The role of information asymmetry and financial reporting quality in debt trading: Evidence from the secondary loan market

Regina Wittenberg-Moerman *

The University of Chicago Graduate School of Business, 5807 South Woodlawn Avenue, Chicago, IL 60637, USA

Abstract

I explore which firm and loan characteristics decrease or exacerbate information asymmetry in the trading of private debt. I find that loans of public firms, loans with an available credit rating, loans of profit firms and loans syndicated by more reputable arrangers are traded at lower bid–ask spreads, while revolvers, distressed loans and loans issued by institutional investors are associated with higher information costs. I also find that timely loss recognition reduces the bid–ask spread. This finding suggests that conservative reporting decreases information asymmetry regarding a borrower and increases the efficiency of the secondary trading of debt securities.

1. Introduction

The U.S. syndicated loan market bridges the private and public debt markets and provides borrowers and lenders with a highly valuable source of financing and investment. The market consists of a wide-range primary loan market where syndicated loans are originated, and an active secondary market where loans are traded after the close of primary syndication. In the past 20 years, the syndicated loan market has been one of the most rapidly growing and innovative...
sectors of the U.S. capital market (Yago and McCarthy, 2004). U.S. firms obtain over $1 trillion in new syndicated loans each year, which represents more than 50% of the annual U.S. equity and debt issuance (Weidner, 2000). The trading of syndicated loans has expanded from $8 billion in 1991 to $144.6 billion in 2003, a compound annual growth rate of 27%.

I employ a sample of traded syndicated loans to examine information asymmetry in the trading of debt securities. The role of information asymmetry in trading on secondary markets has long been of interest to researchers in accounting and finance. The existing literature, however, examines information asymmetry mainly in the context of equity markets, leaving information asymmetry in debt markets largely unexplored.

The secondary loan market is a promising empirical setting to examine information asymmetry in trading of debt securities. First, the secondary loan market provides unique information regarding the trading of private debt issues. Second, the secondary loan market involves an exceptionally wide range of debt securities, a range that includes loans issued to public and private firms, as well as investment grade and leveraged (high yield) loans.

Third, the secondary loan market involves informed traders, such as the arranger and syndicate participants, who have a considerable information advantage over uninformed traders. Through private communication with a borrower, informed lenders receive quarterly or monthly financial disclosures, covenant compliance information, amendment and waiver requests, financial projections, and even plans for acquisitions or dispositions. While this information is critical to evaluating a borrower’s financial health, it is usually either unavailable for uninformed market participants or it only becomes available after a considerable delay. As a result, informed lenders are able to get a more timely and precise evaluation of the borrower’s traded loans compared to an uninformed traders’ evaluation, which is based primarily on publicly available information.

Because information asymmetry plays such an important role in the secondary loan market, it is natural to pose the question of how information asymmetry is resolved in loan trading. In this paper, I examine which firm- and loan-specific characteristics decrease or exacerbate information asymmetry, as estimated by the bid–ask spread in the loan trade. First, I examine firm and loan characteristics suggested by prior research as generally related to information asymmetry. Second, I examine the unique characteristics of the information environment of syndicated loans. Third, controlling for these more readily recognizable determinants of information asymmetry, I examine whether there are aspects of a borrower’s financial reporting quality that decrease information asymmetry in the loan trade. While I address a number of reporting quality characteristics, I place particular emphasis on exploring the effect of timely loss recognition.

It is important to note that the secondary loan market is a natural empirical setting in which to examine the importance of timely loss recognition. Since debt holders’ returns are mainly determined by the downside region of a borrower’s earnings distribution, debt holders are more sensitive to borrowers’ losses than they are to borrowers’ profits. Leftwich (1983), Watts and Zimmerman (1986), Watts (1993, 2003a, b) and Holthausen and Watts (2001) argue that the demand for timely recognition of losses is driven, at least partially, by the reporting demand of debt markets. By providing evidence that the degree of financial reporting conservatism increases with the importance of a country’s debt markets, Ball et al. (2008b) also support the significant impact of the debt markets on accounting practice.

I expect timely loss recognition to decrease information asymmetry in loan trading by enhancing corporate governance of a borrower and by increasing the amount and quality of information available to secondary loan market participants. As a governance mechanism, timely loss recognition may reduce information asymmetry via two routes. First, timely loss recognition increases debt contracting efficiency. By triggering ex-post violations of debt covenants in a timely manner, timely loss recognition allows lenders to more rapidly employ their decision rights following economic losses (Watts and Zimmerman, 1986; Watts, 1993, 2003a; Ball, 2001). Because syndicated loans are subject to tight and numerous financial covenants, I expect timely loss recognition to significantly increase the efficiency of syndicated loan contracts.

Second, conservative financial reporting generates an understatement of net asset values and therefore facilitates monitoring by debt holders and reduces deadweight agency costs (Watts and Zimmerman, 1986; Watts, 1993, 2003a; Ball, 2001). As suggested by Watts (2003a), lenders rely on verifiable lower bound measures of net assets both in assessing a potential loan and in monitoring the borrower’s creditworthiness after a loan issuance. Further, conservative reporting constrains managers’ opportunistic behavior. This reduces managers’ incentives to transfer wealth to themselves either from debt holders or from the firm as a whole (Watts, 2003a,b; LaFond and Roychowdhury, 2008; Roychowdhury and Watts, 2007). Relying on these arguments, I anticipate that by enhancing corporate governance of the borrower, timely loss recognition decreases information asymmetry in secondary loan trading.

It is important to emphasize that conservative financial reporting also fulfills an important role in providing information to investors (Watts, 2003a; Khan and Watts, 2007; LaFond and Watts, 2008). Because managers have incentives to disclose information about unrealized gains but to withhold information regarding losses, conservative financial reporting not only provides a “hard” source of information regarding a firm’s performance, but it also provides investors with a control for alternative “soft” sources of information (Watts, 2003a).

By increasing the amount and quality of public information available to uninformed investors, I expect timely loss recognition to decrease information asymmetry between informed and uninformed traders in debt securities. More specifically, timely loss recognition induces an early revelation of the changes in a borrower’s credit quality and therefore
increases the borrower’s transparency. As a result, timely loss recognition allows uninformed loan traders who do not possess private sources of information regarding the borrower to get a more timely and precise evaluation of the borrower’s traded loans. Moreover, by enhancing the transparency of a borrower, timely loss recognition allows uninformed loan buyers to perform more efficient post-sale monitoring of the borrower. Both of these effects reduce adverse selection in the secondary loan trade and are therefore expected to lead to lower information asymmetry in trading the loans of borrowers who incorporate economic losses in a timely manner.

The empirical findings are consistent with the predicted relations. There is clear evidence that public reporting decreases information asymmetry in loan trading. The availability of firm-specific and/or loan-specific credit ratings also decreases information costs in the loan trade. Further, consistent with the higher uncertainty associated with revolvers, I find that revolving loans are traded at higher bid–ask spreads. Empirical evidence also suggests that the loans of profitable firms are traded at significantly lower spreads than are the loans of firms experiencing losses.

The empirical findings also confirm that the bid–ask spread is strongly associated with the unique characteristics of the information environment of syndicated loans. Consistent with the primary role of the arranger of syndication in resolving information asymmetry regarding the borrower, I find that loans syndicated by more reputable arrangers are traded at significantly lower spreads. In addition, I find that the considerable information advantage of informed traders in the trading of distress loans (loans traded at a bid price below 90% of their par value) is manifested in the significantly higher bid–ask spreads of these loans. To further address the distinctive features of syndicated loans, I distinguish between loans issued by institutional investors and loans issued by banks. Institutional loans, typically issued with long maturities and back-end-loaded repayment schedules, are traded at higher spreads than bank loans are.

Finally, I find evidence that the timely incorporation of economic losses in a borrower’s financial statements reduces the bid–ask spread at which its loans are traded. The effect of timely loss recognition on the loan trading spreads is both statistically and economically significant. These results demonstrate that by improving the efficiency of a borrower’s loan agreements and by enhancing corporate governance and transparency of a borrower, timely loss recognition decreases information asymmetry in the secondary loan trade. Overall, the analysis presented in this paper provides unique empirical evidence that timely loss recognition reduces the information advantage of informed traders and increases the efficiency of the secondary trading of debt securities.

To further examine the impact of financial reporting quality on loan trading, I investigate the relation between the bid–ask spread and timely gain recognition. Even though timely gain recognition improves the timeliness of accounting earnings and therefore is expected to make earnings a more informative measure of a borrower’s performance (Ball and Shivakumar, 2006; Guay, 2006; Guay and Verrecchia, 2006), I do not find that it decreases the bid–ask spread. Timely gain recognition also does not decrease the bid–ask spread of distress loans, for which good news is more important in evaluating lenders’ claims. The results also show that the overall timeliness of a borrower’s financial reporting is not associated with the bid–ask spread in the loan trade. The insignificant relation between timely gain recognition, overall timeliness and the bid–ask spread suggests that these attributes of accounting reporting do not decrease information asymmetry regarding a borrower’s performance and creditworthiness.

The analysis presented in this paper broadens our understanding of how information asymmetry is resolved in the trading of private debt securities. Prior research addresses loan trading primarily by examining banks’ incentives for loan trading and by testing price formation across the loan, bond and equity markets. To the best of my knowledge, this paper is the first to examine the determinants of the bid–ask spread in the loan trade.

This study also contributes to the literature that examines the influence of accounting conservatism on debt markets. Ahmed et al. (2002) and Zhang (2008) argue that timely loss recognition reduces the cost of debt capital. By providing evidence that timely loss recognition reduces the bid–ask spread at which loans are traded, my paper documents that conservative reporting decreases information asymmetry regarding the borrower. To the best of my knowledge, this paper is the first to document the efficiency gain from timely loss recognition in the trading of debt securities on secondary markets.

Finally, this paper contributes to the literature which explores the relation between accounting conservatism and information asymmetry. As suggested by Khan and Watts (2007) and LaFond and Watts (2008), conservative reporting is an equilibrium response to mitigate agency problems between managers and equity investors. This paper extends this line of research and documents that conservative financial reporting helps resolve information asymmetry between informed and uninformed traders in debt securities.

The following section provides a brief description of the secondary loan market. The third section discusses the sources of information asymmetry in loan trading. The fourth section describes the data. The fifth section focuses on the research design. The sixth section discusses empirical findings. The seventh section concludes.
2. The secondary loan market: background and development

Secondary loan sales occur after the close of primary syndication; loan sales are structured as either assignments or participations. When interests in the loan are transferred by assignment, the buyer becomes a direct signatory to the loan. In participation, the original lender remains the holder of the loan and the buyer takes a participating interest in the existing lender’s commitment (Standard & Poor’s, 2003, 2006). While assignments usually require the consent of both the borrower and the arranger for the loan sale, in participations such consent is almost never required. The majority of loan sales in the secondary loan market are performed via assignment. Today, loan sales are arranged through loan trading desks in more than 30 institutions which act as market makers in the secondary loan market (Taylor and Yang, 2004).

The secondary loan market has grown in recent years, with trading volume increasing from $8 billion in 1991 to $144.6 billion in 2003 (Loan Pricing Corporation (LPC), 2003). The market expanded in both par and distressed loans; the trading volume of loans traded at par and of distressed loans respectively reached $87 billion and $57 billion in 2003. Leveraged loans (defined by LPC as loans rated below BBB– or unrated and priced at the spread equal or higher than 150 bps above Libor) represent the largest and fastest growing part of the secondary loan market. Since 2001, trading of leveraged loans has constituted 80% of the total value of par loan trades.

The involvement of institutional investors in the secondary loan market has increased considerably with the market’s development. Banks, finance companies, loan participation mutual funds (prime funds) and collateralized loan obligations (CLOs) constitute the main secondary loan market participants. Prime funds are mutual funds that invest in leveraged loans; for the most part, prime funds are continuously offered funds with quarterly tender periods or true closed-end, exchange-traded funds (Standard & Poor’s, 2003, 2006). The CLOs purchase assets subject to credit risk (such as syndicated loans and mainly leveraged syndicated loans), and securitize them as bonds of various degrees of creditworthiness. Additionally, hedge funds and pension funds are increasing their activity in loan trading (Yago and McCarthy, 2004).

Several reasons contributed to the strong growth in loan sales. New bank regulatory requirements, such as the 1989 Highly Leveraged Transaction guidelines and the 1988 Basel Capital Accord, encourage banks to decrease their credit risk exposure (Altman et al., 2006; Barth et al., 2004). Additionally, the adoption of SEC Rule 144A in 1990 provided a safe-harbor relief from the registration requirements of Section 5 of the Securities Act of 1933 for the resale of privately held debt and equity securities to qualified institutional buyers (QIB) (Yago and McCarthy, 2004). QIB is defined as an institution that owns and manages $100 million ($10 million in the case of a registered broker-dealer) or more in qualifying securities. The objective of Rule 144A was to increase the efficiency and liquidity of the U.S. market for equity and debt securities issued in private placements by allowing large institutional investors to trade restricted securities more freely with each other. The foundation of the Loan Syndication and Trading Association (LSTA) in 1995 was an additional factor that stimulated the development of the secondary loan market (Hugh and Wang, 2004).

Development of the secondary loan market coincided with improvements in the market’s transparency. In 1987, LPC initiated the publication of Gold Sheets, which provide a detailed analysis of market trends, loan price indexes and news coverage. In the late nineties, LSTA created standard documentation for the primary and secondary loan markets and, jointly with LPC, started providing mark-to-market loan pricing based on dealer quotes (Yago and McCarthy, 2004). These initiatives significantly increased the amount of information available to market participants. In addition, Standard & Poor’s, Moody’s and Fitch-ICBA started rating syndicated loans in 1995. The rapid increase in the number of rated loans reduced information asymmetry in the secondary loan market.

3. The sources of information asymmetry in the secondary loan market

3.1. The role of information asymmetry in loan trading

The secondary loan market involves informed market participants, such as arranger and syndicate participants, who have access to a firm’s private sources of information regarding its creditworthiness and liquidity. Even though the credit agreement between a loan syndicate and a borrowing firm is available to a loan’s buyer, there is ongoing communication between the borrower and the syndicate lenders beyond the credit agreement. This communication includes quarterly or monthly financial disclosures, covenant compliance information, amendment and waiver requests, financial projections, and even plans for acquisitions or dispositions (Standard & Poor’s, 2003, 2006). The transfer of this private information is made in accordance with confidentiality agreements between the borrower and the syndicate and is typically out of the public domain.

The information disclosed by the borrower via private communication with syndicate lenders is usually very important to evaluating the borrower’s financial health; this information becomes available to the general public only when a borrower issues a press release or, if it is a public firm, when it files with the SEC. As a result, syndicate lenders have a considerable information advantage in the secondary loan trade compared to uninformed secondary market participants.

It is important to note that uncertainty regarding a borrower and/or a borrower’s traded loans is positively correlated with information asymmetry between informed and uninformed traders in the secondary loan market. To illustrate this point, consider two borrowers—one with low uncertainty regarding its future profitability and creditworthiness and another that operates in a high uncertainty environment. Access to private sources of information regarding the
“low uncertainty” borrower does not grant informed traders considerable information advantage because of the low uncertainty regarding the borrower’s loan contractual repayments. However, private information regarding the “high uncertainty” borrower allows informed lenders to get a more timely and precise evaluation of the borrower’s traded loans compared to an uninformed trader’s evaluation, which is based primarily on publicly available information. In other words, higher uncertainty regarding the borrower increases the benefits of private information available to informed traders and consequently causes higher information asymmetry in the secondary loan trade.

Two additional characteristics of the secondary loan market further underscore the importance of information asymmetry in the loan trade. First, the vast majority of secondary loan market participants are large institutions, such as banks and institutional investors. *Diamond and Verrecchia (1991)* demonstrate that large traders are especially concerned about adverse selection in the secondary trade.

Second, the majority of loan trading involves leveraged loans. These loans, issued by more risky borrowers, require an extensive bank monitoring (*Diamond, 1991*). As established by *Diamond (1984, 1996)* and *Lummer and McConnell (1989)*, banks provide unique services in the form of credit evaluation and monitoring, and therefore decrease the information asymmetry associated with risky borrowers. However, it is not clear whether a loan originating bank is motivated to continue a loan’s monitoring after a portion of the loan has been sold. For a bank to have an incentive to continue monitoring, it seems necessary that it hold a significant fraction of the loan that it originates. Prior literature questions the efficiency of an originating bank’s post-sale monitoring (*Pennacchi, 1988; Gorton and Pennacchi, 1995; Gorton and Winton, 2002*), which further suggests that the secondary loan trade is subject to high information asymmetry.

Because information asymmetry plays such an important role in the secondary loan market, it is natural to pose the question of how information asymmetry is resolved in loan trading. More specifically, I examine which firm- and loan-specific characteristics decrease information asymmetry, as estimated by the bid–ask spread in the secondary loan trade. First, I examine firm and loan characteristics suggested by prior research as generally related to information asymmetry. Second, I examine the unique characteristics of the information environment of syndicated loans. Third, controlling for these more readily recognizable determinants of information asymmetry, I investigate whether the financial reporting quality of a borrower is associated with the bid–ask spread in the secondary loan trade. This last research question is the main focus of this paper.

### 3.2. Determinant of the bid–ask spread generally related to information asymmetry

#### 3.2.1. Publicly reporting versus private firms

When a borrower does not report to the SEC, secondary market participants have less publicly available information regarding its creditworthiness. In addition, private firms are not subject to rigorous monitoring by market forces, such as the SEC, auditors, analysts and public exchanges. Private firms are also less subject to litigations related to financial reporting and disclosure. Therefore, the information advantage of informed traders is typically more substantial in the trading of loans of private borrowers.

In addition, *Diamond and Verrecchia (1991)*, *Leuz and Verrecchia (2000)* and *Verrecchia (2001)* establish that a commitment to higher disclosure reduces information asymmetry. Since, compared with private firms, public firms have an inherent commitment to higher disclosure, this evidence further emphasizes the importance of public reporting in loan trading. Consequently, I expect the loans of publicly reporting borrowers to be traded at lower bid–ask spreads.

#### 3.2.2. Availability of credit rating

I expect the availability of a credit rating to decrease information asymmetry regarding a borrower. When estimating credit rating availability, I consider the existence of both firm-specific and loan-specific credit ratings. The significance of the availability of a credit rating is supported by *Diamond’s (1991)* theoretical model, which emphasizes the importance of publicly available information, such as credit ratings, to the lender–borrower relationship. The importance of loan-specific ratings is also supported by *Sufi (2007b)* who shows that availability of a loan-specific credit rating reduces information asymmetry between borrowers and uninformed lenders in the syndicated loan market.

#### 3.2.3. Loan size

According to *Jones et al. (2005)*, information asymmetries tend to be less severe for large loans, since any fixed costs associated with obtaining information about a firm are less of an obstacle for large loans. *Bharath et al. (2007)* also suggest that small borrowers have greater information asymmetries, and that a loan’s size is typically positively correlated with its borrower’s size. Additionally, *Diamond and Verrecchia (1991)* show that large firms receive a larger benefit from disclosure than small firms do, which further suggests that the trading of larger loans is associated with lower information asymmetry.

#### 3.2.4. Revolving loans

A revolving loan, which acts like a credit line, provides the borrower with additional flexibility, but increases uncertainty for the lender. Compared to the term loan, the revolver is more likely to be subject to takedown risk because it exposes the lender to sizeable changes in its commitment (*Ho and Saunders, 1983*). Moreover, borrowers tend to draw down revolvers
when their performance deteriorates (Berger and Udell, 1995), further increasing uncertainty for the lender. Because greater uncertainty leads to higher information asymmetry in loan trading, I expect revolvers to be traded at higher spreads.

3.2.5. Loss versus profit firms

I also hypothesize that the loans of profitable firms are traded at lower spreads on the secondary loan market relative to the loans of firms reporting losses. First, profit firms operate in a high uncertainty environment. Second, losses are typically associated with a deterioration in a borrower’s credit quality and with an increase in the probability of bankruptcy. This evidence indicates that the loans of loss firms are likely to experience higher adverse selection costs in the secondary trade.

Equity market studies also support this prediction. Ertimur (2004) and Sadka and Sadka (2004) find that the stock trading of loss firms is subject to higher information asymmetry. Lang and Lundholm (1993) demonstrate that profit firms provide more information to stockholders than loss firms do. The theoretical model of Verrecchia and Weber (2007) also suggests that firms that report poor performance experience higher adverse selection costs in the stock market. Because debt holders’ returns are determined primarily by the downside region of a firm's earnings distribution, the impact of losses on the information environment is likely to be even more pronounced in the loan market.

3.3. Unique characteristics of the information environment of syndicated loans

3.3.1. Reputation of the arranger of syndication

I expect loans syndicated by more reputable arrangers to be associated with lower information asymmetry when traded on the secondary market. The syndicate participants typically rely on information provided by the arranger (Jones et al., 2005). The arranger negotiates the loan agreement, coordinates the documentation process, recruits loan participants and performs primary monitoring and enforcement responsibilities (Dennis and Mullineaux, 2000; Lee and Mullineaux, 2004). In addition, Gorton and Haubrich (1990) and Gorton and Pennacchi (1995) emphasize that the bank’s reputation serves as an implicit guarantee in a loan sale with no recourse, which is a common practice in the sale of syndicated loans. The importance of the arranger’s reputation in resolving information asymmetry is further motivated by the evidence that more reputable arrangers are more likely to syndicate loans and are able to sell off a larger portion of a loan to the participants (Dennis and Mullineaux, 2000; Panyagometh and Roberts, 2002). The literature interprets these findings as consistent with the proposition that the arranger’s status is a certification of the borrower’s financial conditions.

3.3.2. Distressed versus par loans

To examine information asymmetry in loan trading, it is also important to distinguish between distressed and par loans. According to the conventions of the secondary loan market, distressed loans are loans traded at a bid price below 90% of the par value. I expect the trading of distressed loans to be associated with stronger adverse selection for the following reasons. First, access to private sources of information regarding a borrower grants informed traders a considerable information advantage when the borrower’s loans are in distress. Via private communication with syndicate lenders, a firm discloses important information, such as monthly financial disclosures, covenant compliance information, amendment and waiver requests and financial projections. While this information is critical for evaluating distress loans, for uninformed traders it is usually either not available or it only becomes available after a delay. Second, Agrawal et al. (2004) show that as a firm’s financial condition worsens, informed investors intensify their trading activity, further increasing adverse selection in secondary trading.

3.3.3. Identity of the lender (i.e., institutional investor or bank)

To address the distinctive characteristics of syndicated loans, I also distinguish between loans issued by institutional investors and loans issued by banks. Institutional investors constitute the main participants in the secondary loan market and institutional loans represent 45% of traded loans during the sample period. I expect loans issued by institutional investors to be traded at higher bid–ask spreads than loans issued by banks are. Institutional term loans typically have a longer maturity and back-end-loaded repayment schedules than bank term loans. The considerably longer duration of institutional term loans is likely to cause higher information asymmetry in the loan trade.

4 These papers analyze the bilateral lender–borrower relationship and therefore refer to the reputation of the selling bank. In the setting of the syndicated market where the arranger manages a number of syndicate lenders, I conjecture that the reputation of the arranger dominates the reputation of the other members of the syndication, including the seller, in a specific transaction. Rajan (1998) also suggests that buyers trust the selling bank in a secondary loan sale, because of the importance of maintaining the bank's reputation.

5 Prior literature suggests that the arranger does not exploit its information advantage to distribute lower quality loans to syndicate participants. A number of studies find that the arranger holds larger proportions of informationally problematic and riskier loans in its own portfolio (Simons, 1993; Lee and Mullineaux, 2004; Jones et al., 2005; Sufi, 2007a). In addition, the arranger has been found to syndicate a larger proportion of a loan that is subsequently upgraded (Panyagometh and Roberts, 2002).
3.3.4. Restructuring purpose loans
I also examine the information environment of restructuring purpose loans, which represent 52.9% of loans traded over the sample period. I expect restructuring purpose loans—loans with a primary purpose of Takeover, LBO/MBO and Recapitalization—to be associated with higher information asymmetry. Restructuring purpose loans indicate a considerable change in a borrower’s capital structure, which is typically associated with a higher uncertainty regarding the borrower’s future performance. This higher uncertainty should lead to higher information asymmetry between informed and uninformed traders because, through private sources of information, the former are better able to evaluate the consequences of the restructuring on the firm’s fundamentals.

3.4. The association between financial reporting quality and information asymmetry

In this section, I analyze the association between the quality of financial reporting and information asymmetry in the secondary loan trade, with particular emphasis on exploring the effect of timely loss recognition on information asymmetry.

3.4.1. Timely loss recognition

Because the secondary loan market is characterized by substantial information asymmetry between informed lenders (e.g., the arranger and syndicate participants) and uninformed market participants, I expect conservative financial reporting, as measured by the timely incorporation of economic losses in a borrower’s financial statements, to have a significant impact on loan trading. In addition, debt holders are more sensitive to borrowers’ losses than to borrowers’ profits (Leftwich, 1983; Watts and Zimmerman, 1986; Watts, 1993, 2003a), which further supports the prediction that timely loss recognition should be important in resolving information asymmetry in the loan market.

I expect conservative financial reporting to decrease information asymmetry in loan trading by enhancing corporate governance of a borrower and by increasing the amount and quality of information available to the secondary loan market participants. Within the governance mechanism, there are two routes through which information asymmetry may be reduced. First, via a contracting route, timely loss recognition triggers ex-post violations of debt covenants in a timely manner (Watts and Zimmerman, 1986; Watts, 1993, 2003a; Ball, 2001). By triggering debt covenant violations, timely loss recognition allows lenders to more rapidly employ their decision rights following economic losses, which increases the efficiency of debt agreements.6

Compared to public debt contracts, syndicated loan contracts impose more numerous and tighter covenants (Assender, 2000; Dichev et al., 2002; Dichev and Skinner, 2002). The proportion of loans subject to financial covenants is even higher across traded loans: 94% of the facility-year observations of public borrowers are subject to financial covenants. Furthermore, the vast majority of traded loans have covenants explicitly based on a borrower’s earnings. These covenants are strongly influenced by the timely incorporation of economic losses in a borrower’s financial statement. Of all the loans of public borrowers on which lenders impose financial covenants, 92% are subject to the interest coverage covenant (Min Interest Coverage and Min Fixed Charge Coverage) and 88% to the debt-to-profitability covenant (Max Debt to EBITDA and Max Senior Debt to EBITDA); 97% are restricted by at least one of these covenants.7 In addition, 15% of the loans of public borrowers are subject to net-worth-based covenants (Min Net Worth and Max Debt to Net Worth). Net-worth-based covenants are also directly affected by timely loss recognition, which makes these covenants more binding (Beatty and Weber, 2006; Zhang, 2008). Because of the prevalence of income and net-worth-based covenants in loan agreements, I expect timely loss recognition to significantly influence the contract efficiency of traded syndicated loans.

Via the second governance route, by generating an understatement of net asset values, conservative financial reporting facilitates monitoring by debt holders and reduces deadweight agency costs (Watts and Zimmerman, 1986; Watts, 1993; Ball, 2001; Watts, 2003a). As discussed in Watts (2003a), lenders rely on verifiable lower bound measures of assets both in assessing a potential loan and in monitoring the borrower’s creditworthiness after a loan issuance.8 Further, conservative reporting constrains managers’ opportunistic behavior. This reduces managers’ incentives to transfer wealth to themselves either from debt holders or from the firm as a whole (Ball, 2001; Watts, 2003a,b; Roychowdhury and Watts, 2007; LaFond and Roychowdhury, 2008). Thus, timely loss recognition reduces managers’ ability to overstate earnings and receive overvalued compensation. Timely loss recognition also decreases managers’ incentives to invest in or postpone the abandonment of negative NPV projects (Ball, 2001; Ball and Shivakumar, 2005; LaFond and Roychowdhury, 2008).9

---

6 Even if debt holders perform conservative adjustments to reported numbers when covenant compliance is estimated, this does not eliminate the need for conservative financial reporting. Thus, Beatty et al. (2008) find that conservative covenant adjustments and financial reporting conservatism complement rather than substitute for each other in satisfying debt holders’ demand for conservatism.

7 There is a substantial variation in the definition of covenants in loan contracts. Thus, debt might be defined by the loan agreement as total debt, long-term debt, senior debt or total debt minus cash, and EBITDA might be related to EBIT, EBITDA, net income or income before extraordinary items.

8 It is important to note that an understatement of net asset values generated by conservative reporting is directly linked to the net-worth-based covenant imposed by syndicated loan contracts. An understatement of net asset values makes a net-worth-based covenant more binding, triggering more timely covenant violations.

9 By investigating the separation of ownership and control, LaFond and Roychowdhury (2008) find that to counter managers’ incentives to invest in or delay divestment of negative NPV projects, there is greater demand for conservatism when there is less alignment of interests between managers and shareholders.
Relying on these arguments, I anticipate that by enhancing corporate governance of the borrower, timely loss recognition decreases information asymmetry regarding the borrower’s performance and creditworthiness.

It is important to emphasize that conservative reporting also fulfills an important role in providing information to investors (Watts, 2003a; Khan and Watts, 2007; LaFond and Watts, 2008). Because managers have incentives to disclose information about unrealized gains but to withhold information regarding losses, conservative financial reporting not only provides a “hard” source of information regarding a firm’s performance, but it also provides investors with a control for alternative “soft” sources of information (Watts, 2003a). LaFond and Watts (2008) and Khan and Watts (2007) show that conservative reporting is an equilibrium response to mitigate agency problems arising from information asymmetry.

By increasing the amount and quality of public information available to uninformed investors, I expect timely loss recognition to decrease information asymmetry between informed and uninformed loan traders. More specifically, timely loss recognition induces early revelation of the changes in a borrower’s credit quality and therefore increases the borrower’s transparency. As a result, timely loss recognition allows uninformed loan traders who do not possess private sources of information regarding the borrower to get a more timely and precise evaluation of the borrower’s traded loans. Increased information flow also allows uninformed loan buyers to perform more efficient post-sale monitoring of the borrower, which further reduces adverse selection in loan trading.

To summarize these arguments, by improving the efficiency of debt agreements and by enhancing corporate governance and transparency of a borrower, timely loss recognition decreases the information advantage of informed traders. Therefore, I expect timely loss recognition to reduce the bid–ask spread in loans trading.

### 3.4.2. Timely gain recognition and the overall timeliness

I also examine the impact of timely gain recognition on loan trading. As with timely loss recognition, timely gain recognition improves the timeliness of accounting earnings and therefore is expected to make earnings a more informative measure of a borrower’s performance (Ball and Shivakumar, 2006; Guay, 2006; Guay and Verrecchia, 2006). Furthermore, the effect of timely gain recognition on information asymmetry is likely to be more pronounced for distressed loans. When loans are in distress, the debt holders’ returns are determined not only by the downside region of a borrower’s earnings distribution, but also by the upside one. In other words, compared to investors in par loans, investors in distress loans are more sensitive to economic gains: therefore good news is more important in evaluating these lenders’ claims.10

In addition, accounting research suggests that the overall timeliness of a borrower’s reporting, for both gains and losses, is associated with the borrower’s transparency and the efficiency of its debt agreements (Ball et al., 2008a). Therefore, I also explore whether the overall reporting timeliness is helpful in resolving information asymmetry in secondary loan trading.

### 4. Data and descriptive statistics

#### 4.1. Data sources and sample selection

I obtain loan trade data from the Loan Trade Database provided by LPC. The database includes indicative loan bid and ask price quotes reported to LPC by trading desks at institutions that make a market in these loans. The Loan Trade Database provides bid and ask price quotes aggregated across dealers. Bid and ask prices are quoted as a percent of par (or cents on the dollar of par value). In addition to price coverage, for every traded loan the database provides the borrower’s name, quote date and the number of market makers reporting quotes to LPC. The Loan Trade Database covers 2,125,589 observations for the period from June 1998 to December 2003; these observations represent the trading of about 4,788 syndicated facilities11 (Table 1).12

I match the Loan Trade Database to the DealScan database, which covers a majority of the syndicated loan issues in the U.S. (this database is also provided by LPC). Connecting these two databases allows for the identification of traded loans on the primary loan market, including their characteristics, such as the amount, maturity, seniority, securitization, covenants and syndicate structure. Merging the Loan Trade and DealScan databases results in a sample of 1,732,065 identified trading observations related to 3,611 trading facilities (Table 1).

Most market makers report loan price quotes to LPC on a daily, biweekly and weekly basis. To address the time-series correlation and measurement error in the trading data, I perform an empirical analysis based on the average annual

---

10 The demand for timely gain recognition may also be driven by the interest-decreasing performance pricing option imbedded in some loan contracts. According to this option, a borrower becomes eligible for lower interest if some financial benchmark is reached. Because a borrower might intentionally accelerate gain recognition to benefit from a lower cost of debt, which, given a borrower’s true credit risk, would lead to insufficient compensation to a lender, the benefits of timely loss recognition to a lender are questionable.

11 In the syndicated loan market, a loan is identified as a “facility”. Usually, a number of facilities with different maturities, interest rate spreads and repayment schedules are structured and syndicated as one transaction (deal) with a borrower. The analysis in this paper is performed at the individual facility level.

12 The database coverage is limited in 1998, but it increases sharply in 1999. According to LPC estimates, the Loan Trade Database covers 80% of the trading volume in the secondary loan market in the U.S.
estimation of the loans’ prices and bid–ask spreads. Because most of the explanatory variables I employ in the analysis vary annually or remain constant over a facility’s trading period, I presume that annual estimations provide better specification of the empirical tests. It is important to note that the core results are robust to performing the analysis based on daily or monthly trading observations. 1,732,065 identified trading observations constitute 10,193 facility-year observations (a majority of the 3,611 identified facilities are traded for a number of years over the sample period). Additionally, I drop loans issued to non-U.S. firms or in currencies other than the U.S. dollar; the remaining sample contains 9,779 facility-year observations representing 3,464 facilities. These facilities are syndicated to 1,435 firms.

I match the sample firms with CRSP and Compustat databases. By using the tickers available on DealScan, I identify 408 of the borrowers as publicly traded firms. To improve the identification, I match the rest of the firms with Compustat/CRSP by name, industry and state location. This results in the recognition of an additional 333 borrowers as publicly reporting firms, 179 of which are also publicly traded. The accuracy of this matching is high, with 79% of the firms being matched on all three parameters.

4.2. Traded versus non-traded loans

The comparison of traded loans to non-traded ones emphasizes the distinctive characteristics of loans traded on the secondary market. Since the majority (96%) of the traded loans in the sample were syndicated starting in 1997, the U.S. non-traded loans syndicated in the primary loan market over the period from 1997 to 2003 are chosen as the most appropriate comparison group for the traded sample.

Consistent with the high involvement of institutional investors in the secondary loan market, institutional term loans are heavily traded (Table 2). Loans with the purpose of a Takeover or LBO/MBO represent 41.9% of the traded facilities, while their proportion in the non-traded sample is considerably lower. In contrast, loans for corporate purposes and working
capital loans represent a smaller percentage of the secondary market, relative to their fraction of non-traded loans. Most of the traded loans are senior and secured.\textsuperscript{13}

Traded loans are also characterized by a longer maturity: the median maturity of the traded loans is six years, while the median maturity of the non-traded loans is three years. The longer average maturity of the traded loans is explained, at least partially, by the longer maturity of institutional loans that represent more than 40% of the traded sample. Traded loans are substantially bigger than non-traded ones: the median size of traded loans reaches $140 million, while the median size of non-traded loans is $62.5 million.\textsuperscript{14}

4.3. Distinctive characteristics of traded loans

To perform a regression analysis, I exclude observations without available data on price quotes, loan size and maturity, and the identity of the arranger of syndication. The final sample results in 8,619 facility-year observations.

\textsuperscript{15} The analysis of traded versus non-traded loans is robust to using different control samples. The results are almost identical whether the traded loans are compared to the loans issued in a variety of currencies, or to the loans issued over different time periods.

\textsuperscript{14} While the entire amount of a syndicated facility may be traded on the secondary loan market, it is also possible for only a partial amount to be traded. The Loan Trade Database does not provide information regarding the relative proportion of a loan that is traded on the secondary market. According to LPC, the average secondary loan trade size amounted to $2.5 million over the sample period.
Table 3
Characteristics of the traded loans

<table>
<thead>
<tr>
<th>Facility characteristics</th>
<th>Facility-year observations</th>
<th>Mean</th>
<th>SD</th>
<th>25%</th>
<th>50%</th>
<th>75%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total sample&lt;sup&gt;a&lt;/sup&gt;</td>
<td>8,619</td>
<td>1.55</td>
<td>1.82</td>
<td>0.50</td>
<td>0.85</td>
<td>1.87</td>
</tr>
<tr>
<td>Bid–ask spread&lt;sup&gt;b&lt;/sup&gt;</td>
<td>6,918</td>
<td>0.89</td>
<td>0.66</td>
<td>0.50</td>
<td>0.67</td>
<td>1.00</td>
</tr>
<tr>
<td>Bid–ask spread—par facilities&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1,701</td>
<td>4.21</td>
<td>2.48</td>
<td>2.43</td>
<td>3.41</td>
<td>5.06</td>
</tr>
<tr>
<td>Size of facility (in millions)</td>
<td>8,619</td>
<td>261.88</td>
<td>353.31</td>
<td>75.00</td>
<td>150.00</td>
<td>300.00</td>
</tr>
<tr>
<td>Time to maturity&lt;sup&gt;e&lt;/sup&gt; (in month)</td>
<td>8,619</td>
<td>49.69</td>
<td>24.44</td>
<td>32.50</td>
<td>51.00</td>
<td>68.00</td>
</tr>
<tr>
<td>Number of market makers&lt;sup&gt;f&lt;/sup&gt;</td>
<td>8,619</td>
<td>9.84</td>
<td>8.35</td>
<td>0.18</td>
<td>0.85</td>
<td>15.27</td>
</tr>
<tr>
<td>Institutional facilities&lt;sup&gt;g&lt;/sup&gt; (in %)</td>
<td>8,619</td>
<td>45.39</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revolver-line facilities&lt;sup&gt;h&lt;/sup&gt; (in %)</td>
<td>8,619</td>
<td>24.89</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distressed facilities&lt;sup&gt;i&lt;/sup&gt; (in %)</td>
<td>8,619</td>
<td>73.78</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distressed facilities&lt;sup&gt;j&lt;/sup&gt; (in %)</td>
<td>8,619</td>
<td>19.74</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distressed facilities&lt;sup&gt;k&lt;/sup&gt; (in %)</td>
<td>2,772</td>
<td>45.39</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total sample&lt;sup&gt;m&lt;/sup&gt;</td>
<td>2,772</td>
<td>1.04</td>
<td>1.05</td>
<td>0.49</td>
<td>0.63</td>
<td>1.06</td>
</tr>
<tr>
<td>Bid–ask spread&lt;sup&gt;b&lt;/sup&gt;</td>
<td>2,772</td>
<td>0.80</td>
<td>0.53</td>
<td>0.48</td>
<td>0.59</td>
<td>1.00</td>
</tr>
<tr>
<td>Bid–ask spread—par facilities&lt;sup&gt;c&lt;/sup&gt;</td>
<td>2,772</td>
<td>3.47</td>
<td>1.68</td>
<td>2.02</td>
<td>2.99</td>
<td>4.77</td>
</tr>
<tr>
<td>Size of facility (in millions)</td>
<td>2,772</td>
<td>390.42</td>
<td>489.91</td>
<td>125.00</td>
<td>225.00</td>
<td>450.00</td>
</tr>
<tr>
<td>Time to maturity&lt;sup&gt;e&lt;/sup&gt; (in month)</td>
<td>2,772</td>
<td>48.97</td>
<td>24.35</td>
<td>32.50</td>
<td>50.50</td>
<td>67.00</td>
</tr>
<tr>
<td>Market share of the arranger&lt;sup&gt;f&lt;/sup&gt; (in %)</td>
<td>2,772</td>
<td>10.86</td>
<td>8.67</td>
<td>0.25</td>
<td>1.19</td>
<td>15.27</td>
</tr>
<tr>
<td>Number of market makers&lt;sup&gt;g&lt;/sup&gt;</td>
<td>2,772</td>
<td>2.62</td>
<td>2.27</td>
<td>1.00</td>
<td>1.89</td>
<td>3.25</td>
</tr>
<tr>
<td>Institutional facilities&lt;sup&gt;h&lt;/sup&gt; (in %)</td>
<td>2,772</td>
<td>41.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revolver-line facilities&lt;sup&gt;i&lt;/sup&gt; (in %)</td>
<td>2,772</td>
<td>29.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distressed facilities&lt;sup&gt;j&lt;/sup&gt; (in %)</td>
<td>2,772</td>
<td>40.98</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distressed facilities&lt;sup&gt;k&lt;/sup&gt; (in %)</td>
<td>2,772</td>
<td>87.45</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distressed facilities&lt;sup&gt;l&lt;/sup&gt; (in %)</td>
<td>2,772</td>
<td>94.35</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> 8,619 facility-year observations have all the data required for the regression analysis. 4,503 facility-year observations are related to publicly reporting firms and 4,116 observations are related to private firms.
<sup>b</sup> The bid–ask spread is estimated based on bid and ask price quotes aggregated across dealers. Bid and ask prices are quoted as a percent of par (or cents on the dollar of par value). The bid–ask spread is measured as the average annual bid–ask spread of the traded facility.
<sup>c</sup> Facilities with an annual average bid price equal or above 90% of the par value.
<sup>d</sup> Facilities with an annual average bid price below 90% of the par value.
<sup>e</sup> Time-to-maturity is measured by the number of months between the facility’s trading date on the secondary loan market and the date when the facility matures. The estimation is based on the annual average of a facility’s traded observations.
<sup>f</sup> The market share is measured by the ratio of the amount of loans that the financial intermediary syndicated as a lead arranger to the total amount of loans syndicated on the primary loan market over the period from 1998 to 2003. In case of the multiple arrangers, I consider the highest market share across the arrangers involved in the loan transaction. The market share is presented at percentage value.
<sup>g</sup> Number of market makers that provide a facility’s bid and ask price quotes to LPC. The estimation is based on the annual average of a facility’s traded observations.
<sup>h</sup> Institutional term loans (Term Loan B, Term Loan C and Term Loan D).
<sup>i</sup> A revolving credit line with a duration above one year; the commitment that the borrower may draw down, repay, and re-borrow under. A borrower is charged an annual commitment fee regardless of usage.
<sup>j</sup> Loans with the primary purpose of Takeover, LBO/MBO or Recapitalization. A loan with a primary purpose of recapitalization is a loan to support a material change in a company’s capital structure, often made in conjunction with other debt or equity offerings.
<sup>k</sup> Includes the following credit rating categories: Moody’s Sr. Debt, Moody’s Loan Rating, S&P Sr. Debt, S&P Loan Rating, Fitch LT and Fitch Loan Rating.
<sup>l</sup> Facilities that are subject to at least one financial covenant.
<sup>m</sup> 2,772 facility-year observations have all the data required for the regression analysis of the bid–ask spread of loans of publicly traded firms.

representing 3,029 facilities. Table 3 presents traded loans’ characteristics. Loans are traded at relatively high spreads; this is especially true of distressed facilities. Traded loans have a median size of $150 million and a median time to maturity of 51 months. The typical market share in the primary loan market of the loan’s arranger is 0.85%. Additionally, bid and ask price quotes of the majority of the traded loans are reported to LPC by one or two market makers.

Loans of public firms are traded at lower spreads; this relation holds for both par and distressed loans. In addition, the traded loans of public firms are bigger in size and are syndicated by arrangers with higher market share. Further, public borrowers have a lower proportion of institutional loans and a higher proportion of revolvers compared to private borrowers. A lower percentage of public borrowers’ traded loans are issued with a primary purpose of Takeover, LBO/MBO or Recapitalization (restructuring purpose loans). Public firms and/or their loans are more frequently rated by credit rating
agencies. Additionally, lenders more often impose financial covenants on public borrowers. The proportion of loans in distress is substantially lower for public borrowers.

5. Research design

5.1. Adverse selection component versus transitory component of the bid–ask spread

Following Copeland and Galai (1983), Glosten and Milgrom (1985) and Kyle (1985), many papers rely on the bid–ask spread as the main measure of information asymmetry (e.g., Lee et al., 1993; Yohn, 1998; Leuz and Verrecchia, 2000; Leuz, 2003; Kalimipalli and Warga, 2002). While these papers argue that the bid–ask spread successfully captures information asymmetry, relying on the bid–ask spread may be problematic because it includes both the adverse selection component, related to asymmetric information, and the transitory component, related to the inventory and order-processing costs of the market maker.

A number of prior studies unravel the adverse selection component of the stock spread. However, because the trading volume and actual transaction data are not available for traded loans, the models suggested by these studies cannot be used to measure the adverse selection component in loan spreads. Consequently, the analysis in this paper is performed without differentiating between adverse selection and transitory components.

To address the transitory component in the empirical analysis, I control for the determinants of this component suggested by prior research. First, I control for the number of institutions making a market in a traded loan. Garbade (1982) and Stoll (1985) suggest that the number of market makers, which is related to the transitory component of the stock spread, is negatively related to the number of market makers. Further, Goldstein and Nelling (1999) find that competition among market makers effectively reduces the bid–ask spread in the stock market. Second, I incorporate into the analysis the time to maturity of the traded loans. Bond trading literature suggests that corporate bonds are more actively traded following issuance and tend to become less liquid with age (Nunn et al., 1986; Sarig and Warga, 1989; Alexander et al., 2000; Hong and Warga, 2000; Chakravarty and Sarkar, 2003).

5.2. Empirical estimation of financial reporting quality

In this section, I focus on the empirical estimation of the attributes of financial reporting quality: timely loss recognition, timely gain recognition, and the overall timeliness of financial reporting. I also address the importance of incorporating the market-to-book ratio into the analysis.

To measure timely loss recognition, I employ the market-based model suggested by Basu (1997). The model relates earnings to contemporaneous stock returns, which serve as a proxy for economic gains and losses. Following Basu (1997), I estimate a piecewise-linear regression of earnings on stock returns: $NI_{it} = \beta_0 + \beta_1 DR_{it} + \beta_2 R_{it} + \beta_3 R_{it}^2 + \epsilon_{it}$. The timeliness of income in reflecting current-year economic losses (decreases in stock market value) is measured by the sum of $\beta_1$ and $\beta_2$.15

The definitions of the variables employed in the model are as follows. $NI_{it}$ is earnings per share for firm $i$ in the fiscal year $t$ deflated by the opening stock price and adjusted by the average EP ratio for sample firms in fiscal year $t$. $R_{it}$ is the return on firm $i$ from nine months before fiscal year-end $t$ to three months after fiscal year-end $t$ less the corresponding CRSP NYSE/AMEX/NASDAQ market return. $DR_{it}$ is an indicator variable taking the value of one if the firm’s market-adjusted returns are negative, zero otherwise. Observations falling either in the top or bottom 1% of either price or asset deflated earnings or returns in each year are excluded.

I estimate Basu’s (1997) model at the 3-digit-industry-year level. Each publicly traded borrower is assigned a corresponding industry-year timely loss recognition measure estimated in the year preceding the year in which the bid–ask spread is measured. I also estimate the firm timely loss recognition measure; this estimation is based on firm-specific Basu regressions estimated over the 20-year period preceding the loan trading. To get more reliable measures of timely loss recognition from industry-year and firm-specific regressions, I require a minimum of 10 observations to be available for regressions estimated over the 20-year period preceding the loan trading. To get more reliable measures of timely loss recognition from industry-year and firm-specific regressions, I require a minimum of 10 observations to be available for regressions estimated over the 20-year period preceding the loan trading. To get more reliable measures of timely loss recognition from industry-year and firm-specific regressions, I require a minimum of 10 observations to be available for regressions estimated over the 20-year period preceding the loan trading.

Following Frankel and Roychowdhury (2007) and Khan and Watts (2007), I also allow the earnings timeliness with respect to good news and the asymmetric timeliness with respect to bad news to vary with firm-specific characteristics. These characteristics—size, market-to-book and leverage—have been found to be both theoretically and empirically


related to financial reporting conservatism. I estimate the model suggested by Khan and Watts (2007) to obtain the weights used to aggregate the firm characteristics into annual firm-specific measures of timeliness:

\[
E_t = \beta_1 + \beta_2 DR + \nu_1 (\mu_1 + \mu_2 Size_a + \mu_3 M/B + \mu_4 LEV) + DR \cdot \mu_5 (\lambda_1 + \lambda_2 Size_a + \lambda_3 M/B + \lambda_4 LEV)
\]

Timeliness with respect to good news (G_Score) and asymmetric timeliness with respect to bad news (C_Score) are linear functions of firm-specific characteristics:

\[
G_Score = \mu_1 + \mu_2 Size_a + \mu_3 M/B + \mu_4 LEV ; \quad C_Score = \lambda_1 + \lambda_2 Size_a + \lambda_3 M/B + \lambda_4 LEV.
\]

It is important to note that prior research suggests that when the earnings–returns association is employed to investigate differences in earnings timeliness it is necessary to control for the market-to-book ratio (Pae et al., 2005). By applying stricter verification standards to the recognition of good news as gains than to the recognition of bad news as losses, conservative reporting leads to an understatement of book asset values relative to their market value (Givoly and Hayn, 2000; Watts, 2003a; Beaver and Ryan, 2005; Roychowdhury and Watts, 2007). Therefore, the greater the reporting conservatism, the larger is the market-to-book ratio. Because conservative reporting reduces information asymmetry regarding a borrower, the borrower’s market-to-book ratio is likely to be negatively associated with the bid–ask spread in the secondary loan trade.

However, a larger market-to-book ratio also indicates a borrower’s greater growth options. Because greater growth options are associated with larger information asymmetry (Smith and Watts, 1992), the market-to-book ratio is expected to be positively associated with the loan trading spread. As a result, while the market-to-book ratio is expected to be related to information asymmetry in the secondary loan trade, there is no clear prediction regarding the sign of this relation.

6. Empirical results

6.1. Determinants of information asymmetry in the secondary loan trade

In this section, I analyze firm- and loan-specific characteristics that resolve or exacerbate information asymmetry in the secondary loan market. First, I address general determinants of information asymmetry. Second, I focus on specific characteristics of the syndicated loans’ information environment. Third, controlling for these more readily recognizable determinants of information asymmetry, I examine whether there are aspects of a borrower’s financial reporting quality that decrease information asymmetry in the secondary loan trade.

6.1.1. Determinants of the bid–ask spread generally related to information asymmetry

Table 4 presents the results from estimating the loan bid–ask spread for the total sample and for the sample of publicly traded borrowers. There is clear evidence that public reporting and the availability of a credit rating decrease information asymmetry in the secondary loan trade. Thus, loans of publicly reporting firms are traded at lower spreads than the loans of private firms are. This result is statistically and economically significant; facilities of publicly reporting firms experience spreads that are 12.6 cents lower than spreads on facilities of private firms (economic effects are reported as cents/dollars per $100 of par value). This effect is substantial, given that it constitutes 14.9% of the median bid–ask spread for the total loan sample. Additionally, rated facilities experience a decrease in the bid–ask spread. Facilities with an available credit

---

17 See Khan and Watts (2007) for the model’s developments and the validation of the conservatism score.

18 A majority of the explanatory variables employed in the empirical analysis are not highly correlated. The Pearson/Spearman rank correlation coefficients are considerably high only for two pairs of the explanatory variables: Time-to-maturity and Investor (0.42), and Revolver and Investor (−0.53). I winsorize the bid–ask spread and all the explanatory variables at the 1% and 99% level.

19 It could be useful to test whether the rated loans of public borrowers experience a further decrease in the traded spread. The extremely high correlation (92%) between Public and the interaction term between the Public and Rated variables prevents the incorporation of the interaction term into the analysis.
rating are traded at spreads that are 16.3 and 28 cents lower than spreads on non-rated facilities, for the total and the publicly traded samples, respectively.20

For the total sample of traded loans, I also find a negative relation between the bid–ask spread and loan size. An increase of one standard deviation in Facility-size is associated with a decrease of 13.6 cents in the bid–ask spread. This result is consistent with the higher amount and quality of information available regarding larger debt issues. However, since larger debt issues typically have a larger trading volume, there is a concern that a relation between the bid–ask spread and the loan size is at least partially attributed to a loan’s trading volume. Because the Loan Trade Database does not provide information regarding trading volume, it is not possible to directly control for the volume’s effects on the bid–ask spread.

20 Economic effects for the sample of public borrowers are estimated based on the regression analysis that relies on the industry-year timely loss recognition measure, as reported in Column (2) of Table 4.
For the loans of publicly traded borrowers, there is no evidence that the bid–ask spread is significantly related to Facility-size. This result is potentially explained by a more homogeneous disclosure level among public firms.

Consistent with the higher uncertainty associated with revolvers, these facilities are traded at higher bid–ask spreads. The impact of Revolver on the bid–ask spread is statistically and economically significant for both total and publicly traded samples.

Further, loans of profit firms are traded at significantly lower spreads than loans of firms experiencing losses are. Loans of profit firms experience spreads that are 27 cents lower than the spreads on the loans of loss firms; this effect constitutes 43.1% of the median traded spread across loans of publicly traded borrowers. The relation between the bid–ask spread and Income-net is not driven by the age of a firm. Young sample firms do not experience a higher frequency of losses than more mature firms do. In addition, the results are robust whether a loss indicator variable is based on the current year income before extraordinary items or on the borrower’s net income in the prior year.

6.1.2. Unique characteristics of the information environment of syndicated loans

Empirical findings suggest that loans syndicated by more reputable arrangers are traded at significantly lower bid–ask spreads. The effect of Arranger-reputation on the bid–ask spread is economically significant and robust to alternative measures of the arranger’s reputation.22 This evidence is consistent with the arranger’s primary role in resolving information asymmetry regarding the borrower and its traded loans.

Another key variable of interest is the loan’s distress status. The considerable information advantage of informed traders in the trading of distress loans is manifested in the significantly higher spreads of these facilities. Distressed loans experience spreads that are $3.20 higher than spreads on loans traded at par.23 It is important to emphasize that this effect is attributed primarily to the adverse selection component and not to the transitory component of the bid–ask spread.

There is a concern that the trading of distress loans is associated with higher transitory costs because it is more costly for a market maker to hold more risky loans in the inventory. However, secondary loan trading is characterized by a marked positive correlation between credit risk and liquidity, so more risky loans are associated with a higher trading liquidity (Yago and McCarthy, 2004). This relation is the opposite of that observed in the corporate bond market, where investment grade bonds are more liquid than high yield bonds. The large and fast-growing demand for high credit risk loans in the secondary loan market generates a significantly larger order flow for more risky loans. As suggested by Bhasin and Carey (1999), this order flow effect may more than offset the higher holding costs associated with risky loans, typically causing the lower transitory component of the bid–ask spread in trading more risky loans on the secondary market. Furthermore, for the sample borrowers, I find that distressed loans have a significantly higher number of market makers than loans traded at par. This evidence further suggests that the transitory component of the bid–ask spread is lower in trading of distress loans.

Empirical findings also suggest that, for the total sample, institutional loans are traded at higher spreads than bank loans are. Thus, the longer duration of institutional loans translates into higher information costs in the loan trade. The effect of the longer duration is, however, offset by the higher amount and quality of information available regarding the publicly traded borrowers. Regarding restructuring purpose loans, there is no evidence that these loans are traded at higher spreads than loans issued for more general purposes, such as debt repayment, working capital and corporate operations.24

6.1.3. Characteristics of the financial reporting quality of a borrower

6.1.3.1. Timely loss recognition. From the results reported in Table 4, it is immediately apparent that the timely incorporation of economic losses in a borrower’s financial statements reduces the bid–ask spread at which its loans are traded. This effect is statistically and economically significant and is robust to different measures of timely loss recognition. For Basu’s (1997) industry-year measure of timely loss recognition, an increase of one standard deviation in Timely-loss-recognition reduces the bid–ask spread of a traded loan by about 6 cents. This effect is substantial: it constitutes 8.8% of the median bid–ask spread of the loans of publicly traded borrowers.25 For Basu’s (1997) firm-specific measure and for the B_Score

---

21 With the higher spreads for revolving facilities, one concern is the common perception that financial intermediaries usually issue revolvers to more stable, investment-grade borrowers. However, this banking policy mainly applies to 364-day revolving facilities (Yago and McCarthy, 2004), while the vast majority of revolvers in the research sample are long-term revolving (credit lines above one year).

22 Alternative measures of the arranger’s reputation include: (1) an estimation of the arranger’s market share in the primary market over an extended period, from 1990 to 2003; (2) an estimation that accounts for the total market share of all the arrangers involved in the loan (in case of the multiple arrangers).

23 The positive relation between loan distress status and the bid–ask spread indicates that, for debt securities, the “second-moment” effect (i.e., variance effect) and the “first-moment” effect (i.e., mean effect) are not independent. Equity theory-based models characterize information asymmetry as a second-moment effect that is unrelated to means, or first moments (Verrecchia, 2001). This important difference between debt and equity trading emphasizes that the theory models may have to be modified to incorporate the distinctive features of debt securities. I thank Robert Verrecchia for drawing my attention to this issue.

24 The analysis does not control for financial covenants because 73.8% and 94.4% of observations of the total and the publicly traded samples respectively have at least one financial covenant.

25 As a robustness test, I employ an industry-year timely loss recognition measure estimated based on the Fama–French industries. I find that the association between timely loss recognition and the bid–ask spread is even more pronounced in this estimation: the reduction in the bid–ask spread caused by an increase of one standard deviation in Timely-loss-recognition represents 9.5% of the sample median bid–ask spread.
annual firm-specific measure, an increase of one standard deviation in *Timely-loss-recognition* reduces the bid–ask spread by about 6 and 5 cents, respectively.\(^{26}\)

These results demonstrate that by improving the efficiency of a borrower’s loan agreements and by enhancing corporate governance and transparency of a borrower, timely loss recognition decreases information asymmetry in the secondary loan trade. The analysis presented here provides unique empirical evidence that timely loss recognition decreases the information advantage of informed traders and therefore increases the efficiency of the trading of debt securities.\(^{27}\)

While the empirical findings confirm that timely loss recognition significantly decreases information asymmetry between informed and uninformed traders, it is not possible to empirically disentangle the contracting route from the other mechanisms through which timely loss recognition operates. First, because 94% of the facility-year observations of publicly traded borrowers are subject to financial covenants, *Timely-loss-recognition* cannot be interacted with the variable indicating the existence of financial covenants. Second, the vast majority of the sample loans have income-based covenants. Therefore, controlling for covenants involving earnings measures also does not permit quantifying the impact of loan contracting efficiency on information asymmetry.

Additionally, there is no evidence that the market-to-book ratio significantly influences loan spreads. While Market-to-book is negatively related to the bid–ask spread, and while this relation is consistent with high market-to-book borrowers experiencing more conservative reporting, it is not statistically significant. The result is potentially explained by the equivocal relation between the market-to-book ratio and information asymmetry in the secondary loan trade. On one hand, the larger the market-to-book ratio, the larger the financial reporting conservatism is. On the other hand, a larger market-to-book ratio is associated with a borrower’s greater growth options.

6.1.3.2. *Timely gain recognition and the overall timeliness*. I do not find that timely gain recognition or the overall timeliness of a borrower’s financial reporting increases debt trading efficiency. As evidenced in Table 5, the *Timely-gain-recognition* and the *Overall-timeliness* variables do not affect the bid–ask spread. The results are unchanged when Basu’s (1997) firm-specific measures of timely gain recognition and the overall reporting timeliness (instead of the industry-specific measures) and the G_Score measure are employed in the analysis.

I also examine whether timely gain recognition has a stronger effect on the bid–ask spreads of distressed loans. Untabulated results show no relation between the trading spread and the interaction term between the *Timely-gain-recognition* and *Distress* variables. As an alternative measure of a loan’s performance, I employ the loan bid price in the secondary trade. In this specification, I also do not observe that timely gain recognition has a stronger effect on the information environment of distressed loans. I realize that the insignificant impact of timely gain recognition on the trading of distressed loans may result from the low power of the empirical tests, driven by a small number of distressed facilities across the loans of public borrowers (8.9% of loan-year observations).

I also address the relation between loan trading and unconditional conservatism. Unconditional conservatism is estimated by \(\beta_0 + \beta_1 LF\) in the Basu (1997) model, where LF is the frequency of negative market-adjusted stock returns (Ball et al., 2008b). The untabulated results demonstrate that high levels of unconditional conservatism do not reduce the bid–ask spread in the secondary loan trade. These results are consistent with Basu (2005) and Ball et al. (2008b), who suggest that unconditional conservatism does not provide new information to investors.\(^{28}\)

The insignificant relation between the bid–ask spread and timely gain recognition, overall timeliness, and unconditional conservatism suggest that these attributes of accounting reporting do not decrease information asymmetry regarding a borrower’s performance and creditworthiness. These findings further support the special role timely loss recognition plays in enhancing the corporate governance of a borrower and in increasing information flow to market participants.

6.2. *Control variables and robustness tests*

The loadings on control variables are consistent with the predicted relations. The significant impact of *N-of-market-makers* on the loan spread suggests that this variable successfully captures the transitory component of the bid–ask spread. I realize that the same association between the bid–ask spread and the number of market makers might be observed if some institutions were to intentionally avoid making a market in loans with high exposure to private information. However, given data availability, it is not possible to control for endogeneity between the number of market makers and the bid–ask spread. To alleviate this concern, I include in the analysis, to the best of data availability, all the variables that are potentially associated with the bid–ask spread.

\(^{26}\) The average weights on size, market-to-book and leverage that I obtain when estimating Khan and Watts’s (2007) model are consistent with the values reported by Khan and Watts (2007). The mean and median values of C_Score and G_Score and the correlations between them are also consistent with Khan and Watts’s (2007) findings.

\(^{27}\) I have repeated the tests reported in Table 4 with the corresponding asymmetric timeliness measures instead of the asymmetric loss recognition measures incorporated into the analysis. The timely loss recognition and the asymmetric timeliness measures are highly correlated—the Pearson rank correlation coefficients range between 71% and 95%, depending on the timeliness estimation method. Consequently, relying on the asymmetric timeliness measures results in findings that are almost identical to those reported in Table 4.

\(^{28}\) I realize that the insignificant relation between unconditional conservatism and the trading spreads may be driven by measurement error in the empirical estimation of unconditional conservatism; the measurement error is caused by estimating unconditional conservatism over the finite sample period.
Table 5
Incorporating timely gain recognition and the overall timeliness measures

<table>
<thead>
<tr>
<th>Pred. signs</th>
<th>Publicly traded sample</th>
<th>Publicly traded sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rating ($\beta_1$)</td>
<td>-</td>
<td>-0.267***</td>
</tr>
<tr>
<td>Facility-size ($\beta_2$)</td>
<td>-</td>
<td>-0.033</td>
</tr>
<tr>
<td>Revolver ($\beta_3$)</td>
<td>+</td>
<td>0.226***</td>
</tr>
<tr>
<td>Arranger-reputation ($\beta_4$)</td>
<td>-</td>
<td>-0.059***</td>
</tr>
<tr>
<td>Distress ($\beta_5$)</td>
<td>+</td>
<td>2.442***</td>
</tr>
<tr>
<td>Investor ($\beta_6$)</td>
<td>+</td>
<td>0.023</td>
</tr>
<tr>
<td>Primary-purpose ($\beta_7$)</td>
<td>+</td>
<td>0.029</td>
</tr>
<tr>
<td>N-of-market-makers ($\beta_8$)</td>
<td>-</td>
<td>-0.021**</td>
</tr>
<tr>
<td>Time-to-maturity ($\beta_9$)</td>
<td>-</td>
<td>-0.004***</td>
</tr>
<tr>
<td>Income-net ($\beta_{10}$)</td>
<td>-</td>
<td>-0.286***</td>
</tr>
<tr>
<td>Timely-loss-recognition ($\beta_{11}$)</td>
<td>-</td>
<td>-0.302**</td>
</tr>
<tr>
<td>Timely-gain-recognition ($\beta_{12}$)</td>
<td>-</td>
<td>0.439</td>
</tr>
<tr>
<td>Overall-timeliness ($\beta_{12}$)</td>
<td>-</td>
<td>0.380</td>
</tr>
<tr>
<td>Market-to-book ($\beta_{13}$)</td>
<td>?</td>
<td>-0.004</td>
</tr>
<tr>
<td>Number of observations</td>
<td>492</td>
<td>2,722</td>
</tr>
<tr>
<td>Number of clusters</td>
<td>492</td>
<td>2,722</td>
</tr>
</tbody>
</table>

Spread $= z + \hat{\beta}_1$ Rating $+ \hat{\beta}_2$ Facility-size $+ \hat{\beta}_3$ Revolver $+ \hat{\beta}_4$ Arranger-reputation $+ \hat{\beta}_5$ Distress $+ \hat{\beta}_6$ Investor $+ \hat{\beta}_7$ Primary-purpose $+ \hat{\beta}_8$ N-of-market-makers $+ \hat{\beta}_9$ Time-to-maturity $+ \hat{\beta}_{10}$ Income-net $+ \hat{\beta}_{11}$ Timely-loss-recognition $+ \hat{\beta}_{12}$ Timely-gain-recognition $+ \hat{\beta}_{13}$ Overall-timeliness $+ \hat{\beta}_{13}$ Market-to-book.

Regressions include year and industry fixed effects. Standard errors are heteroskedasticity robust, clustered at the firm level. Standard errors are reported in parentheses. ***, **, * denote significance at the 1, 5 and 10 percent level, respectively. Variables: Timely-loss-recognition—estimated by the sum of $\beta_{12}$ and $\beta_{13}$ in a piecewise-linear industry-year regression of earnings on the contemporaneous stock returns (Basu, 1997); $N_{it} = \beta_0 + \beta_1 DR_{it} + \beta_2 R_0 + \beta_3 R_1 + DR_{it}$. Timely-gain-recognition—estimated by $\beta_{12}$ in Basu’s (1997) model. Overall-timeliness—a measure of the overall timeliness, for both gains and losses, estimated by $R^2$ of Basu’s (1997) model. For the definition of Spread and the rest of the explanatory variables, see Table 4.

The negative relation between Time-to-maturity and the loan spread suggests that younger loans are more heavily traded and become less liquid with age. This result is consistent with the corresponding findings in bond trading. The impact of the time to maturity on the bid–ask spread is considerable; an increase of one standard deviation in Time-to-maturity is associated with a decrease of 17 cents in the bid–ask spread.

The results are robust to the inclusion of additional control variables, such as loan price, additional dummies for loan type and purpose, loan maturity, specific types of financial covenants, the performance pricing provisions, the number of lenders in the syndication, the number of the firm’s traded loans, the time period between the loan origination and its first trading date, the rating category, the discrepancy between S&P’s and Moody’s credit ratings, leverage, sales growth, capital expenditures, the ratio of R&D expenses to sales and stock return volatility (estimated by a standard deviation of daily or monthly holding period returns) and firm size (measured by a logarithm of the annual sales or by a logarithm of the total assets). I do not control for a loan’s seniority and security because the vast majority of the traded loans are senior and secured.

Because of the high correlation between the time-to-maturity and maturity variables (71%), I do not include these variables simultaneously in the regression analysis.

The 48% of the sample loans are subject to the performance pricing provision, which includes both/either an interest-increasing performance pricing option and/or an interest-decreasing performance pricing option. The interest-increasing performance pricing option gives lenders the right to receive higher interest rates if the borrower’s credit quality improves; thereby this option alleviates loan prepayment risk to the lenders (Asquith et al., 2005). No evidence is found of a significant relation between the loan bid–ask spread and the inclusion of the performance pricing provision/options in a loan contract.

A high correlation (75%) between loan size and firm size prevents the simultaneous incorporation of both variables in the regression. An analysis incorporating firm size instead of loan size provides almost identical results.

---

29 Because of the high correlation between the time-to-maturity and maturity variables (71%), I do not include these variables simultaneously in the regression analysis.

30 The 48% of the sample loans are subject to the performance pricing provision, which includes both/either an interest-increasing performance pricing option and/or an interest-decreasing performance pricing option. The interest-increasing performance pricing option gives lenders the right to receive higher interest rates if the borrower’s credit quality improves; thereby this option alleviates loan prepayment risk to the lenders (Asquith et al., 2005). No evidence is found of a significant relation between the loan bid–ask spread and the inclusion of the performance pricing provision/options in a loan contract.

31 A high correlation (75%) between loan size and firm size prevents the simultaneous incorporation of both variables in the regression. An analysis incorporating firm size instead of loan size provides almost identical results.
Table 6 offers additional specifications to test the robustness of the results. I begin by verifying that the empirical findings are not driven by observations based on a single institution’s reporting. First, measurement error is likely to be higher when loan bid and ask price quotes are reported to LPC by a single market maker. Second, the transitory component of the bid–ask spread is expected to be higher in these cases. Third, the most worrisome concern is that an arranger of syndication, who is an informed trader in the loan market, is likely to be a market maker if only one institution makes a loan in a traded loan. To alleviate these concerns, I perform the analysis for loans followed by more than one market maker. Despite a substantial reduction in the sample size, the explanatory power of the model increases and the information asymmetry variables continue to be significantly related to the loan spreads. Additionally, I verify that the findings are not sensitive to the clustering procedure employed in the analysis: clustering at the year level (instead of firm-level clustering) provides similar results. I interpret these findings as a further verification of the robustness of the empirical analysis.

The model’s explanatory power is high; while it is comparable to the explanatory power of the models explaining equity trading spreads, it is considerably higher than that of models explaining corporate bond trading spreads. The model’s explanatory power is not driven by the incorporation of the fixed effects in the regression; estimating the model without 2-digit industry and year fixed-effects results in reduction of Adj R² by only 1.4%–1.8%, depending on a model’s specification.

---

Table 6

<table>
<thead>
<tr>
<th>Pred. signs</th>
<th>Quotes reported by more than one market maker</th>
<th>Clustering at the year level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Publicly traded</td>
</tr>
<tr>
<td>Public (β₁)</td>
<td>-</td>
<td>-0.142*** (0.05)</td>
</tr>
<tr>
<td>Rating (β₂)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Facility-size (β₃)</td>
<td>-</td>
<td>-0.169*** (0.03)</td>
</tr>
<tr>
<td>Revolver (β₄)</td>
<td>+</td>
<td>0.190*** (0.04)</td>
</tr>
<tr>
<td>Arranger-reputation (β₅)</td>
<td>-</td>
<td>-0.067** (0.03)</td>
</tr>
<tr>
<td>Facility-size (β₆)</td>
<td>+</td>
<td>2.447*** (0.11)</td>
</tr>
<tr>
<td>Investor (β₇)</td>
<td>+</td>
<td>0.073 (0.05)</td>
</tr>
<tr>
<td>Primary-purpose (β₈)</td>
<td>+</td>
<td>-0.050 (0.05)</td>
</tr>
<tr>
<td>N-of-market-makers (β₉)</td>
<td>-</td>
<td>-0.033*** (0.05)</td>
</tr>
<tr>
<td>Time-to-maturity (β₁₀)</td>
<td>-</td>
<td>-0.005*** (0.01)</td>
</tr>
<tr>
<td>Income-net (β₁₁)</td>
<td>-</td>
<td>-0.259*** (0.06)</td>
</tr>
<tr>
<td>Timely-loss-recognition (β₁₂)</td>
<td>-</td>
<td>-0.509*** (0.18)</td>
</tr>
<tr>
<td>Market-to-book (β₁₃)</td>
<td>?</td>
<td>-</td>
</tr>
<tr>
<td>Adj R-Sq</td>
<td>61.28%</td>
<td>63.68%</td>
</tr>
<tr>
<td>Number of observations</td>
<td>4,281</td>
<td>1,572</td>
</tr>
<tr>
<td>Number of clusters</td>
<td>781</td>
<td>324</td>
</tr>
</tbody>
</table>


Regressions include year and industry fixed effects. Standard errors are heteroskedasticity robust. Standard errors are clustered at the firm level for the regression analysis of the traded facilities with price quotes reported by more than one market maker. Standard errors are reported in parentheses. ***, **, * denote significance at the 1, 5 and 10 percent level, respectively. Variables: Timely-loss-recognition—estimated by the sum of β₁₂ and β₁₁ in a piecewise-linear industry-year regression of earnings on the contemporaneous stock returns (Basu, 1997); NlR = β₀ + β₁ DRₑ + β₂ R₀ + β₃ Rₐ + DRₑ. For the definition of Spread and the rest of the explanatory variables, see Table 4.

**32 I exclude the Rating indicator variable from this analysis because more than 90% of the facilities followed by more than one market maker have a public credit rating.**
7. Conclusions

In this paper, I employ a sample of traded syndicated loans to explore firm- and issue-specific characteristics that resolve or exacerbate information asymmetry in the trading of debt securities. First, I examine variables suggested by prior research as generally related to information asymmetry. I find that public reporting and the availability of a credit rating decrease information asymmetry in the loan trade. Further, consistent with the higher uncertainty associated with revolvers, I find that revolvers are traded at higher bid–ask spreads. Empirical evidence also suggests that loans of profit firms are traded at significantly lower spreads than loans of firms experiencing losses are.

Second, I examine unique characteristics of the information environment of syndicated loans. Consistent with the arranger’s primary role in resolving information asymmetry in the syndicated loan market, I find that loans syndicated by more reputable arrangers are traded at significantly lower spreads. Further, empirical findings suggest that the considerable information advantage of informed traders in the trading of distress loans is manifested in significantly higher spreads of these facilities. I also find that institutional loans, which are typically issued with long maturities and back-end-loaded repayment schedules, are traded at higher spreads than bank loans are.

Third, I examine whether there are aspects of the financial reporting quality of a borrower that decrease information asymmetry in the secondary loan trade. I find that timely loss recognition reduces the bid–ask spread at which loans are traded. The effect of timely loss recognition on the loan trading spreads is both statistically and economically significant and is robust to different measures of timely loss recognition. These results demonstrate that by enhancing corporate governance of a borrower and by increasing the amount and quality of information available to uninformed market participants, timely loss recognition decreases information asymmetry in the secondary loan trade. Overall, the analysis presented in this paper provides unique empirical evidence that timely loss recognition reduces the information advantage of informed traders and increases the efficiency of the secondary trading of debt securities.

Appendix A. Variable definitions

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arranger-reputation</td>
<td>As suggested by Lee and Mullineaux (2004) and Sufi (2007a,b), the arranger’s reputation is estimated by the arranger’s average market share in the primary syndicated loan market. The market share is measured by the ratio of the amount of loans that the financial intermediary syndicated as a lead arranger to the total amount of loans syndicated on the primary loan market over the period from 1998 to 2003. In the case of multiple arrangers, I consider the highest market share across the arrangers involved in the loan transaction.</td>
</tr>
<tr>
<td>Bid–ask spread</td>
<td>The bid–ask spread is estimated based on bid and ask price quotes aggregated across dealers. Bid and ask prices are quoted as a percent of par (or cents on the dollar of par value). The bid–ask spread is measured as the average annual bid–ask spread of the traded facility.</td>
</tr>
<tr>
<td>Distress</td>
<td>An indicator variable taking the value of one if a loan is traded at the annual average bid price below 90% of the par value, zero otherwise.</td>
</tr>
<tr>
<td>Facility-size</td>
<td>A logarithm of the facility amount.</td>
</tr>
<tr>
<td>Income-net</td>
<td>An indicator variable taking the value of one if the borrower’s current year net income is positive, zero otherwise.</td>
</tr>
<tr>
<td>Investor</td>
<td>An indicator variable taking the value of one if the loan’s type is term loan B, C or D (institutional term loans), zero otherwise.</td>
</tr>
<tr>
<td>Market-to-book</td>
<td>The ratio of the firm’s market value to book value of common equity, estimated at the end of the borrower’s fiscal year.</td>
</tr>
<tr>
<td>Number-of-market-makers</td>
<td>The average annual number of market makers that provide a loan’s bid and ask prices to LPC.</td>
</tr>
<tr>
<td>Overall-timeliness</td>
<td>The overall timeliness of financial reporting, for both gains and losses, estimated by $R^2$ of Basu’s (1997) model. The measure is based on the industry-year estimation on the model.</td>
</tr>
<tr>
<td>Public</td>
<td>An indicator variable taking the value of one if the borrower is a publicly reporting firm in the year when the loan is traded on the syndicated loan market, zero otherwise.</td>
</tr>
<tr>
<td>Primary-purpose</td>
<td>An indicator variable taking the value of one if the facility’s primary purpose is Takeover, LBO/MBO or Recapitalization, zero otherwise. A loan with a primary purpose of recapitalization is a loan to support a material change in a firm’s capital structure, often made in conjunction with other debt or equity offerings.</td>
</tr>
<tr>
<td>Rating</td>
<td>An indicator variable taking the value of one if a firm and/or facility has an available credit rating, zero otherwise. Credit rating categories include Moody’s Sr. Debt, Moody’s Loan Rating, S&amp;P Sr. Debt, S&amp;P Loan Rating, Fitch LT and Fitch Loan Rating.</td>
</tr>
<tr>
<td>Revolver</td>
<td>An indicator variable taking the value of one if the facility’s type is revolver above one year, zero otherwise.</td>
</tr>
<tr>
<td>Time-to-maturity</td>
<td>The number of months between the facility’s trading date on the secondary loan market and the date when the facility matures.</td>
</tr>
<tr>
<td>Timely-gain-recognition</td>
<td>The measure of timely gain recognition in financial reporting, estimated by $\beta_2$ in Basu’s (1997) model. The measure is based on the industry-year estimation on the model.</td>
</tr>
<tr>
<td>Timely-loss-recognition</td>
<td>The measure of timely loss recognition in financial reporting. This measure is estimated as one of the following: (1) the sum of $\beta_2$ and $\beta_3$ in Basu’s (1997) model, based on the industry-year model’s estimation; (2) the sum of $\beta_2$ and $\beta_3$ in Basu’s (1997) model, based on the firm-specific model’s estimation; (3) B_Score based on Khan and Watt’s (2007) model.</td>
</tr>
</tbody>
</table>
References