2013

Tilburg University

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Bank loan announcements and borrower stock returns during the 2007 financial crisis in the U.S market

Date of graduation: 1st September 2013

Graduation department: School of Economics and Management

Faculty name: School of Economics and Management

Table Contents

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Abstract

We investigate the effect of syndicated bank loan announcements on the borrowers' equity value during the boom and crisis period from 2005 to 2009 in the U.S market. The significantly positive cumulative abnormal return, around the loan announcement, supports the "specialness" of the banks for both pre-crisis and crisis period. In addition, the empirical result also indicates that the certification value of bank loans in the crisis period is greater than in the boom period. Furthermore, we demonstrate that larger bank loan granted by small number of mandated lead arrangers for smaller and riskier companies triggers greater positive stock market reactions during the crisis period.

Keywords: syndicated loans, borrower's equity value, asymmetric information, event study, crisis, U.S

1. Introduction

The "specialness" of intermediation, using the banks as an example, has become the center of discussion in many previous research studies. Banks are believed to convey valuable signaling regarding borrower's quality and risk profile. Fama (1995) and Diamond (1991) explain that the positive stock reactions in theoretical research that banks have access to inside information and have an incentive to monitor and screen the borrower, which acts as positive credit worthy signaling for the borrower. Empirical research tends to support the "specialness" of bank loans by finding positive and significant abnormal returns in reaction to bank loan announcements. For instance, James (1987) and Lummer and McConnell (1989) confirm that the abnormal stock return exists around the bank loan announcement date. Furthermore, several authors concentrate on verifying which characteristics of the loan and borrower play a significant role in shaping stock market reactions. Billett et al. (1995) demonstrates that more reputable banks will convey greater certification value to the investors about the borrower's prospects through the bank loan announcement. Preece, Dianna, and Donald J. Mullineaux (1996) indicate that the smaller size of syndicate loans will lead to greater stock abnormal returns around bank loan announcement dates. In contrast, the opposite findings in a previous paper also exists, stating that firms announcing bank loans suffer negative abnormal stock returns over the subsequent three years (Billett et al., 2006).

From September 2007 to December 2009, the U.S stock market experienced a continuous economic and financial turmoil. During that painful period, huge changes occurred in the macroeconomic and financial environment. However, there is very little literature concentrating on whether there is a difference for the "specialness" of the banks between crisis and pre-crisis periods in the U.S syndicated loan market. Moreover, regarding the relevant characteristic, whether it will have a stronger or weaker relationship to stock reactions in a crisis period as compared to a pre-crisis period is still unclear. This paper aims at answering these two questions by employing a Crisis Dummy variable and an interaction term between the Crisis Dummy and other characteristic variables to run the multivariate regression. The reason why we chose syndicated loans as our research sample is that the global syndicated loan has become an important part of external financing for companies, with the volume $408.3 billion for the first quarter of 2013. Therefore, the research about the certification value of syndicated loan announcements is more meaningful for the recent stock market.

We adopt the event study to compute and test the significance of stock price reactions, i.e., cumulative abnormal returns (CARs) to investigate the "specialness" of the banks. Our sample consists of 351 syndicate loans in the U.S market announced from January 2005 to December 2009. We define the pre-crisis period starting from January 2005 to August 2007 and crisis period starting from September 2007 to December 2009. For the full period, we find significantly positive abnormal stock returns reacting to the bank loan announcement within the event window. Although both pre-crisis and crisis witness the positive cumulative abnormal returns, the positive signaling conveyed by the bank loan is stronger in crisis. Next, in multivariate regression, we analyze how the characteristic of loan and borrower will affect the stock market reactions. The result shows that loan size, maturity, leverage ratio and risk profile have a significant positive relationship with the stock abnormal returns. On the contrary, the number of mandated lead arrangers has a negative effect on stock reactions. Furthermore, in crisis period, the influence of loan size, maturity, leverage and firm risk on the equity value reaction to the bank loans will be more powerful than in the boom period.

The rest of the paper is organized as follows. Section 2 presents the relevant literature. The information about the data is defined and described clearly in Section 3. Section 4 introduces the employed methodology. Then the result analysis can be found in Section 5. Finally, in Section 6, a brief conclusion is given.

2. Related Literature

In this section we review the relevant literature dealing with the impact of bank loan announcements on stock returns as well as the impact of boom and crisis cycles on bank behavior. We start by stating the previous theoretical arguments and the empirical research separately on the "specialness" of bank loans. Then we compare the conclusion of the existing research on the bank lending behavior in a boom and crisis period.

2.1 The impact of bank loan announcement on shareholder's wealth.

The previous theoretical research indicates that, as a special intermediary, banks play an important role in diminishing the informational asymmetry. This phenomenon is commonly called the "specialness" of bank loans. According to the intermediation theory, as an insider information producer, banks may play a unique role in eliminating the informational asymmetries. The "specialness" is explained in details by Fama (1985): Bank loans may

serve as the credit worthiness signal of a company. Through initial screening and monitoring, banks can produce positive valuable private information about borrowing firms to outsiders. Outside investors tend to choose the companies which have a bank loan announcement, because they believe banks would lend to high-quality borrowers to maximize the value of loans (Fama, 1985). Then in later research Diamond finds only borrowers with middle or high credit ratings have incentives to be monitored, whereas the borrowers with low credit ratings do not (Diamond, 1991). We summarize the theoretical research in the following table.

Table 2.1 Previous theoretical research

This table outlines the existing theoretical arguments on the specialness of banks briefly, including the author, published year and highlights.

Author (Year)	**Highlights**
Fama (1985)	Banks play an unique role in producing of information, indicating that bank loan announcement may act as a credible signal of firm quality to outside investors.
Diamond (1991)	Firms with more severe adverse selection and moral hazard problems have stronger incentive to be monitored and can benefit more from bank lending.

Several authors concentrate on the empirical research to analyze the connection between the bank loan announcement and equity prices. In Table 2.1, we list the empirical findings in previous paper.

Table 2.2 Previous empirical research findings

This table presents the previous empirical research, including the author, published year and main findings.

Author (Year)	**Main findings**
James (1987)	Significant positive abnormal returns occurs when stockholders of firms announce new bank loan agreements, whereas negative abnormal returns are shown when private placements are announced.
Lummer and McConnel (1989)	Only announcements of favorable loan renewals and revisions are accompanied by a stock-price increase. In contract, the newly issued bank loans do not have a significant positive effect on stock prices.

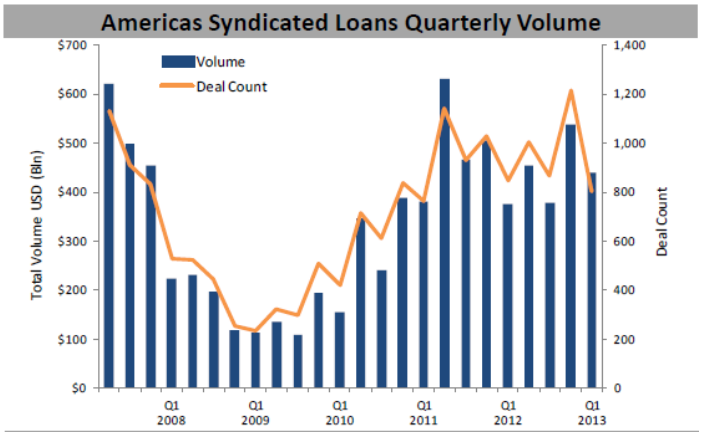
Table 2.2 Continued

Author (Year)	Main findings
Slovin, Johnson and Glascock (1992)	Only small and less prestigious firms gain great abnormal return from bank loan announcement, because small firms face severe moral hazard and adverse selection problems that make issuing capital market difficult, as a result, benefiting more from monitoring and screening.
Best and Zhang (1993)	Banks will supply significant information to the market only when the renewal borrower has negative or unchanged performance indicators, for example uncertain earnings forecast.
Billett et al. (1995)	Significantly higher abnormal returns would be shown when the lenders have higher quality. This means a "reputable" banking firm conveys more positive information about the borrower's prospects

In recent years, the global syndicated loan has become an important part of external financing for companies. In the U.S syndicated lending market, , the total volume for U.S. loans was $408.3 billion in the first quarter of 2013, an increase of 17.8% compared with the same period in 2012 including refinanced debt (Bloomburg 2013). Figure 1 shows the quarterly volume of America's syndicated loans.

Figure 1 Quarterly volume of America's syndicated loans

This figure displays the evolution of the quarterly loan volume for each year and number of issues (right scale) on the American syndicated lending market (source: Bloomburg 2013)



One advantage of syndicated loans is that in this market, borrowers can raise funds with lower costs compared to bond issues or a series of bilateral loans. According to much previous research, the announcement of a syndicate loan will also trigger positive abnormal returns for borrowers. Table 2.3 shows the previous research regarding to the syndicated loan.

Table 2.3 Previous research about syndicated loan

This table presents the previous research about the syndicated loan, including the author, published year and main findings.

Author (Year)	**Main findings**
Focarelli et al. (2008)	The announcement of a syndicated loan has a positive effect on the borrowers' stock price. This positive reaction becomes more obvious when the arranger of the syndicate loan retains a larger share of the facility.
Preece and Mullineaux (1996)	The size of the syndicate loan has a negative relationship with the equity abnormal return, because the contractual flexibility complements monitoring as a source of the market's positive reaction to bank loans. Therefore, when the number of lenders is small, the contractual flexibility increases. As a result, the positive stock reaction will be greater as well.

However, there is also some research that states the bank loan announcement is bad news and will cause a negative stock reaction for the borrowers. The study of Billett et al. in 2006 shows that in the long run, a firm that announces a bank loan will suffer a negative stock reaction (Billett et al., 2006). Moreover, the negative reaction is even worse for the borrowers with poor creditworthiness in an emerging market, in China for example (Bailey et al., 2012).

2.2 The bank lending behavior in pre-crisis and crisis period

Many previous studies on bank lending behavior concentrate on changes happening in the lending market during the crisis period. At the same time, the credit crunch becoe a hot topic in the research field. Wagster finds that the credit crunch can be explained by unweighted capital ratio and voluntary risk-reduction by banks. Moreover, because of the increase in systematic risk, banks are more rigorous on holding loans (Wagster, 1999). Compared to a pre-crisis period, risk level becomes a more important factor that needs to be controlled and considered in a bank lending market. In Berger and Udell's research, when facing regulatory or internal pressures to reduce bank risk, banks tend to withhold credit or raise the cost of credit significantly (Berger and Udell 1994).

Additionally, the reason for shrinkage in a loan market is explored in more detail. Peek states that an explicit regulation has a connection to the shrinkage of both bank loan portfolios and

bank lending, with the effect on the flow of lending being even larger than that on the change in loans held by banks. Furthermore, this shrinkage is in addition to any bank shrinkage due to weak loan demand associated with weakness in the overall economy (Peek and Rosengren, 1995). Bernanke and Lown demonstrate that the weakened state of borrowers' balance sheets is one important factor that causes the slowdown of the lending. The shortage of equity capital of banks is another factor that limits banks' ability to make loans (Bernanke, 1991). In Ralph de Haas and Neeltje van Horen's research, we know that the market for syndicated loans shrinks significantly during the global financial crisis (Ralph de Haas and Veeltje van Horen, 2010). This is caused by stricter bank screening and monitoring: a wake-up call. In detail, the retention rates increase significantly during the crisis, especially when high level of information asymmetry exist between borrowers and lenders.

In more recent years, Dell'Ariccia and Marquez (2008) argue that adverse selection problems that arose by informational asymmetries among lenders triggers banks to monitor and screen to avoid financing those borrowers that are rejected by their competitors. However, during the expansionary phase of a business cycle or when the loan demands are large, such adverse selection problems become less severe. As a result, banks will loose their lending standards. More research about loans in sub-prime mortgage markets shows that the quality of loans in the subprime mortgage market experience a dramatic deterioration for six consecutive years before the crisis (Demyanyk, 2011)

However, there is also an opposite opinion stating that during the crisis, the bank loan announcement has a negative effect on the borrower's stock return. One explanation could be that during the crisis, the announcement of a bank loan indicates that the company is facing a financial problem. Therefore, the announcement will become a signal of borrower weakness during economic and financial turmoil rather than a signal of good quality certification. Another explanation states that, during the crisis, some lenders also experienced severe financial problems. Lenders with a low reputation will also cause negative stock reaction. This is consistent with Billett et al.'s (1995) research, who stats that only reputable lenders will cause high positive excess returns. For all these reasons, we could also expect negative abnormal returns for borrower's stock around bank loan announcement dates.

3. Data description

In this section we provide the description of the data as well as the relevant descriptive statistics. To investigate how the bank loan announcement affects the equity return of the company during the pre-crisis and crisis periods, we need four sets of data in total, precisely, the record of bank loan announcements, stock returns of the companies who announce bank loans, S&P 500 price index and relevant statistics about firm characteristics. In the following part, the detailed information about those data is provided.

3.1 Bank loan announcement recorded

Thomson one banker provides us all the data about the bank loans in "Deal Data" category. We set five criteria to filter recorded data that we need exactly in our research. Firstly, as this paper concentrates on the U.S lending market, only the bank loans whose domicile nation is United States is analyzed. Secondly, The main goal of this paper is to compare the effect of bank loan announcements on companies' stock returns between the pre-crisis period and the crisis period. Therefore, we downloaded data for the pre-crisis and the crisis period separately. To be more specific, we limited the announcement date starting from the beginning of January 2005 to the end of August 2007 for the boom period, and from the beginning of September 2007 to the end of December 2009 for the depressed period. Thirdly, we chose the top-1000 bank loans for the pre-crisis and the crisis period separately by sorting the principal amounts to get the loan deals that are more significant and representative. Next, considering whether the loans are syndicated or bilateral will affect the company's stock reactions following the bank loan announcements, in this paper we chose only syndicated loans as our research data. The reason for this is that in recent years, the global syndicated loans have become a much more important part of external financing for companies, Bloomberg (2013). Finally, we chose loan comprehensive reports which contain all of the loan relevant statistics that we need.

As a result, the total initial sample contains 2000 loan deals, including 1000 deals for the pre-crisis period (from 2005 to 2007) and 1000 for the crisis period (from 2007 to 2009). Table 3.1 presents the description about the initial bank loan sample

Table 3.1 Initial Bank Loan Sample

The table shows our initial sample selection. We downloaded 2000 bank loans in the U.S market from 2005 to 2009 from Thomson One Banker-Deal Data Database. Besides, to simplify the research, we identified each announcement as an individual event, no matter whether it was announced by the same company at different dates.

	Total	**Period**	**Source**
Loan Announcement Pre-Crisis	1000	2005:2008	Thomson One Banker
Loan Announcement Crisis	1000	2007:2009	
Companies	369	2005:2009	Thomson One Banker

In the present study, we chose several bank loan characteristics as variables to investigate the relationships between these variables and the stock reactions around the announcements dates. To be more precise, we chose Long Term Dummy, Maturity, Principal Amount, the Number of Mandated Arrangers by Unique Parents and Crisis Dummy as our variables. Long Term Dummy and Maturity measure how long the loan deal contract will be. Principal Amount is a proxy to measure how large the loan deal is and the Number of Mandated Arrangers shows the size of the syndicate. The last, Crisis Dummy equals 1 if the announcement date is within the period of September 2007 to December 2009, and 0 if the announcement date belongs to January 2005 to August 2007. In Table 2, we present the definition and source of each bank loan relevant variable.

Table 3.2 Definition of Bank Loan relevant variables

This table provides the definition of the important variables related to bank loans in the sample. In the present research, we chose the following items as our variables to investigate the relationship between these variables and the stock reactions.

Item	**Definition**	**Source**
Borrower	The name of the borrower	Thomson One Banker
Long Term Dummy	Dummy equals 1 if the loan is a term loan, 0 if otherwise.	
Primary SIC Code	SIC coding is used primarily to classify a company's main industry and line of business.	
Announcement Date	The announcement date is the first day the public will receive information regarding a new security issue.	
Maturity	Equals Maturity Date minus Announcement Date	

Table 3.2 Continued

Item	Definition	Source
Principal Amount in Market	The amount borrowed, such as the face value of a debt security in Million USD	Thomson One Banker

3.2 Stock return

In the present research, firstly, we need the stock returns within an estimation window to estimate the market model and the stock returns within an event window to compute an abnormal return. Next we will illustrate the steps taken to prepare the stock returns data.

Step1: Download daily stock price in Datastream Database.

We first searched the Datastream Code of each company with the company's name in Datastream Navigator and deleted the companies whose stock prices were not recorded in the Datastream Database. Then we set the period starting from 2004 until 2009 and input the DS code in Datastream to get the daily stock price data for each company. In total, there were 324 companies left after deleting the companies which did not provide stock price information in Datastream.

Step2: We computed the daily stock return by applying the formula $R_{it} = \frac{P_{it} - P_{i(t-1)}}{P_{i(t-1)}} * 100\%$ for each firm i.

Step3: We considered an estimation window of [-100,-10] days before the event date and considered seven different event windows: [-2,2], [-1,1], [0,0], [0,1], [0,2], [-1,0], [-2,0]. Then we computed the number of days between each stock return date and the announcement date in each different loan deal. Finally, we filtered and retained the stock returns within the event and estimation window only.

3.3 S&P 500 Price Index

We chose S&P 500 daily Price Index as the market benchmark to estimate the market model. The S&P 500 is a stock market index based on the market capitalizations of the 500 leading companies publicly traded in the U.S. stock market. It is one of the most commonly followed equity indices and considered as the best representation of the market as well as a bellwether for the U.S. economy. In our case, we chose the top-1000 large loan deals borrowed by large companies which were represented by S&P 500. Therefore, it is very reasonable to use S&P500 as the market return in our research.

The S&P 500 daily Price Index from 2004 to 2009 can be gained in Datastream Database as well. So we used the same formula as we used to compute the company's stock return to get the daily return of S&P 500 Index. Similarly, we kept the S&P 500 Index return within a [-100,-10] estimation window and seven different event windows only.

3.4 Borrower company characteristics

We collected firm characteristics from Compustate in the WRDS Database. Firstly, we searched the GVKEY of each company in Compustate one by one by using the name of the company. Then we deleted the companies whose data were not recorded by the Compustate Database. Finally, we set the searching period starting from 2005 to 2009 to filter the data that we needed. In this research, we selected the following variables to investigate relationships between these variables and the stock reactions around the announcement date. In detail, these were Total Asset, Leverage Ratio, Current Ratio, Profit Margin, Stock Volatility, Revenue and ROA, representing different aspects of quality and ability of the companies.

To be more specific, Total Asset (with the code of AT in Compustate) is an important measurement of the firm size. Leverage Ratio equals Long Term Debt (DLTT)/Total Asset (AT), measuring the leverage level of the company. Current Ratio equals Current Assets (ACT)/ Current Liabilities (LCT), representing the liquidity of the company. Moreover, the Profit Margin is computed from the formula of Net income (NI)/ Total Revenue (REVT), indicating the profitability of the company. The Stock Volatility is the standard deviation of the Stock Return, measuring the risk of the company. Revenue is the amount of money that a company actually receives during a specific period according to the definition in Investopedia. ROA is Net Income/ Total Asset, an indicator of how profitable a company is, relative to its total assets. The above variables are summarized in the following table.

Table 3.3 Definition of Company Characteristics Variables

This table provides the definition of important variables related to the borrower companies. In our research, we chose the following variables to investigate the relationship between these variables and the stock reaction

Item	Description	Source
Total Asset	= logarithm of firm's total assets in Million USD	Thomson One Banker
Leverage Ratio	= Long Term Debt/Total Assets	Thomson One Banker
Current Ratio	= Current Assets/Current Liabilities	Thomson One Banker
Profit Margin	= Net Income/Total Revenue	Thomson One Banker
Stock Volatility	= Stock Return Volatility	Datastream Database
Revenue	= Sales in Million USD	Thomson One Banker
ROA	= Net Income/ Total Assets	Thomson One Banker

3.5 Summary

After downloading all data stated above, we merged them together. We dropped the companies if they lacked any item of data required and only left the companies that had the full data we needed in our research, including bank loan information, stock price in and around bank loan announcement year, company characteristics in bank loan announcement year. At last, 227 companies and 351 bank loan deals were left. Next, we summarize each statistic separately in Table 3.4 and 3.5.

Table 3.4 Descriptive Bank Loan Statistics

This table shows the descriptive bank loan statistics for the variables employed in the regression analysis. The sample includes 351 loan deals. Long Term dummy and Crisis Dummy are dummy variables. For dummy variables, we also consider how many observations have a value that is equal to 1. All variables are defined in Table 3.2.

Item	Nr.Obs	Mean	Median	Min	Max	SD	Number of positive dummy variable
Borrower	351	n/a	n/a	n/a	n/a	n/a	n/a
Long Term Dummy	351	0.81	n/a	0	1	0.39	286
Maturity	351	3.94	5	0.5	13	1.88	n/a
Principal Amount in Market	351	1974.14	1500	516.08	30000	2314.92	n/a

Table 3.4 Continued

Item	Nr.Obs	Mean	Median	Min	Max	SD	Number of positive dummy variable
Log Principal	351	6.25	10.31	7.35	7.31	0.61	n/a
Number of Mandated Arrangers by Unique Parents	351	4.50	5	1	11	1.69	n/a
Crisis Dummy	351	0.44	n/a	0	1	0.50	156

Table 3.5 Descriptive Company Characteristics

This table shows the descriptive company characteristics employed in the regression analysis. Our sample includes 227 companies. All variables are defined in Table 3.3.

Item	Nr.Obs	Mean	Median	Min	Max	SD
Asset	227	25398.62	14813	424.94	228052	33279.2
Log Asset	227	9.54	9.60	6.05	12.34	1.13
Leverage Ratio	227	0.25	0.22	0	1.00	0.16
Current Ratio	227	1.36	1.21	0.36	4.11	0.65
Stock Return Volatility	227	0.02	0.02	0.01	0.06	0.01
Revenue	227	22809.93	10758	31.6	425071	45839.28
Log Revenue	227	9.20	9.28	3.45	12.96	1.34
ROA	227	0.06	0.05	-0.28	0.41	0.07

4. Methodology

In this section we illustrate the methodology adopted to do the research about the effect of bank loan announcements on equity stock returns. Our approach relies on the event studies methodology (Frank de Jong and Peter de Goeij, 2011). We hereby state this process precisely in the following four parts.

4.1 Identifying the event

We consider the bank loan announcement as an event and identify it as day 0. Our main goal is to investigate the relationship between the loan announcement and the stock returns on as well as around day 0. Therefore, we set seven event windows: Three symmetric ones: five-day [-2,2], three-day [-1,1], one-day [0,0], and four asymmetric ones: three-day [-2,0] and [0,2], two-day [-1,0], [0,1]. We do not take a long term event window into account here, because in the long term other factors, the manager's performance for example, will also affect the stock returns. In that case, it is hard to identify whether it is a loan announcement or other factors that cause the stock reaction in the long term. Moreover, it is worth to explain that the main purpose of choosing [-2,0] and [-1,0] as an event window is to verify the existence of potential information leakage.

Table 4.1 Define Event and Event window

This table presents the definition of the event day as well as seven event windows.

Item	**Statistics**	**Description**
Event day	0	announcement date
Event window	[-2,2]	2 days before until 2 days after the announcement date
	[-1,1]	1 day before until 1 days after the announcement date
	[0,0]	On announcement date
	[-1,0]	1 day before and the day on the announcement date
	[-2,0]	2 day before and the day on the announcement date
	[0,1]	The day on and 1 day after the announcement date
	[0,2]	The day on and 2 days after the announcement date

4.2 Models for the abnormal return

The abnormal return (AR) is defined as the actual stock return in the event window minus the normal return (NR) on the same day. Therefore, the most important step to get the abnormal return is to choose a good benchmark return model as well as a reasonable estimation window for the normal return computation. In this paper, we adopt a classic approach based on the market model which indicates the relationship between the return of a given stock and the return of the market index:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (1)$$

Where R_{it} is the individual firm i stock return on day t, defined as $\frac{P_{it}-P_{i(t-1)}}{P_{i(t-1)}}$, and R_{mt} is the stock market return on day t, defined as $\frac{P_{mt}-P_{m(t-1)}}{P_{m(t-1)}}$. α_i and β_i are the parameters to be estimated over an estimation window. The abnormal returns (AR) are then defined as the residuals or prediction errors (ε_{it}) of this model.

Firstly, we define the estimation window starting from 100 to 10 days prior to the event day 0. Then we choose S&P 500 index return to proxy for the market return. Next we run the OLS regressions between the stock returns and the market returns in the estimation window [-100,-10] to get the estimation of α_i and β_i for each firm i. The next step is to compute the normal return (NR) which can be gained from the following equation:

$$NR_{it} = e(\alpha_i) + e(\beta_i)R_{mt} \quad (2)$$

Where $e(\alpha_i)$ and $e(\beta_i)$ are the estimated parameters got from the OLS regression. Then we compute the normal return in each day within the seven different event windows for each loan event. Finally, daily abnormal returns are obtained in this way,

$$AR_{it} = R_{it} - NR_{it} \quad (3)$$

Where, R_{it} is the actual return for borrower i on day t within the event window. And NR_{it} is the normal return estimated with equation (2) for borrower i at the same day t. We examine seven different event windows, which are described in Table 4.1.

4.3 Analyzing abnormal returns

In our research, only analyzing the abnormal return at the event date is not enough and therefore we cumulated the abnormal returns (CARs) over the time-series for each event window.

$$CAR_i = AR_{i,t1} + \cdots + AR_{i,t2} = \sum_{t=t1}^{t2} AR_{it} \quad (4)$$

Where, t1 and t2 represent the lower and upper bounds of an event window. Then we get 2457 (=351*7) CARs in total for the whole sample. Furthermore, we aggregated the CARs over the cross-section of events to get cumulative average abnormal returns (CAAR):

$$CAAR = \frac{1}{N}\sum_{i=1}^{N} CAR_i \quad (5)$$

Then for seven event windows, we obtain seven CAAR in total.

4. Testing abnormal performance

The testing includes univariate analysis and multivariate analysis. But before doing univariate and multivariate analyses, we first computed the correlations for cross sectional variables in STATA software to see whether there are strong connections between each variable or not.

4.4.1 Univariate analysis

Step one, We tested CAARs for the whole period from 2005 to 2009 for each event window. To be more specific, we employed the null hypothesis being that CAARs equals 0 and ran t-tests to investigate whether the result is statistically significant.

$$\mathrm{H_0}: \mathrm{CAAR_i} = 0$$

If the value of t-test is statistically significant, we can conclude that the loan announcement has a positive or negative effect on stock returns. We also summarized the relevant statistics of CARs in each event window separately for the whole period from 2005 to 2009.The relevant statistics include the mean, median, standard deviation (SD), maximization, minimization, the proportion of positive values and the proportion of negative values.

Step two, We separated the research period into two groups: pre-crisis and crisis. We defined the pre-crisis period starting from January 2005 and ending up with August 2007, and the crisis period starting from September 2007 until December 2009. Then we ran similar t-tests for the null hypothesis for each group separately. According to the statistical significance of the t-test value, we can form a conclusion as to whether the loan announcement has a positive or negative effect on stock return in each period, separately. Also, we summarized the relevant statistics for pre-crisis and crisis period separately for each event window.

Step three, for the whole period as well as for the pre-crisis and crisis period separately, we regressed CARs on the Crisis Dummy, on each loan variable and on each borrower characteristic one by one to investigate the relationship between the chosen variable and the CARs caused by the bank loan announcement. In the univariate analysis, we considered the influence between the CARs and one variable only. The estimate for CAR under the univariate analysis is:

$$CAR_i = \alpha + \beta_i * Variable + \varepsilon_i \quad (6)$$

CAR_i , the cumulative abnormal return for company i, is the dependent variable and is defined in equation (4). α implies the value of CARs if the chosen variable is 0. β_i is the coefficient of the variables, which can be the Crisis Dummy or one of the loan and borrower

characteristics. If β_i is significantly positive and represents the Crisis Dummy, we can interpret β_i in this way like, during crisis period, the CARs will increase by β_i compared to CARs in pre-crisis period. And if β_i is loan or borrower characteristic variable i and is positive and significant, β_i tells us that 1 unit extra variable i will lead to an increase of β_i in CARs.

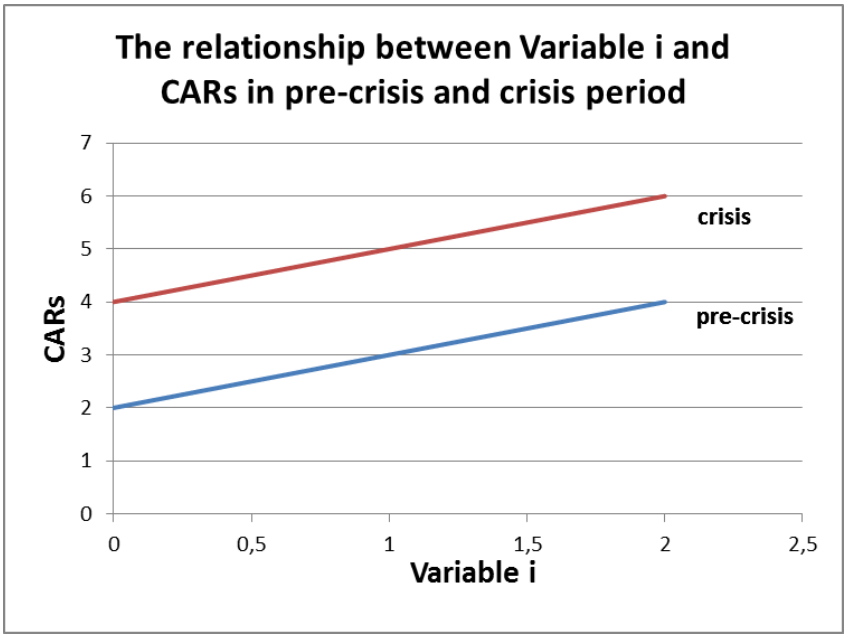
4.4.2 Multivariate analysis

In a univariate analysis, we only take one variable into consideration, but if other excluded variables vary systematically with that chosen variable in univariate analysis, the previous estimated relationship will be incorrect. As a result, we needed to employ a multivariate analysis. To be precise, we regressed the borrowers' CARs on a Crisis Dummy and on the interaction terms between the Crisis Dummy and the important variables related to loan and borrower characteristics. All important variables related to loan and borrower characteristics are defined clearly in Table 3.2 and 3.3.

Firstly, the Crisis Dummy is the most important variable in this paper. This paper mainly studies the effects of bank loan announcements on companies' stock returns in different economic periods, namely the pre-crisis and crisis period. To be precise, initially, we set the Crisis Dummy variable to equal 1 if the bank loan announcement occurred between September 2007 to December 2009 and 0 if it occurred between January 2005 and August 2007. Then we regressed the borrowers CARs (dependent variable) on the Crisis Dummy (independent variable), controlling loan and borrower characteristics (independent variables) to see whether the value of the coefficient is statistically significant positive or negative. Specifically, for example if the coefficient of the Crisis Dummy is x and is statistically significant positive, we can expect in the crisis period, that there are x more CARs than in the pre-crisis period, holding all other variables constant. Meanwhile, assuming the coefficient of loan or borrower variable i is y and is statistically significant positive, we can expect every extra 1 unit in variable i to lead to y more CARs, all else being equal. Graphically, the relationship is shown below.

Chart 4.1 The relationship between Variable i and CARs in pre-crisis and crisis period
(Regress CARs on Crisis Dummy, Variables)

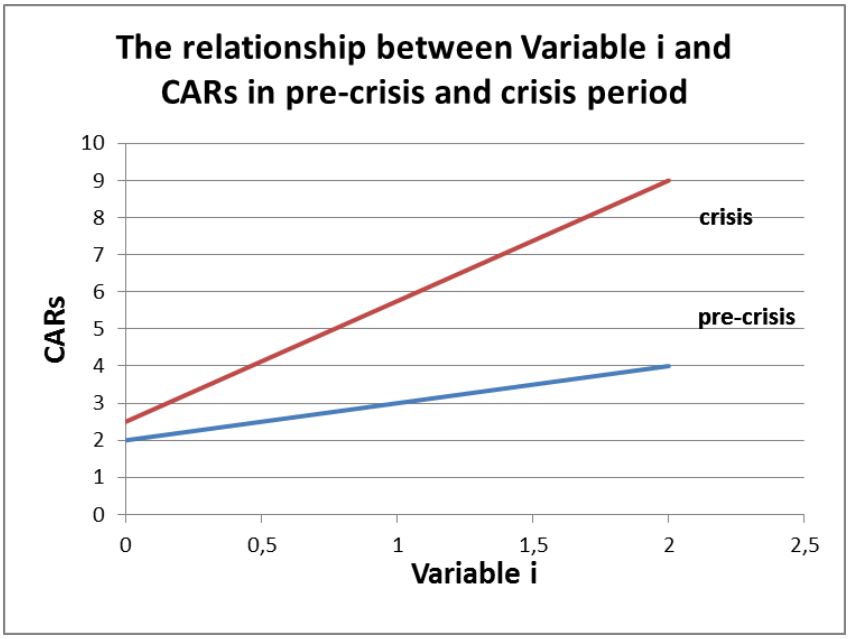
Y axis represents the value of CARs, and X axis represents the value of variable i. The red line indicates the relationship between the CARs and Variable i in the crisis period and the blue line is for the pre-crisis period.



Secondly, it is necessary to analyze the effect of interaction terms between the Crisis Dummy and the important variables on the abnormal returns. We simply multiplied the Crisis Dummy and the variables to get the interaction terms. By regressing the CARs on the interaction term, controlling the important loan and borrower characteristics variables, we aimed at investigating whether the variable will have a stronger or weaker relationship to stock reaction in the crisis period as compared to the pre-crisis period, holding all other variables constant. Specifically, assuming the coefficient of the interaction term is positive and significant x and the coefficient of the variable i term is positive and significant y, we can expect for every extra 1 in variable i, we will see x more CARs in the crisis period over and above any effect we see in the pre-crisis period. Under this assumption, every 1 extra unit variable i leads to x+y more CARs in crisis. Graphically, the relationship is shown as below.

Chart 4.1 The relationship between Variable i and CARs in pre-crisis and crisis period (Regress CARs on interaction term, Variables)

Y axis represents the value of CARs, and X axis represents the value of variable i. The red line indicates the relationship between the CARs and Variable i in the crisis period and the blue line is for the pre-crisis period.



We estimate the CAR model as the following:

$$CAR_i = a + b_i * Crisis\ Dummy + c_i * (Crisis\ Dummy * Variables) + d * Controlled\ Variables + \varepsilon_i \quad (7)$$

CAR_i , the cumulative abnormal return for company i, is the dependent variable and is defined in equation (4). a tells us if all independent variables are equal, how much CARs we expect in the case of bank loan announcement occurs. b_i and c_i are the coefficients of the Crisis Dummy and the interaction term between the Crisis Dummy and several variables related to loan and borrower characteristics. d is the coefficient of controlled variables. ε_i measures the error in this estimated equation.

5. Empirical Results

In this section, we describe and discuss the results of the standard event study analysis of equity reaction to a bank loan announcement. This section contains three parts. We first summarize the result of an abnormal return as well as the statistics used in the process of gaining the abnormal return. In the second part, we discuss the univariate results regarding stock return reaction to bank loan announcements for the full sample as well as for the pre-crisis and crisis periods separately. We also take the influence of each single variable on the CARs into consideration. In the third part, we turn our attention to the multivariate analysis regarding stock return reaction to bank loan announcements employing a set of variables, including the Crisis Dummy and loan and borrower characteristics.

5.1 Summary of abnormal return (AR)

As described in methodology, to compute an abnormal return, we need to regress the actual stock return on market return to get the market model. Table 5.1 shows the summary of the relevant statistics of the market model.

Table 5.1 Market model statistics

This table provides statistics of the Alpha and Beta in market model. Mean, Median, Max, Min, Standard deviation are shown here. Moreover, we also ran t-tests for the hypothesis of alpha equals zero and the hypothesis of beta equals one. Whether alpha significantly differs from or equals to one indicates whether the firm specific risk exists or not. The beta indicates how firm stock return will sensitively react to the changes in market return.

	Mean	**Median**	**Max**	**Min**	**SD**	**ttest**
Alpha	0.0028	0.0002	1.3961	-0.0194	0.0597	1.1167
Beta	0.9826	0.9202	3.0892	-0.2246	0.4748	-0.8577

The result tells us that the mean of the Alpha is 0.003, close to zero, but the t-test for the hypothesis of alpha equals zero is not significant. Therefore, we cannot say only systematic risk exists. Also we can expect the beta has the mean of 0.98, which is close to 1, meaning the firm's stock return changes almost the same with market return. However the t-test for the hypothesis of beta equals one is not significant, either. Next, we will summarize the statistics about the abnormal return (AR).

Table 5.2 Statistics abnormal return (AR)

In this table, we summarize the relevant statistics of the abnormal return for all companies on each day within the event window. Specially, we consider the mean, media, min, max and SD of AR on two days and one day before the announcement date, the announcement day, one day and two days after the announcement day.

Day	**Mean**	**Median**	**Max**	**Min**	**SD**	**ttest**
-2	0.36%	0.14%	11.99%	-5.28%	2.01%	3.35
-1	0.25%	0.09%	18.56%	-12.13%	2.14%	2.23
0	0.74%	0.16%	37.31%	-15.43%	4.26%	3.23
1	0.16%	0.10%	13.46%	-21.15%	2.47%	2.75
2	0.30%	0.15%	10.46%	-8.30%	1.88%	2.99

We can see that the mean of the AR for these five days are all above 0, which means the average abnormal return (AAR) for these five days are positive. Then we can expect that the bank loan announcement has a positive effect on the stock return. Two days and one day before the announcement date, the mean are 0.36% and 0.25% separately. The positive AAR before the announcement date may be caused by the information leakage. It is noticeable that the value of the mean on the announcement date is the biggest, because on the announcement date, the information is the strongest and the most convincing. The positive AR on two days after and one day after the announcement date indicate that positive stock return reaction will last until several days after the announcement day. Furthermore, the values of the t-tests for the null hypothesis that abnormal return equals to zero are all significant for five days, -2, -1, 0, 1, 2. Therefore, we can conclude that, for those five days within the seven event window, the bank loan announcement has a positive significant effect on the equity stock return. Here we only state a brief conclusion, as we will discuss the reason behind the positive reaction as well as other relevant factors affecting the stock reaction to the loan announcement in more details in the univariate and multivariate analyses. In a standard event study, we usually employ an event window to do the research on the cumulative abnormal returns within a short period.

In the next part, we will analysis the cumulative abnormal returns (CARs) and average cumulative abnormal return (CAAR) in detail.

5.2 Univariate result

In this part, we arrange our analysis in the following order. Firstly, we provide the correlations for cross sectional variables. And briefly analyze the relationship between each variable and the CARs, as well as the relationship between every two variables. Secondly, we present and interpret our main univariant result for the full sample period from 2005 to 2009 for all the 351 bank loan announcements. Third, we analyze the sub-period separately. Precisely, the full sample period is divided into the pre-crisis (2005-2007) and the crisis (2007-2009) period. Finally, we investigate the relationship between the loan and borrower variables and the stock return reactions to the bank loan announcement.

5.2.1 Correlations for cross sectional variables.

We firstly provide the summary of the correlations between every two variables and between each variable and CARs in Table 5.3. We notice that Log principal, Number of Arrangers,

Log Asset, Profit Margin, Log Revenue and ROA have negative correlations to CARs. In contrast, Maturity, Leverage Ratio, Current Ratio and Stock Volatility are positively related to CAR. We can guess larger Log Principal, Number of Arrangers, Log Asset, Profit Aargin, Log Revenue and ROA may lead to a lower CARs, whereas higher Maturity, Leverage Ratio, Current Ratio and Stock Volatility may trigger higher CARs. These will be confirmed or denied in later analysis.

Table 5.3 Correlations for cross sectional variables

This table provides the correlations between the variables employed in the cross sectional analysis. Our sample consists 227 companies, borrowing 351 bank loan announcements from 2005 to 2009.

	Log Principal	**Maturity**	**Nr of Arrangers**	**Log Asset**	**Leverage Ratio**	**Current Ratio**	**Profit Margin**	**Stock Volatility**	**Log Revenue**	**ROA**	**CARs (2,2)**	**CARs (1,1)**	**CARs (0,0)**	**CARs (-2,0)**	**CARs (-1,0)**	**CARs (0,1)**	**CARs (0,2)**
Log Principal	1.00																
Maturity	-0.16	1.00															
Number of Arrangers	0.15	-0.02	1.00														
Log Asset	0.58	-0.32	0.20	1.00													
Leverage Ratio	-0.20	0.19	-0.10	-0.35	1.00												
Current Ratio	-0.12	0.067	-0.09	-0.21	-0.11	1.00											
Profit Margin	0.00	-0.02	0.05	-0.03	-0.14	-0.02	1.00										
StockVolatility	-0.37	-0.00	-0.22	-0.34	0.26	0.13	-0.12	1.00									
Log Revenue	0.49	-0.27	0.14	0.82	-0.37	-0.12	-0.17	-0.33	1.00								
ROA	0.17	-0.10	0.08	0.11	-0.37	0.17	0.44	-0.36	0.22	1.00							
CAR(2,2)	-0.06	0.14	-0.21	-0.18	0.36	0.00	-0.14	0.48	-0.18	-0.27	1.00						
CAR(1,1)	-0.03	0.18	-0.12	-0.15	0.31	0.07	-0.05	0.32	-0.17	-0.2	0.80	1.00					
CAR(0,0)	-0.04	0.08	-0.08	-0.04	0.26	0.00	-0.09	0.29	-0.07	-0.20	0.62	0.74	1.00				
CAR(-2,0)	-0.04	0.10	-0.16	-0.08	0.25	0.00	-0.08	0.41	-0.14	-0.22	0.77	0.71	0.78	1.00			
CAR(-1,0)	-0.07	0.14	-0.14	-0.12	0.27	0.05	-0.03	0.34	-0.16	-0.16	0.69	0.84	0.87	0.90	1.00		
CAR(0,1)	-0.00	0.12	-0.06	-0.08	0.30	0.02	-0.10	0.26	-0.08	-0.23	0.72	0.88	0.84	0.59	0.71	1.00	
CAR(0,2)	-0.06	0.12	-0.12	-0.13	0.35	0.00	-0.14	0.34	-0.11	-0.24	0.80	0.78	0.78	0.53	0.63	0.92	1.00

5.2.2 Full sample period univariate result

In this part, we first show our main univariate results regarding stock market reaction to bank loan announcements over the full period, including both pre-crisis and crisis periods (2005-2009). We provide all of the relevant statistics about CARs and CAAR in Table 5.4

Table 5.4 Cumulative abnormal return (CARs) and Cumulative average abnormal return (CAAR)

This table provides the univariate result of cumulative abnormal return by aggregating the abnormal return in each event window for the full sample period from 2005 to 2009. In total, we have seven event windows. The relevant statistics include mean, median, max, min, SD, the percentage of positive value, as well as the result of the t-tests for the null hypothesis that CAAR equals to zero. Actually CAAR is just the mean of CAR. In total, we have seven CAAR for seven different event windows. ***, **,* indicate significance at 1%, 5% and 10% respectively.

Event window	**Percent of positive CARs**	**CAAR**	**Mean**	**Median**	**Max**	**Min**	**SD**	**t-test for CAAR**
[-2,2]	70.66%	2.01%	2.01%	1.20%	27.26%	-7.55%	4.35%	8.67***
[-1,1]	62.4	1.40%	1.40%	0.72%	33.35%	-8.80%	4.46%	5.89***
[0,0]	55.56%	0.76%	0.76%	0.16%	37.31%	-15.43%	4.24%	3.34***
[-2,0]	62.68	1.38%	1.38%	0.67%	30.56%	-7.01%	4.27%	6.06***
[-1,0]	60.11%	1.05%	1.05%	0.44%	35.30%	-12.72%	4.35%	4.53***
[0,1]	61.54	1.11%	1.11%	0.50%	32.57%	-11.51%	4.44%	4.69***
[0,2]	63.25%	1.39%	1.39%	0.72%	31.76%	-10.93%	4.56%	5.70***

In column 2, we can observe that 55% to 70% companies in our full period sample have positive CARs reacting to bank loan announcement. It is also noticeable that for the event window [-2, 2], we can expect the largest percentage of positive CARs, 70.66%. And on announcement day 0, the percentage is the lowest, 55.56%. Therefore, we can expect that the longer the event window is, the larger the percent of positive CARs will be. Furthermore, we can also expect that the portion of positive CARs in [0,1], [0,2] event window are larger than those in [-2,0], [-1,0] event window. The positive cumulative abnormal return in the event windows prior to the announcement day is mainly caused by the information leakage, which

is less convincing than the real loan announcement. This can be interpreted by saying that the weaker signal will lead to less percentage of positive CARs.

Column 3 tells us the cumulative average abnormal return (CAAR) in seven event windows are all positive, ranging from 0.76% to 2.01%. Similar to column 2, the largest of the CAAR, 0.0201 is presented when we consider the event window of [-2,2], the longest event window. In two event windows before the announcement date, [-2, 0] and [-1, 0], we can see lower CAAR (1.38% and 1.05%) than those in two event windows after, with 1.11% and 1.39% CAAR. Therefore, we can expect that although the information leakage exists before the announcement day, the positive stock reaction in post announcement period is stronger than the reaction in the pre-announcement period as well as the announcement date. One explanation for the post-stock reaction-announcement-drift is that investors underreact to news. In other words, there is a limit to the capacity with which investors can process information. This is consistent with the test result found by DellaVigna and Pollet (JF, 2009). They test the price reaction by comparing announcements made on Fridays to announcements made on other days in the week, and find the CARs in the event window [-1,1] is less than CARs on 2.75 days after the announcement.

Then we turn to the last column. The result of the t-test for the null hypothesis of CAAR equals to zero are all positive statistically significant. All of the t-test values are at the 1% confidence level, which give us the strongest statistical significance. This indicates that for the full sample period from 2005-2009 in the US market, in the days surrounding the bank loan announcements, shareholders earn substantially positive abnormal returns. The positive stock market reaction to the bank loan announcement can be explained by the popular intermediation theory that, as a special intermediation, bank loans deliver a positive signal for the borrower that borrowing companies are high-quality and are willing to be monitored by banks for the public investors. Public investors do not have access to insider information as well as access to monitor the borrowers, therefore, they trust the judgment of banks who can gain insider information and have a lot of special features regarding the loan characteristic, for example maturity, the required borrower risk and the required borrower size. Another reasonable explanation is about the agency cost. Precisely, the announced bank loan will reduce the overinvestment in a company by non-congruent managers, because the bank loan usually requires the company to pay back interest every one or few months. If the company cannot offer enough interest payment, then they will receive a wake-up call from the bank.

Our empirical result is consistent with many previous papers, for example Fama (1985) and Diamond (1991), who concentrate on the theoretical research on the topic "What's different about banks?" James (1987) and Lummer and McConnel (1989) show the sizable average excess return in empirical research. However, our results do not confirm previous findings that bank loans are bad news with negative returns by Billett et al. (2006) and Bailey et al. (2012).

In next part, we will divide the full sample period into boom and recession and show the analysis of the univariate in these two periods separately.

5.2.3 Sub-sample period univariate analysis-- pre-crisis and crisis period

Firstly, we provide our main univariate results regarding stock market reactions to bank loan announcements for the pre-crisis and crisis period separately. Pre-crisis period is defined from 2005 to 2007 and crisis period is defined from 2007 to 2009. We describe all relevant statistics about CARs and CAAR in Table 5.5.

Table 5.5 Cumulative abnormal return (CARs) and Cumulative average abnormal return (CAAR) Pre-Crisis and Crisis period

This table provides the univariate results of the cumulative abnormal return by aggregating the abnormal return in each event window for the pre-crisis (Panel A) from 2005 to 2007 and the crisis period (Panel B) from 2007 to 2009. In total, we have seven event windows. The relevant statistics include mean, median, max, min, SD, the percentage of positive value, as well as the result of the t-test for the null hypothesis that CAAR equals to zero. Actually CAAR is just the mean of CARs. In total, we have seven CAAR for seven different event window. ***,**,* indicate significance at 1%, 5% and 10% respectively.

Panel A—Pre-crisis period

Event window	**Percent of positive CARs**	**CAAR**	**Mean**	**Median**	**Max**	**Min**	**SD**	**t-test for CAAR**
[-2,2]	65.31%	0.88%	0.88%	0.97%	9.66%	-7.55%	2.58%	4.78***
[-1,1]	57.20%	0.64%	0.64%	0.35%	12.63%	-6.07%	2.33%	3.83***
[0,0]	54.80%	0.27%	0.27%	0.07	6.48%	-3.93%	1.39%	2.75***
[-2,0]	58.20%	0.59%	0.59%	0.46%	11.33%	-7.01%	2.27%	3.65***

Panel A Continued

Event window	Percent of positive CARs	CAAR	Mean	Median	Max	Min	SD	t-test for CAAR
[-1,0]	59.20%	0.44%	0.44%	0.34%	14.63%	-4.12	2.05%	2.98***
[0,1]	56.60%	0.47%	0.47%	0.22%	11.68%	-5.93%	2.07%	3.21***
[0,2]	56.60%	0.56%	0.56%	0.31%	9.40%	-6.28%	2.27%	3.46***

Panel B—Crisis period

Event window	Percent of positive CARs	CAAR	Mean	Median	Max	Min	SD	t-test for CAAR
[-2,2]	77.42%	3.45%	3.45%	1.79%	27.26%	-4.53%	5.56%	7.71***
[-1,1]	71.33%	2.37%	2.37%	1.27%	33.35%	-8.80%	6.06%	4.88***
[0,0]	57.42%	1.37%	1.37%	0.24%	37.31%	-15.43%	6.15%	2.77***
[-2,0]	68.39%	2.38%	2.38%	1.01%	30.56%	-6.78%	5.76%	5.15***
[-1,0]	61.30%	1.83%	1.83%	0.66%	35.30%	-12.72%	6.04%	3.76***
[0,1]	67.74%	1.91%	1.91%	0.82%	32.57%	-11.51%	6.18%	3.86***
[0,2]	71.61%	2.43%	2.43%	1.27%	31.76%	-10.93%	6.24%	4.86***

Next, we first summarize the statistics in Panel A and Panel B separately, then we compare the difference between Panel A and Panel B and analyze the reason behind the difference.

In Panel A, in column 2, we can see that the percentage of the positive cumulative abnormal returns (CARs) is between 55% and 65, lower than that in a full-sample period on average. Then we turn to analysis column 3. We can expect that the CAAR in seven different windows are all positive and statistically significant before the crisis.

In Panel B, in column 2, the percentage of positive CAR ranges from 57% to 77%, higher than the percent in a full-sample period. In column 3, we can know that all CAAR are positive and higher than that in the full-sample period as well, between 1.37% and 3.45%. Moreover, in the last column, values of the t-tests for CAAR are all statistically significant positive at 1% confidence level. In conclusion, the bank loan announcement led to significant

positive stock market reaction during the crisis period from September 2007 to December 2009.

Now, we will concentrate on the difference of the stock reaction to loan announcement between the pre-crisis and the crisis period by comparing the CAAR relevant statistics in Panel A and B. If we compare the percentage of positive CARs in boom and crisis, we notice that during the booming period, the portion of positive stock reaction is larger than that in crisis by 10% on average. This means, in the pre-crisis period, positive stock market reactions to the bank loan announcement occur more frequently, compared to the crisis period. Then we turn to the comparison of the CAAR value. During the boom period, the CAAR is lower than that during the depressed period on average. The difference in CAAR indicates that during the crisis period, the average stock market reaction to the bank loan announcement is larger, compared to the pre-crisis period.

As a conclusion, although a bank loan announcement is good news for the company in both pre-crisis and crisis period, which could lead to a positive effect on stockholder's wealth, the effect is much more powerful during the period of economic and financial turmoil. That is to say, in a crisis period, the positive effect of "specialness" is greater and more obvious. Next, we explain the reason behind this conclusion in detail. During the crisis, a bank implements stricter regulation in loan contract to avoid loss. The requirement to maturity, borrower risk and borrower capital amount are all higher than those in a boom period. A bank will also decrease the demand of issuing loans and employ heavier screening and monitoring. As a result, the bank loan announcement is a more positive and powerful signal for the borrower company to certificate their high-quality. This is similar to the "wake-up call" theory in De Hass's research in 2010. In contrast, during the economic growth periods, because of reduced informational asymmetries, banks tend to loose their lending standards, diminishing the certification value of bank lending. This is confirmed in the research by Dell'Ariccia and Marquez(2006) and Demyanyk (2011), which indicates that the quality of loans deteriorated for six consecutive years before crisis. Our empirical findings are consistent with the result of many previous papers, for example Berger and Udell (1994), Peek and Rosengren (1995), Bernanke et al (1991) and Dell'Ariccia and Marquez (2006). However, our conclusion is against Ivashina and Scharfstein's research, which indicates the stock reacts negatively to the loan announcement, because investors expect that lower quality borrowers are more likely to apply for bank loans during a crisis.

5.2.4 Relationship between the variables and CARs

In this part we investigate the relationship between variables and CARs and verify which features of the loan contract and the borrower play a significant role in shaping stock market reactions. In the following, we employ [-2, 2] as the event window to be investigated, in which the t-test result for CAAR is the most statistically significant. We regressed the CARs in [-2, 2] on the Crisis Dummy or bank loan variable or borrower characteristics separately. In the following, we provide the result of the univariate regression in Table 5.6.

Firstly, we analyzed the Crisis Dummy. The coefficient of the Crisis Dummy is 0.0257 and it is statistically significant, which means during crisis period, the CARs [-2,2] will increase by 2.57% compared to CARs [-2,2] in pre-crisis period. The intercept for Crisis Dummy is 0.0088 and is also statistically significant, representing the CARs [-2,2] during the pre-crisis period. Therefore, we can get the result that CARs is 0.88% during the boom period and 0.0088+0.0257=3.45% during the boom period. This is the same with the value of CAAR in [-2, 2] event window in Table 5.5. We can confirm the conclusion again that during the crisis period, the bank loan announcement has a stronger positive effect on the stock return. The certification value of a bank loan is greater when the economic and financial macro environment is bad.

Next we turn to the bank loan variables analysis. The coefficient of Log Principal is negative but is non-significant. Therefore, the relationship between the loan size and the CARs is not clear. But we notice that the Maturity has a positive and statistical significant connection with the stock market reaction to the “specialness” of the bank. The coefficient is 0.0033 at 1% confidence level, which means 1 more year in maturity will lead to an increase of 0.33% in CAR. The longer the maturity of the loan contract is, the higher the CARs will be in [-2,2] event window. Therefore, it is not surprising for us to notice that the coefficient of the Long Term Dummy is also positive and statistical significant. Next, the positive coefficient of Number of Arrangers tell us if the syndicate loan has a fewer arrangers, the borrower will gain a higher abnormal return around the bank loan announcement date.

Then we will investigate whether the borrower characteristic will also play a significant role in shaping the stock market reaction. Log Asset, a measurement of firm size, has a negative significant coefficient, -0.0068, indicating that small firms tend to experience higher

cumulative abnormal returns around the bank loan announcement than large firms. In previous papers, there is an explanation that unlike the big firms, small firms do not disclose enough information to the public. As a result, the bank loan announcement will play a positive roll to certificate the good quality for the company. As to other variables, Leverage Ratio and Stock Volatility have a positive effect on the stock reaction, whereas, Log Revenue and ROA have a negative effect on CARs.

Considering the limitation of the univariate analysis that it ignores the inter-connection between variables, we will not consider in great detail the relationship between the variables and CARs here. In the next section, we will show a multivariate regression which investigates whether the relevant variables play a significant role in shaping stock return reactions in detail.

Table 5.6 Regressions of CAR on the Crisis Dummy, loan and borrowers variables

This table displays the univariate results of OLS regressions. CAR[-2,2] is the dependent variable, and Crisis Dummy, loan and borrowers variables is the independent variable. Crisis Dummy is a dummy variable which equals 1 if the bank loan announcement occurs between September 2007 and December 2009, and equals 0 if otherwise. The definitions of all variables are defined in the previous tables. ***,**,* indicate significance at 1%, 5% and 10% respectively.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Crisis Dummy	0.026***											
	(0.45%)											
Log Principal		-0.004										
		(0.38%)										
Maturity			0.003***									
			(0.12%)									
Long Term Dummy				0.018***								
				(0.59%)								
Number of Arrangers					−0.005***							
					(0.14%)							
Log Asset						−0.007***						
						(8.62%)						
Leverage Ratio							0.103***					
							(1.42%)					
Current Ratio								0.000				
								(0.40%)				
Profit Margin									−0.026***			
									(0.98)			

Table 5.6 Continued

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Stock Volatility										1.768^{***} (17.34%)		
Log Revenue											-0.006^{***} (0.17%)	
ROA												-0.177^{***} (3.45%)
Intercept	0.009^{***} (0.3%)	0.052^{*} (2.83%)	0.007 (0.54%)	0.005 (0.53%)	0.045^{***} (0.65%)	0.0862^{***} (2.00%)	-0.005 (0.41%)	0.020^{***} (0.57%)	0.023^{***} (0.25%)	-0.016^{***} (0.41%)	0.073^{***} (1.60%)	0.030^{***} (0.30%)
Number of observation	351	351	351	351	351	351	351	351	351	351	351	351
R-square	0.086	0.004	0.020	0.026	0.045	0.031	0.132	0.000	0.019	0.230	0.031	0.071

5.3 Multivariate result

In this part, we present the results of a multivariate analysis of the relationship between the borrower's stock market reaction and the relevant variables. Specifically, we take the most significant CARs [-2, 2] as the measurement of borrower's stock market reaction. In this section, we divide the discussion into to two small parts. We first analyze the relationship between the borrower's CARs and the Crisis Dummy. Then we interpret the relationship between CARs and Interaction term, holding all other variables constant. In the following, we present the result of the multivariate regression in Table 5.7

5.3.1Analysis of Crisis Dummy in multivariate result

We notice that the coefficient of the Crisis Dummy is 0.0172 and is statistically significant. That means, in the crisis period, there is 1.72% more CARs than in the pre-crisis period, holding all other variables constant. In other words, during crisis, a bank loan plays a more positive role in certificating that the borrower has a higher quality, compared to the boom period. It is worth to say that, in multivariate regression, the coefficient of the Crisis Dummy is lower than that in the univariant regression. A reasonable explanation might be that, in the multivariate analysis we kept all of the other variables constant to eliminate the influence of the changes caused by those variables on CARs, from the pre-crisis period to the crisis period. Therefore, we can conclude that the 0.0172 increase in CARs from the pre-crisis to the crisis period is merely a result of the change in financial and economic environment.

5.3.2 Analysis of Interaction term in multivariate result

We employ the interaction term in multivariate analysis to investigate whether the variable will have a stronger or weaker relationship to stock reaction in the crisis period as compared to the pre-crisis period, holding all other variables constant.

Based on the positive and statistical significant coefficient (0.0024) of Crisis*Log Principal interception, we know that during the crisis period, the principal of loan has a stronger positive connection with the stock market reaction than in the pre-crisis period. Specifically, every extra one more unit in principal of loan will lead to 0.24% more CARs in the crisis period above any effect we see in the pre-crisis period. In

total, during the recession, one extra unit principal of loan will cause 0.0024+ 0.0148 = 1.72% more CARs in crisis. Overall, principal of loan matters more for a bank loan announcement to be perceived as a positive signal for investors during the recent financial crisis, compared to during the pre-crisis period. The size of loan can be interpreted as reinforcing the certification and signaling role of the bank lending decision (Mosebach, 1999), because larger principal loan banks will have a greater incentive to monitor and screen the borrower to avoid any loss, no matter whether this is in the pre-crisis or the crisis period. Moreover, in the crisis period, the monitoring intensive becomes even greater, because in tough periods borrowers with large loan principal amounts have a greater possibility to default. As a result, banks are more cautious to deal with the loan with larger facility in a crisis than in a boom. Another explanation for the positive relationship between loan amount and CARs is that greater loans allow stockholders to undertake more projects which are in line with their objectives and hence the positive effect (Steven Ongena et al., 2008). In a crisis period, most companies will cut the budget and are not willing to undertake new projects. The large loans give the borrower company a great amount of initial cash flow to invest in new projects, as a result, making it outstanding from other peer companies and leading to greater CARs.

Similar results can be found in Crisis*Maturity that when the financial and macro environment is tough, a longer loan will trigger more positive stock return reactions than in bull period by 0.47%. To sum up, during the crisis period, one extra year in maturity will lead to 0.0047+ 0.0166=2.13% more CARs. This is consistent with Raghuram Rajan and Andrew Winton's finding that a bank with a short-term loan may not monitor the borrower even when monitoring is socially beneficial. The free-rider problem can be a reasonable explanation. Precisely, banks need to spend time as well as expense to gather information and monitor the borrower, meanwhile the public also benefits from the information with no cost. If the maturity of the loan is short, the benefit of monitoring for banks will be low. As a result banks have a weak willingness to monitor for short-term loans, decreasing the CARs as well.

Next, we turn to a very important loan variable in syndicate loans, the Number of Arrangers. We notice that during the crisis period, one unit increase in the Number of Arrangers leads to a decrease of 0.0046-0.003=0.16% in CARs. We can say that

during the crisis, although the relationship between the Number of Arranger and the CARs remains negative, the degree of the negative effect is weaker than that in the pre-crisis period. The negative relationship between the Number of Arranger and CARs can be explained as follows. Firstly, as the arrangers number increases, the cost of the loan contract increases and the value associated with the capacity to renegotiate should decline, leading to a decrease in CARs (Preece, 1996). Secondly, the small syndicate is easy to organize monitoring, triggering a positive stock market reaction (Lee, 2004). Moreover, the certification provided by the arranger is an increasing function of the share of the facility retained by it, because with a greater portion of facility, each arranger will have a greater incentive to evaluate and monitor the borrower (Focarelli, 2008).

The coefficient of Crisis*Log Asset is also statistically significant positive. The interpretation can be that an increase in CARs stemming from one extra unit LogAsset is greater in the crisis period than in the boom period. But as the relationship between the asset level and the stock reaction is non-significant, we cannot give a convincing conclusion as to the effect of asset on CARs.

The next significant interaction term is Crisis*Leverage Ratio. The 0.0923 significant coefficient of Crisis*Leverage Ratio indicates that the positive effect of the increase in borrower's leverage level on the stock return is more obvious during crisis period. Then we can gain the result that one extra unit of leverage ratio will lead to 0.0923+0.0324=12.47% more CARs. One reason to explain why a high leverage level will increase CARs is that the bank loan announcement is a stronger signaling and disciplining device for a high leverage level company (Leland and Pyle, 1977; Ross, 1977). Specially, when a firm has more debt in the capital structure, it may meet a higher possibility to default or become more fragile. In that case, the bank loan announcement indicates a signal that although the borrower has high debt ratio, it has high quality, because banks have access to insider information and a strong willingness to avoid loss. Moreover, issuing debt can decrease the agency cost (Jansen, 1986). Shareholders will decrease the overinvestment or empire building if their company has high debt ratio, because they have to be sure the company has enough cash to pay back the debt. As a result, CARs is higher in the high leverage company. Last, a high-quality firm can issue more debt than a low-quality company, thus,

during the crisis, receiving a bank loan, which represents the borrower's quality is certified by the lenders.

Stock Volatility is another important variable. The significant positive coefficient tells us that riskier companies will experience higher abnormal return around a bank loan announcement date. Moreover, with the same level of Stock Volatility increase, the positive stock reaction is greater in the crisis period compared to the pre-crisis period. This finding is consistent with the research of Steven Orgena et al. (2008), which indicates that the informational asymmetries are more severe for riskier firms. As the informational asymmetry is one of the main reasons why financial intermediaries exist, a bank loan announcement will eliminate the informational asymmetry and lead to a positive stock market reaction for the borrowers around the announcement date. During the crisis period, the investor is concerned more about the risk of the company as well as the risk brought by informational asymmetry. Therefore, the bank loan announcement gives the riskier company a greater certification value during the crisis than during the pre-crisis period.

The coefficient of Log Revenue and ROA and relevant interaction terms are not statistically significant. Therefore, in our research we cannot draw any conclusions about the relationship between the stock reaction and these two variables. But some previous research tells us that higher sales will lead to higher CARs around an announcement date.

Table 5.7 Regressions of CARs on main loan and borrower characteristics.

This table presents the results of OLS regressions where the dependent variable is the CARs [-2,2]. Crisis is a dummy variable equal to 1 if the bank loan announcement occurs between Sep 2007 and Dec 2009, and 0 if otherwise. All explanatory variables are defined as in previous tables. The interaction terms are generated in stata. ***,** and* indicate a statistically significant coefficient at the 1%, 5% and 10% confidence level.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Crisis Dummy	0.017*** (0.60%)										
Crisis*Log Principal		0.002*** (0.08%)									
Crisis*Maturity			0.005*** (0.15%)								
Crisis*Nr of Arrangers				0.003** (0.13%)							
Crisis*Log Assets					0.002*** (0.06%)						
Crisis*Leverage Ratio						0.092*** (2.67%)					
Crisis*Current Ratio							0.011*** (0.37%)				
Crisis*Profit Margin								-0.008 (3.00%)			

Table 5.7 Continued

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Crisis*Stock Volality									1.000***		
									(32.06%)		
Crisis*Log Revenue										0.002***	
										(0.06%)	
Crisis*ROA											0.009
											(4.98%)
Log Principal	0.016***	0.015***	0.017***	0.015***	0.016***	0.018***	0.015***	0.013***	0.017***	0.016***	0.013***
	(0.40%)	(0.41%)	(0.42%)	(0.41%)	(0.42%)	(0.42%)	(0.42%)	(0.39%)	(0.43%)	(0.41%)	(0.39%)
Maturity	0.004***	0.004***	0.001	0.004**	0.004**	0.004**	0.004**	0.004	0.004**	0.004**	0.003*
	(0.17%)	(0.17%)	(0.15%)	(0.17%)	(0.17%)	(0.18%)	(0.17%)	(0.17%)	(0.18%)	(0.17%)	(0.16%)
Long Term Dummy	0.002	0.002	0.003	0.002	0.002	-0.001	0.000	0.002	-0.000	0.002	0.002
	(0.70%)	(0.69%)	(0.67%)	(0.68%)	(0.69%)	(0.70%)	(0.70%)	(0.69%)	(0.70%)	(0.69%)	(0.68%)
Number of Arrangers	-0.004***	-0.003**	-0.003**	-0.005***	-0.003**	-0.003**	-0.003**	-0.003**	-0.003**	-0.003**	-0.003**
	(0.13%)	(0.13%)	(0.13%)	(0.12%)	(0.13%)	(0.13%)	(0.13%)	(0.13%)	(0.13%)	(0.13%)	(0.13%)
Log Asset	-0.001	-0.001	-0.000	-0.000	-0.001	-0.002	-0.000	0.000	-0.001	-0.000	0.000
	(0.44%)	(0.43%)	(0.41%)	(0.43%)	(0.44%)	(0.36%)	(0.44%)	(0.51%)	(0.43%)	(0.44%)	(0.46%)
Leverage Ratio	0.074***	0.074***	0.075***	0.073***	0.073***	0.032**	0.073***	0.070***	0.075***	0.073***	0.070***
	(2.30%)	(2.28%)	(2.23%)	(2.29%)	(2.29%)	(1.47%)	(2.29%)	(2.23%)	(2.27%)	(2.28%)	(2.25%)

Table 5.7 Continued

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Current Ratio	-0.001 (0.33%)	-0.001 (0.33%)	-0.000 (0.32%)	-0.001 (0.33%)	-0.001 (0.33%)	-0.001 (0.32%)	-0.007 (0.39%)	-0.001 (0.34%)	-0.001 (0.32%)	-0.001 (0.32%)	-0.001 (0.34%)
Profit Margin	-0.004 (0.87%)	-0.004 (0.86%)	-0.003 (0.88%)	-0.004 (0.86%)	-0.004 (0.85%)	-0.001 (1.02%)	-0.003 (0.80%)	0.001 (2.91%)	-0.003 (0.90%)	-0.004 (0.84%)	-0.007 (0.92%)
Stock Volatility	1.329*** (32.30%)	1.331*** (32.05%)	1.323*** (29.65%)	1.428*** (32.50%)	1.373*** (32.38%)	1.121*** (27.57%)	1.420*** (31.82%)	1.701*** (30.18%)	0.503 (43.34%)	1.381*** (32.60)	1.687*** (30.83%)
Log Revenue	0.002 (0.39%)	0.002 (0.38%)	0.002 (0.36%)	0.001 (0.38%)	0.002 (0.39%)	0.003 (0.32%)	0.001 (0.39%)	0.001 (0.48%)	0.007 (0.38%)	0.001 (0.39%)	0.000 (0.41%)
ROA	-0.018 (4.81%)	-0.018 (4.81%)	-0.017 (4.65%)	-0.017 (4.80%)	-0.016 (4.89%)	(-0.023) (4.68%)	(-0.016) (4.96%)	-0.007 (6.02%)	-0.011 (4.77%)	-0.017 (4.89%)	-0.008 (4.71%)
Intercept	-0.161*** (3.70%)	-0.151*** (3.57%)	-0.159*** (3.56%)	-0.146*** (3.55%)	-0.148*** (3.53%)	-0.155*** (3.43%)	-0.149*** (3.51%)	-0.131*** (3.33%)	-0.152*** (3.50%)	-0.147*** (3.50)	-0.133*** (3.33%)
Number of observation	350	350	350	350	350	350	350	350	350	350	350
Number of clusters	197	197	197	197	197	197	197	197	197	197	197
R-square	0.366	0.366	0.379	0.361	0.361	0.400	0.363	0.343	0.370	0.360	0.343

6. Conclusion

This paper aims at investigating the stock reaction in the U.S stock market to the syndicated loan announcement during the Pre-Crisis and Crisis periods. The whole sample period starts from January 2005 to December 2009 and it is divided into two sub periods: Pre-Crisis period, from January 2005 to August 2007, and Crisis period, from September 2007 to December 2009. The total sample consists of 351 syndicated loans, with 196 deals in the Pre-crisis period and 155 deals in the Crisis period separately. We employed the standard event study methodology to compute and test the cumulative abnormal return (CARs) and cumulative average abnormal return (CAAR) for the full- and sub-sample periods. Then we concentrated on analyzing the influence of loan and borrower characteristics on stock return with univariate and multivariate regressions.

In the univariate analysis, our main finding for the full sample period confirms the "specialness" of bank loans. That is from 2005 to 2009 in the U.S market, within the event window around the bank loan announcement date, shareholders earn substantially positive abnormal returns. This result is consistent with the conclusion by James (1987). Results of sub-sample periods tell us that the certification value of bank loan announcements exists in both the pre-crisis and crisis periods. However, the effect of "specialness" on the stock market is stronger in the crisis period, compared to the pre-crisis period. A reasonable explanation for this can be that during the crisis, the bank adopts a stricter loan contract and monitoring process to avoid loss, which conveys a stronger positive signal to confirm the high quality of the borrower. Our explanation is similar to the "wake-up call" theory in De Hass and Neeltje van Horen's research in 2010. The univariate regression provides us with the influence of loan and borrower characteristics on equity return. The significant conclusion is that Maturity, Leverage Ratio and Stock Volatility have a positive relationship with the CARs. Whereas, the number of mandated lead arrangers, firm size, revenue and ROA negatively affect the stock return reaction to the loan announcement. To be brief,

smaller, lower profitable and riskier firms will see greater positive CARs around the announcement date. Moreover, long-term loans with a small syndicate will earn a higher cumulative abnormal return in the event window.

We can draw the conclusion from the multivariate results that, under the control of all other variables being constant, the Crisis Dummy plays a positive role in shaping the stock reaction to the loan deals, which means the "specialness" of the bank loan is greater in recession from September 2007 to December 2009. We also employ the interaction term which is the product of the Crisis Dummy and loan or borrower related variable to investigate whether the variable will have a stronger or weaker relationship to stock reaction in the crisis period as compared to the pre-crisis period. The result tells us that the large principal of loan is perceived as a positive signal for investors especially in the recent financial crisis. This finding is supported by Mosebach (1999) that banks have greater incentives to monitor the large principal loan. Similarly, banks tend to spend more time on screening the long-term loan rather than the short-term. Moreover, the greater number of mandated lead arrangers to lower CARs, which can be explained by the number of mandated lead arrangers will lead to an increase in the cost of contract and decrease the flexibility of renegotiation (Preece, 1996). Last, two important proxies representing the ability for firms to overcome the financial toughness, Leverage Ratio and the Stock Volatility, indicate positive influences on the stock market reaction to bank loan announcements, especially in the crisis period. In high leverage and risk level companies, the informational asymmetry is more severe and therefore a bank loan announcement will convey greater certificated value to this kind of company by eliminating the informational asymmetry.

Overall, our results demonstrate that bank loans play a positive role in increasing the stock market performance, both in the pre-crisis and in the crisis period. Moreover, positive signaling is more powerful during the crisis period for smaller, riskier companies who obtain large and long-term loans.

7. References

[1] Altunbas, Yener, Blaise Gadanecz, and Alper Kara, 2006. Syndicated Loans: A Hybrid of Relationship Lending and Publicly Traded Debt. Palgrave Macmillan.

[2] Bailey, Warren, Wei Huang, and Zhishu Yang, 2012. Bank Loans with Chinese Characteristics: Some Evidence on Inside Debt in a State-Controlled Banking System. Journal of Quantitative Financial Analysis 46(6), 1795-1830.

[3] Berger, Allen N., Leora F. Klapper, and Gregory F. Udell, 2001. The ability of banks to lend to informationally opaque small businesses. Journal of Banking & Finance 25(12), 2127–67.

[4] Berger, Allen N., and Gregory F. Udell, 1994. Did Risk-Based Capital Allocate Bank Credit and Cause a 'Credit Crunch' in the United States? Journal of Money, Credit and Banking 26(3), 585–628.

[5] Bernanke, Ben S., Cara S. Lown, and Benjamin M. Friedman, 1991. The Credit Crunch. Brookings Papers on Economic Activity 1991(2), 205–47.

[6] Best, Ronald, and Hang Zhang, 1993. Alternative Information Sources and the Information Content of Bank Loans. Journal of Finance 48(4), 1507–22.

[7] Billett, Matthew T., Mark J. Flannery, and Jon A. Garfinkel, 1995. The Effect of Lender Identity on a Borrowing Firm's Equity Return. Journal of Finance 50(2), 699–718.

——— 2006. Are Bank Loans Special? Evidence on the Post-Announcement Performance of Bank Borrowers. Journal of Financial and Quantitative Analysis 41(4), 733–51.

[8] Christophe J.Godlewski, 2012, Bank Loans and Borrower Value During the Recent Financial Crisis Empirical Evidence from France.

[9] De Haas, Ralph, and Neeltje van Horen, 2010. The crisis as a wake-up call. Do banks tighten screening and monitoring during a financial crisis? Netherlands Central Bank, Research Department.

[10] Dell'Ariccia, Giovanni, and Robert Marquez, 2006. Lending Booms and Lending Standards. Journal of Finance 61(5), 2511–46.

[12] Demyanyk, Yuliya, and Otto Van Hemert, 2011. Understanding the Subprime Mortgage Crisis. Review of Financial Studies 24(6), 1848 –1880.

[13] Diamond, Douglas W., 1984. Financial Intermediation and Delegated Monitoring. Review of Economic Studies 51(3), 393–414.

——— 1991. Monitoring and Reputation: The Choice between Bank Loans and Directly Placed Debt. Journal of Political Economy 99(4), 689–721.

[15] Fama, Eugene F. 1985. What's different about banks? Journal of Monetary Economics 15(1), 29–39.

[16] Focarelli, Dario, Alberto Franco Pozzolo, and Luca Casolaro, 2008. The pricing effect of certification on syndicated loans. Journal of Monetary Economics 55(2), 335–49.

[17] Gambacorta, Leonardo, and Paolo Emilio Mistrulli, 2004. Does bank capital affect lending behavior? Journal of Financial Intermediation 13(4), 436–57.

[18] Gatev, Evan, and Philip E. Strahan, 2009. Liquidity risk and syndicate structure. Journal of Financial Economics 93(3), 490–504.

[19] Huang, Weihua, Armin Schwienbacher, and Shan Zhao, 2012. When Bank Loans Are Bad News: Evidence From Market Reactions to Loan Announcements Under the Risk of Expropriation. Journal of International Financial Markets, Institutions & Money 22(2), 233-252.

[20] Ivashina, Victoria, and David Scharfstein, 2010. Bank lending during the financial crisis of 2008. Journal of Financial Economics 97(3), 319–38.

[21] James, Christopher, 1987. Some evidence on the uniqueness of bank loans. Journal of Financial Economics 19(2), 217–35.

[22] Jensen, Michael C., 1986. Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. American Economic Review 76(2), 323–29.

[23] Jensen, Michael C., and William H. Meckling, 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. Journal of Financial Economics 3(4), 305–60.

[24] Lee, Sang W., and D.J. Mullineaux, 2004. Monitoring, Financial Distress, and the Structure of Commercial Lending Syndicates. Financial Management 33, 107–30.

[25] Leland, Hayne E., and David H. Pyle, 1977. Informational Asymmetries, Financial Structure, and Financial Intermediation. Journal of Finance 32(2), 371–87.

[26] Lummer, Scott L., and John J. McConnell, 1989. Further evidence on the bank lending process and the capital-market response to bank loan agreements. Journal of Financial Economics 25(1), 99–122.

[27] Ongena, Steven, David C Smith, and Dag Michalsen, 2003. Firms and their distressed banks: lessons from the Norwegian banking crisis. Journal of Financial Economics 67(1), 81–112.

[28] Ongena, Steven, Viorel Roscovan, Song Wei-L., and Bas J.M. Werker, 2008. Banks and Bonds: The Impact of Bank Loan Accouncements on Bond and Equity Prices.

[29] Peek, Joe, and Eric Rosengren, 1995. Bank regulation and the credit crunch. Journal of Banking & Finance 19(3-4), 679–92.

[30] Preece, Dianna, and Donald J. Mullineaux, 1996. Monitoring, loan renegotiability, and firm value: The role of lending syndicates. Journal of Banking & Finance 20(3), 577–93.

[31] Slovin, Myron B., Shane A. Johnson, and John L. Glascock, 1992. Firm size and the information content of bank loan announcements. Journal of Banking & Finance 16(6), 1057–71.

[32] Wagster, John D., 1999. The Basle Accord of 1988 and the international credit crunch of 1989-1992. Journal of Financial Services Research 15(2), 123–43.