

# 企業持有銀行股權對銀行貸款的 益處：來自全球金融風暴的實證

## The Benefits of Firms Holding Bank Shares on Bank Loans: Evidence from the Global Financial Crisis

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## 摘要

本研究利用2005年到2010年台灣公司的銀行貸款合約資料，探討在金融危機間，非金融業公司能否透過持有銀行股份與放貸銀行建立關係連結，進而替公司從銀行融資上獲得優惠。研究結果顯示透過持有股權與銀行建立連結的公司相較於無此關係連結的公司，能獲得約125%的貸款額度；即使關係連結公司的違約風險較高，這些公司仍舊可獲得低於類似條件卻無關係連結公司約28.28個基點的貸款利率優惠。我們的研究結果顯示透過持有銀行股份與放貸銀行建立關係連結確實能為公司帶來好處。

**關鍵詞：**銀行貸款、持有銀行股權、金融危機、關係人放貸

## Abstract

This study investigates whether firms that build connections via holding bank shares can benefit their bank loan contracts during the global financial crisis. The analysis is based on data from Taiwan (2005 to 2010). Empirical results show that the loan size of connected firms is approximately 1.25 times larger than that of firms without such connections. Connected firms can obtain 28.28 basis points lower loan rate as well, and can benefit from bank loans even if they present high default risks. Our findings provide not only support for benefits derived from relationship lending for firms but also an explanation why firms hold bank shares.

**Keywords:** Bank Loans, Holding Bank Shares, Financial Crisis, Relationship Lending

# 1. INTRODUCTION

The role of relationship lending has a profound effect on bank financing, especially in developing countries (e.g., Khwaja & Mian, 2005; Claessens et al., 2008). To obtain preferential access to finance, some firms develop relationships via multiple channels, such as social networks (Haselmann et al., 2014; Yen et al., 2014), political connections (Khwaja & Mian, 2005; Claessens et al., 2008; Li et al., 2008; Chen et al., 2014; Houston et al., 2014) and related lending (Laeven, 2001; La Porta et al., 2003; Maurer & Haber, 2007; Lu et al., 2012). Particularly, Claessens et al. (2008) and Chen et al. (2014) reveal that politically connected firms can obtain preferential treatment in bank financing,<sup>1</sup> whereas Haselmann et al. (2014) and Yen et al. (2014) indicate that the social networks of CEOs can translate into favorable bank loans for their firms.<sup>2</sup>

In addition to social networks and the political connections, bank insiders also utilize the ability to affect banks to issue loans. Such lending is called “related lending” or “insider lending”. Laeven (2001) and Lu et al. (2012) show the bank shareholders can impact the decision-making process for lending<sup>3</sup>. Utilize the data of Mexico, La Porta et al. (2003) and Maurer & Haber (2007) find that banks tend to lend related firms<sup>4</sup>. Lu et al. (2012) argue that in china, non-state-owned firms have a higher propensity to hold bank ownership because non-state-owned firms

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<sup>1</sup> Claessens et al. (2008) find that firms that contribute to (elected) federal deputies substantially increase their bank financing during the four years following an election. Chen et al. (2014) note that connected firms obtain a lower loan rate from government-owned banks during an election year than non-election years.

<sup>2</sup> Haselmann et al. (2014) utilize a dataset of members of 211 social clubs in Germany to investigate how social connections between banks and firms affect the allocation of credit. Yen et al. (2014) investigate the potential benefits provided by the directorship of CEOs in trade associations.

<sup>3</sup> Laeven (2001) derive a model of insider lending exhibit that bank manager have incentives to lend loans to bank shareholder because bank shareholders have the power to fire the bank manager. Lu et al. (2012) holding more than 5% bank ownerships are entitled to assign deputies to the bank's board of directors. The deputies can impact the lending decision process and thus benefit the shareholder.

<sup>4</sup> La Porta et al. (2003) find that related lending have a large fraction of the bank loan and takes advantage of better loan terms than arm's-length lending. Maurer & Haber (2007) show that related lending allowed banks to overcome the information asymmetry about borrowers.

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are more likely to bear with bank discrimination for lack of political connections. Therefore, firms have a motivation to build relationships with banks because the connections bring about an advantage of treatment in loan contracts.

This paper presents an additional perspective to the literature on relationship lending by focusing on individual firms holding lenders' shares. Firms are classified as "share-connected firms" if they once held bank shares, or "dual-connected firms" if they both once held bank shares and had lender-borrower relationships with financial intermediaries. Looking at a sample of bank loans in Taiwan, we empirically study whether the connection relationship between firms and financial intermediaries through the channel of the former entity holding bank shares brings benefits in corporate financing.

In particular, the global financial crisis represents an exogenous shock that has a negative effect on all individual banks, and results in the systematic decrease in bank loan supply. For example, using the bank loans from the Dealscan database, Ivashina & Scharfstein (2010) report that new lending in 2008 was significantly lower than in 2007, and new loans granted to large borrowers fell by 47% during the crisis.<sup>5</sup> They also suggest that some banks may have adequate capital to extend loans, but are unwilling to extend credit to firms that do not have prior bank-borrower relationship. Using a unique data set of German savings banks in Germany during the period 2006 to 2008, Puri et al. (2011) find that banks affected by the crisis reject substantially more loan applications than unaffected banks. They also find that bank-borrower relationships can mitigate these supply side effects. Therefore, the global financial crisis provides a superior opportunity to examine whether the holding of bank shares of firms will benefit bank financing under poor macroeconomic condition.

We require detailed individual loan contracts and information of bank shareholders to investigate this issue. This high data requirement is one of the motives for selecting Taiwanese firms as our sample. Taiwan provides unique and reliable loan transaction data because the Financial Supervisory Commission

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<sup>5</sup> Similarly, Chava & Purnanandam (2011) find that banks affected by the crisis decreased the quantity of their lending and increased loan interest rates during the post-crisis period significantly more than the unaffected banks during the Russian crisis.

(official authority) requires all listed companies to provide worksheets on loan contracts with annual official financial reports. We collect these worksheets as basis for a comprehensive analysis on bank loan contracts from all listed companies, and therefore, we avoid possible sample selection bias encountered by previous studies.<sup>6</sup> Although our study is Taiwan-specific, the result may provide a reference for other countries whose corporate finances similarly depend on the banking systems. We further obtain bank shareholder data from the Bankscope database and Taiwan Economic Journal (TEJ), the economic data bank, to provide detailed corporate information on ownership structures in Taiwan.

Our empirical results verify the benefits of relationship lending during the 2008 financial crisis because, intuitively, firms generally have difficulty in obtaining finance from banks under poor macroeconomic conditions. We find that those firms owning bank shares are generally charged a lower loan rate, and granted a larger loan size than firms that do not own bank shares. On average, the loan rate of (dual) share-connected firms is (17.31) 28.28 basis points lower than that of non-connected firms, and the loan size of (dual) share-connected firms is (36.64%) 25.11% larger than that of non-connected firms. In addition, the collateral requirements for dual connected firms are approximately 17.91% lower than that for non-connected firms. Hence, evidence shows that the relationship between firms and banks still leads to superior financing for firms during financial crisis. Our next step is to understand whether this kind of relationship helps risky firms obtain preferential access to finance. Graham et al. (2008) and Chava et al. (2009) argue that banks usually offer higher interest rates or stringent collateral requirements to risky firms. We find that dual-connected firms with high leverage enjoy a lower loan rate and larger loan size than non-connected firms.

The contribution of this study can be summarized in two aspects. First, unlike the channels of relationship lending documented in previous studies (Claessens et al., 2008; Chen et al., 2014; Haselmann et al., 2014; Houston et al., 2014; Yen et al., 2014), we investigate the role of the connection between lenders and borrowers via bank shares on bank financing. The results support the benefits on bank

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<sup>6</sup> In prior studies, most bank loan data came from specific banks or bank loan structures during specific periods.

financing with regard to such a relationship. In line with Lu et al. (2012) finding, our empirical results demonstrate that holding bank ownership have lower loans rate and more likely to obtain short-term loans. Moreover, even if macroeconomic conditions are poor or firms have a relatively high default risk,<sup>7</sup> the relationship between firms owning bank shares and banks helps the former to obtain preferential access to bank financing.

Second, this paper connects its findings to those in the literature on bank lending during the global financial crisis (Ivashina & Scharfstein, 2010; Chava & Purnanandam, 2011; Puri et al., 2011; Acharya & Naqvi, 2012). Although these studies show a substantial decline in loan supply during the crisis periods, less attention has been given to the bank shares of firms on bank financing. During the crisis period, we find that firms owning bank shares are generally charged a lower loan rate and granted a larger loan size. These findings are consistent with the results of Ivashina & Scharfstein (2010) and Puri et al. (2011) who suggest that the bank-borrower relationship of firms can benefit their bank financing during the crisis period.

The rest of this paper is organized as follows. Section 2 describes the hypothesis development. Section 3 presents the sample construction and summary statistics based on data from Taiwan. Section 4 presents the empirical results. Section 5 draws conclusions.

## **2. HYPOTHESIS DEVELOPMENT**

One strand of the literature on bank loans, which have gradually become the main source of external funding in financial markets,<sup>8</sup> focuses on relationship

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<sup>7</sup> Strahan (1999), Graham et al. (2008), and Chava et al. (2009) argue that firms with a high default risk will be charged higher loan rates.

<sup>8</sup> Graham et al. (2008) report that bank loans are widely used in corporate financing around the world. In 2008, new capital raised in the bank loan market hit US\$10 billion for Taiwan companies - triple the total amount of corporate bond issuances.

lending. For example, Degryse & Cayseele (2000) utilize European small business data to find that the price of bank loans increases with the duration of the lender-borrower relationship. They also show that the scope of such a relationship, defined as whether this firm also buys other informational services from the bank and executes most of its payments via the bank, substantially decreases the interest rate the firm gets.<sup>9</sup> In addition to the duration of the relationship, Houston & James (2001) and Farinha & Santos (2002) investigate the role of the number of correspondent banks for individual firms.<sup>10</sup>

The literature presents the channels of the lender-borrower relationship in at least three different ways. First, Li et al. (2008) study the channel connecting private firms' managers who are affiliated in the ruling Communist Party and who have built political connections, while Claessens et al. (2008) focus on campaign contributions to define political connections. Second, Haselmann et al. (2014) and Yen et al. (2014) employ the social networks of CEOs as a channel to acquire preferential treatment in bank loans. Third, La Porta et al. (2003) and Lu et al. (2012) utilize bank shareholder data investigate the benefits of related lending for firms.

We contribute to the literature of relationship lending by studying whether firms that once held bank shares can be viewed as having a special type of relationship lending. More specifically, we hypothesize that firms choosing to develop a relationship with lenders via purchasing lenders' common shares will benefit from better loan contract terms, such as loan size, loan period, and collateral or not collateral loans. Note that several contract terms used in this paper are meaningful, because recent studies (Degryse & Cayseele, 2000; Coleman et al., 2006; Graham et al., 2008) suggest that interest rate and non-interest rate terms are correlated with borrowers' characteristics. In other words, beyond loan rates, other non-rate loan contract terms are also costly to borrowers. For instance, though

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<sup>9</sup> Similar discussions can be found in Ongena & Smith (2000, 2001).

<sup>10</sup> Houston & James (2001) find that single correspondent bank firms do not face higher costs of borrowing, and their results suggest that a close banking relationship lowers the cost of borrowing. However, Farinha & Santos (2002) argue that a firm substituting a single correspondent bank relationship with multiple relationships sees an increase in its borrowing costs with more growth opportunities or poor performance.

borrowers might be subject to low interest rates, they may be asked for more collateral or be charged more covenant restrictions. Hence, we propose the following two hypotheses.

**Hypothesis 1:** Firms that once held bank shares can obtain benefits in bank financing.

Strahan (1999) presents that both rate and non-rate terms are unfavorable for high-leverage firms. In fact, prior studies (Graham et al., 2008; Chava et al., 2009) suggest that high default risk firms suffer higher interest rates and more stringent collateral restrictions. Since these findings indicate that firm survival should be taken into account for lenders, it would be interesting to explore the role of firms, which once held bank shares, in bank loans regarding default risk. Therefore, we propose the second null hypothesis as follows.

**Hypothesis 2:** Risky firms that once held bank shares acquire favoritism in bank loans.

### 3. DATA DESCRIPTION

We include non-financial firms listed in the Taiwan Stock Exchange (TWSE) between 2005 and 2010 into this study to match bank shareholder data that come from the Bankscope database and TEJ. All non-financial firms are divided into three groups: (1) Share connected firms; (2) Dual connected firms; (3) Non-connected firms. A share connected firm is a firm that holds bank shares, but has no lending relationship with the bank, whereas a dual connected firm represents a firm that not only holds bank shares, but also has built a lending relationship with a bank.

With regard to individual bank loans, we have detailed contract records, such

as loan rates, loan size, loan periods, and collaterals, from the TEJ database.<sup>11</sup> The complete dataset helps us to study whether firms having bank shares can obtain benefits on bank loan contract terms. Firm characteristic variables, including total assets, leverage, Tobin's q (Q), tangibility, profitability, and Z-score, are also obtained from the TEJ database. We exclude those observations with missing loan contract terms or firm characteristics, leading to 14,340 firm-year observations. For clarity, we summarize the detailed definition of each variable in Table 1.

Panel A of Table 2 presents descriptive statistics of bank loan contracts, while the average of a bank relation variable is reported in Panel B of Table 2. In Panel A, the means of the loan interest rate (Loan Rate), the loan size (Loan Size), the loan period (Loan Period), and the dummy variable of secured loan (Collateral) are 1.2128, 4.0555, 5.8053, and 0.4638, respectively. In Panel B, the numbers of share connected and dual connected firms are 457 (3.19%) and 215 (1.50%), respectively. In Panel C, we include firm-level variables used in the studies of Fan & Wong (2002), Yeh & Woitdtk (2005), Almeida & Campello (2007), and Graham et al. (2008). The averages of LnAssets, Leverage, Tobin's Q, Tangibility, Profitability, Z-SCORE, and fixed rate loan dummy are 16.1866, 0.5404, 1.2771, 0.3409, 0.0208, 1.0539, and 0.6694, respectively.

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<sup>11</sup> As requested by the Securities and Futures Bureau (SFB) of Taiwan, companies with assets of more than NTS200 million have to regularly report their accounting statements, which contain balance sheets and income statements. Therefore, detailed bank loans are available in Taiwan.

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**Table 1** Variable definitions

Variable	Definition	Source
<i>Panel A: Dependent variable: Loan contract term</i>		
Loan Rate	Loan rate minus the risk-free rate at the time of the loan origination.	TEJ_bank
Loan Size	Natural logarithm of loan size (in thousand NT dollars).	TEJ_bank
Loan Period	Natural logarithm of loan period (in number of days).	TEJ_bank
Collateral	A dummy variable that equals 1 for assets as collateral and zero otherwise.	TEJ_bank
<i>Panel B: Bank relationship measure</i>		
Share Connected Firm: $D_{scf}$	A dummy variable that equals 1 for a company that once held bank shares and zero otherwise.	Bankscope, TEJ, and by us
Dual Connected Firm: $D_{dcf}$	A dummy variable that equals 1 for a company that once held bank shares plus had lending relationships and zero otherwise.	Bankscope, TEJ, and by us
<i>Panel C: Firm and loan characteristic variables</i>		
LnAsset	Natural log of total assets adjusted by 2006 New Taiwan Dollar (NTD) value.	TEJ
Leverage	Total debts comprising long-term debt and short-term debt over total assets.	TEJ
Tobin's Q	Ratio of market value of the firm over total assets.	TEJ
Tangibility	Property, plant, and equipment plus inventories over total assets.	TEJ
Profitability	Net income over total sales.	TEJ
Z-SCORE	Z-score is the modified Altman's (1968) Z-score that equals $(1.2\text{Working capital} + 1.4\text{Retained earnings} + 3.3\text{EBIT} + 0.999\text{Sales}) / \text{Total assets}$ .	TEJ
$D_{Fix}$	A dummy variable that equals 1 for fixed rate loan and zero otherwise.	TEJ_bank

Notes:

1. TEJ = Taiwan Economic Journal. TEJ\_bank = TEJ bank-loan database.
2. By us: the data contain detailed firm-level bank shares for each public firm in Taiwan. The data are hand-collected and the variables are constructed by the authors.

**Table 2** Descriptive statistics of variables

This table presents summary statistics of connected firms and bank-loan contracts. The loan-level data are based on the TEJ bank-loan database that records detailed information for each bank-loan contract made in Taiwan. The sample includes 14,340 firm-year observations from 2005 to 2010. For the definitions of all variables, see Table 1.

Variable	Mean	Median	S.D.
<i>Panel A: Dependent variable: Loan contract term</i>			
Loan Rate	1.2128	0.8663	1.1149
Loan Size	4.0555	4.0943	1.5847
Loan Period	5.8053	5.8999	1.0843
Collateral	0.4638	0.0000	0.4987
<i>Panel B: Bank relationship measure</i>			
Share Connected Firm: $D_{scf}$	0.0319	0.0000	0.2260
Dual Connected Firm: $D_{dcf}$	0.0150	0.0000	0.1321
<i>Panel C: Firm and loan characteristic variables</i>			
LnAsset	16.1866	16.01	1.2505
Leverage	0.5404	0.5409	0.1356
Tobin's Q	1.2771	1.0200	0.874
Tangibility	0.3409	0.3347	0.1835
Profitability	0.0208	0.0239	0.0613
Z-SCORE	1.0539	0.9598	0.7521
$D_{Fix}$	0.6694	1.0000	0.4704

Data source: this research

We provide the correlation-coefficient matrix of the variables in Table 3. It is clear from the table that the correlations between all variables are relatively small, making multicollinearity less of a concern. Moreover, we find a significantly negative correlation between Loan Rate and the variable of the firm with a bank relation no matter which measure (share connected or dual connected firms) is used. It likely suggests that firms with bank shares tend to acquire lower bank loan rates and do not have to provide collaterals. We also observe that LnAsset is positively correlated with bank connection, which suggests that large firms tend to build connections with banks.

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**Table 3** Correlation matrix

This table presents the correlation-coefficient matrix of the variables. The sample includes 14,340 firm-year observations from 2005-2010. Definitions for all variables are in Table 1. Superscripts \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively.

	$D_{def}$	$D_{scf}$	Loan Rate	Loan Size	Loan Period	Collateral	LnAsset	Leverage	Tobin's Q	Tangibility	Profitability	Z-SCORE	$D_{fix}$
$D_{def}$	1												
$D_{scf}$	0.581**	1											
Loan Rate	-0.056**	-0.081**	1										
Loan Size	0.060**	0.103**	-0.273**	1									
Loan Period	-0.016	-0.013	-0.024*	0.278**	1								
Collateral	-0.034**	-0.032**	0.061**	0.079**	0.196**	1							
LnAsset	0.078**	0.172**	-0.112**	0.441**	0.146**	-0.100**	1						
Leverage	-0.035**	-0.019*	0.090**	0.142**	0.065**	0.100**	0.194**	1					
Tobin's Q	-0.055**	-0.092**	-0.026**	0.033**	0.119**	0.037**	-0.132**	-0.044**	1				
Tangibility	0.032**	0.031**	-0.036**	-0.016	0.016	0.034**	0.022*	-0.183**	-0.052**	1			
Profitability	-0.008	-0.004	-0.066**	0.045**	0.097**	-0.059**	0.117**	-0.169**	0.349**	-0.206**	1		
Z-SCORE	-0.008	-0.011	0.032**	-0.023*	-0.034**	-0.208**	0.002	-0.166**	0.153**	-0.206**	0.570**	1	
$D_{fix}$	-0.001	-0.015	-0.146**	-0.045**	-0.047**	0.041**	-0.036**	0.074**	0.030**	0.052**	0.004	-0.067**	1

Data source: this research

## 4. EMPIRICAL RESULTS

### 4.1 Validating the Bank Relationship Effect

Due to the 2008 financial crisis, companies may have encountered difficulty borrowing money from banks, and so we investigate whether connected firms can have better loan contracts compared to non-connected companies. Focusing on four loan contract terms - namely, Loan Rate, Loan Size, Loan Period, and Collaterals of the bank relationship measure in Tables 4 and 5 - we compute the differences of loan contract terms between the group of connected firms and that of non-connected firms. If we observe the existence of a significant difference, then it justifies a bank ownership effect.

In Panel A of Table 4, the year-by-year differences regarding the loan rate between share connected and non-connected firm are significantly negative except in 2006, while the differences of loan size are significantly positive in Panel B. The evidence indicates that, compared to non-connected firms, share connected firms likely benefit not only from a higher loan size, but also a lower loan rate, supporting the advantage of firms with bank shares over non-connected firms. Turning to loan period in Panel C, we find that the benefits of share connected firms are generally insignificant. One possible explanation for this result is that long-term contracts may not be the first priority for a company. Finally, while we focus on collaterals in Panel D, it is clear that the year-by-year differences are all negative (ranging from -0.075 to -0.116), although some are not statistically significant. The results generally provide support for the advantage of firms holding bank shares, because share connected firms likely can get lower collaterals.

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**Table 4** Descriptive statistics' comparison by year: Share connected firm

This table's sample includes 14,125 firm-year observations from 2005 to 2010. The observations of dual connected firms are excluded. For definitions of all variables, see Table 1. Difference is mean difference between share connected firm and non-connected firm. Superscripts \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively.

	2005	2006	2007	2008	2009	2010
<b>Panel A: Loan Rate</b>						
Share Connected Firm	1.2942	1.9541	0.7696	0.6319	0.7123	0.4991
Non-Connected Firm	1.5979	1.7920	1.2511	0.7533	1.0434	0.7835
Difference	-0.3037*	0.1621	-0.4815***	-0.1214**	-0.3310***	-0.2844***
T-value	(-1.81)	(0.79)	(-6.73)	(-2.15)	(-4.59)	(-4.60)
<b>Panel B: Loan Size</b>						
Share Connected Firm	4.6775	4.1275	4.8349	4.5145	5.2156	4.8678
Non-Connected Firm	3.8924	3.7467	4.1056	4.0834	4.1773	4.1263
Difference	0.7851***	0.3808*	0.7293***	0.4311***	1.0383***	0.7415***
T-value	(3.70)	(1.64)	(5.61)	(3.19)	(6.97)	(4.47)
<b>Panel C: Loan Period</b>						
Share Connected Firm	5.5616	5.9808	5.6268	5.3580	6.3447	5.8926
Non-Connected Firm	5.8451	5.8230	5.6466	5.7317	6.1305	5.7473
Difference	-0.2835**	0.1579	-0.0198	-0.3737***	0.2142***	0.1453
T-value	(-2.05)	(0.82)	(-0.18)	(-4.29)	(3.01)	(1.05)
<b>Panel D: Collateral</b>						
Share Connected Firm	0.4375	0.4286	0.3727	0.3780	0.3717	0.3913
Non-Connected Firm	0.5125	0.4633	0.4101	0.4410	0.4747	0.5073
Difference	-0.075**	-0.0347	-0.0374	-0.0630	-0.1030**	-0.1160**
T-value	(-2.05)	(0.82)	(-0.94)	(-1.57)	(-2.18)	(-2.21)

Data source: this research

To further verify the benefits of firms having bank shares, we similarly compute the differences of loan terms between dual connected firms and non-connected firms in Table 5. Panels A and B show that the differences in the loan rate and loan size are statically significant except for loan rate in 2008, suggesting

that dual connected firms do not find it difficult to borrow loans at a lower interest rate and larger size from banks during the recent financial crisis. However, Panels C and D of Table 5 exhibit that the benefits of this kind of firm relationship with banks seldom exist for loan period and collateral.

**Table 5** Descriptive statistics' comparison by year: Dual connected firm

This table's sample includes 13,883 firm-year observations from 2005 to 2010. The observations of share connected firms are excluded. For definitions of all variables, see Table 1. Difference is mean difference between dual connected firm and non-connected firm. Superscripts \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively.

	2005	2006	2007	2008	2009	2010
<b>Panel A: Loan Rate</b>						
Dual Connected Firm	1.1432	1.2286	0.8329	0.6938	0.7371	0.5303
Non-Connected Firm	1.5979	1.7920	1.2511	0.7533	1.0434	0.7835
Difference	-0.4548	-0.5634	-0.4182***	-0.0595	-0.3062***	-0.2532**
T-value	(-1.04)	(-1.44)	(-3.27)	(-0.71)	(-2.79)	(-2.30)
<b>Panel B: Loan Size</b>						
Dual Connected Firm	4.6196	4.6191	4.8097	4.6111	5.0848	4.5671
Non-Connected Firm	3.8924	3.7467	4.1056	4.0834	4.1773	4.1263
Difference	0.7272	0.8725	0.7042***	0.5277***	0.9074***	0.4407*
T-value	(-1.15)	(-1.52)	(-2.94)	(-2.61)	(-4.01)	(-1.69)
<b>Panel C: Loan Period</b>						
Dual Connected Firm	5.3569	6.3345	5.4279	5.2289	6.4154	5.8094
Non-Connected Firm	5.8451	5.8230	5.6466	5.7317	6.1305	5.7473
Difference	-0.4882	0.5115	-0.2187	-0.5028***	0.2849***	0.0621
T-value	(-1.18)	(-0.99)	(-0.98)	(-3.89)	(-3.20)	(-0.33)
<b>Panel D: Collateral</b>						
Dual Connected Firm	0.4286	0.5556	0.2889	0.3571	0.2340	0.4722
Non-Connected Firm	0.5125	0.4633	0.4101	0.4410	0.4747	0.5073
Difference	-0.0840	0.0922	-0.1212*	-0.0839	-0.2406***	-0.0351
T-value	(-0.42)	(-0.55)	(-1.75)	(-1.42)	(-3.78)	(-0.42)

Data source: this research

In sum, we find that connected firms have a better financing ability especially in loan rate and loan size, supporting our first hypothesis that connected firms receive favorable bank loans during the period of the 2008 financial crisis. However, it is important to note that the difference analysis here does not control for other variables that may affect loan rate, loan size, loan period, and collateral. Therefore, we use regression analysis in the following section to test whether connected firms enjoy superior favoritism in bank loan terms than non-connected firms.

## 4.2 Regression Results

### 4.2.1 The Benefits Connected Firms Receive on Loan Contract Terms

In the following regression specifications, we follow the method of Qian & Strahan (2007) and Graham et al. (2008) in studying whether connected firms enjoy more favorable loan contract terms than non-connected firms. Given that firm  $i$  borrow from bank  $j$  in year  $t$ , we estimate the following equation:

$$Y_{ijt} = \alpha_0 + \beta_1 D_{cf,it} + \gamma_1 Firm_{it} + \gamma_2 Loan_{it} + \varepsilon_{it}, \quad (1)$$

where the dependent variable  $Y_{ijt}$  is proxied by four loan contract terms: Loan Rate, Loan Size, Loan Period, or Collateral. Here,  $D_{cf,it}$  represents whether firm  $i$  in year  $t$  is a dual or share connected firm, and  $Loan_{it}$  represents the loan characteristic control vector. The firm characteristic vector  $Firm_{it}$  contains six characteristics of firms: LnAsset, Leverage, Tobin's Q, Tangibility, Profitability, and Z-SCORE.<sup>12</sup> Notably, all of the firm characteristic variables are estimated one year prior to the year of loan initiation. The control vector  $Loan_{it}$  contains loan characteristics:<sup>13</sup> Loan Rate, Loan Size, Loan Period, and Fixed Dummy.

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<sup>12</sup> See Table 1 for the detailed definitions of these control variables. For these control variables, refer to Fan & Wong (2002), Yeh & Woitke (2005), Almeida & Campello (2007), and Graham et al. (2008).

<sup>13</sup> Prior studies suggest that loan rate and other loan terms, such as loan size or loan period, are simultaneously determined (e.g., Melnik & Plaut, 1986). We remove a loan characteristic from  $Loan_{it}$  if it is used as the dependent variable. For example, when

Furthermore, this specification, which controls year fixed effects, also adopts the approaches of White (1980) and Petersen (2009) for robustness.

Table 6 shows regression analyses of the relationship between share connected firms and loan contract terms.<sup>14</sup> It is apparent from the table that the coefficients of firms having bank shares are significantly negative for Loan Rate and Loan Period, but significantly positive for Loan Size. The results indicate that firms with bank shares benefit from a lower loan rate and higher loan size. Note that the mean of the loan rate in our sample is about 1.21%, meaning that connected firms generally get a lower loan rate by 23.32% ( $= 0.2828\%/1.21\%$ ), while the loan size of share connected firms is 25.11% larger than that of non-connected firms. These findings not only demonstrate the importance of a firm relation with banks on loan contracts, but also exhibit economic significance.

With regard to firm characteristic variables, firms that are a larger size and have a higher Z-score (lower default risk) significantly benefit from loan contract terms in loan rate, loan size, and collaterals, which are consistent with the findings of Graham et al. (2008) and Lin et al. (2011). Moreover, we find that firms with greater profitability and higher Tobin's Q exhibit a lower loan rate and longer loan period, indicating that firms having financial slacks obtain larger loan amounts and lower loan rates. We also observe that firms with high levels of tangibility have on average a longer loan period. One possible reason for the result is that these companies need long-term funding to match their longer asset duration (e.g., property, plant, and equipment).

The coefficients of the loan characteristic variables are almost all irrepressibly significant in Table 6. Empirical results show that there are negative relationships between Loan Rate and Loan Size. Moreover, loans with a floating interest rate ( $D_{Fix} = 0$ ) and longer loan period tend to have a larger loan size and higher loan rates.

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Loan Rate is the dependent variable,  $Loan_{it}$  only contains Loan Size, Loan Period, and Fixed Rate Dummy.

<sup>14</sup> To save space, we do not report the coefficients of the year dummies in this table.

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**Table 6** Share connected firms and bank loan contract terms

This table presents the results for the effect of share connected firms on bank loan contract terms. The dependent variables on the OLS test are loan rate, loan size, and loan period. The probit model uses collateral as the dependent variable. Here,  $D_{scf}$  is a dummy variable that equals 1 for a company that once held bank shares and zero otherwise. For the definitions of all variables see Table 1. To save space, we do not report the coefficients of all control variables in this table. T-values based on the year fixed effect and the robust standard errors clustered by the firm dimensions are in parentheses. Superscripts \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Loan Rate	Loan Size	Loan Period	Collateral
Constant	-0.1440 (-0.80)	-5.5050*** (-22.02)	3.6233*** (19.35)	2.2941*** (9.57)
$D_{scf}$	-0.2828*** (-5.33)	0.2511*** (4.28)	-0.1540*** (-3.09)	0.0186 (0.29)
LnAsset	-0.1183*** (-10.24)	0.4734*** (30.72)	0.0626*** (5.41)	-0.2616*** (-16.89)
Tobin's Q	-0.0348** (-2.37)	0.1281*** (6.66)	0.1121*** (6.96)	-0.0086 (-0.42)
Profitability	-1.6513*** (-6.53)	-1.3392*** (-4.30)	1.6586*** (6.33)	1.9326*** (5.05)
Tangibility	0.0876 (1.26)	-0.2068** (-2.27)	0.1476** (2.09)	0.2485*** (2.79)
Leverage	1.5499*** (16.69)	0.8012*** (6.32)	0.0762 (0.82)	0.4575*** (3.80)
Z-SCORE	-0.1395*** (-6.07)	0.0627** (2.52)	-0.1014*** (-4.81)	-0.4252*** (-13.45)
Loan Rate		-0.3221*** (-14.34)	0.1837*** (13.46)	0.1783*** (8.99)
Loan Size	-0.1331*** (-13.51)		0.1921*** (24.07)	0.1115*** (8.81)
Loan Period	0.2607*** (21.99)	0.3138*** (22.92)		0.2335*** (14.58)
$D_{Fix}$	-0.3037*** (-11.37)	-0.2133*** (-6.36)	-0.0324 (-1.31)	0.1071*** (3.20)
Control for Year	Yes	Yes	Yes	Yes
Control for Firm	Yes	Yes	Yes	Yes
Adj-R <sup>2</sup>	0.1947	0.2948	0.1464	0.1464
No. of Obs.	14,340	14,340	14,340	14,340

Data source: this research

Table 7 reports regression results on dual connected firms and loan contract terms. Controlling the firm and loan characteristic variables, the coefficients of dual connected firms ( $D_{acf}$ ) continue to be significantly positive for Loan Size, but are significantly negative for Loan Rate, Loan Period, and Collateral. Moreover, dual connected firms have a lower loan rate by about 14.31% (= 0.1731%/1.21%), whereas the loan size for dual connected firms is about 36.64% larger than that of non-connected firms. Comparing to previous results of share connected firms in Table 6, dual connected firms exhibit a 17.91% decrease in collaterals. The lower collateral may suggest that firms having both a lending relationship and bank shares are financial slack compare with firms only having bank shares. For firm characteristic variables, the regression results of dual connected firms are similar to the results of share connected firms shown in Table 6.

**Table 7** Dual connected firms and bank loan contract terms

This table presents the results for the effect of dual connected firms on bank loan contract terms. The dependent variables of the OLS test are loan rate, loan size, and loan period. The probit model uses collateral as the dependent variable. Here,  $D_{acf}$  is a dummy variable that equals 1 for a company that once held bank shares plus had a lending relationships and zero otherwise. For the definitions of all variables, see Table 1. To save space, we do not report the coefficients of all control variables in this table. T-values based on the year fixed effect and the robust standard errors clustered by the firm dimensions are in parentheses. Superscripts \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively.

	(1) Loan Rate	(2) Loan Size	(3) Loan Period	(4) Collateral
Constant	-0.3316* (-1.81)	-5.5170*** (-21.18)	3.6608*** (19.02)	2.2515*** (9.12)
$D_{acf}$	-0.1731** (-2.11)	0.3664*** (4.30)	-0.2280*** (-2.96)	-0.1791* (-1.76)
LnAsset	-0.1078*** (-9.14)	0.4752*** (29.61)	0.0607*** (5.10)	-0.2600*** (-16.30)
Tobin's Q	-0.0292** (-1.99)	0.1297*** (6.70)	0.1098*** (6.77)	-0.0050 (-0.24)
Profitability	-1.6464*** (-6.48)	-1.3431*** (-4.29)	1.6300*** (6.19)	1.9119*** (4.93)
Tangibility	0.0679 (0.97)	-0.2245** (-2.43)	0.1315* (1.82)	0.3303*** (3.64)

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Leverage	1.6017*** (16.81)	0.8859*** (6.83)	0.1011 (1.07)	0.3788*** (3.08)
Z-SCORE	-0.1435*** (-6.16)	0.0557** (2.21)	-0.0980*** (-4.63)	-0.4225*** (-13.09)
Loan Rate		-0.3215*** (-14.20)	0.1768*** (12.76)	0.1866*** (9.24)
Loan Size	-0.1354*** (-13.70)		0.1857*** (22.89)	0.1070*** (8.38)
Loan Period	0.2583*** (21.17)	0.3051*** (21.85)		0.2411*** (14.68)
$D_{Fix}$	-0.2874*** (-10.56)	-0.2178*** (-6.37)	-0.0087 (-0.35)	0.1073*** (3.13)
Control for Year	Yes	Yes	Yes	Yes
Control for Firm	Yes	Yes	Yes	Yes
Adj-R <sup>2</sup>	0.1886	0.2854	0.1395	0.1395
No. of Obs.	14,340	14,340	14,340	14,340

Data source: this research

In sum, the empirical results in this subsection are consistent with our first hypothesis that firms having bank shares benefit from a lower loan rate and non-interest contract terms. Moreover, firms with a larger size, higher Tobin's Q, and greater profitability significantly enjoy more favoritism in terms of loan rate and non-interest terms. By contrast, high default risk (high leverage or low Z-score) causes lenders to require a higher price for a loan contract. Therefore, in the following subsection we further analyze whether dual connected firms can obtain any favors in bank loans under the circumstance of higher default risk.

#### 4.2.2 Dual Connected Firms with High Default Risk

Since prior studies (Strahan, 1999; Graham et al., 2008; Chava et al., 2009) argue that firms with high default risk (high leverage or low Z-score) have a high loan rate and strict non-interest terms, we examine whether dual connected firms<sup>15</sup>

<sup>15</sup> For the sake of space, we keep the results for dual connected firms in this research. The estimated results for share connected firms are available upon request.

with a high default risk can obtain more favorable loan contract terms than non-connected firms by imposing a dummy of high default risk ( $D_{hdr}$ ) that is equal to 1 if a firm has a high default risk and zero otherwise. Given that firm  $i$  borrow from bank  $j$  in year  $t$ , we set up an interaction term between dual connected firms and high default risk in Equation (2) as follows.

$$Y_{ijt} = \alpha_0 + \beta_1 D_{dcf, it} + \beta_2 D_{hdr} * D_{dcf, it} + \gamma_0 D_{hdr} + \gamma_1 Firm_{it} + \gamma_2 Loan_{it} + \varepsilon_{it}, \quad (2)$$

where the dependent variable  $Y_{ijt}$  is proxied by four loan contract terms. Here,  $D_{dcf, it}$  indicates whether firm  $i$  in year  $t$  is a dual connected firm;  $Firm_{it}$  represents a firm characteristic vector; and  $Loan_{it}$  represents a loan characteristic vector. This specification, which controls year fixed effects, also adopts robust and clustered standard error approaches at the firm level for robustness.

Regarding the dependent variable (Loan Size) in Table 8, the coefficient of the dummy variable for dual connected firms is 20.87% at the 10% significance level, and the coefficient of the interaction term between the dummy variables of dual connected firms and low Z-score is positively significant (29.5%), supporting our second hypothesis that that banks likely offer preferential loan sizes to those dual connected firms even if they have a relatively high default risk. However, turning to the loan rate, the significances for the coefficients disappear, indicating that dual connected firms with high default risk do not benefit from a better price of loan contracts from banks.

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**Table 8** Dual connected firms and bank loan contract terms: Low Z-score effects

This table presents the results on the benefits of dual connected firms based on low Z-score firms. The dependent variables on the OLS test are the bank-loan contract terms, which are loan rate, loan size, and loan period. The probit model uses collateral as the dependent variable. Here,  $D_{dcf}$  is a dummy variable that equals 1 for a company that once held bank shares plus had a lending relationships and zero otherwise. The  $D_{Low Z-score}$  is a dummy variable that equals one if the Z-score of the lending firm is lower than median and zero otherwise. For the definitions of other variables, see Table 1. To save space, we do not report the coefficients of all control variables in this table. T-values based on the year fixed effect and the robust standard errors clustered by the firm dimensions are in parentheses. Superscripts \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Loan Rate	Loan Size	Loan Period	Collateral
Constant	-0.6558*** (-3.56)	-5.3706*** (-21.38)	3.4465*** (18.29)	1.2501*** (5.10)
$D_{dcf}$	-0.0874 (-0.81)	0.2087* (1.70)	-0.0779 (-0.64)	-0.1491 (-0.95)
$D_{dcf} * D_{Low Z-score}$	-0.1637 (-1.02)	0.2950* (1.77)	-0.2795* (-1.81)	-0.0907 (-0.44)
$D_{Low Z-score}$	0.1410*** (4.89)	-0.0901** (-2.51)	0.0943*** (3.36)	0.4718*** (12.80)
LnAsset	-0.1021*** (-8.61)	0.4725*** (29.62)	0.0645*** (5.45)	-0.2407*** (-14.83)
Tobin's Q	-0.0271* (-1.83)	0.1292*** (6.68)	0.1113*** (6.86)	0.0045 (0.22)
Profitability	-2.1411*** (-9.30)	-1.2674*** (-4.26)	1.2754*** (5.33)	0.7141** (2.20)
Tangibility	0.1316* (1.88)	-0.2535*** (-2.79)	0.1774** (2.43)	0.4971*** (5.52)
Leverage	1.5758*** (16.41)	0.9053*** (6.97)	0.0858 (0.90)	0.2777** (2.25)
Loan Rate		-0.3207*** (-14.06)	0.1774*** (-12.73)	0.1841*** (-9.24)
Loan Size	-0.1357*** (-13.63)		0.1859*** (22.90)	0.1083*** (8.43)
Loan Period	0.2607*** (21.33)	0.3049*** (21.88)		0.2461*** (15.15)
$D_{Fix}$	-0.2766*** (-10.20)	-0.2207*** (-6.50)	-0.0015 (-0.06)	0.1328*** (3.89)
Control for Year	Yes	Yes	Yes	Yes
Control for Firm	Yes	Yes	Yes	Yes
Adj-R <sup>2</sup>	0.1858	0.2856	0.1382	0.1382
No. of Obs.	14,340	14,340	14,340	14,340

Data source: this research

Instead of Z-score, we adopt firm leverage to test the benefits of dual connected firms in Table 9. Regarding loan size, the coefficient estimate of the dummy variable for dual connected firms is 48.65% with a *t*-statistic of 3.92, while the interaction term between the dummy variables of dual connected firms and high leverage is negatively significant. Moreover, we observe the interaction term between the dummy variables of dual connected firms and high leverage is significantly negative if the loan rate is used as the dependent variable, indicating that dual connected firms generally have a lower loan rate even if they exhibit high leverage. Overall, the results again demonstrate benefits for those firms that build up relationships with banks.

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**Table 9** Dual connected firms and bank loan contract terms: High leverage effects

This table presents the results on the benefits of dual connected firms based on high leverage firms. The dependent variables on the OLS test are the bank-loan contract terms, which are loan rate, loan size, and loan period. The probit model uses collateral as the dependent variable. Here,  $D_{dcf}$  is a dummy variable that equals 1 for a company that once held banks shares plus had a lending relationships and zero otherwise. The  $D_{HighLeverage}$  is a dummy variable that equals one if the leverage of the lending firm is higher than median and zero otherwise. For the definitions of other variables, see Table 1. To save space, we do not report the coefficients of all control variables in this table. T-values based on the year fixed effect and the robust standard errors clustered by the firm dimensions are in parentheses. Superscripts \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
	Loan Rate	Loan Size	Loan Period	Collateral
Constant	0.0202 (0.11)	-5.464*** (-20.66)	3.6383*** (18.99)	2.3147*** (9.31)
$D_{dcf}$	0.0057 (0.05)	0.4865*** (3.92)	-0.2965*** (-2.79)	-0.0901 (-0.66)
$D_{dcf} * D_{HighLeverage}$	-0.4570*** (-2.81)	-0.3256** (-1.98)	0.1371 (0.90)	-0.2207 (-1.08)
$D_{HighLeverage}$	0.4735*** (18.24)	0.1255*** (3.60)	-0.0231 (-0.91)	0.0939*** (2.75)
LnAsset	-0.0946*** (-8.15)	0.4964*** (31.56)	0.0658*** (5.64)	-0.2551*** (-16.26)
Tobin's Q	-0.0306** (-2.09)	0.1314*** (6.72)	0.1104*** (6.83)	-0.0052 (-0.26)
Profitability	-1.7407*** (-6.81)	-1.6321*** (-5.21)	1.5450*** (5.89)	1.8557*** (4.78)
Tangibility	0.0234 (0.34)	-0.3009*** (-3.29)	0.1130 (1.57)	0.3103*** (3.44)
Z-SCORE	-0.1536*** (-6.63)	0.0503** (2.00)	-0.0986*** (-4.66)	-0.4242*** (-13.09)
Loan Rate		-0.3109*** (-13.54)	0.1821*** (13.15)	0.1867*** (9.30)
Loan Size	-0.1292*** (-13.00)		0.1870*** (23.16)	0.1083*** (8.49)
Loan Period	0.2626*** (21.60)	0.3088*** (21.96)		0.2426*** (14.78)
$D_{Fix}$	-0.2718*** (-10.07)	-0.1990*** (-5.83)	-0.0035 (-0.14)	0.1124*** (-3.30)
Control for Year	Yes	Yes	Yes	Yes
Control for Firm	Yes	Yes	Yes	Yes
Adj-R <sup>2</sup>	0.1943	0.2815	0.1395	0.1395
No. of Obs.	14,340	14,340	14,340	14,340

Data source: this research

## 5. CONCLUSIONS

This research explores the benefits that non-financial firms get from owning bank shares on bank loan contracts, which proxy one kind of relation-connection not documented in the finance literature. Based upon a comprehensive bank loan database in Taiwan, this paper fills this gap in the literature by adding direct evidence on preferential lending. Specifically, we study whether firms having bank shares obtain preferential treatments from their bank loans in Taiwan during the global financial crisis from 2005 to 2010.

Our major findings can be summarized in two-fold as follows. First, we find that firms with bank shares can obtain favoritism from the banks on loan contracts during the global financial crisis. For example, the loan size of connected firms is on average about 1.25 times larger than that of firms without such connections, and these connected firms can obtain a 28.28 basis points lower loan rate than non-connected firms. These findings are consistent with the results of Ivashina & Scharfstein (2010) and Puri et al. (2011) who suggest that the bank-borrower relationship of firms can benefit their bank financing during the crisis period. Second, even under the circumstance of high default risk, we find that these connected firms still acquire favoritism in loan terms compared with non-connected firms, especially in bank loan size. In sum, our empirical results indicate that firms having bank shares can and do enjoy benefits from bank financing.

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