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Non-Bank Lending to Firms: Evidence from Korean Firm-Level Data

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Abstract

Purpose - The purpose of this paper is to examine the determinants of non-bank depository institutions (non-bank financial corporations) lending to firms. The paper aims to contribute to the existing literature by providing empirical evidence from firm-level data and unveiling factors related to access to non-bank financial corporations by firms.

Research design, data, and methodology - We used the data on borrowing by firms from CRETOP from years 2008 to 2011. Using the manufacturing industry, we examined what firm-level characteristics explained the increase in borrowing from non-bank financial corporations rather than the banks.

Results - Analyzing the firm-level data from 2008 to 2011, we found that firms were more likely to borrow from non-bank financial institutions as the size of the firm increases, implying that large firms have more access to non-bank financing than small and medium-sized firms. In addition, it also showed that small and medium-sized firms moved to non-bank financial corporations for loans.

Conclusion - Non-bank depository institutions are not a substitute for bank lending to firms. More specifically, they replace bank lending to firms mostly for large firms rather than small and medium-sized firms. Also, collateral and other firm-level characteristics do not matter in accounting for non-bank lending to firms.

Keywords: Non-Bank Lending, Financial Crisis, Monetary Policy, Small and Medium-sized Enterprises.

JEL Classifications: G32, G38, G21

1. Introduction

The accessibility to external financing is crucial for the survival and operation of firms, especially during times of crisis. Given its importance, there has been vast literature studying how firms borrow or how banks lend to firms based on firm- and bank-level characteristics (Ivashina Scharfstein, 2010; Kan-drac, 2012; Banna et al., 2017; Ferrarini et al., 2017). These studies show the significant factors in deciding whether a firm borrows from a financial institution. Though they are useful in understanding the determinants of firms' access to financial institutions, they overlook other sources of external financing, such as non-bank financial institutions. As is well-documented by the IMF (2016), the structure of financial markets has changed remarkably, and this means that this should also be considered when we evaluate firms' access to external fi

ancing. However, there have been few studies that examine the role of non-bank financial institutions as a firm's alternative source of external financing. To fill this gap in the literature, this paper studies how firms access non-bank financial institutions for external financing using Korean firm-level data from 2008 to 2011.

To understand why lending by non-bank financial corporations matters for the financing needs of firms, it is necessary to understand the basic structure of financial institutions in Korea. These financial institutions can be broadly categorized into several groups: banks, non-bank depository institutions, financial investment business entities, insurance companies, other financial institutions and financial auxiliary institutions, as shown in <Table 1>. In the following, we also refer to banks as commercial and specialized banks and non-bank depository institutions as non-bank financial corporations, and these terms can be used interchangeably.

Firms can borrow money from banks and non-bank depository institutions whenever necessary. Even though

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firms can access both banks and non-bank depository institutions for credit, previous studies only consider lending to firms by focusing on banks rather than including non-bank depository institutions (Kim, 2015). Lending by the non-bank depository institutions has received little attention. Thus, this paper studied access to non-bank financial corporations by firms, in other words, the determinants of firms' borrowing from non-bank depository institutions, which differs from the previous literature.

Even though there is little research on the lending behavior of non-bank depository institutions, it is also widely believed that commercial and specialized banks tend to charge lower rates, and this results in firms moving to high rate loans when financial institutions start to apply stricter loan qualifications, for instance, as they did during the recent global financial crisis. This implies that non-bank depository institutions may serve as a substitute for lending by commercial and specialized banks. We try to empirically examine whether this conventional wisdom is true.

<Table 1> Financial Institutions in Korea

Classification		
Financial holding companies	Bank holding companies	
	Non-bank holding companies	
Banks	Commercial Banks	Nationwide Banks
		Local Banks
		Branches of Foreign Banks
	Specialized Banks	KDB
		KEXIM
		IBK
		NACF
	NFFC	
Non-bank Depository Institutions	Merchant Banking Corporations	
	Mutual Savings Banks	
	Credit Cooperatives	Credit Unions
		MG community credit cooperatives
		Mutual Banking
Postal Savings		
Financial Investment Business Entities	Securities Companies	
	Futures Companies	
	Collective Investment Business Entities	
	Investment Advisory and Discretionary Investment Business Entities	
	Trust Business Entities	Bank / Securities / Insurance / Real Estate Trust
Insurance Companies	Life Insurance Companies	
	Non-life Insurance Companies	Property and Casualty Insurance Companies
		Reinsurance Companies
	Postal Insurance	Guarantee Insurance Companies
	Mutual Aid Associations	Mutual Aid Services of NFFC / Korean FCCC / NCUF Korea
Other Financial Institutions		
Financial Auxiliary Institutions		

Source: Bank of Korea

Lending to firms by non-bank financial corporations has received less attention compared to that by commercial and specialized banks for the following reasons. First, it does not account for the significant share of bank lending to firms. For instance, lending to firms by non-bank financial corporations accounts for 8.6% of total lending to firms in the case of the manufacturing industry. Secondly, data for those financial institutions are not available up to 2008. With respect to data availability, we overcome the issue by obtaining data on firms' borrowing from non-bank financial corporations along with other firm-level characteristics. In addition, lending to firms by non-bank depository institutions has been rising in recent years, which makes their lending to firms more important than before. This implies that non-bank lending to firms became important in accommodating the financial needs of firms, and it is important for policy makers and researchers to understand which of the firms' characteristics enables firms to access non-bank lending.

This paper tries to empirically examine the determinants of non-bank lending to firms using firm-level data in Korea. The empirical results would tell us how firms accommodate their financial needs via banks and non-banks and possibly how firms switch their borrowing from banks to non-banks.

The existing literature investigates bank lending to firms based on both bank- and firm-level characteristics (Cottarelli & Generale, 1995; Clarke et al., 2005; Kamil & Rai, 2013). However, to our knowledge, there is few studies on non-bank lending. We refer to an empirical analysis based on Yin and Liu (2017). We also consider other factors that are con-sidered to be related to bank lending to firms and examine whether those factors also play a significant role in deciding firms' access to non-bank financing.

The remainder of this paper is organized as follows. Section 2 reviews the lending behavior of non-bank depository institution to firms in general and summarizes some features from the firm-level data. Section 3 presents the empirical strategy and results. Section 4 is the conclusion.

2. Data Description

Data on firm-level characteristics and borrowing from commercial and specialized banks and non-bank financial

corporations are obtained from the CRETOP database, and de-tailed information on the data can be found in Lee (2018).

In this section, we review the data on non-bank lending to firms based on aggregate and firm-level data. The aggregate data, which shows trends in non-bank lending to firms, comes from a Bank of Korea database. It classifies lending to firms based on banks and non-banks, and this enables us to compare the overall trends in each financial institution's lending to firms in a given period. The database provides data on non-bank lending to firms since 2008, which makes it difficult to compare the growth in lending from the early 2000s. Thus, we only present overall trends in non-bank lending to firms after 2008 and compare the trends with banks' lending to firms.

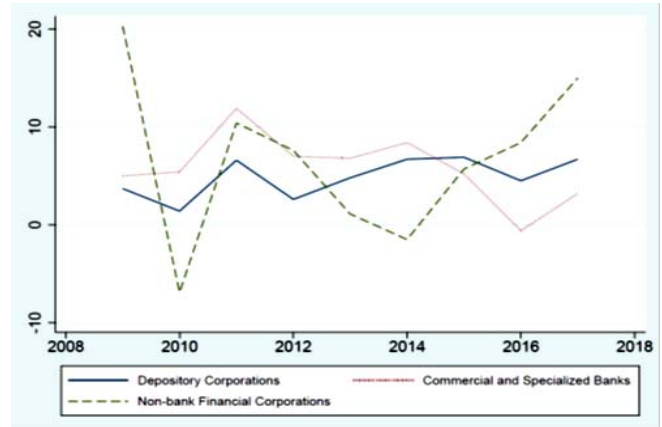
We also provide some summary statistics based on firm-level data. One can find some discrepancies in the aggregate data since it only covers the manufacturing sector rather than all industries in the economy. However, we can find some interesting features in the composition of borrowing from each financial institution by firms.

2.1. Evidence from Aggregate Data

In the following, we summarize the data from the Bank of Korea. We first present the data on bank and non-bank lending to firms. Figure 1 shows the growth rate of lending to firms, including two different types of financial institutions, after the recent global financial crisis. We can find some interesting features in this data. First, it is remarkable how non-bank financial corporations increased their lending to firms far more than commercial and specialized banks and overall depository corporations, even during the financial crisis. Second, the loan growth of non-bank financial corporations is very volatile compared to the commercial and specialized banks. It is also noticeable that commercial and specialized banks actually reduced their loans to firms after the financial crisis, though it is not clearly shown in the figure. Their loan growth rates were 17.5% and 25% in 2007 and 2008, respectively, and this suggests that the financial crisis indeed resulted in a contraction of credit supply.

Figure 1 suggests that the lending behavior of commercial and specialized banks and non-bank financial corporations has been quite different since 2009. This raises questions of whether non-bank financial corporations provide more loans to small and medium-sized firms, in other words, if small and medium-sized firms moved to non-bank financial corporations due to stricter loan qualification from commercial and specialized banks, or for other reasons.

Figure 2 shows loan growth by firm size. This enables us to figure out how banks adjusted their lending during the financial crisis based on a firm's size. It suggests that banks cut their lending to small and medium-sized firms far more severely than large firms, and this trend lasted until 2014.

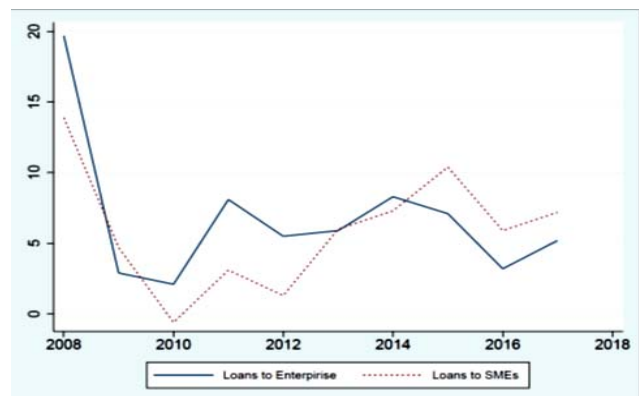


<Figure 1> Growth in Bank Lending to Firms

As seen in Figure 1 and Figure 2, what we found can be summarized as follows: The commercial and specialized banks indeed decreased their loans to firms compared to the pre-crisis period. And the reduction in loans seems to be drastic for small and medium-sized firms. Figure 1 and Figure 2 also indicate that non-bank financial corporations provide more credit to small and medium-sized firms. In the following, we examine this issue based on firm-level data, since the aggregate data does not provide information on lending by non-bank financial corporations to firms based on firm size that is different from lending by banks.

2.2 Facts from Micro Data

Evidence from the aggregate data shows that small and medium-sized firms have experienced difficulties in raising funds through banks. In the following, we examine whether those SMEs were able to access non-bank financial institutions to meet their financial needs during times of crisis. The aggregate data does not exactly provide any information on lending to firms based on firm size or any other firm-level characteristics. We overcome this limitation using firm-level data, specifically data on firm's borrowing from each financial institution.

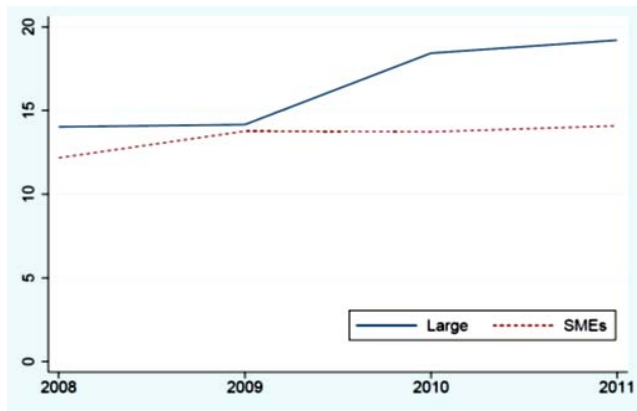


<Figure 2> Growth in Bank Lending to Firms by Firm Size

We begin by presenting the fraction of non-bank borrowing out of total borrowing from commercial and specialized banks and non-bank financial corporations. Figure 3 shows the average share of borrowing from non-bank financial corporations. It shows that the share has risen for large firms, implying that large firms might have substituted for the reduction in borrowing from commercial and specialized banks in 2010. The figure also suggests that the share of SMEs borrowing from non-bank financial corporations has been stagnant given the sample period, which is different from large firms.

As seen in Figure 3, the share of borrowing from non-bank financial corporations rose after the financial crisis, and the rise is pronounced for large firms. We can also observe the borrowing from non-banks has hiked from growth rate of borrowing based on firm-level data, which shows a noticeable increase in borrowing from non-banks, especially for large firms.

What is more interesting is that borrowing by large firms increased far more than for small and medium-sized firms, as shown in <Table 2>, which shows the average loan growth for each firm size and each financial institution. Looking at the fourth column showing the growth of loans from non-bank financial corporations for large firms, their borrowing from non-bank depository institutions rose 133% and 87% in 2009 and 2011, respectively. The growth rate itself is quite large, and compared to the loan growth for SMEs, it seems to be even greater.



<Figure 3> Share of Borrowing from Non-banks

<Table 2> Growth Rate of Borrowing from Non-banks

	Commercial and Specialized Banks		Non-bank financial corporations	
	Large	SMEs	Large	SMEs
2009	5.21	8.79	133.49	16.18
2010	6.53	10.54	12.91	10.55
2011	9.14	7.12	86.88	20.66

The data suggest that non-bank lending to firms rose greatly after the recent financial crisis. This rise might be

driven by the fact that more firms accommodate loans from non-bank depository institutions or the fact that the firms (that have already been borrowing from non-bank financial corporations) have increased their borrowing from non-banks. We calculate the share of firms that newly accommodate their financing needs via non-bank financial corporations to identify factors behind the increase. <Table 3> shows the share of firms that started new borrowing from non-banks based on firm size.

The statistics show that a smaller fraction of large firms just started to obtain loans from non-banks. This hints that the increase may be driven by a small fraction of large firms that just started their financing through non-banks.

<Table 3> Fraction of Firms with New Borrowing from Non-banks

	Large	SMEs
2009	64.04	67.86
2010	27.03	42.80
2011	25.09	40.29

Additionally, <Table 4> summarized the fraction of firms that experienced an increase in their borrowing from non-bank financial corporations for each year from 2009 to 2011. It shows that the large firms tend to increase their borrowing from non-bank financial corporations, which is different from the conventional wisdom.

In the following we try to understand the behavior of non-bank financial corporations during the recent crisis. We use firm-level data that contains information on their borrowing from non-bank financial corporations along with other firm-level characteristics to examine what factors played a significant role in the provision of loans to large firms by non-bank financial corporations. The empirical results suggest that large firms are more likely to access non-bank financial corporations than small firms. It also shows that small and medium-sized firms move to non-bank financial corporations for loans, meaning that loans from non-bank financial corporations substitute for loans from commercial and specialized banks as in the conventional wisdom.

<Table 4> Percentage of firms with increases in borrowing from non-bank financial corporations

	Large	SMEs
2009	16.48	10.91
2010	15.79	10.49
2011	16.85	11.14

3. Determinants of Non-Bank Borrowing

3.1 Baseline Empirical Analysis

In the following empirical analysis, we examine factors that can account for changes (increases) in borrowing from

the non-bank financial corporations during the period, and we only consider firms that are active. We define the dependent variable as a dummy variable that is denoted 1 if a firm has experienced an overall increase in borrowing and their borrowing from non-bank financial corporations is greater than from commercial and specialized banks. To put it simply, we define the dependent variable as 1 if they raise more funds from non-bank financial corporations.

For independent variables, we include firm size, which is defined as the log of total assets of a firm. The coefficient on size is positive if non-bank financial corporations tend to provide more credit to large firms or as firm size increases. The leverage ratio, which is total debt to total assets, is also considered, and this ratio can be interpreted as a measure of a firm's operation risk (Yin Liu, 2017). The firm's profitability is also an important factor in determining whether a bank lends to the firm, so we also include it in the analysis.

We test whether firm size and other firm-level characteristics are significant factors in deciding firm's borrowing from non-bank financial corporations. Using panel data from 2008 to 2011, we estimate the following regression:

$$D(NBF)_{i,t} = \alpha_0 + \alpha_1 \cdot Firm\ Size_{i,t} + \alpha_2 \cdot Leverage_{i,t} + \alpha_3 \cdot Profit_{i,t} + \epsilon_{i,t} \quad (1)$$

Where $D(NBF)_{i,t}$ is a dummy variable that has value 1 if a firm's borrowing from depository institutions is greater than 0 and its borrowing from non-bank financial corporations is greater than borrowing from commercial and specialized banks. The subscript i denotes firm and t represents year.

Before proceeding to the empirical analysis, we summarize some statistics for independent variables by firm size. <Table 5> and <Table 6> show some summary statistics of variables that are used for empirical analysis.

<Table 5> Summary Statistics for Large Firms

Variable	Obs	Mean	Std. Dev.	Min	Max
Firm size	6,408	18.63709	1.422775	2.371915	23
Leverage	6,405	77596.24	4391881	0.00079	254,000,000
Profit	5,024	-3.07558	1.226937	-10.4973	19
Collateral Value	6,383	113979.2	6438705	9.93E-07	366,000,000
Growth in total borrowing	4,663	10.09811	169.3436	-1	7,022
- the commercial and specialized banks	4,495	11.34725	182.0523	-1	7,006
- the non-bank financial corporations	3,425	38.46034	505.5396	-1	15,854

<Table 6> Summary Statistics for SMEs

Variable	Obs	Mean	Std. Dev.	Min	Max
Firm size	193,538	14.48397	1.498265	0	21
Leverage	193,135	0.644725	0.496764	-0.36813	105
Profit	176,604	-2.89716	1.131171	-14.2365	5
Collateral Value	192,365	0.374826	0.259815	-4.02041	2
Growth in total borrowing	135,786	3.183048	91.0179	-1	22,375
- the commercial and specialized banks	133,435	4.464054	148.9292	-1	45,809
- the non-bank financial corporations	78,733	4.1023	171.2142	-1	38,625

<Table 7> shows preliminary results. The results indicate that large firms are more likely to conduct more borrowing from non-bank financial corporations. The first column shows the results including the whole sample. The second and third column show the results based on large and small and medium-sized firms, respectively. Firm size appears to be a significant factor among different samples, indicating that it matters even among small and medium-sized firms in explaining their borrowing from non-bank financial corporations. When we look at the third column, it shows that the coefficient on leverage appears to be positive and statistically significant. This means that firms with a high level of debt or high risks tend to obtain loans from non-bank financial corporations, as in the conventional wisdom.

The results in <Table 7> suggest that firms that have high risk tend to borrow more from non-bank financial corporations. This raises a question about whether those firms borrow more from non-bank financial corporations since the commercial and specialized banks during the recent global financial crisis. In other words, those firms access non-bank financial corporations to substitute for their borrowing from commercial and specialized banks. However, it is challenging to identify this based on financial statements and other information given the availability of the data. One possible way to resolve this issue is to use the loan growth from commercial and specialized banks. If a firm increases its borrowing from non-bank financial corporations as commercial and specialized banks are reluctant to lend more, the coefficient on the loan growth from the commercial and specialized banks would appear as negative, which reflects the substitution effect between those two sources of lending. Otherwise, the coefficient may be positive, which suggests that the increase in borrowing from non-bank financial corporations simply indicates that a firm requires more capital for its operation.

<Table 7> Determinants of Non-Bank Borrowing I

	(1)	(2)	(3)
Firm size	0.04***	0.07**	0.04***
	(0.00)	(0.03)	(0.00)
Leverage	0.00	0.00	0.01**
	(0.00)	(0.00)	(0.00)
Firm Profit	0.00	0.00	0.00
	(0.00)	(0.01)	(0.00)
Constant	-0.53***	-1.09*	-0.53***
	-0.05	-0.6	-0.05
N	134,970	3,842	131,128

We also consider other possible factors that might play a significant role in determining firms' borrowing from banks or financial institutions, which is collateral value. Typically, banks require more collateral for small and medium-sized firms (Blazy Weill, 2013), and we examine whether high collateral value helps a firm to borrow more from non-banks. Including both factors—loan growth rate from commercial and specialized banks and collateral value—we estimate the following:

$$D(NBF)_{i,t} = \alpha_0 + \alpha_1 \cdot Firm\ Size_{i,t} + \alpha_2 \cdot Leverage_{i,t} + \alpha_3 \cdot Profit_{i,t} + \alpha_4 \cdot Collateral_{i,t} + \alpha_4 \cdot CBS\ Loan\ Growth_{i,t} + \epsilon_{i,t} \quad (2)$$

where $Collateral_{i,t}$ is measured as the ratio of tangible assets to total assets and $CBS\ Loan\ Growth_{i,t}$ is the growth rate of borrowing from commercial and special-ized banks. We estimate the above equation using a fixed-effect model to capture unobserved heterogeneity across firms that is fixed over time.

<Table 8> shows the results based on equation (2). As in <Table 7>, the first column shows the results based on the whole sample, the second column represents the results for large firms and the last column only considers small and medium-sized firms. The coefficients on size are the same as before, which indicates that larger firms seem to have more access to non-bank borrowing. What seems to be puzzling is that collateral value does not play any significant role in non-bank borrowing, even for small and medium-sized firms. What is notable in <Table 8> is that the coefficient on loan growth from commercial and specialized banks turns out to be negative and significant for small and medium-sized firms. This result implies that firms that are able to borrow funds from commercial and specialized banks do not borrow or increase their borrowing from non-bank financial corporations. This reaffirms the

conventional wisdom that firms that are financially constrained move to non-bank financial corporations, especially SMEs.

<Table 8> Determinants of Non-Bank Borrowing II

	(1)	(2)	(3)
Firm size	0.04***	0.07**	0.04***
	(0.00)	(0.03)	(0.00)
Leverage	0.00	0.00	0.02***
	(0.00)	(0.00)	(0.00)
Firm Profit	-0.00**	-0.01	-0.00*
	(0.00)	(0.01)	(0.00)
Δ Collateral	0.00	0.00	0.02
	(0.00)	(0.00)	(0.01)
CBSLoanGrowth	-0.00***	0.00	-0.00***
	(0.00)	(0.00)	(0.00)
Constant	-0.55***	-1.22*	-0.55***
	(0.06)	(0.65)	(0.06)
N	124,011	3,575	120,436

The empirical analysis examined whether firm-level characteristics are significant factors in deciding whether a firm borrows from non-bank financial corporations. Based on the empirical analysis, we investigate if changes in firm-level characteristics also play an important role in determining a firm's borrowing from non-bank financial corporations. Specifically, we estimate the following:

$$D(NBF)_{i,t} = \alpha_0 + \alpha_1 \cdot \Delta Firm\ Size_{i,t} + \alpha_2 \cdot Leverage_{i,t} + \alpha_3 \cdot Profit_{i,t} + \alpha_4 \cdot Collateral_{i,t} + \epsilon_{i,t} \quad (3)$$

Similar to the previous empirical analysis, equation (3) estimates whether changes in firm size, leverage, profit and collateral value contribute to borrowing more from non-bank financial corporations.

<Table 9> shows the results based on equation (3). The first column shows the results based on the whole sample, and the results are quite consistent with the previous ones. Overall, it is likely for firms to increase borrowing more from non-bank financial corporations as their size increases, and this re-affirms the previous results. The second and third column show results based on large firms and small and medium-sized firms, and we can also see that firms tend to borrow more from non-bank financial corporations as their size grows. It is noteworthy that the coefficient on collateral becomes significant throughout the first and the third columns, which is different from the previous empirical results, meaning that collateral does not help firms to borrow more funds from non-bank financial corporations.

<Table 9> Changes in Firm-Level Characteristics and Non-Bank Borrowing

	(1)	(2)	(3)
ΔFirm size	0.01***	0.16***	0.01***
	(0.00)	(0.04)	(0.00)
ΔLeverage	0.00**	0.00**	0.01**
	(0.00)	(0.00)	(0.00)
ΔFirm Profit	-0.00***	-0.01*	-0.00***
	(0.00)	(0.01)	(0.00)
ΔCollateral	-0.00**	-0.00*	-0.01
	(0.00)	(0.00)	(0.01)
Constant	0.11***	0.14***	0.11***
	(0.00)	(0.01)	(0.00)
N	126,124	3,290	122,834

The baseline empirical analysis shows that large firms are more likely to do more borrowing from non-bank financial corporations as their size increases and firms with high profit or experiencing profit growth depend less on borrowing from non-bank financial corporations.

3.2 Robustness Check

The empirical results in the previous section suggest that firm size is a significant factor determining borrowing from non-bank financial corporations by firms. We perform an additional empirical analysis to confirm the findings from the previous analysis. Different from the previous analysis, we estimate equation (3) using pooled regression and reexamine the results since the estimator can be inconsistent in short panels.

<Table 10> shows the results based on pooled regression, similar to the previous results. The first column shows the results based on the whole sample, the second, large firms, and the last column, small and medium-sized firms. Compared to <Table 9>, the coefficient on changes in firm size appears to be positive and statistically significant, which confirms the previous findings. Similarly, changes in profit do not contribute to an increase in borrowing from non-bank financial corporations by firms. Contrary to the previous results in <Table 9>, changes in leverage and in collateral become insignificant. The results consistently suggest that larger firms are likely to borrow more funds from non-bank financial corporations.

<Table 10> Changes in Firm-Level Characteristics and Non-Bank Borrowing based on Pooled Regression

	(1)	(2)	(3)
ΔFirm size	0.02***	0.15***	0.02***
	(0.00)	(0.03)	(0.00)
ΔLeverage	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
ΔFirm Profit	-0.00***	-0.01	-0.00***
	(0.00)	(0.01)	(0.00)
ΔCollateral	(0.00)	(0.00)	-0.03***
	0.00	0.00	(0.01)
Constant	0.11***	0.15***	0.11***
	(0.00)	(0.01)	(0.00)
N	126,124	3,290	122,834

So far, the empirical analysis has focused on the firm-level characteristics that may contribute to borrowing from non-bank financial corporations by firms. Next, we try to identify factors that make firms increase their borrowing from non-bank financial corporations. The empirical results indicate that large firms and less-profitable firms tend to raise funding more from non-bank financial corporations than from commercial and specialized banks. Now, we turn our attention to the question of whether those factors play a significant role in the growth rate of borrowing from non-banks by firms. Instead of using the dummy variable, which is defined as 1 if the growth of borrowing from non-banks by a firm is greater than the growth of borrowing from commercial and specialized banks, we use the non-bank growth rate as a dependent variable. We estimate equation (3) using the new dependent variable including year fixed effects model.

<Table 11> shows the results for the determinants of loan growth from non-banks. The results suggest that borrowing by firms indeed increases with firm size, similar to the previous results, and this holds true across different samples. For instance, the second column, which shows the results based on large firms and the third column, which includes only small and medium-sized firms, indicate that the coefficient on changes in firm size or growth in firm size appears to be positive and statistically significant. And it is also noteworthy that other factors such as profit growth and changes in collateral and leverage seem to be insignificant in deciding changes in borrowing from non-bank financial corporations by firms.

<Table 11> Determinants of Loan Growth

	(1)	(2)	(3)
ΔFirm size	8.63**	8.63**	8.63**
	(4.00)	(4.00)	(4.00)
ΔLeverage	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
ΔFirm Profit	-0.67	-0.67	-0.67
	(1.01)	(1.01)	(1.01)
ΔCollateral	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Constant	4.55***	4.55***	4.55***
	(1.68)	(1.68)	(1.68)
N	68,349	68,349	68,349

Different empirical analyses imply that firm size is a significant factor in borrowing from non-bank financial corporations. The first analysis set was done based on the question, What factors help firms increase their borrowing from non-bank financial corporations? The results show that large firms and less-profitable firms tend to do more borrowing from non-banks. The second set of results show that the growth of borrowing from non-banks depends on firm size rather than other firm-level characteristics. The evidence helps explain how firm-level characteristics are related to their borrowing from non-banks. The results suggest that large firms are likely to borrow more from non-banks, and borrowing from non-banks also increases with firm size.

Lastly, we implement additional empirical analysis to check whether there are any other firm-level characteristics such as age, dependence on external financing, growth in total borrowing, etc. It considers firm age as it is related to reputation, and we also include a firm's dependence on borrowing that is defined as total borrowings and bonds payable to total assets to check whether firms that depend heavily on external borrowing tend to borrow more from non-banks.

<Table 12> presents the results based on new explanatory variables and entire sample with year fixed effects. Again, the dependent variable is the growth rate of borrowing from non-banks. It shows that firm size is still significantly important in determining borrowing from non-banks. We can also see that firm age appears to be more statistically significant than firm size across all different specifications, meaning firms with a longer history can borrow more funds from non-banks than new or young firms. And it also implies that firms that have higher loan growth also exhibit a higher growth rate of borrowing from non-banks. The results might reflect the fact that those firms have high demand for loans or external borrowing, and it can also mean that those firms are declined by commercial and specialized banks, which leads them to borrow from

non-banks.

<Table 12> Determinants of Borrowing from Non-bank Financial Corporations

	(1)	(2)	(3)	(4)	(5)
ΔFirm size	7.94***	7.70***	8.00***	7.95**	8.89**
	(2.75)	(2.85)	(2.85)	(3.71)	(3.91)
ΔLeverage	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
ΔFirm Profit	-0.8	-0.89	-0.95	-1.55	-1.63
	(0.79)	(0.81)	(0.81)	(1.05)	(1.08)
ΔCollateral	-0.00	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Firm Age	5.64***	5.72***	5.85***	5.45***	5.50***
	(1.24)	(1.29)	(1.29)	(1.71)	(1.78)
Dependency		-0.03			
		(0.03)			
ΔDependency			-0.00		
			(0.04)		
ΔGrowth in Total				0.07***	
				(0.01)	
ΔCBSLoanGrowth					-0.00
					(0.00)
Constant	-9.12***	-8.25**	-9.70***	-9.11**	-9.49**
	(3.06)	(3.59)	(3.18)	(4.26)	(4.44)
N	68,347	7,030	66,967	46,450	44,892

We try to identify factors that might explain borrowing from non-bank financial corporations using firm-level data. The results show throughout all different empirical analyses that firm size may be a significant factor in deciding a firm's borrowing and the growth of their borrowing from non-bank financial corporations. This means that small and medium-sized firms have relatively limited access to financing via non-bank financial corporations, implying that loans from non-bank financial corporations cannot be considered as a substitute for borrowing from the other financial institutions.

Additional empirical analysis also indicates that a firm's age has a positive impact on the increase in borrowing from non-bank financial corporations and it also shows that firms that show a higher increase in total borrowing from all financial institutions may also increase their borrowing from non-bank financial corporations.

4. Conclusion

This paper tries to provide some empirical evidence on how firms access non-bank financial institutions for their

external financing based on firm-level data from 2008 to 2011. The empirical results suggest that large firms are more likely to access non-bank financial corporations than small and medium-sized firms. And small and medium-sized firms increase borrowing from non-bank financial corporations as they face borrowing limits from commercial and specialized banks, confirming the conventional wisdom.

These empirical findings suggest that non-bank depository institutions are not a sub-stitute for bank lending to firms. More specifically, they can replace bank lending to firms mostly for large firms rather than small and medium-sized firms. The findings from empirical analysis suggest that small and medium-sized firms experienced a contraction in lending from all financial institutions during the recent financial crisis.

The results of empirical analysis suggest that small and medium-sized firms might suffer from a lack of available lending by all types of financial institutions, which implies that this could result in a severe contraction in their economic activities. This also raise concerns for policy makers on how to design or reform policies to help those firms access external finances during times of crisis to mitigate any shocks to the economy.

This paper contributes to the existing literature by providing empirical evidence that determines firms' access to financing via non-bank financial corporations. Given the lack of availability of data, it is difficult to identify the exact supply factors for non-bank depository institutions. Future research should try to clarify these issues to make the empirical analysis more robust.

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