parentheses are based on robust standard errors clustered by firm. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	Bank-customer dummy		Ln (Bank-customer lease+1)
	OLS	Logit	OLS
	(1)	(2)	(3)
Policy	0.031***	1.120**	0.615***
	(3.12)	(1.98)	(3.13)
Ln(assets)	0.007*	0.582***	0.146*
	(1.95)	(3.31)	(1.94)
ROA	-0.012	0.609	-0.221
	(-1.16)	(0.18)	(-1.12)
Sales growth	0.002	0.524**	0.046
	(0.92)	(2.27)	(0.94)
Tobin's Q	0.001	-0.766	0.022
	(1.51)	(-1.30)	(1.54)
Debt/assets	0.001	0.564	0.009
	(1.09)	(0.43)	(1.09)
Cash/assets	0.004	-0.325	0.067
	(0.44)	(-0.22)	(0.43)
Firm FE	Yes	-	Yes
Year FE	Yes	Yes	Yes
Industry FE	-	Yes	-
N	8825	3162	8825
adj. R²	0.108	-	0.109
pseudo R²	-	0.221	-

Table 6. Dynamic Effect of the Difference-in-Difference Analysis

This table estimates the effect of targeted monetary tightening on bank-affiliated leases, bank-customer leases and nonbank-affiliated leases. The sample contains 8825 firm-year observations during the period 2007-2013. All regressions control for year- and firm-fixed effects. Variable definitions are in Table A1 of the Internet Appendix. T-values in parentheses are based on robust standard errors clustered by firm. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	Ln(Bank-affiliated lease+1)	Ln(Bank-customer lease+1)	Ln(Nonbank-affiliated lease+1)
	(1)	(2)	(3)
$Policy^{-2}$	-0.049	-0.003	0.297
	(-0.29)	(-0.06)	(0.96)
$Policy^{-1}$	0.234	0.237	-0.189
	(1.49)	(1.24)	(-0.70)
$Policy^{0}$	0.436	0.361*	-0.037
	(1.34)	(1.73)	(-0.13)
$Policy^{1}$	1.500***	0.779**	0.470
	(3.09)	(2.42)	(1.07)
$Policy^{2}$	1.451***	0.621**	0.328
	(3.01)	(2.06)	(0.87)
$Policy^{3}$	1.270***	1.069***	0.284
	(2.90)	(2.72)	(0.70)
Ln(assets)	0.239**	0.139*	0.260*
	(2.58)	(1.89)	(1.87)
ROA	-0.610	-0.165	0.362
	(-1.38)	(-0.85)	(0.68)
Sales growth	0.037	0.046	0.008
	(0.56)	(0.92)	(0.11)
Tobin's Q	0.020	0.021	0.033
	(0.95)	(1.57)	(1.02)
Debt/assets	0.012	0.010	0.024
	(0.95)	(1.23)	(1.38)
Cash/assets	-0.475*	0.061	0.101
	(-1.72)	(0.39)	(0.28)
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	8825	8825	8825
adj. R^2	0.156	0.112	0.171

Table 7. The Adjustment of the Targeted Monetary Tightening on Leases

This table reports results of the difference-in-difference analysis of how the reversal of monetary tightening policy affects the bank-affiliated leases, bank-customer leases and nonbank-affiliated leases. The sample contains 1435 firm-year observations for firms affected by the 2010-2013 targeted monetary tightening policy. The regression is in an eight year window from 2010 to 2017. *Policy_delist* equals 1, if the firm is in one of the industries, which have been delisted from the overcapacity list and the year is from 2014 to 2017, and 0, otherwise. Column (1) and (2) use *Bank-affiliated dummy* and *Ln (Bank-affiliated lease+1)* as dependent variables. Column (3) and (4) use *Bank-customer dummy* and *Ln(Bank-customer lease+1)* as dependent variables. Column (5) and (6) use *Nonbank-affiliated dummy* and *Ln(Nonbank-affiliated lease+1)* as dependent variables. Variable definitions are in Table A1 of the Internet Appendix. Financial variables are winsorized at 1% and 99%. T-values in parentheses are based on robust standard errors clustered by firm. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	Bank-affiliated dummy	Ln (Bank-affiliated lease+1)	Bank-customer dummy	Ln (Bank-customer lease+1)	Nonbank-affiliated dummy	Ln (Nonbank-affiliated lease+1)
	(1)	(2)	(5)	(6)	(5)	(6)
Policy_delist	-0.032*	-0.599*	-0.032**	-0.626**	-0.021	-0.480
	(-1.89)	(-1.75)	(-2.01)	(-2.02)	(-0.53)	(-0.60)
Ln(assets)	0.031	0.588	-0.003	-0.065	0.026	0.589
	(0.97)	(0.95)	(-0.16)	(-0.15)	(0.67)	(0.77)
ROA	0.259*	5.113*	0.111	2.216	0.208	4.216
	(1.88)	(1.85)	(1.09)	(1.08)	(0.94)	(1.00)
Sales growth	-0.006	-0.102	0.010	0.203	-0.006	-0.106
	(-0.33)	(-0.30)	(0.70)	(0.72)	(-0.55)	(-0.51)
Tobin's Q	0.002	0.042	0.001	0.014	0.005	0.096
	(0.27)	(0.26)	(0.13)	(0.11)	(0.31)	(0.32)
Debt/assets	0.143*	2.844*	0.120*	2.373*	0.216***	4.272***
	(1.88)	(1.87)	(1.85)	(1.86)	(2.75)	(2.84)
Cash/assets	0.075	1.560	0.080	1.626	0.086	1.657
	(0.97)	(1.02)	(1.58)	(1.62)	(0.89)	(0.89)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	1435	1435	1435	1435	1435	1435
adj. R^2	0.249	0.254	0.204	0.202	0.211	0.219

Table 8. The Leasing Rate and Other Characteristics of Finance Leases

This table reports descriptive statistics for 1301 lease transactions in our sample during the period 2007-2019. The number of non-missing observations for Leasing rate, Leasing amount and Maturity (years) are 412, 1301 and 1002 respectively. Variable definitions are in Table A1 of the Internet Appendix. We use t-test for differences in means. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

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***

Table 9. **Realized Credit Risk on Bank-affiliated and Nonbank-Affiliated Leases**

Panel A reports adjusted leasing rates (%) of ST/default leases and Non-ST/default leases using bank-affiliated leases and nonbank-affiliated leases as a classification, which contains 1301 lease transactions during the period 2007-2019. Panel B reports the difference-in-difference analysis of the targeted monetary tightening policy shock on the *ST/default dummy* for bank-affiliated and nonbank-affiliated leases. The dependent variable is *ST/default dummy* for all columns. Column (1) and (2) run OLS and Logit regression for bank-affiliated leases. Column (3) and (4) run OLS and Logit regression for nonbank-affiliated leases. In Panel A, we use t-test for differences in means. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively. In Panel B, t-values in parentheses are based on robust standard errors clustered by firm. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Panel A: Adjusted Leasing Rates: ST/default leases vs Non-ST/default leases			
	Number of ST/default leases (% of total leases in the class)	ST/default leases adjusted rate (%)	Non-ST/default leases adjusted rate (%)	Difference
	(1)	(2)	(3)	(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

Panel B: Impacts of the Targeted Monetary Tightening Policy on ST/default dummy				
	Bank-affiliated leases		Nonbank-affiliated leases	
	OLS	Logit	OLS	Logit
	(1)	(2)	(3)	(4)
Policy	-0.262	0.776	0.025	1.022
	(-0.80)	(0.74)	(0.23)	(1.03)
Ln(assets)	0.028	-1.487**	0.034	-1.690***
	(0.21)	(-1.98)	(0.71)	(-2.59)
ROA	1.269	-34.602	1.083	-59.936***
	(0.57)	(-1.45)	(0.62)	(-2.84)
Sales growth	-0.017	0.385	-0.057	-1.373
	(-0.44)	(0.39)	(-0.87)	(-0.94)
Tobin's Q	-0.050	-1.414	-0.004	-1.462*
	(-0.57)	(-0.73)	(-0.20)	(-1.81)
Debt/assets	1.915	5.325	-0.441	-1.447
	(1.30)	(1.05)	(-0.86)	(-0.43)
Cash/assets	1.258	5.749	-0.132	-0.189
	(1.45)	(0.66)	(-0.14)	(-0.03)
Firm FE	Yes		Yes	
Year FE	Yes	Yes	Yes	Yes
Industry FE		Yes		Yes
N	185	143	213	172
adj. R^2	0.699	-	0.839	-
pseudo R^2	-	0.321	-	0.464

Table 10. The Characteristics of Bonds Issued by Lessors

This table reports the descriptive statistics of bonds issued by lessors. The bond issuance data is from Chinese database WIND during the period 2007-2019. There are 76 bonds issued by 17 bank-affiliated leasing firms and 940 bonds issued by 73 nonbank-affiliated leasing firms. The adjusted cost of bonds is benchmarked against the official bank loan rate of similar maturity. Variable definitions are in Table A1 of the Internet Appendix. Financial variables are winsorized at 1% and 99%. We use t-test for differences in means. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Variable	All sample	Bank-affiliated leases	Nonbank-affiliated leases	Difference
	(1)	(2)	(3)	(3)-(2)
Adjusted issuance yield (%)	-0.10	-0.71	-0.05	0.66***
Issue maturity (years)	2.1	3.3	2.0	-1.3***
Issue amount (millions of RMB)	1013.3	2561.8	887.4	-1674.4***
Assets (millions of RMB)	4.9	9.8	4.9	-4.9***
Debt/assets	0.8	0.9	0.8	-0.1***
ROA (%)	1.5	1.1	1.5	0.4***
Rating	3.4	4.0	3.4	-0.6***

Table 11. The Issuance Yield of Bonds Issued by Lessors

The sample contains 925 bond issuance cases of leasing firms for which the information of issuance rate and firm balance sheet is available during the period 2007-2019. Variable definitions are in Table A1 of the Internet Appendix. Financial variables are winsorized at 1% and 99%. T-values in parentheses are based on robust standard errors clustered by firm. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

	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

Table 12. Market Reaction to Lease Announcements

This table reports the cumulative abnormal return (CAR) for bank-affiliated leases and nonbank-affiliated leases. CARs are calculated based on the CAPM model, the excess return model and the Fama-French three factors model respectively. Hushen 300 index return and the value weighted average return of all stocks traded on the main board of Shanghai and Shenzhen stock exchanges (All stock average) are used as the market return respectively. The Fama-French three factors are downloaded from CSMAR. The estimation period is during trading days [−190, −10], where day 0 is the announcement day. The t-test of means are reported in the parenthesis. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Panel A: CAPM model		
Type of leases	CAR [-1,+1] (%)	CAR [-1,+1] (%)
	(Market return=All stock average)	(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] (%)	CAR [-1,+1] (%)
	(Market return=All stock average)	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)

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In this Internet Appendix, we report the following tables omitted from the main paper.

Table A1. Variable Definitions

Adjusted interest rate —A lease's interest rate minus the official bank lending rate of same maturity, in percent.

Assets-Assets in year t-1, in billions of RMB.

Bank-affiliated dummy-Dummy equal to one if the firm has a lease transaction though a bank-affiliated leasing company in year t and zero otherwise.

Bank-affiliated lease/assets-Lease amount though a bank-affiliated leasing company during year t divided by assets in year t-1.

Bank-customer dummy-Dummy equal to one if the lessee has received loans or credit lines from the lessor's parent bank within five years prior to the leasing transaction.

Bank-customer lease/assets-Financing amount through a bank-customer lease during year t divided by assets in year t-1.

Book value/original value-The leasing asset's book value divided by its original value in the SLB transaction.

Capex/assets- Investment during year t divided by assets in year t-1.

Cash/assets-Cash divided by assets in year t-1.

Debt/assets-Total debt divided by assets in year t-1.

Issue amount/assets-The issue amount of bonds divided by the leasing company's assets.

Lease amount/assets-Lease amount during year t divided by assets in year t-1.

Lease dummy-Dummy equal to one if the firm has a lease transaction in year t and zero otherwise

Ln(asset)-Log of total assets in year t-1.

Ln (bank-affiliated lease+1)-Log of the sum of bank-affiliated lease amount and 1.

Ln (bank-customer lease+1)-Log of the sum of bank-customer lease amount and 1.

Ln (lease amount+1)-Log of the sum of total lease amount and 1.

Ln (nonbank-affiliated lease+1)-Log of the sum of nonbank-affiliated lease amount and 1.

Δ*Long-term loan /assets*-Change of long-term loan divided by assets in year t-1.

Nonbank-affiliated dummy-Dummy equal to one if the firm has a Lease transaction though a nonbank-affiliated leasing company in year t and zero otherwise.

Nonbank-affiliated lease/assets-Lease amount though a nonbank-affiliated leasing firm during year t divided by asset in year t-1.

Parent-underwriting dummy-Dummy equal to one if the bond's underwriter is the leasing company's parent bank.

Policy-Dummy equal to one if the firm is affected by the De-capacity Policy in year t.

Policy_delist-Dummy equal to one if the firm is delisted from the De-capacity Policy in year t.

Rating-Equal to 1,2,3,4 respectively for AA-, AA, AA+ and AAA.

ROA-Return on assets in year t-1.

Sales value/book value-The leasing asset's sale value divided by its book value in the SLB transaction.

Sales growth-Sales growth rate in year t-1.

Same province- Dummy equal to one if the lessee is in the same city as the lessor and zero otherwise.

SOE-Dummy equal to one if the firm is a state-owned enterprise and zero otherwise.

ST/default-Dummy equal to one if the lessee is labelled ST during the leasing period or the lease transaction is defaulted.

Tobin's q-Tobin'q in year t-1.

Table A2. List of Bank-Affiliated Leasing Firms and Their Parent Banks

This table lists bank-affiliated leasing firms and their corresponding parent banks.

Bank-affiliated leasing firm	Parent bank
Agricultural Bank of China Financial Leasing	Agricultural Bank of China
Bank of Beijing Financial Leasing	Bank of Beijing
Bank of Communications Financial Leasing	Bank of Communications
BOL Financial Leasing	Bank of Luoyang
CCB Financial Leasing	China Construction Bank
China Development Bank Leasing	China Development Bank
Chongqin Xinyu Financial Leasing	Bank of Chongqing
Citic Leasing	China Citic Bank
CMB Financial Leasing	China Merchants Bank
Cqrc Financial Leasing	Chongqing Rural Commercial Bank
Everbright Financial Leasing	China Everbright Bank
Guiyang Gyb Financial Leasing Co.,ltd	Bank of Guiyang Co.,ltd
Huaxia Financial Leasing	Huaxia Bank
ICBC Leasing	Industrial and Commercial Bank of China
Industrial Bank Financial Leasing	Industrial Bank
Jiangxi Financial Leasing	Bank of Jiangxi
Lanyin Financial Leasing	Bank of Lanzhou
Maxwealth Financial Leasing	Bank of Ningbo
Minsheng Financial Leasing	China Minsheng Bank
Qianhaixingbang Financial Leasing	Shenzhen Rural Commercial Bank
Qingdao Bank Leasing	Bank of Qingdao
Sichuan Tianfu Financial Leasing	Sichuan Tianfu Bank
SPDB Financial Leasing	Shanghai Pudong Development Bank
Suyin Financial Leasing	Bank of Jiangsu
Suzhou Financial Leasing	Bank of Suzhou
Tianyin Financial Leasing	Bank of Tianjin
Xiamen Financial Leasing	Xiamen Rural Commercial Bank
Yangtze United Financial Leasing	Shanghai Rural Commercial Bank
Zheyin Financial Leasing	China Zheshang Bank
Zhujiang Financial Leasing	Guangzhou Rural Commercial Bank

Table A3. Leasing Rate by Industry

This table reports the leasing rate and the adjusted leasing rate by industry. The sample contains the 412 finance leases for which the information of interest rate is available during the period 2007-2019.

Industry of the borrower	Bank-affiliated			Nonbank-affiliated		
	N	Leasing rate (%)	Adjusted leasing rate (%)	N	Leasing rate (%)	Adjusted leasing rate (%)
All sample	142	5.7	0.0	270	6.5	0.9
Coal and mining	7	6.0	-0.1	6	8.2	2.8
Chemicals	13	6.8	0.7	31	7.7	1.7
Non-metallic mineral product	12	5.5	-0.2	18	5.9	0.4
Ferrous metal	16	5.5	-0.2	26	5.6	0.1
Nonferrous metals	8	6.4	0.1	7	6.5	1.0
Transportation	0	-	-	3	6.5	0.3
Electrical machinery	41	5.4	-0.4	51	6.1	0.7
Petroleum and natural gas exploitation	2	6.0	-0.4	6	6.6	0.2
Food	0	-	-	5	6.7	0.9
Textile	0	-	-	5	6.1	0.1
Paper and printing	6	5.4	-0.2	3	6.1	0.7
Pharmacy	4	5.6	-0.4	8	6.0	0.2
Equipment	15	5.6	0.2	24	6.0	0.9
Automobile	0	-	-	2	5.5	-0.2
Computer and information technology	2	5.6	-0.7	11	5.4	-0.1
Waste resources	0	-	-	4	5.4	0.6
Construction	12	6.1	0.3	9	7.1	1.6
Wholesale and retail	1	6.1	-0.3	4	5.9	0.2
Real estate	0	-	-	10	7.8	1.8
Other manufacturing industry	2	5.6	0.7	11	5.5	0.7
Other industry	0	-	-	26	7.1	2.1