1-1-2009

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Recommended Citation
Journal of Finance and Accounting, vol. 36, no. 9 - 10, p. 1117 - 1147, November/December, 2009

JBFA Journal of Business Finance & Accounting

Journal of Business Finance & Accounting, 36(9) & (10), 1117–1147, November/December 2009, 0306-686X
doi: 10.1111/j.1468-5957.2009.02162.x

Financial Restatements, Cost of Debt and Information Spillover: Evidence From the Secondary Loan Market

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Abstract: In this paper, we investigate the effect of financial restatements on the debt market. Specifically, we focus on the secondary loan market, which has become one of the largest capital markets in the US, and ask the following: (1) whether financial restatements increase restating firm's cost of debt financing and (2) whether the information about restatements arrives at the secondary loan market earlier than at the stock market? Using 176 restatement data, we find significant negative abnormal loan returns and increased bid-ask spreads around restatement announcements. Furthermore, this negative loan market reaction is more pronounced when the restatement is initiated by either the SEC or auditors, and when the primary reason for restatement is related to revenue recognition issues. Additionally, we find restatement information arrives at the secondary loan market earlier than at the equity market, and that such private information quickly flows into the equity market. We also show that stock prices begin to decline approximately 30 days prior to the restatement announcements for firms with traded loans. However, we do not find such informational leakage for firms without traded loans. Collectively, the results of this paper suggest: (1) increased cost of debt financing after restatements and (2) superior informational efficiency of the secondary loan market to the stock market.

Keywords: financial restatements, secondary loan market, cost of debt, information spillover

1. INTRODUCTION

Financial restatements have become an increasing phenomenon in financial reporting and have attracted considerable attention from regulators, the financial press and

*The authors are both from Lally School of Management & Technology, Rensselaer Polytechnic Institute. They thank seminar participants at Rensselaer Polytechnic Institute, Financial Management Association Meeting, and Korean Accounting Association Summer Meeting for helpful comments and suggestions. Moreover, this paper has benefited from discussion of Min Sup Song and helpful comments and suggestions of Martin Walker (editor) and an anonymous referee. The authors also acknowledge excellent editorial assistance from Rosemarie Webb. (Paper received August 2008, revised version accepted May 2009, Online publication September 2009)

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investors.[1] The number of financial restatements has grown rapidly since 1997, and the increasing trend of restatements is largely driven by large firms.[2] The dramatic increase of the frequency of financial restatements and the size of restating firms have also attracted the attention of academics as well. Extant studies document loss of firm value, downward revision in analyst earnings forecast, increased analyst forecast dispersion, increased cost of equity capital, and decreased earnings response coefficients (ERCs) after restatements.[3] Overall, the evidence of these studies suggests that restatements change investors' perceptions of firms' future cash flows, creating uncertainty regarding the reliability of financial statements and leading to significant losses in shareholder value and an increase in the cost of capital.

In contrast to the extensive amount of research on the effect of financial restatements on the equity market, the question of how restatements of past accounting information affect other capital markets has received relatively little attention. In this paper, we investigate the economic consequences of restatements from the perspective of debt holders. Specifically, we analyze a sample of traded syndicated loans and explore how and when the secondary loan market reacts to financial restatements. We also examine whether the information related to restatements arrives at the syndicated loan market earlier than the stock market.

The secondary loan market has rapidly grown in the past 20 years and has become one of the most innovative capital markets (Yago and McCarthy, 2004).[4] The fully developed securitization tools and ratings induce participation of large populations of informed lenders and institutional investors, and increase levels of liquidity in this market (Miller, 1998; and Oldham, 1998). However, unlike the stock or the bond markets, the secondary loan market has characteristics of both a public (stock or bond) market and a private lending contract (Dennis and Mullineaux, 2000; and Allen et al., 2005). Like private lending contracts, loan syndicate members, the majority of whom are banks and institutional investors, have the privileges to access borrowers' private information on a more frequent and timely basis. The information advantage provides banks and institutional investors opportunities to access the information related to restatements earlier than other *public* market participants. Therefore, it is possible that the secondary loan market incorporates private information about restatements into loan prices earlier than other public markets.

Overall, testing the effect of financial restatements on the syndicated loan market has several important implications. First, we can test whether financial restatements affect the cost of debt, specifically the cost of syndicated bank loans. Hribar and Jenkins (2004) document increases in firms' cost of equity capital after restatements. However, to date, the impact of financial restatements on the cost of debt has not been sufficiently studied.[5] Examining the relation between financial restatements and the cost of bank loans is economically important, given that the bank loans are one of the largest sources

1 As stated by the US General Accounting Office (GAO), a financial restatement occurs when a company, either voluntarily or prompted by auditors or regulators, revises public financial information that has been previously reported.

2 According to the GAO, the average (median) size by market capitalization of a restating company increased from $500 million ($143 million) in 1997 to $2 billion ($351 million) in 2002.

3 See Kinney and McDaniel (1989), Defond and Jiambalvo (1991), Feroz et al. (1991), Dechow et al. (1996), Anderson and Yohn (2002), Hribar and Jenkins (2004) and Palmrose et al. (2004), etc.

4 According to LPC, the annual trading volume of the secondary loan market reached $176 billion in 2005.

5 The only exception, to the best of our knowledge, is Graham et al. (2008), which document a significant increase in the cost of bank loan after restatement announcements. Their study deals with all bank loans

of corporate financing. Just as stock market returns are directly associated with the cost of equity, the returns of bank loans in the secondary loan market are directly associated with the cost of syndicated bank loans. Therefore, by examining the impact of restatement announcements on loan returns, we provide a direct effect of restatements on firms' debt financing.

Second, superiority of information acquisition about restating firms may allow the secondary loan market investors to gain information about reporting failures earlier in the process. If restatements are fully anticipated by the market, then we would not observe any abnormal market reactions to the restatement announcements. If the information related to restatements is gradually released, but not fully anticipated by the market, we would still observe abnormal market reactions to restatement announcements.

Third, syndicated loan market participants, in contrast to those of the public markets, are limited to only sophisticated investors such as banks and institutional investors. Therefore, the market price of the syndicated loan market might be more informative than the price of other public markets with noise traders, which allows us to more accurately measure the economic consequences of financial restatements. Both the second and third implications suggest superiority of informational efficiency of the secondary loan market relative to the stock market. We address this informational advantage of the syndicated loan market in our formal tests.

Using syndicated loan quote data from the LSTA/LPC secondary market price database, we compute cumulative average abnormal loan returns (CAAR) over both event and pre-event periods of restatements. We find significant negative abnormal returns for both event windows and pre-event windows, although the economic magnitudes of CAAR for event windows are much larger than those of pre-event windows. In addition, we examine the cumulative average bid-ask spread changes (BAS) over both timeframes to assess the impacts of restatements on perceived information asymmetries in the loan market. We find the BAS increases about 2% for both event and pre-event windows. The results indicate debt holders perceive more risk and uncertainties about restating firms after they receive restatement information. We also document that restatements relating to revenue recognition and restatements initiated by outsiders (auditors or the SEC) are associated with significantly more negative abnormal returns and larger increases in bid-ask spread. These findings are consistent with prior studies using equity market data, such as Anderson and Yohn (2002), Palmrose et al. (2004) and Hribar and Jenkins (2004), which show that restatements relating revenue recognition issues and restatements attributed to outsiders have greater impacts on investors' perceptions of company prospects and uncertainty than other reasons and initiators of restatements.

Additionally, we perform a Granger causality test to see whether the syndicated loan market anticipates financial restatements earlier than the stock market. Granger causality analysis indicates that contemporaneous and lagged loan returns have explanatory powers on stock returns while stock returns are not significant in explaining

and is not limited to syndicated bank loans. To provide evidence that restatements increase the cost of bank loans, they compare the price and various non-price variables of bank loan contracts before and after financial restatements. However, due to the time lag between bank loans before and after bank loan contracts, their results might involve potential noise that is not directly related to restatements. Considering this, measuring short-term price and spread changes in our study provides a more direct measure of the changes in the cost of debt.

contemporaneous and lagged loan returns, suggesting that information concerning impending restatements is leaked among the investors of the secondary loan market and quickly flows among the stock market participants. In a subsequent test, we divide the restating firms into two groups: firms with traded loans vs. firms without traded loans. We then compare stock price movements between these two groups. The stock price of firms with traded loans begins to decline around 30 days prior to restatement announcements, approximately when the syndicated loan price also begins to move down. However, the stock price of firms without traded loans does not show such information leakage. The results confirm superiority of informational efficiency of the secondary loan market. The cross-sectional regression analysis after controlling for size and other factors further confirms the differences in the stock price behaviors between these two groups. The results are also consistent with the findings of Ivashina and Sun (2007) in which institutional investors use private information obtained from the loan market to trade in the stock market.

The remainder of the paper is organized as follows: Section 2 reviews financial restatements and the secondary loan market literature, followed by Section 3 which develops our hypotheses on the relation between financial restatements and the secondary loan market. In Section 4, we explain selected sample and methodology, and Section 5 describes summary statistics. Section 6 includes our empirical results and implications and is followed by our conclusion in Section 7.

2. REVIEW OF LITERATURE

(i) Financial Restatements: Background

There are several provisions of security acts which require companies to correct inaccurate, incomplete, or misleading disclosures (Palmrose et al., 2004). Usually the company, the SEC, an auditor or any combination of them can initially identify the need for a restatement. In the last decade, the number of financial restatements has increased dramatically. According to the GAO restatement dataset, the number of restatements grew by 400% from 1997 through 2004. Several explanations have been offered to clarify why financial restatements have increased significantly. Turner and Weirich (2006) explain that the Sarbanes-Oxley Act (SOX) Section 404, which requires that companies hire independent auditors to test the effectiveness of their internal controls, is the major reason for increased restatements. Healy and Wahlen (1999) argue that a firm's desire to attract capital at a lower cost motivates companies to violate accounting standards, eventually leading to accounting restatements. Bergstresser and Philippon (2006) and Efendi et al. (2007) argue that the widespread shift towards equity-based compensation during the 1990s and legal changes that enabled management to simultaneously exercise options and sell the underlying security play an important role in undermining the accuracy of financial information.

Prior studies on financial restatements focus mainly on the stock market to examine the impact of restatements on the changes of firm value. Most studies document negative abnormal returns to the announcements of restatements in the stock market. For example, Palmrose et al. (2004) find that restating firms lose firm value by −9.2% over the two-day announcement window. In addition, more negative returns are associated with restatements involving fraud and decreasing reported income and are attributed to auditors. However, they do not detect a significant change of bid-ask

spread surrounding the announcement date. Anderson and Yohn (2002) examine stock market returns and bid-ask spreads around restatements both in the short and long term windows. They find −3.49% cumulative abnormal returns and 0.01% increase of bid-ask spread around the 7-day window of restatement announcements. They also find that negative market reactions are most pronounced for firms with fraud and revenue recognition issues. Hribar and Jenkins (2004) argue that financial restatements lead to both decreases in expected future earnings and increases in the firm's cost of equity capital. They document the increase in restating firm's cost of equity capital ranging from 7% to 19%. They also show that restatements initiated by auditors and firms with greater leverage experience greater increases in their cost of capital.[6]

Even with a significant amount of research, prior restatement studies have focused mostly on equity and little is known about the economic consequences of restatements on debt. To the best of our knowledge, Graham et al. (2008) is the only study that relates accounting restatements to the cost of debt. They compare bank loans initiated before and after restatements and find that loans initiated after restatements have significantly higher loan spreads, shorter maturities, higher likelihood of being secured, and more covenant restrictions than loans initiated before restatements. They also find that loan syndicates contain fewer lenders and that firms pay higher upfront and annual fees after misreporting announcements. While their study looks at the effect of restatements on private bank loan contracts, we focus on the secondary loan market, a hybrid of a public and a private market. Additionally, we test whether the syndicated loan market anticipates restatements earlier than the stock market.

(ii) The Secondary Loan Market: Background

The US loan market is a highly valuable source of financing and investment for borrowers and lenders. The market consists of a primary loan market, where loans are initiated, and an active secondary market, where loans are traded after the close of primary syndication (Wittenberg-Moerman, 2008). In the secondary market, loan sales take place through either assignments or participations. Assignments usually require the consent of both the borrower and the arranger for the loan sale because the assignee becomes a direct lender after buying the loan. Under participation, the original lender remains the holder of the loan and continues to receive loan payments until transferring them to the participation buyers. Therefore, participations can be sold without consent of the borrower.

As a result of the designation of loans in Rule 144A security, trading in the secondary loan market is limited to financial institutions and institutional investors (Allen and Gottesman, 2006).[7] With the development of the secondary loan market, the participation of institutional investors has increased dramatically. Today, various types of institutional investors – such as prime funds, Collateralized Loan Obligations, finance companies, and insurance companies – have replaced banks as the main participants in

6 Other studies also report similar results. See, for example, Kinney and McDaniel (1989) and Dechow et al. (1996).

7 In April 1990, the Securities and Exchange Commission (SEC) adopted Rule 144A. Under this rule, securities could be sold and immediately resold to qualified institutional buyers without registration with the SEC.

the secondary market (Taylor and Yang, 2004).[8] In addition, hedge funds and pension funds are increasing their activities in loan trading (Yago and McCarthy, 2004).

The secondary loan market has grown rapidly for the past two decades. The trading volume has increased from $8 billion in 1991 to $176 billion in 2005 (Drucker and Puri, 2009). Several reasons have contributed to the rapid growth in loan sales. One important reason is the use of the secondary market as a tool to manage credit risk and diversify participants' loan portfolios (Simons, 1993; Demsetz, 2000; and Cebenoyan and Strahan, 2004). In addition, the introduction of credit derivatives, such as Collateralized Loan Obligations and Credit Default Swaps, promotes the willingness of banks to sell their syndicated loans (Allen and Gottesman, 2006). Another motivation of loan sales is the adoption of new bank regulatory requirements which induce banks to remove capital-intensive loans from their books by loan sales.[9] Furthermore, as more and more institutional investors participate in loan sales, they are more likely to trade loans to benefit from price movements and temporary market inefficiencies. McDermott et al. (2004) states that the secondary syndicated loan market now tends to resemble other securities markets where traders take positions and arbitragers adjust prices.

Although the secondary loan market can be viewed as a public debt market in which loans are traded like bonds, with fully developed securitization tools and a wide institutional investor base, it can still be viewed as a private debt market. Sufi (2007) argues that syndicated loans are structured to reduce the moral hazard problem between lenders and borrowers and finds that lead banks are more likely to retain a larger share of the loan and form a more concentrated syndicate when the borrower requires more intense monitoring and due diligence. Although lead banks can sell some portion of the loan in the secondary market, they usually still hold a relatively large stake of the loan so as to continue to monitor the borrowers and to pass cash streams to buyers. Holland (1994) and Wittenberg-Moerman (2008) argue that lenders in the loan market have a considerable information advantage over uninformed investors through private communication with borrowers. In addition, most syndicated loans are structured with covenant restrictions in the loan agreement. The covenant structure entitles all members of the syndicate to the receipt of monthly or quarterly financial updates, detailing accounting data such as EBITDA, debt levels, free cash flows, and net worth (Allen et al., 2005). Therefore, syndicate members can receive a considerable amount of private information about the financial condition of the borrower and update their expectations about borrower's future cash flows based on frequent and timely accounting information from the borrower.

3. HYPOTHESES DEVELOPMENT

The negative market reactions to financial restatements in the stock market have been well documented. The negative abnormal returns and increased bid-ask spreads are attributed to two major reasons: first, the impact of the restatement on the firm's past financial statements changes investors' perceptions of the firm's future cash flows expectations. A majority of restatement cases reduces earnings, thereby revealing that

8 Prime funds are mutual funds that invest in leveraged loans. The CLOs purchase assets subject to credit risk (mainly leveraged syndicated loans), and securitize them as bonds of various degrees of creditworthiness.
9 Such as the 1989 Highly Leveraged Transaction Guidelines and the 1988 Basel Capital Accord.

companies are financially worse than they previously appeared.[10] Second, the existence of a restatement may create uncertainty regarding the reliability of information disclosed in the firm's financial reporting.

Graham et al. (2008) examine the effect of financial restatements on bank loan contracting and find that banks use tighter loan contract terms to overcome increased default risk and information asymmetry arising from financial restatements. Their study supports the view that the risk and uncertainty problems, which are well documented in the equity market, also exist in the private debt market. However, to date, there has been no empirical work to examine the effect of financial restatements on the secondary loan market. Since both loan and equity represent claims on a firm's assets, any changes in investors' expectations of future cash flows will influence the pricing of loans as well as equity and other securities (Allen et al., 2005). Furthermore, trading in the secondary loan market is limited to sophisticated investors such as institutional investors, which makes the equilibrium market price more informative. Therefore, the new information about impending restatements might be impounded in the loan market price earlier than the stock price. It would be an empirical question whether there is a significant negative market reaction on or before financial restatements. Also, if the syndicated loan market anticipates upcoming restatements, then whether it anticipates fully or partially might be another important question to test. If the loan market does not fully anticipate accounting restatements, we would observe negative abnormal loan returns and increased bid-ask spreads for both the announcement period and the pre-announcement period.

H_{1a}: There are significant negative abnormal loan returns surrounding a restatement announcement.

H_{1b}: There are significant increases in loan bid-ask spreads surrounding a restatement announcement.

Salavei and Moore (2005) document that different types of restatements send different magnitudes of signals to investors and have different wealth and information effects. We conjecture that restatements concerning revenue recognition increase perceived risk and uncertainty more than other types of restatements and subsequently incur more negative returns and greater increases in bid-ask spread. As firms appear to manage earnings through manipulation of revenue recognition, revenue recognition issues may be perceived by loan market participants to be more intentional than other restatement items. In fact, a majority of the corporate financial reporting problems over the last several years has been related to revenue recognition. In 2000, the Securities and Exchange Commission issued Staff Accounting Bulletin 101 (SAB 101), followed by SAB 101A and B, which clarified guidelines for how and when companies can recognize revenue. These tighter measures were designed to end inflated revenue numbers and provide investors with more realistic numbers as to a company's worth. Anderson and Yohn (2002) find the negative stock market reactions and an increase in bid-ask spreads to financial restatement are most pronounced for firms with revenue recognition issues. We thus conjecture revenue recognition has a similar effect in the secondary loan market as in the stock market.

10 In our sample, 143 restatements are overstatements and 33 are understatements. Kinney and McDaniel (1989) find that there are twice as many announcements about earnings overstatements as there are about earnings understatements. Graham et al. (2008) find that overstatements outnumber understatements nine to one.

H_{1a1}: The negative abnormal loan returns surrounding restatement announcements are more pronounced for firms with revenue recognition restatements than for firms with other reasons of restatements.

H_{1b1}: The increases in loan bid-ask spreads surrounding restatement announcements are more pronounced for firms with revenue recognition restatements than for firms with other reasons for restatements.

The majority of financial restatements are initiated by companies themselves through internal audits and other internal control procedures. However, the SEC may also request a restatement after reviewing company filings. When auditors discover that previously issued financial statements contain material omissions or misstatements, the auditors are required by Generally Accepted Auditing Standards (GAAS) to advise the client to make appropriate disclosures to correct them. If a restatement is initiated by outsiders, including the SEC and auditors, the restatement may indicate that the internal corporate governance system of the restating firm is weak. As Palmrose et al. (2004) point out, attribution to outside initiators signals that monitoring functions of the restating firm failed to prevent, identify, and correct material misstatements. Hribar and Jenkins (2004) show that restatements initiated by auditors are associated with the largest increases in the cost of capital. Thus, we expect the incremental effect of restatements initiated by outside parties is more pronounced than initiated by inside parties.

H_{1a2}: The negative abnormal loan returns surrounding restatement announcements are more pronounced for restatements initiated by outsiders than by insiders.

H_{1b2}: The increases in loan bid-ask spreads surrounding restatement announcements are more pronounced for restatements initiated by outsiders than by insiders.

The secondary loan market is a hybrid between a public and a private market, comprised of financial institutions with access to private information about borrowing firms (Allen and Gottesman, 2006). As most syndicated loans are structured by covenant requirements, borrowers must release their detailed financial and accounting information such as leverage, earnings, net worth, cash flow, and liquidity to their lenders periodically, generally one month prior to public release. If this information is useful to predict the possibility of restatements, we expect some lenders may take actions, such as selling part or all of their loans before restatements are publicly announced, so as to reduce their increased risk and uncertainty about 'bad' loans. Further, since the major participants in the secondary loan market are institutional investors, they are more likely to sell such loans to avoid potential loss before the restatements are publicly announced. Therefore, we would expect to see a drop in bank loan prices when this information is available to lenders and the loan market reactions would precede the restatement announcement date. In other words, the secondary loan market has the opportunity to incorporate private information about restatements into the price when the monthly financial reports are released. We conjecture that the secondary loan market anticipates financial restatements at least one month prior to the announcement.

H_2: There are significantly negative abnormal loan returns and increases in loan bid-ask spreads at least one month prior to the announcement of financial restatements.

Even if hypothesis 2 suggests that restatement information can be partially anticipated in the secondary loan market before the restatement announcement date, this does not necessarily mean that there is no such anticipation of restatements in the stock market. Indeed, prior studies document that different types of stock market participants such as short-sellers, insiders, and large investors can anticipate restatements before they are publicly announced (e.g., Efendi et al., 2005; Desai et al., 2006; Agrawal and Cooper, 2007; Demirkan, 2007; and Salavei et al., 2008).[11] However, empirical evidence indicates that an informational link emanates from the loan market to the equity market. James (1987), Lummer and McConnell (1989) and Aintablian et al. (2007) show that initiation of a bank loan is a positive signal to the equity market. Slovin et al. (1993) and Dahiya et al. (2003) find that stock returns are negatively impacted by the announcement of a loan sale or termination of a lending relationship. Nonetheless, these studies focus on non-traded relationship bank loans rather than the secondary bank loan market. Allen and Gottesman (2006) propose an integrated market hypothesis which suggests that both equity and loan markets are highly integrated such that information flows freely across markets. Investors should use all available financial markets to opportunistically benefit from information, and as a result, prices will adjust rapidly to information revealed in other companion markets. Allen et al. (2005) compare abnormal returns in the syndicated loan market to the equity market with regard to the earnings announcement. They find that negative earnings announcements are reflected more rapidly in bank loan prices than in stock prices. Specifically, loan returns reflect this information approximately one month earlier than abnormal stock returns on negative earnings news. Ivashina and Sun (2007) find institutional investors use private information obtained from the loan market to trade in the stock market, although it is not legally permitted. Thus, we conjecture that the information related to restatements arrives at the secondary loan market first and then flows into the equity market. Furthermore, we hypothesize that if securities of a restating firm are traded in both the stock and the loan markets, investors in the stock market should receive restatement information from the loan market preceding restatement announcements and stock prices will adjust rapidly to such information.

H_{3a}: The information on restatements is available in the secondary loan market before it flows into the stock market.

H_{3b}: The stock market reacts earlier to restating firms with traded loans than to restating firms without traded loans.

4. SAMPLE AND METHODOLOGY

(i) Sample Selection

Our restatement sample is collected from the US General Accounting Office (GAO) database. This database includes 2,309 restatements announced by 1,896 public

11 We thank the referee for pointing out this issue.

companies from January 1, 1997 to September 30, 2005. The GAO database provides restatement announcement date, restatement reasons and initiators of restatement information. Loan trade data are collected from the Loan Trade Database provided by LPC.[12] This database includes indicative loan bid and ask price quotes reported to LPC by trading desks at institutions that make a market for these loans.[13] In addition to price coverage, the database provides the borrower's name, quote date, and the number of market makers reporting indicative price quotes to LPC for every traded facility. The Loan Trade Database incorporates 2,806,512 trading observations for the period from January 1998 to February 2005, which represent 5,271 syndicated facilities. Loan characteristic information is obtained from Dealscan database which provides a historical database of detailed deal terms and conditions on loans including interest rates, maturities, covenants, performance pricing and whether a loan is secured. Beyond these loan contract terms, Dealscan also includes information on the types of loans and the purposes of the loans as well as the structures of syndicated loans such as the number of lenders in a syndicated loan.

We first match the Loan Trade Database with the Dealscan database based on the Facility-ID and/or Loan Identification Number (LIN). Connecting these two databases allows us to identify the deal characteristics of the traded loans such as loan size, maturities, seniorities, loan types and purposes, and syndicate structures. Merging these two databases results in a sample of 1,732,065 identified trading observations related to 2,111 trading facilities. We then merge the GAO database with the Dealscan and the Loan Trading Database by ticker symbol and company name.[14] We require that each observation should have valid data in those three databases. To run an event study, we remove facilities that have one-sided trading data and with less than 25 time-series observations of quoted loan prices. Finally, we match the sample with the Compustat database to identify firm-level characteristics. This step results in a final sample size of 19,505 trading observations, 176 facilities, 103 restatements, and 90 companies.

To test the third hypothesis, we collect stock daily prices data from CRSP database for the 103 restating firms that trade in the secondary loan market and the 895 restating firms that do not trade in the secondary loan market. Our source for loans and stock index returns are the S&P/LSTA Leverage Loan Index from Standard & Poor's, and the NYSE/AMEX/NASDAQ value-weighted index from CRSP.

(ii) Methodology

We perform event studies to investigate the impact of financial restatements on the loan market. We take the announcements of restatements as our events and establish whether loan prices before and around the events display abnormal returns. To test our hypotheses, we present evidence for three event days and three event windows: day -1, day 0, day $+1$, 3-day event window $[-1, +1]$, 15-day pre-event window $[-15, -1]$ and 30-day pre-event window $[-30, -1]$.

12 LPC is a data warehouser which collects daily price quotes from more than 30 dealers in the syndicated bank loan market and makes them available for use in the mark-to-market database.

13 Although the quotations do not obligate the market maker to transact at the quoted price, internal studies conducted by LPC show that transaction prices do not differ considerably from the midpoint of the average of all bid and all ask quotations (Allen and Gottesman, 2006).

14 Because ticker symbols are recycled in practice, we manually check all of the company names after merging.

Following Brown and Warner (1985), MacKinlay (1997), Altman et al. (2006) and Francis et al. (2007), we use three different methods to compute daily abnormal returns. The first method is a mean-adjusted model in which abnormal returns are obtained by subtracting a [−90, −31] mean return from a loan return. The second method is a market-adjusted model in which the S&P/LSTA Leveraged Loan Index, which is considered as market index return, is subtracted from a loan daily return to calculate abnormal return.[15] The third method is a market-model in which the predicted return based on a market-model regression is subtracted from a loan return (Brown and Warner, 1985; and MacKinlay, 1997). To see the approximation of the magnitude of the return impact on a loan of restatement, we also report the unadjusted raw return.[16]

We calculate the cumulative average abnormal returns (CAAR) in three steps. First, using the above models, we calculate daily abnormal returns (AR) for each firm in the days surrounding the announcement of the event being studied. Second, we calculate the average abnormal returns (AAR) for each day in the event window. This aggregates the abnormal returns for all loans to find the average abnormal return at each time. It helps eliminate idiosyncrasies in measurement due to particular loans. Finally, we sum the average abnormal returns over the days in the event window to form the cumulative average abnormal returns (CAAR):

$$\mathrm{AAR} = \sum_{i=1}^{N} \frac{\mathrm{AR}_i}{N}$$

$$\mathrm{CAAR}_{d1,d2} = \sum_{day=d1}^{d2} \mathrm{AAR} = \sum_{day=d1}^{d2} \sum_{i=1}^{N} \frac{\mathrm{AR}_i}{N}.$$

The event study of the bid-ask spread of loans is conducted in a similar manner as the raw model of loan abnormal returns. We construct the daily changes of the bid-ask spread of our sample loans. We first calculate the bid-ask spread, which equals the difference between the mean of bid quotes and mean of ask quotes, divided by half of the sum. The relative bid-ask spread is the percentage difference between today's bid-ask spread and yesterday's bid-ask spread. We calculate the daily relative bid-ask spread changes for each firm, average relative bid-ask spread changes for each day in the event window, and cumulative average relative bid-ask spread changes for certain event windows.

5. SAMPLE DESCRIPTION

Table 1 provides details about the distribution of the restatements in the selected sample. The sample is divided into categories based on the reasons for the restatements, years of restatements and the initiators of the restatements. Panel A shows a variety of

15 As the S&P/LSTA Leveraged Loan Index is a weekly series, following Altman et al. (2006), we convert the Index weekly series to a daily series through linear intrapolation.

16 Some facilities in the loan trading database have low trading frequency which might introduce a bias in calculating abnormal return. In our sample, four facilities only have weekly data. We use the Handjinicolaou and Kalay (1984) methodology to deal with the infrequent trading problem for those facilities.

Table 1
Distribution of the Selected and the GAO Restatement Samples

Panel A: Reasons of Restatements

	Selected Sample		*GAO Sample*	
Reasons	*Frequency*	*Percentage*	*Frequency*	*Percentage*
Revenue Recognition	33	25.00	742	26.09
Cost and Expense	39	29.55	778	27.36
Restructuring, Assets, or Inventory	22	16.67	351	12.34
Acquisitions and Mergers	5	3.79	128	4.50
Securities Related	6	4.55	298	10.48
Loan-Loss	1	0.76	16	0.56
IPR&D	1	0.76	38	1.34
Related-Party Transactions	4	3.03	61	2.14
Tax Related	0	0.00	18	0.63
Reclassification	9	6.82	181	6.36
Other	11	8.33	200	7.03
Unspecified	1	0.76	33	1.16
Total*	132	100.00	2,844	100.00

Panel B: Years of Restatements

	Selected Sample		*GAO Sample*	
Years	*Frequency*	*Percentage*	*Frequency*	*Percentage*
1999	4	3.88	175	7.58
2000	8	7.77	200	8.66
2001	14	13.59	225	9.74
2002	19	18.45	314	13.60
2003	17	16.50	308	13.34
2004	28	27.18	370	16.02
2005 (till 02/28)	13	12.62	524	22.69
Total	103	100.00	2,309	100.00

Panel C: Initiators of Restatements

	Selected Sample		*GAO Sample*	
Initiators	*Frequency*	*Percentage*	*Frequency*	*Percentage*
Company	64	57.66	1323	54.00
SEC	10	9.01	241	9.84
Auditor	8	7.21	281	11.47
Unspecified	29	26.13	605	24.69
Total**	111	100.00	2,450	100.00

Notes:
*Some firms have more than one reason for the restatements.
**Some of the restatements are initiated by two initiators.

reasons of restatements.[17] Among them, revenue recognition accounts for 25% of the restatement cases. Costs or expenses account for 29.55% of these cases. About 16.67% of firms restate due to accounting treatment of restructuring activity, investments, timing

17 GAO (2002) classifies restatements into nine categories: (1) acquisitions and mergers; (2) cost or expense; (3) in-process research and development; (4) reclassification; (5) related-party transactions; (6) restructuring, assets, or inventory; (7) revenue recognition; (8) securities related; and (9) others.

of asset write-downs, inventory valuation, etc. Other kinds of restatements account for less than 10% of the total cases.[18]

Panel B of Table 1 reports the frequency of restatements by years. It is obvious that restatement cases have increased dramatically since 1999.[19] Panel C shows the frequency of restatements by the initiators of restatements. The majority of restatements in our sample are attributable to the company (57.66%). Restatements initiated by the SEC and auditors account for 9.01% and 7.21%, respectively.

In order to examine whether the selected sample is representative of the original restatement sample, in Table 1, we also report the distribution of the restatements in the GAO restatement sample. Overall, we find the distributions of these two samples are very similar, suggesting that our sample is not systematically different from the GAO restatement sample.

Table 2 presents the loan-level and firm-level characteristics of the selected sample. *Size* is the loan facility amount measured in millions of dollars. The mean (median) loan size is 451.36 (252.00) million in our sample with a minimum of 10 million and a maximum of 7,000 million. *Maturity* is the time period that the loan principal must be repaid in full and is measured in months. The mean (median) duration of a loan is approximately 67.65 (71.50) months. *Spread* is measured as the Dealscan data item all-in spread drawn (AIS drawn) which is the amount the borrower pays in basis points over LIBOR or LIBOR equivalent for each dollar drawn. The mean (median) spread is 278.86 (300.00) basis points in our sample. *Lenders* refer to the total number of lenders in a syndicated loan.[20] The average number in the sample is 13.50 with a minimum of 1 and a maximum of 57. In addition, we include three dummy variables. *Secured* is a dummy variable that takes the value of one if a facility is backed by collateral; otherwise, the variable equals zero. *Performance pricing* is a dummy variable that equals one if a loan facility uses a performance pricing provision in the contract.[21] *Covenant* is a dummy variable that equals one if a loan facility uses at least one covenant in the contract. We find approximately 86% of our sample loans have at least one collateral term, 60% have a performance pricing provision and 82% have at least one covenant term in our selected sample. Those results are also consistent with prior findings such as Allen et al. (2005) and Francis et al. (2007).

Panel B of Table 2 includes firm characteristics of the selected sample. For the total 90 firms, the average total asset is 6,221.15 million, which is larger than the average assets of 3,305 million for all Compustat companies.[22] The principle reason is that our selected restating firms are all public companies with a minimum borrowing amount of 10 million. It is not surprising that our sample firms are relatively large. We find other firm characteristics, including leverage, tangibility profitability, market to book and *Z*-score, vary across our sample.

18 Because there can be more than one account affected by a restatement, the total number of reasons reported in Panel A exceeds selected sample size.

19 We do not find any restatement firms in the GAO sample that traded loans in the Dealscan database in 1998. Therefore, there is no observation in 1998.

20 Multiple lenders are important features of syndicated loans. A syndicate is a group of lenders making a loan jointly to a single borrower. There is one or a couple of lead arranger(s) who establishes a relationship with the borrowing firm, negotiates terms of the contract, and guarantees an amount for a price range. The lead arranger(s) then turn(s) to participant lenders to fund part of the loan.

21 Performance pricing is a relatively new provision in bank debt contracts. Performance pricing explicitly varies the loan spread with the borrower's credit rating or financial performance measured with financial ratios like debt-to-EBITDA, leverage, interest coverage, etc.

22 Measured at 1997 fiscal year end.

Table 2
Sample Description

Variables	*N*	*Mean*	*Median*	*Std. Dev.*	*Min.*	*Max.*
Panel A: Loan Characteristics						
Size (Million)	176	451.36	252.00	777.57	10.00	7,000.00
Maturity (Month)	176	67.65	71.50	22.96	12.00	119.00
Spread	176	278.86	300.00	113.76	22.00	625.00
Lenders	176	13.50	12.00	11.94	1.00	57.00
Performance Pricing (dummy)	176	0.60	1.00	0.49	0.00	1.00
Covenant (dummy)	176	0.82	1.00	0.39	0.00	1.00
Secured (dummy)	176	0.86	1.00	0.34	0.00	1.00
Panel B: Firm Characteristics						
Asset (Million)	90	6,221.15	1,845.69	2,3591.86	185.85	168,130.00
Leverage	90	0.55	0.51	0.35	0.01	1.60
Market to Book	90	2.15	1.85	3.49	0.06	20.78
Profitability	90	0.03	0.02	0.11	−0.61	0.49
Tangibility	90	0.35	0.21	0.23	0.01	0.92
Z-score	90	1.52	1.17	4.91	−14.92	29.24

Notes:
This table presents summary statistics of the loan characteristics and firm characteristics of the selected sample. *Size* is the loan facility amount measured in millions of dollars. *Maturity* is the time period that the loan principal must be repaid in full, and it is measured in months. *Spread* is the all-in spread drawn which is defined as the amount the borrower pays in basis points over LIBOR or the LIBOR equivalent for each dollar drawn down. *Lender* is the total number of lenders in a syndicated loan. *Performance pricing* is a dummy variable that equals one if the loan facility uses performance pricing, and zero otherwise. *Covenant* is a dummy variable that equals one if the loan facility uses covenant, and zero otherwise. *Secured* is a dummy variable that equals one if the loan facility is secured by collateral and zero otherwise. *Asset* is the total asset of a firm measured in millions. *Leverage* is the sum of long term debt and debt in current liabilities divided by total assets. *Market to Book* is the sum of market value of equity and the book value of debt divided by total assets. *Profitability* is the EBITDA divided by total assets. *Tangibility* is the net Property, plant and equipment divided by total assets. *Z*-score is the Altman's (1968) *Z*-score which measures firms' default risk. All loan level variables are estimated at the loan initiation year. All firm level variables are estimated at the end of the fiscal year prior to restatement announcement year.

6. EMPIRICAL TEST RESULTS

(i) Abnormal Loan Returns and Bid-Ask Spread Changes

Panel A of Table 3 presents the average abnormal returns (AAR) for one day prior to the event, the event date, one day after the event, the cumulative average abnormal returns (CAAR) over 3-day event period, 15-day pre-event period, and 30-day pre-event period. We use raw, mean-adjusted, market-adjusted, and market model methods to compute daily abnormal returns. We find significantly negative AARs for day −1, day 0, and day 1 at different levels for all models. For all models, the magnitude of AARs is most pronounced at day 0 among all three event days. For example, the magnitude of AAR for day 0 is about twice the magnitude of AAR for day −1.

As expected, we find significant negative abnormal returns for the three-day event window, 15-days pre-event window, and the one month pre-event window for all models at different significant levels. For example, for market-adjusted model, the cumulative average abnormal returns are −0.249%, −0.057% and −0.053%, and statistically significant at the 1% level for [−1, 1], [−15, −1] and [−30, −1] windows, respectively.

Table 3

Abnormal Returns and Bid-Ask Spread Changes Around Restatement Announcements in the Secondary Loan Market

Panel A: Abnormal Returns Around Restatement Announcements

Day or Window	*Raw Model*	*Mean-Adjusted Model*	*Market-Adjusted Model*	*Market Model*
AAR[−1]	−0.00150**	−0.00154***	−0.00158***	−0.00088*
	(−2.46)	(−2.96)	(−2.60)	(−1.74)
AAR[0]	−0.00325**	−0.00312*	−0.00334**	−0.00307*
	(−1.98)	(−1.91)	(−2.04)	(−1.89)
AAR[1]	−0.00211**	−0.00188*	−0.00219**	−0.00187**
	(−2.10)	(−1.91)	(−2.20)	(−2.00)
CAAR[−1, 1]	−0.00240***	−0.00228***	−0.00249***	−0.00209***
	(−3.21)	(−3.08)	(−3.33)	(−2.85)
CAAR[−15, −1]	−0.00072***	−0.00041**	−0.00057***	−0.00043**
	(−4.05)	(−2.30)	(−5.17)	(−2.45)
CAAR[−30, −1]	−0.00055***	−0.00024*	−0.00053***	−0.00022*
	(−3.97)	(−1.74)	(−4.40)	(−1.71)

Panel B: Bid-Ask Spread Changes Around Restatement Announcements

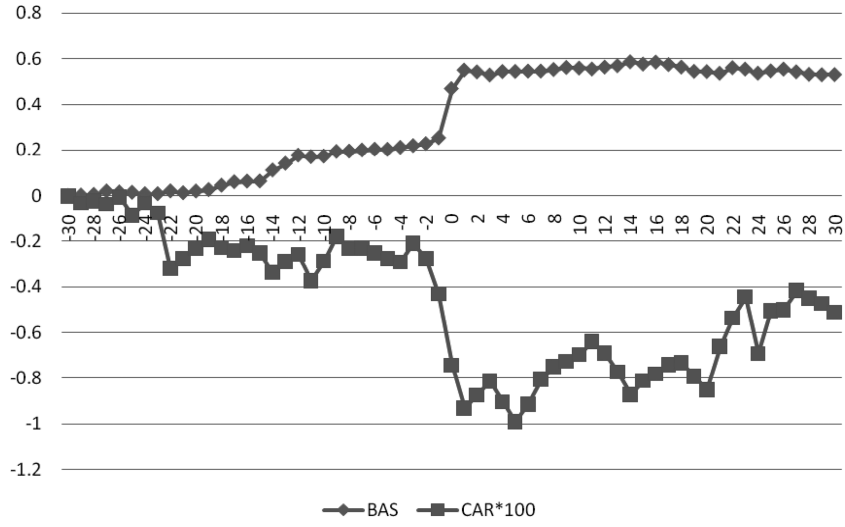
Event Day or Window	*Relative Bid-Ask Spread (z-stat)*
Average Relative BAS [−1]	0.0217*** (4.58)
Average Relative BAS [0]	0.0182*** (9.92)
Average Relative BAS [1]	0.0187*** (9.42)
Cumulative Average Relative BAS [−1, 1]	0.0193*** (12.37)
Cumulative Average Relative BAS [−15, −1]	0.0172*** (25.97)
Cumulative Average Relative BAS [−30, −1]	0.0169*** (38.28)

Notes:
This table reports abnormal returns and bid-ask spread changes around restatement announcements in the secondary loan market. Panel A presents the average abnormal loan returns of loans on event day −1, 0 and 1 and cumulative average abnormal loan returns surrounding the restatement event: 3-day window [−1,+1], pre-15-day window [−15, −1] and pre-30-day window [−30, −1]. The loan returns are defined as the percentage difference between today's loan price (as measured as the mean of average daily bid quotes and average daily ask quotes) and yesterday's loan price. Loan bid (ask) price is the mean of bid (ask) quotes in each trading day. Raw model, Mean-adjust model, Market-adjust return and market model are used to compute daily average abnormal return. The *z*-statistics are included in brackets. Panel B presents the average relative bid-ask spread changes of loans on event day −1, 0 and 1 and cumulative average relative bid-ask spread changes of loans surrounding the restatement event: 3-day window [−1, +1], pre-15-day window [−15, −1] and pre-30-day window [−30, −1]. Loan bid-ask spread is calculated as the difference between mean of bid quotes and mean of ask quotes divided by half of their sum. Relative bid-ask spread is the percentage difference between today's bid ask spread and yesterday's bid ask spread. The *z*-statistics are included in brackets. *, ** and *** represent significant at the 10%, 5% and 1% level, respectively.

Panel B of Table 3 presents the average relative bid-ask spread changes for the same windows. Consistent with hypotheses 1 and 2, we find that the average relative bid-ask spread changes are 2.17%, 1.82% and 1.87%, and are all statistically significant at the 1% level for day −1, day 0 and day 1, respectively. The cumulative average relative bid-ask spread changes are 1.93%, 1.72% and 1.69%, and all statistically significant at the 1% level over the 3-day period, 15-day pre-event, and the 30-day pre-event period, respectively.[23]

23 We also calculate the CAAR for pre-event windows before −30 day, such as [−45, −31]. However, we do not find significant CAAR before −30 day.

Figure 1
Cumulative Abnormal Returns (CAR) and Cumulative Relative Bid-Ask Spread Changes (BAS) Around Window [−30, +30] of Restatement Announcements in the Secondary Loan Market



The results show that the syndicated loan market reacts negatively on restatement announcements through decreases in loan prices and increases in bid-ask spreads. In addition, the information concerning restatements is *partially* impounded by the loan prices at least 30 days prior to the announcements.

To gain a visual sense of the pattern of abnormal returns and bid-ask spread changes, we plot the cumulative abnormal loan returns (X100), based on the mean-adjusted model, and cumulative relative bid-ask spread changes against the event window [−30, +30]. Figure 1 clearly shows a descending trend in the cumulative abnormal loan returns and an increasing trend in the cumulative relative bid-ask spread changes prior to one month before event day. In addition, we also find a significant decrease in cumulative abnormal loan returns, and a significant increase of cumulative relative bid-ask spread changes around day 0, indicating the announcement delivers new information to the loan market about the restating firm's default risk and uncertainty.

(ii) Multivariate Regression Models and Empirical Test Results

(a) OLS Regression

In this section, we test whether negative announcement loan returns and positive bid-ask spread changes are more pronounced when restatements are related to revenue recognition issues, or when restatements are initiated by outsiders such as regulators and auditors. We estimate OLS regressions that include restatement, company and loan characteristics which are expected to influence the loan market reactions to restatement

announcements. Our regression models are:

$$\text{CAR} = f_1(\textit{Revenue Recognition}, \textit{Outsiders}, \text{SOX}, \textit{Firm Characteristics}, \textit{Loan Characteristics}, \textit{Year Effects}, \textit{Industry Effects}) \quad (1)$$

$$\text{BAS} = f_2(\textit{Revenue Recognition}, \textit{Outsiders}, \text{SOX}, \textit{Firm Characteristics}, \textit{Loan Characteristics}, \textit{Year Effects}, \textit{Industry Effects}) \quad (2)$$

where dependent variables are 3-day cumulative abnormal loan returns (CAR) based on mean-adjusted model, and 3-day cumulative relative bid-ask spread changes (BAS) around $[-1, 1]$ event window.

Our testing variables include restatement reasons and restatement initiators. We use dummy variable *Revenue Recognition* to indicate whether restatements are related to revenue recognition issue, and dummy variable *Outsiders* to indicate whether restatements are initiated by the SEC or by auditors.[24] Prior studies such as Byers and Hranaiova (2007) find that the negative market reaction to financial restatements has declined in the SOX era. In order to control for post SOX effect, we use a dummy variable SOX, which equals one if the restatement date is after July 31, 2002, and zero otherwise. In addition, we also control for different listing markets (NYSE, NASDAQ, American Exchange and OTC) and industries (one digit SIC Code) of restating firms in our regressions.

Following Graham et al. (2008), Anderson and Yohn (2002), Palmrose et al. (2004) and Allen et al. (2005), we control for various firm and loan characteristics in the regressions. We first use the logarithm of a firm's total assets to measure firm size. Prior research finds that the information asymmetry problem is more severe in small firms (e.g., Dennis and Sharpe, 2005). Thus, we expect firm size is negatively associated with abnormal loan returns and positively associated with bid-ask spreads. We use the market to book value to proxy for the growth opportunities of firms. All else equal, a restating firm having better growth opportunities should have less negative market reactions, suggesting a positive coefficient on abnormal loan returns, and a negative coefficient on bid-ask spread changes. We also control for leverage, profitability, and *Z*-score, all of which measure a firm's default risk. All else equal, higher leverage, lower profitability and a lower *Z*-score are related to higher default risk. Therefore, we expect leverage is negatively related to loan returns, and positively related to loan bid-ask spread. Profitability and *Z*-score are positively related to loan returns, and negatively related to bid-ask spread. Finally, we control for tangibility as when it is determined that a firm should default, lenders could recover through tangible assets. Thus, we expect tangibility is positively related to loan returns and negatively related to bid-ask spread. All of the above firm level variables are measured one fiscal year prior to the restatement year.

For loan characteristics, we control for *Log* (*size*), *Log* (*maturity*), *Log* (*spread*) and *Log* (*lenders*), as well as three dummy variables: *Performance Pricing*, *Covenant*, and *Secured* in the regressions. It is known that maturity and interest spread are positively related to loan risk; thus, we expect these two variables are negatively related to loan returns

24 In our multivariate regressions, we also include other reasons of restatements in regressions. The results are not reported in our tables.

and positively related to bid-ask spread. However, we cannot predict the effects of loan size and number of lenders on loan returns and bid-ask spread. We control for *Performance Pricing* because lenders price loans differently if they contain performance pricing clauses. As the existence of financial covenants indicates loans are more risky, we expect *Covenant* is negatively related to loan returns and positively related to bid-ask spread. Because of the collateral requirement in secured loans, we anticipate *Secured* is positively related to loan returns and negatively related to bid-ask spread (e.g., Realdon, 2006). In the regressions, we also control for loan types and loan purposes in different model specifications.[25] All of the above loan level variables are measured in the fiscal year when loans are initiated.[26]

The OLS regression results of equation (1) are reported in Table 4. Column 1 analyzes how restatement characteristics affect loan returns. As expected, we find a significant negative estimated coefficient of *Revenue Recognition* at the 1% level, which indicates the loan market reacts more pronounced to restatement of revenue recognition. For the initiators of restatement, we also find significantly negative estimated coefficient at the 1% level for *Outsiders*, which is consistent with our expectation that restatements initiated by outsiders are associated with more pronounced negative abnormal returns.

Column 2 of Table 4 shows the results after controlling for firm characteristics. The effects of the *Revenue Recognition* and *Outsiders* on loan returns continue to be statistically significant. For the firm characteristics, we detect significant negative effects of *Log* (*Asset*) and *Leverage* on loan returns. Although the signs of other firm variables (except for *Tangibility*) are consistent with our expectations, we do not find significant results. For dummy variable SOX, the coefficient is positive but insignificant, indicating there is no significantly different loan market reactions to financial restatements between pre-SOX and post-SOX periods.

After controlling for loan characteristics in Column 3, we find similar results for restatement characteristics variables. For loan characteristics, we find that the *Log* (*Spread*) and *Log* (*Maturity*) have significantly negative coefficients at the 5% and 10% level, respectively, which indicate that higher loan interest spread and longer loan maturity are associated with higher default risk and lower returns. Consistent with our predictions, we find *Secured* has a significantly positive effect on loan returns.

In Table 5, we further examine whether the changes in bid-ask spreads surrounding the announcement of restatement are related to the restatement characteristics. As expected, we find *Revenue Recognition* and *Outsiders* have significant positive estimated coefficients for all three model specifications which indicates those two variables have more information uncertainty effects on loan prices.

(b) Robustness Checks

Our main results are robust in various specifications. We first rerun the regression after deleting outliers measured by Cook's distance. Although generalized White tests reject

25 We separate loan types into five groups: 364-day facility, revolver, term loan, term loan B-D (institutional term loan), and others. For loan purposes, we separate loans into seven groups: acquisition lines, LBO/MBO, takeover, debt repay/recapitalization, corporate purpose, working capital, and other purposes.

26 Bank loan terms are set up when loans are initiated. Generally, loan terms are not changed when loans are traded in the secondary market. Although it is possible that some loan terms are changed through renegotiations between lenders and borrowers, Dealscan does not provide such information. Therefore, the only way to control for traded loan characteristics is to find those loan terms at initiation time.

Table 4

OLS Regression Results. Dependent Variable is the Cumulative Abnormal Returns of Loans During Event-Window [−1, 1]

	Predicted Sign	*(1)*	*(2)*	*(3)*
Restatement Variables				
Revenue Recognition (Dummy)	−	−0.004**	−0.005**	−0.005***
		[−2.21]	[−1.96]	[−2.40]
Outsiders (Dummy)	−	−0.009***	−0.007**	−0.008***
		[−2.71]	[−2.33]	[−2.82]
SOX	+		0.001	0.002
			[0.13]	[0.83]
Firm Variables				
Log(Asset)	−		−0.002**	−0.002**
			[−2.18]	[−2.14]
Leverage	−		−0.004*	−0.003
			[−1.84]	[−1.17]
Tangibility	+		−0.002	−0.003
			[−0.46]	[−0.69]
Profitability	+		0.001	0.001
			[0.09]	[0.18]
Market to Book	+		0.001	0.001
			[0.82]	[1.52]
Z-Score	+		0.001	0.001**
			[1.47]	[2.08]
Loan Variables				
Log(Size)	?			−0.001
				[−0.24]
Log(Spread)	−			−0.008**
				[−2.60]
Log(Maturity)	−			−0.004*
				[−1.69]
Log(Lender)	?			−0.001
				[−1.53]
Performance Pricing (Dummy)	+			−0.002
				[−1.10]
Secured (Dummy)	+			0.010***
				[3.08]
Covenant (Dummy)	−			−0.002
				[−1.13]
Constant	+	0.001	0.012	0.080**
		[0.30]	[1.63]	[2.48]
Control For				
Listing Market		N	Y	Y
Industry		N	Y	Y
Loan Type		N	N	Y
Loan Purpose		N	N	Y
Observations		176	176	176
Adj. *R*-squared		0.16	0.29	0.48

Table 4 (Continued)

Notes:
This table presents the OLS regressions of the cumulative abnormal returns (CARs) obtained in the 3 day event window [−1, 1] on restatement, firm and loan characteristics. The regressions can be described in the following models:

Model 1: CAR = f(*Revenue Recognition*, *Outsiders*)
Model 2: CAR = f(*Revenue Recognition*, *Outsiders*, SOX, *Firm characteristics*, *Listing market effect*, *Industry effect*),
Model 3: CAR = f(*Revenue Recognition*, *Outsiders*, SOX, *Firm characteristics*, *Loan characteristics*, *Listing market*, *effect*, *Industry effect*, *Loan type effect*, *Loan purpose effect*)

CARs are calculated using mean-adjust model. *Revenue Recognition* is a dummy variable that equals one if a restatement is related to revenue recognition issue, and zero otherwise. *Outsiders* is a dummy variable that equals one if a restatement is initiated by the SEC or an auditor, and zero otherwise. *Asset* is the total asset of a firm measured in millions. *Leverage* is the sum of long term debt and debt in current liabilities divided by total assets. *Market to Book* is the sum of market value of equity and the book value of debt divided by total assets. *Profitability* is the EBITDA divided by total assets. *Tangibility* is the net Property, plant and equipment divided by total assets. *Z*-score is the Altman's (1968) *Z*-score which measures firms' default risk. SOX is a dummy variable that equals one if the restatement date is after July 31, 2002, and zero otherwise. *Size* is the loan facility amount measured in millions of dollars. *Spread* is the all-in spread drawn which is defined as the amount the borrower pays in basis points over LIBOR or the LIBOR equivalent for each dollar drawn down. *Maturity* is the time period that loan principal must be repaid in full, and it is measured in months. *Lender* is the total number of lenders in a syndicated loan. *Performance Pricing* is a dummy variable that equals one if the loan facility uses performance pricing, and zero otherwise. *Covenant* is a dummy variable that equals one if the loan facility uses covenant, and zero otherwise. *Secured* is a dummy variable that equals one if the loan facility is secured by collateral and zero otherwise. All loan level variables are estimated in the loan initiation year. All firm level variables are estimated at the end of the fiscal year prior to restatement announcement year. The heteroskedasticity robust *t*-statistics are in parentheses. *, **, *** represent significant at 10%, 5% and 1%, respectively.

heteroskedasticity, we use heteroskedasticity-consistent standard errors throughout. Replicating the regressions with OLS standard errors generates similar results to the tables. Our main results do not change when we use different measures of cumulative abnormal returns. In Table 4, cumulative abnormal returns are calculated based on a mean-adjusted model. We rerun the regressions using two different cumulative abnormal returns based on a market-adjusted model and market model. As reported in Table 6, results are robust to the different measures of cumulative abnormal returns.

The basic unit of our regression is a loan facility. However, loan contract terms are generally negotiated at package level. A loan package may include several facilities which may not be independent. Treating these correlated loan facilities independently could lead to biased results and overstate statistical significance. To deal with this issue, following Graham et al. (2008), we aggregate individual facilities into package level observations by computing weighted (by loan amount) average loan terms such as spread, maturity, etc. We then estimate the regressions at the package level. As shown in Table 6, results are almost similar to earlier test results.[27]

27 Palmrose et al. (2004) and Anderson and Yohn (2002) find a positive relation between relative size of restatement and the stock market reaction. In Tables 4, 5 and 6, we also test restatement magnitude effect on CAR and BAS. We use restated net income less originally reported net income over restated period scaled by total assets reported at year end prior to restatement announcement year to proxy for relative size of restatement. However, we do not find significant results in all models.

Table 5

OLS Regression Results. Dependent Variable is the Cumulative Average Relative Bid-Ask Spread Changes (ABS) of Loans During Event-Window [−1, 1]

	Predicted Sign	*(1)*	*(2)*	*(3)*
Restatement Variables				
Revenue Recognition (Dummy)	+	0.304***	0.285***	0.272**
		[2.81]	[2.72]	[2.35]
Outsiders (Dummy)	+	0.477**	0.427**	0.481***
		[2.49]	[2.62]	[2.90]
SOX	−		−0.037	−0.006
			[−0.49]	[0.07]
Firm Variables				
Log(Asset)	−		−0.023	0.045
			[−0.86]	[1.21]
Leverage	+		0.048	0.046
			[0.54]	[0.41]
Tangibility	−		−0.165	−0.218
			[−1.07]	[−1.05]
Profitability	−		−0.330	−0.176
			[−1.09]	[−0.52]
Market to Book	−		0.001	0.016
			[0.03]	[1.13]
Z-Score	−		−0.078*	−0.083**
			[−1.70]	[−2.10]
Loan Variables				
Log(Size)	?			−0.077
				[−1.23]
Log(Spread)	+			0.185*
				[2.13]
Log(Maturity)	+			0.150*
				[1.73]
Log(Lender)	?			0.185***
				[2.80]
Performance Pricing (Dummy)	−			0.084
				[1.05]
Secured (Dummy)	−			−0.016
				[−0.16]
Covenant (Dummy)	−			0.168*
				[1.78]
Constant	−	−0.053*	−0.013	−1.158
		[−1.80]	[−0.05]	[−1.07]
Control For				
Listing Market		N	Y	Y
Industry		N	Y	Y
Loan Type		N	N	Y
Loan Purpose		N	N	Y
Observations		176	176	176
Adj. *R*-squared		0.19	0.20	0.27

Table 5 (Continued)

Notes:
This table presents the OLS regressions of the cumulative average relative bid-ask spread changes obtained in the 3 day event window [−1,1] on restatement, firm and loan characteristics. The regressions can be described in the following models:

Model 1: ABS = f(*Revenue Recognition*, *Outsiders*)
Model 2: ABS = f(*Revenue Recognition*, *Outsiders*, SOX, *Firm characteristics*, *Listing market effect*, *Industry effect*),
Model 3: ABS = f(*Revenue Recognition*, *Outsiders*, SOX, *Firm characteristics*, *Loan characteristics*, *Listing market effect*, *Industry effect*, *Loan type effect*, *Loan purpose effect*)

Revenue Recognition is a dummy variable that equals one if a restatement is related to revenue recognition issue, and zero otherwise. *Outsiders* is a dummy variable that equals one if a restatement is initiated by the SEC or an auditor, and zero otherwise. *Asset* is the total asset of a firm measured in millions. *Leverage* is the sum of long term debt and debt in current liabilities divided by total assets. *Market to Book* is the sum of market value of equity and the book value of debt divided by total assets. *Profitability* is the EBITDA divided by total assets. *Tangibility* is the net Property, plant and equipment divided by total assets. *Z*-score is the Altman's (1968) *Z*-score which measures firms' default risk. SOX is a dummy variable that equals one if the restatement date is after July 31, 2002, and zero otherwise. *Size* is the loan facility amount measured in millions of dollars. *Spread* is the all-in spread drawn which is defined as the amount the borrower pays in basis points over LIBOR or the LIBOR equivalent for each dollar drawn down. *Maturity* is the time period that loan principal must be repaid in full, and it is measured in months. *Lender* is the total number of lenders in a syndicated loan. *Performance Pricing* is a dummy variable that equals one if the loan facility uses performance pricing, and zero otherwise. *Covenant* is a dummy variable that equals one if the loan facility uses covenant, and zero otherwise. *Secured* is a dummy variable that equals one if the loan facility is secured by collateral, and zero otherwise. All loan level variables are estimated in the loan initiation year. All firm level variables are estimated at the end of the fiscal year prior to restatement announcement year. The heteroskedasticity robust *t*-statistics are in parentheses. *, **, *** represent significant at 10%, 5% and 1%, respectively.

(iii) Information Flow From the Loan Market to the Equity Market

(a) Event Study

To test the information flow from loan market to equity market, we look at two different aspects of the aggregate relation between the stock returns and the secondary loan market returns: an event study surrounding restatement announcements and a bivariate Granger causality test. We separate the total restatement sample into two groups. The first group is the restating firms, which trade in both the secondary loan market and the equity market. The second group is the restating firms, which only trade in the equity market. If there is a spillover of information from the loan market to the stock market, we expect to find negative stock reactions prior to the restatement announcements for restatement firms with traded loans.

The results of Table 7 are consistent with our conjecture. For [−1, 1] three days event window, we find significant negative abnormal returns for both groups. For two pre-event windows [−15, −1], and [−30, −1], we find significantly negative abnormal returns, but only for the sub-sample which trades in both markets. The results indicate that after releasing the restatement information in the loan market, this information quickly flows into the equity market and can be incorporated into stock prices. For the firms without traded loans, as there is no information leaking before it is publicly announced, the significant negative abnormal returns happened only surrounding event days.

Table 6
Robustness Checks

	Market-Adjusted Model	*Market Model*	*Package Level Regression*	
	CAR3	*CAR3*	*CAR3*	*ABS3*
Restatement Variables				
Revenue Recognition (Dummy)	−0.005***	−0.005**	−0.006*	0.251*
	[−2.45]	[−2.32]	[1.89]	[1.70]
Outsiders (Dummy)	−0.008***	−0.008***	−0.007*	0.308*
	[−2.91]	[−2.81]	[−1.74]	[1.74]
SOX	0.002	0.002	0.002	0.053
	[0.79]	[0.85]	[1.15]	[0.47]
Firm Variables				
Log(Asset)	−0.002**	−0.002**	−0.002	0.049
	[−2.19]	[−2.14]	[−1.15]	[0.96]
Leverage	−0.003	−0.004	−0.001	0.032
	[−1.13]	[−1.23]	[−0.33]	[0.21]
Tangibility	−0.003	−0.003	−0.003	−0.099
	[−0.67]	[−0.69]	[−0.40]	[−0.40]
Profitability	0.002	0.001	0.007	−0.130
	[0.26]	[0.18]	[0.76]	[−0.43]
Market to Book	0.001**	0.001**	0.001	0.013
	[2.26]	[2.33]	[1.36]	[0.77]
Z-Score	0.001**	0.001**	0.001	0.049
	[2.14]	[2.08]	[1.27]	[1.41]
Loan Variables				
Log(Size)	0.001	0.002	−0.001	−0.054
	[0.04]	[0.24]	[−0.56]	[−0.83]
Log(Spread)	−0.008**	−0.008**	−0.007*	0.110
	[−2.59]	[−2.60]	[−1.88]	[1.01]
Log(Maturity)	−0.004*	−0.004*	−0.005	0.155*
	[−1.73]	[−1.70]	[−1.57]	[1.77]
Log(Lender)	−0.001*	−0.001	−0.001	0.136*
	[−1.66]	[−1.44]	[−0.83]	[1.74]
Performance Pricing (Dummy)	−0.002	−0.002	−0.003	0.037
	[−1.16]	[−1.11]	[−1.10]	[0.25]
Secured (Dummy)	0.011***	0.010***	0.011**	0.005
	[3.09]	[3.06]	[2.29]	[0.05]
Covenant (Dummy)	−0.002	−0.002	−0.001	0.102
	[−1.22]	[−1.23]	[−0.60]	[0.88]
Constant	0.077**	0.080**	0.078*	−0.941
	[2.39]	[2.48]	[1.87]	[−0.80]
Control For				
Listing Market	Y	Y	Y	Y
Industry	Y	Y	Y	Y
Loan Type	Y	Y	Y	Y
Loan Purpose	Y	Y	Y	Y
Observations	176	176	103	103
Adj. *R*-squared	0.47	0.48	0.39	0.18

Table 6 (Continued)

Notes:
This table presents package level and firm level OLS regressions of the cumulative abnormal returns and the cumulative average relative bid-ask spread change obtained in the 3 day event window [−1,1] on restatement, firm and loan characteristics. The regression can be described in the following model:

CAR/ABS = f (*Revenue Recognition*, *Outsiders*, SOX, *Firm characteristics*, *Loan characteristics*, *Listing market effect*, *Industry effect*, *Loan type effect*, *Loan purpose effect*)

Revenue Recognition is a dummy variable that equals one if a restatement is related to revenue recognition issue, and zero otherwise. *Outsiders* is a dummy variable that equals one if a restatement is initiated by the SEC or an auditor, and zero otherwise. *Asset* is the total asset of a firm measured in millions. *Leverage* is the sum of long term debt and debt in current liabilities divided by total assets. *Market to Book* is the sum of market value of equity and the book value of debt divided by total assets. *Profitability* is the EBITDA divided by total assets. *Tangibility* is the net Property, plant and equipment divided by total assets. *Z*-score is the Altman's (1968) *Z*-score which measures firms' default risk. SOX is a dummy variable that equals one if the restatement date is after July 31, 2002, and zero otherwise. *Size* is the loan facility amount measured in millions of dollars. *Spread* is the all-in spread drawn which is defined as the amount the borrower pays in basis points over LIBOR or the LIBOR equivalent for each dollar drawn down. *Maturity* is the time period that loan principal must be repaid in full, and it is measured in months. *Lender* is the total number of lenders in a syndicated loan. *Performance Pricing* is a dummy variable that equals one if the loan facility uses performance pricing, and zero otherwise. *Covenant* is a dummy variable that equals one if the loan facility uses covenant, and zero otherwise. *Secured* is a dummy variable that equals one if the loan facility is secured by collateral, and zero otherwise. All loan level variables are estimated in the loan initiation year. All firm level variables are estimated at the end of the fiscal year prior to restatement announcement year. The heteroskedasticity robust *t*-statistics are in parentheses. *, **, *** represent significant at 10%, 5% and 1% respectively.

Table 7

Abnormal Returns Around Restatement Announcements in the Stock Market

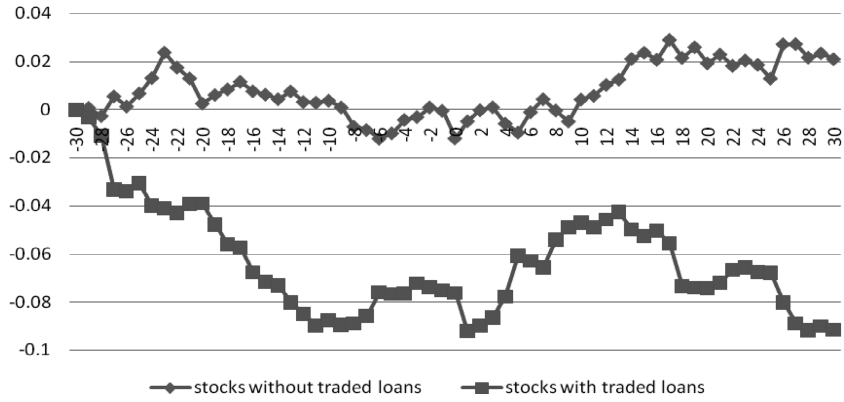
Day or Window	*Restating Firms Without Traded Loans*	*Restating Firms With Traded Loans*
AAR[−1]	−0.001	−0.009***
	(−0.91)	(−3.04)
AAR[0]	−0.011***	−0.011***
	(−7.60)	(−2.45)
AAR[1]	0.007***	−0.016***
	(4.91)	(−4.85)
CAAR[−1, 1]	−0.002**	−0.006***
	(−2.18)	(−2.81)
CAAR[−15, −1]	−0.001	−0.0014*
	(−1.43)	(−1.74)
CAAR[−30, −1]	−0.000	−0.0021***
	(−0.53)	(−3.52)
N	895	95

Notes:
This table presents the average abnormal return of stocks on event day −1, 0 and 1 and cumulative average abnormal return of stocks surrounding the restatement event: 3-day window [−1,+1], pre-15-day window [−14,−1], and pre-30-day window surrounding restatement announcements for both restating firms with traded loans and without traded loans. Market-adjust return is used to compute daily average abnormal return. The *z*-statistics are in parentheses. *, **, *** represent *z*-test significant at 10%, 5% and 1%, respectively.

To gain a visual sense of different stock market reactions to restatements of the two groups, Figure 2 plots the cumulative abnormal loan returns of restating firms trading in both markets, and restating firm trading only in the equity market for [−30, +30] window. Figure 2 clearly shows a descending trend in the cumulative abnormal loan

Figure 2

Cumulative Abnormal Returns (CAR) of Restating Firms With Traded Loans and Restatement Firms Without Traded Loans Around Window [−30, +30] of Restatement Announcements in the Stock Market



returns, one month prior to the event day for restating firms with traded loans, while we could not find such a trend for restating firms without traded loans. We also find both groups experience negative abnormal returns around restatement announcement period. The magnitude of abnormal returns of restating firms which trade in both markets is much larger than that of restating firms which trade only in the equity market.

(b) OLS Regression

The different pre-event stock market reactions to firms with and without traded loans may be attributed to restatement characteristics or firm characteristics. In order to control for those factors, we provide a cross sectional regression. Our testing variable is a dummy variable *Traded Loan*, which equals one if a restatement firm has traded loans in the secondary loan market during restatement time, and zero otherwise.

Table 8 reports the results. We use both [−15, −1] pre event window and [−30, −1] pre event window cumulative abnormal returns as dependent variables. Results show that the coefficients for *Traded Loan* for both models are negative and significant at 5% level, which indicates firms with traded loans have more pronounced pre-event stock market reactions than firms without traded loans. The results further confirm the findings in Table 7 and support our hypothesis 3 that there is information spillover from the loan market to the stock market. Table 8 also shows that *Revenue Recognition* and *Outsiders* have negative associations with the stock market reactions, which are consistent with prior findings. Although the coefficient of SOX is positive, it is not significant at tradition level.

Table 8

OLS Regression Results. Dependent Variables are Cumulative Abnormal Stock Returns During Pre-Event Windows

	CAR15	*CAR30*
Traded Loan (Dummy)	−0.080**	−0.102**
	[−2.10]	[−2.13]
Restatement Variables		
Revenue Recognition (Dummy)	−0.087***	−0.141***
	[−2.87]	[−3.78]
Outsiders (Dummy)	−0.078***	−0.107***
	[−2.91]	[−2.92]
SOX	0.067	0.093
	[1.29]	[1.39]
Firm Variables		
Log(Asset)	−0.033***	−0.011
	[−3.95]	[−1.01]
Leverage	−0.118	−0.083
	[−1.21]	[−0.79]
Tangibility	0.044	0.332***
	[0.66]	[4.04]
Profitability	0.235**	0.181
	[2.01]	[0.94]
Market to Book	0.027	0.082***
	[1.27]	[3.24]
Z-Score	0.012***	0.019***
	[2.73]	[2.77]
Constant	0.025	0.079
	[0.22]	[0.49]
Control For		
Listing market	Y	Y
Industry	Y	Y
Observations	745	745
Adj. *R*-squared	0.16	0.23

Notes:

This table presents the OLS regressions of the cumulative abnormal stock returns (CARs) obtained in the 15 day event window [−15, −1] and 30 day event window [−30,−1] on restatement and firm characteristics. CARs are calculated using a mean-adjust model. The regression can be described in the following model:

CAR = *f* (*Traded loan*, *Revenue Recognition*, *Outsiders*, SOX, *Firm characteristics*, *Listing market effect*, *Industry effect*),

Traded loan is a dummy variable that equals one if a restatement firm has traded loans in the secondary loan market during restatement time, and zero otherwise. *Revenue Recognition* is a dummy variable that equals one if a restatement is related to a revenue recognition issue, and zero otherwise. *Outsiders* is a dummy variable that equals one if a restatement is initiated by the SEC or an auditor, and zero otherwise. *Asset* is the total asset of a firm measured in millions. *Leverage* is the sum of long term debt and debt in current liabilities divided by total assets. *Market to Book* is the sum of market value of equity and the book value of debt divided by total assets. *Profitability* is the EBITDA divided by total assets. *Tangibility* is the net Property, plant and equipment divided by total assets. *Z*-score is the Altman's (1968) *Z*-score which measures firms' default risk. SOX is a dummy variable that equals one if the restatement date is after July 31, 2002, and zero otherwise. *Size* is the loan facility amount measured in millions of dollars. All firm level variables are estimated at the end of the fiscal year prior to restatement announcement year. The heteroskedasticity robust *t*-statistics are in parentheses. *, **, *** represent significant at 10%, 5% and 1%, respectively.

(c) Bivariate Granger Causality Test

To test the causality between the loan market and the equity market, we assess the lead-lag relation between loan and equity market returns using a bivariate Granger causality test. We use daily returns for the firms which trade in both markets from 30 days before to restatement announcement date in order to test the lead-lag relation between the loan and equity markets. We estimate pooled OLS regression for each of the following return-generating processes,[28] which are similar to Ivashina and Sun (2007) and Allen and Gottesman (2006).

$$\mathrm{RS}_i(t) = \alpha + \sum_{j=1}^{5} \beta_j^{s} \mathrm{RS}_i(t-j) + \sum_{j=0}^{5} \beta_j^{L} \mathrm{RL}_i(t-j) + \sum_{j=0}^{5} \beta_j^{D} \mathrm{RM}_i(t-j) + \sum_{j=0}^{5} \beta_j^{M} \mathrm{RD}_i(t-j) + \varepsilon_{it} \tag{3}$$

$$\mathrm{RL}_i(t) = \alpha + \sum_{j=1}^{5} \beta_j^{L} \mathrm{RL}_i(t-j) + \sum_{j=0}^{5} \beta_j^{S} \mathrm{RS}_i(t-j) + \sum_{j=0}^{5} \beta_j^{D} \mathrm{RM}_i(t-j) + \sum_{j=0}^{5} \beta_j^{M} \mathrm{RD}_i(t-j) + \varepsilon_{it} \tag{4}$$

where $\mathrm{RL}_{i,t}$ represents returns on syndicated loan i, at time t and $\mathrm{RS}_{i,t}$ represents the stock return of the loan issuing company for loan i, at time t. We also control for market level returns for loan market and equity market. RD and RM are daily returns of S&P/LSTA Leverage Loan Index and daily returns of the NYSE/AMEX/NASDAQ value-weighted Index from CRSP, respectively.

Table 9 reports the results of the return generating process (3) and (4). The results of equation (3) indicate that contemporaneous and lagged loan returns have statistically significant impacts on equity returns, which suggests that loan returns affect current and future equity returns. As syndicate participants have access to private information about the borrowing firms, this information, such as financial restatement, is first incorporated into loan prices, and later reflected in equity prices. The results indicate that information flow from the loan market to the equity market does exist. However, in equation (4), we could not find that contemporaneous and lagged stock returns have statistically significant impacts on loan returns, which may indicate loan market returns rely mainly on firm specific information but not public information. Other results of the estimation are not surprising. For equation (3), the contemporaneous and one lag of the NYSE/AMEX/NASDAQ value-weighted Index have statistically significant coefficients in explaining equity returns. For equation (4), the contemporaneous and one lag of the S&P/LSTA Leverage Loan Index have explanatory powers with regard to loan returns.

28 We also estimate the equations jointly using seemingly unrelated regression (SUR). Both estimation techniques produce substantially similar results.

Table 9

Lead-Lag Relation Between Loan Market Returns and Stock Market Returns

Variables	*RS(t)*	*RL(t)*
Intercept	−0.001*	−0.001**
	(−2.78)	(−2.07)
RL(t)	0.072**	
	(2.34)	
RL(t−1)	−0.058*	0.490***
	(−1.72)	(42.10)
RL(t−2)	−0.067*	−0.192***
	(−1.94)	(−14.78)
RL(t−3)	0.096***	0.133***
	(2.77)	(9.49)
RL(t−4)	−0.056*	−0.075***
	(−1.65)	(−5.23)
RL(t−5)	0.029	0.045***
	(0.97)	(3.01)
RS(t)		−0.002
		(−0.59)
RS(t−1)	0.526***	0.001
	(44.58)	(0.22)
RS(t−2)	−0.032**	−0.004
	(−2.46)	(−0.79)
RS(t−3)	0.032**	0.003
	(2.41)	(0.56)
RS(t−4)	−0.042***	−0.005
	(−3.22)	(−1.07)
RS(t−5)	0.032***	0.004
	(2.86)	(1.35)
RM(t)	0.535***	−0.007
	(16.54)	(−0.84)
RM(t−1)	−0.213***	0.007
	(−5.85)	(0.94)
RM(t−2)	−0.012	−0.012
	(−0.23)	(−1.30)
RM(t−3)	0.043	0.003
	(0.39)	(0.37)
RM(t−4)	0.017	0.005
	(0.56)	(0.69)
RM(t−5)	0.018	−0.012
	(0.35)	(−1.21)
RD(t)	6.187	5.637**
	(1.05)	(2.22)
RD(t−1)	2.599	−5.562*
	(0.40)	(−1.72)
RD(t−2)	−6.122	−0.476
	(−0.89)	(−0.75)
RD(t−3)	3.287	0.745
	(0.41)	(0.58)
RD(t−4)	−3.59	−1.236
	(−0.43)	(−0.85)
RD(t−5)	2.576	1.034
	(0.39)	(0.06)
Observations	7076	7076
Adj *R*-square	0.31	0.21

Table 9 (Continued)

Notes:
This table presents the results of the study of the lead lag relation between daily returns of stocks and syndicated loans issued by the same companies. Model specifications are:

$$\mathrm{RS}_i(t) = \alpha + \sum_{j=1}^{5} \beta_j^S \mathrm{RS}_i(t-j) + \sum_{j=0}^{5} \beta_j^L \mathrm{RL}_i(t-j) + \sum_{j=0}^{5} \beta_j^D \mathrm{RM}_i(t-j) + \sum_{j=0}^{5} \beta_j^M \mathrm{RD}_i(t-j) + \varepsilon_{it} \quad (3)$$

$$\mathrm{RL}_i(t) = \alpha + \sum_{j=1}^{5} \beta_j^L \mathrm{RL}_i(t-j) + \sum_{j=0}^{5} \beta_j^S \mathrm{RS}_i(t-j) + \sum_{j=0}^{5} \beta_j^D \mathrm{RM}_i(t-j) + \sum_{j=0}^{5} \beta_j^M \mathrm{RD}_i(t-j) + \varepsilon_{it}. \quad (4)$$

The left column records results for equation (3) studying how past and contemporaneous loan returns affect current stock returns. The right column records the corresponding results for equation (4) – stock returns' effect on current loan returns. The models are estimated in pooled OLS Regressions. RL, RS, RD and RM stand for daily returns for individual loans in the secondary market, daily equity returns, daily returns of S&P/LSTA Leverage Loan Index, and daily returns of the NYSE/AMEX/NASDAQ Value-weighted Index, respectively. The heteroskedasticity robust *t*-statistics are in parentheses. ***, ** and * indicate *p*-values of 1%, 5% and 10%, respectively.

7. CONCLUSION

The majority of the existing studies on the economic consequences of financial restatements have focused on the equity market. In this paper, we focus on the secondary loan market and analyze the consequences of financial restatements from debtholders' perspective. Using the event study methodology, we find statistically significant negative abnormal loan returns and positive bid-ask spread changes around both the event window and the pre-event window. In addition, we find that revenue recognition and restatements attributed to outsiders (auditors and the SEC) are associated with more negative returns and wider spreads, which indicate that revenue recognition and restatements attributed to outsiders have greater impacts on investors' perceptions of the likelihood of default of loans than other reasons and initiators. The results are consistent with findings of prior literature that financial restatements decrease investors' perceptions of firms' future cash flow and increase uncertainties about the credibility of firms' financial statements. Overall our results imply that financial restatements raise firm's cost of debt.

In the subsequent analysis, we also document that the secondary loan market partially anticipates impending restatements by showing downward movements of negative loan returns starting at least 30 days prior to the event. We further analyze whether this informational leakage in the secondary loan market starts earlier than the equity market. By examining the differences in the stock market reactions to restating firms with and without traded loans, we find evidence to support the fact that restatement information flows quickly into the stock market once such information is released to syndicated members. Our Granger causality analysis further demonstrates there is a causal relation between loan returns and stock returns. Collectively, the results are consistent with the notion that banks and institutional investors, who are the major players in the secondary loan market, process superior information about restatements than the stock market participants.

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