Does secondary loan market trading destroy lenders' incentives?*

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Abstract

In this paper we investigate whether the secondary market trading of syndicated loans compromises the quality of bank lending practices. We compare the performance of borrowers of traded loans following the initial trading event against the performance of borrowers of non-traded loans following loan issuance. We also investigate whether the relative performance of traded versus non-traded loans varies with the reputation of the lead arranger of syndication and with loan purpose. We measure performance by borrowers' accounting performance and default risk. For loans originated by reputable lead arrangers, we find evidence that borrowers of traded loans actually perform better than borrowers of non-traded loans do. Thus, loan sales appear to have a *positive* effect on reputable arrangers' incentives to monitor and screen borrowers. For loans originated by lower reputation lead arrangers, we find some evidence that the performance of borrowers of traded loans is worse than that of borrowers of non-traded loans and that borrowers of traded loans engage in earnings management behavior. These results are consistent with breakdowns in due diligence by non-reputable arrangers on loans anticipated to be sold. We also document that restructuring purpose loans (loans with a primary purpose of takeover, LBO, MBO or recapitalization) perform worse relative to other loans, regardless of whether or not they are traded.

1. Introduction

A central question surrounding the recent financial crisis is the extent to which the "originate-to-distribute" model of bank credit undermined banks' incentives to screen and monitor borrowers. Under originate-to-distribute models, banks originate loans, earn fees in the process, and then distribute the loans to other investors through securitization, syndication or outright sale. This basic model applies to a wide range of transaction classes where textured differences in transaction structures can generate different performance implications. While much recent research focuses on the role played by loan securitization processes in mortgage loan markets, this issue is also of vital importance in the corporate loan market, which is characterized by loan syndication and the trading of loans on the secondary loan market.

The main objective of this paper is to investigate whether the secondary market trading of syndicated corporate loans compromises the quality of bank lending practices. In particular, we examine whether secondary loan sales, by potentially separating the loan originator from the ultimate bearer of default risk, reduce lenders' incentives to ex-ante screen loans and monitor them ex-post, or whether they increase lenders' incentives to exploit their private information by initiating and distributing poor quality loans. Our fundamental research strategy compares the performance of borrowers of traded loans following the initial trading event against the performance of borrowers of non-traded loans following loan issuance.[1] Performance is measured using borrowers' accounting performance (EBITDA to total assets and interest coverage ratio) and default risk.

We also explore the possibility that the influence of secondary market trading on bank lending practices differs across particular subsets of loans due to variation across those subsets in

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[1]For traded syndicated loans, the initial trading event typically occurs within one to three months of loan origination. For this reason we compare the performance of traded loans after the initial trading event against non-traded loans following loan origination.

lenders' incentives to screen and monitor loans. We first investigate the extent to which the relative performance of traded versus non-traded loans varies with the reputation of the lead arranger of the syndication.[2] Reputational concerns of the lead bank have been posited as a key mechanism to mitigate asymmetric information and incentives problems in the syndicated loan market. Existing literature documents that more reputable arrangers are more likely to syndicate loans and are able to sell off a larger portion of a loan to syndicate participants (Dennis and Mullineaux, 2000, and Sufi, 2007). Thus, it is plausible that breakdowns in arrangers' incentives would be more likely to occur for loans syndicated by lower reputation arrangers than for loans syndicated by higher reputation arrangers.[3]

Second, we investigate whether restructuring purpose loans (loans with a primary purpose of takeover, LBO, MBO or recapitalization) underperform relative to other loans. Restructuring purpose loans are typically associated with significant changes in a borrower's capital structure and operations, increasing uncertainty regarding the borrower's future prospects. This heightened uncertainty may generate a significant information advantage for lead arrangers relative to outside investors, as lead arrangers have access to important private information regarding a borrower. Further, restructuring purpose loans generate upfront fees of up to 2.5% of the total loan commitment, which are significantly higher than fees for other loan types. Higher loan origination fees in conjunction with a significant information advantage could present lenders' with a strong motive and fertile opportunities to originate and then sell low quality restructuring loans on the secondary loan market. In addition, syndicated loans have played a central role in the recent LBO wave, suggesting that lending standards for the origination of restructuring

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[2] In the primary syndicated loan market, loan deals are characterized by the existence of a lead arranger who establishes a relationship with the borrowing firm, negotiates the terms of the contract, organizes a syndicate of participant lenders and performs primary monitoring and enforcement responsibilities.

[3] Throughout the paper, we use the terms "highly reputable arranger" ("less reputable arranger") and "reputable arranger" ("non-reputable arrangers") interchangeably.

purpose loans could also be adversely affected by high institutional investor demand for these loans (Axelson et al., 2007, and Ivashina and Kovner, 2008).

The extent to which loan sales lead to a breakdown in lenders' incentives to screen and monitor borrowers remains an open question in the literature. On one hand, Pennacchi (1988) and Gorton and Pennacchi (1995) suggest that after a loan or some portion of it is sold on the secondary market, the lender is less motivated to continue the loan's monitoring. Specific to syndicated loans, Berndt and Gupta (2009), focusing on stock returns, document that borrowers whose loans are sold in the secondary market significantly underperform other bank borrowers on a risk-adjusted basis over the three year period following the sale of their loan. Based on these results they draw the inference that loan trading adversely affects lenders' incentives to screen and monitor traded loans.[4]

On the other hand, participants in the secondary loan market are highly sophisticated players and are unlikely to be systematically fooled by originating banks.[5] In addition, syndicated loan contracts contain features specifically designed to mitigate agency problems with respect to loan trading. Drucker and Puri (2009) document that at loan origination, lenders anticipate that a given loan will ultimately be sold in the secondary market and include more restrictive covenants in the traded loans' contract, relative to the contracts of loans not anticipated to be sold. Drucker and Puri (2009) also document that borrowers benefit from these more restrictive covenants by increasing their access to loans and achieving more durable

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[4] In a critique of Berndt and Gupta (2009), Duffee (2009) argues that definitive conclusions cannot be drawn from differences in mean stock returns across borrowers with and without actively traded loans and that "no sensible investor could fail to consider the adverse selection and moral hazard implications of the loan-sale market."

[5] Kroszner and Rajan (1994), who investigate potential conflicts of interest in the securities underwriting activities of banks prior to the passage of Glass-Steagall in 1933, also support the proposition that investors can see through banks' incentives. They document that not only did the securities underwritten by banks not underperform relative to those underwritten by investment banks, but also that there were systematic differences in the types of securities underwritten by these intermediaries. Kroszner and Rajan (1994) argue that these findings are a manifestation of sophisticated market participants discounting securities issued by banks that experience substantial conflicts of interest.

lending relationships. Further, as we argued earlier, reputation plays a significant role in the syndicated loan market. Gopalan et al. (2009) show that defaults by a lead arranger's borrowers adversely affect its subsequent lending activity, consistent with a loss of reputation. Such a loss of future business can impose substantial costs on lead banks due to a loss in lucrative fee income and opportunities to cross-sell other fee based business (see Ivashina and Kovner, 2008, on this later point). Thus, the extent to which secondary market loan sales generate breakdowns in lenders' incentives to screen and monitor loans, if at all, is ultimately an empirical question. In this paper, we provide substantial new evidence on this issue.

We first examine the behavior of loan prices following the initial trading event for the subset of loans traded on the secondary market. We find that loans are initially sold at roughly par.[6] The fact that loans do not initially trade at a substantial discount is consistent with market participants not viewing the event of a loan's sale on the secondary market as evidence of an incentive breakdown. Interestingly, we find that on average, the prices of traded loans decrease in the three years subsequent to their initial trading date. Further, loans originated by reputable lead arrangers deteriorate significantly less after the initial trading than those issued by less reputable arrangers, and loans issued to support corporate restructuring deteriorate significantly more than loans issued for other purposes. While intriguing, this pricing data does not directly speak to the question of whether secondary market trading adversely affects lead arrangers' screening and monitoring incentives or whether this effect is more pronounced for the loans of non-reputable arrangers and for restructuring loans. Such a conclusion must be based on a direct comparison of the performance of traded loans to that of non-traded loans.

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[6] We exclude loans that are distressed (traded at below 90 percent of par value) at the initial trading date from the analysis. Distressed loans at the initial trading date are quite rare; out of 2,811 traded loan facilities, 109 have been distressed at the initial sale.

We systematically compare the performance of borrowers of traded loans against the performance of borrowers of non-traded loans across a range of key performance measures over a three year period following a loan issuance or sale. Comparing loans originated by high reputation lead arrangers, we find no evidence that borrowers of traded loans perform poorly relative to borrowers whose loans are not traded. In fact, we actually find evidence that in terms of accounting performance borrowers of traded loans perform better than borrowers of non-traded loans. In terms of credit quality, the performance of borrowers of traded loans is indistinguishable from that of borrowers of non-traded loans. Thus, loan sales, if anything, have a *positive* effect on reputable arrangers' incentives to monitor and screen, leading to higher quality loans being sold to uninformed investors in the secondary loan market.[7]

With respect to loans originated by lower reputation lead arrangers, we find some evidence that borrowers of traded loans perform poorly relative to borrowers of non-traded loans. For profitability and interest coverage measures we find that the performance of borrowers of traded loans is similar to that of borrowers of non-traded loans, while with respect to credit ratings, we find that the performance of borrowers of traded loans is worse than that of borrowers of non-traded loans. We also find evidence consistent with earnings management behavior by borrowers in the period leading up to loan origination and trading. These result are consistent with breakdowns in due diligence by non-reputable arrangers relative to loans anticipated to be sold.

Finally, we document that across accounting performance measures, restructuring purpose loans perform worse relative to loans issued with a refinancing or general corporate purpose, regardless of whether or not they are traded. In terms of credit quality, restructuring purpose

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[7]Greenbaum and Thakor (1987) argue that in the presence of asymmetric information about borrower quality, better quality assets will be sold (securitized) by originating banks and poorer quality assets will be retained on the bank's balance sheet. Greenbaum and Thakor's (1987) argument follows from a signaling story in which borrowers signal their quality through the choice of loan insurance coverage. However, as we discuss below, our finding of the better performance of traded versus non-traded loans only holds for loans originated by high reputation lead banks.

loans do not underperform relative to other loans for both traded and non-traded samples. This evidence suggests that loan trading is not the main driver of the poor performance of restructuring purpose loans.

Our study contributes to a substantial body of empirical literature that examines how loan contracts are structured to mitigate agency problems.[8] Prior studies demonstrate that the reputation of the lead arranger and the proportion of the loan retained by the lead arranger at origination play a key role in mitigating adverse selection and moral hazard problems.[9] Our study in essence examines whether the sale of loans in the secondary market allows lead arrangers to unwind incentives established by the original syndicate structure.[10] We also demonstrate that reputation is a powerful mechanism in mitigating arrangers' incentives problems associated with loan sales.

Further, our paper complements the recent stream of research on lenders' incentives associated with the securitization of loans. This includes Keys et al. (2008 and 2009), Mian and Sufi (2008), Purnanandam (2008), Doms et al. (2007), Dell`Ariccia et al. (2009) and Demyanyk and Van Hemert (2008), who examine the securitization of mortgage-backed securities. In a recent study, Benmelech et al. (2009) investigate whether securitization is associated with incentive breakdowns in the corporate loan market by examining the performance of individual loans held by collateralized loan obligations (CLOs) following securitization. Related to our findings on traded versus non-traded loans, Benmelech et al. (2009) document that securitized loans perform no worse than unsecuritized loans in terms of accounting returns, credit rating

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[8] Important contributions include Simons (1993), Dennis and Mullineaux (2000), Lee and Mullineaux (2004), Jones et al. (2005), François and Missonier-Piera (2005), Sufi (2007), Ball et al. (2008), Wittenberg-Moerman (2008) and Ivashina (2009).

[9] Pertinent theory underpinning these agency problems includes Leland and Pyle (1977), Diamond (1984), Gorton and Pennacchi (1995) and Holmström and Tirole (1997), among others.

[10] It is possible that lead arrangers can unwind incentives even without secondary market selling by, for example, hedging the default risk of the retained loan proportion via credit derivatives (e.g., Duffee and Zhou, 2001, Ashcraft and Santos, 2007, and Parlour and Plantin, 2008). We do not address this issue in this paper.

changes, and market-assessed probability of default. They do however find that loans originated by a bank that also acts as the CLO underwriter show signs of underperformance.

Our paper is also related to the literature on the "specialness" of bank loans.[11] The development of an active secondary market for syndicated loans has raised concerns that this trading option could potentially diminish the special monitoring role played by banks. Gande and Saunders (2008) directly examine this issue, documenting that new loan announcements are associated with a positive borrower stock price announcement effect even when a borrower's loans trade on the secondary market.[12] We directly extend this literature by investigating the impact of secondary trading on borrowers' post-sale accounting performance and credit quality.

Finally, we contribute to the regulatory debate on the "originate-to-distribute" model of bank credit. In the aftermath of the recent crisis the calls for increased regulation abound. For example, Berndt and Gupta (2009) propose regulatory restrictions on loan sales, increased disclosure, and a loan trading exchange with a clearinghouse. However, while the originate-to-distribute model may have a dark side, it also provides potential benefits by enhancing the credit risk management of financial intermediaries and by creating liquidity in the credit markets. Such benefits should be preserved to the extent possible, and so it is crucial that any regulatory changes be based on sound empirical evidence. Our findings suggest that calls for sweeping regulations on loan sales are premature. Our evidence shows that loan sales are not inherently bad for incentives and that for loans issued by reputable lead arrangers—the majority of traded loans—loan sales actually have a positive impact on banks' incentives to monitor and screen.

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[11] A number of studies have shown that announcements of bank loans elicit positive short-term abnormal returns for the borrowers, in contrast to the announcement effect of most other forms of corporate financing, such as common stock, preferred stock, straight debt, convertible debt, etc. See James and Smith (2000) and Gande and Saunders (2008) for comprehensive reviews of this literature. In addition, many theoretical models highlight the unique monitoring functions of banks (e.g., Diamond, 1984, Ramakrishnan and Thakor, 1984, and Fama, 1985).

[12] Dahiya, Puri, and Saunders (2003) find a negative announcement effect for the sale of a borrower's loans by its lenders. This result is likely to be explained by the high proportion of distressed loans in the study's research sample.

The remainder of the paper is organized as follows. Section 2 provides a description of the syndicated loan market and discusses the structure of information distribution in this market. Section 3 presents our predictions. Section 4 describes the data and sample. Section 5 presents our empirical findings. Section 6 offers concluding remarks.

2. The primary and secondary syndicated loan markets

The U.S. syndicated loan market provides borrowers with an alternative source of financing to high-yield bonds and relationship-based bilateral bank loans. The syndicated loan market is one of the main sources of financing for U.S. companies (Yago and McCarthy, 2004, and LSTA, 2007). Since 1999, U.S. firms have obtained over $1 trillion in new syndicated loans each year. Syndicated lending represents more than fifty percent of corporate financing originated in the U.S., and of the top 500 non-financial firms in the COMPUSTAT universe, 90 percent rely on syndicated loan financing (Weidner, 2000, and Sufi, 2007).

A syndicated loan is a private debt security that also has the features of a public debt, such as credit ratings and an active secondary market. The loan is a floating rate debt issue, priced at a specified interest rate spread above a reference rate, such as Prime, LIBOR and Certificate of Deposit; the loan is always a senior debt instrument. The syndicated loan is provided by a group of lenders and it is structured and managed by one or several banks known as arrangers (Standard & Poor's, 2007). While each of the syndicate lenders is responsible for only a portion of the total loan, the loan is governed by a common contract. The terms of the loan are identical for all members of the syndication; participants' unanimity is required to change the principal terms of the contract.

After the close of primary syndication, syndicated debt instruments can be traded on the secondary market. Loan sales are structured either as assignments or participations, with

investors usually trading through loan trading desks at large underwriting banks. In a sale via assignment, the buyer becomes a direct signatory to the loan. In participation, the original lender remains the holder of the loan and the buyer is taking a participating interest in the existing lender's commitment (Standard & Poor's, 2007). The vast majority of loan sales in the secondary loan market are performed via assignment.

The secondary loan market expanded even faster than the primary market: from a trading volume of $8 billion in 1991, the secondary loan market has increased to a trading volume of $510 billion in 2008. Leveraged loans (loans rated below BBB- or Baa3 or unrated and priced at the spread equal to or higher than 150 basis points above LIBOR) represent the fastest growing part of the secondary loan market. Institutional investors, such as loan participation mutual funds (prime funds), Collateralized Loan Obligations (CLOs), hedge funds, pension funds and finance companies constitute the main secondary market participants.[13] Institutional investors are primarily attracted to the leveraged segment of the secondary loan market.

Prior research documents that syndicate lenders anticipate selling loans on the secondary market at the loan origination (Guner, 2006, and Drucker and Puri, 2009). This proposition is supported by our sample data because the vast majority of the traded loans become traded shortly after origination. 75 percent of traded loans become traded within three months of origination and 90 percent of the traded loans became traded within six months of origination.

The origination and ongoing maintenance of syndicated loans depends crucially on borrowers providing lenders with confidential information (e.g., Dennis and Mullineaux, 2000, and Sufi, 2007). The arranger and syndicate participants receive confidential information provided by the borrower, including timely financial disclosures, covenant compliance

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[13] Prime funds are mutual funds that invest in leveraged loans. The CLOs purchase assets subject to credit risk, such as syndicated loans, and securitize them as bonds of various degrees of creditworthiness.

information, amendment and waiver requests, financial projections, and plans for acquisitions or dispositions (Standard and Poor's, 2007). While this information is critical to evaluating a firm's financial health, it is usually either unavailable to outside investors or only becomes available after a considerable delay when a firm files with the SEC or issues a press release. Because syndicated loans are not considered securities and are thus not governed by the Securities Acts of 1933 and 1934 (LSTA, 2007, Chapter 2), informed lenders can trade on material non-public information.[14] This raises a concern that the lenders can exploit their privileged access to private information by originating and selling poor quality loans on the secondary loan market.

Loan Syndications and Trading Association's (LSTA) guidelines address this concern and suggest that market participants should trade in a manner consistent with the appropriate standards of professional integrity and fair dealing. In particular, an informed participant would be expected to offer to reveal syndicate confidential information to a counterparty, unless the informed participant reasonably believes that the counterparty has already been informed or the counterparty is sophisticated and understands the nature and importance of syndicate confidential information.[15] While this mechanism is expected to reduce the information advantage of the arranger of syndication, it is subject to two limitations.

First, investors on "the public side" may not be eligible to receive syndicate confidential information. More specifically, if an investor wants to retain the option to trade a borrower's public securities, he cannot receive material non-public information. Rule 10b-5 under the

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[14] Information has been defined as "material" for purposes of U.S. securities laws in circumstances where: (i) there is a "substantial likelihood" that a "reasonable investor" would consider the information important in making an investment decision; (ii) the disclosure of the information would be "viewed by the reasonable investor as having significantly altered the 'total mix' of information made available;" or (iii) the disclosure of the information is "reasonably certain to have a substantial effect on the market price of the security." See LSTA (2007) for further discussion of material non-public information.

[15] Syndicate confidential information is nonpublic information which the borrower intends to disclose only to syndicate members and potential syndicate members. Potential syndicate members can receive syndicate confidential information upon compliance with the applicable confidentiality requirements.

Exchange Act prohibits the purchase or sale of a security on the basis of material nonpublic information about that security or its issuer, in breach of a duty of trust or confidence that is owed directly, indirectly, or derivatively to the issuer of that security, its shareholders, or any other person who is the source of the information. To retain an option to trade a borrower's public securities, some participants employ so-called "Chinese walls," designed so that the groups on "the private side" of the firm receive all confidential materials and agree not to trade in the public securities of the issuers for whom they receive private information nor to share this information with "the public side" of the firm. Another strategy commonly used by secondary market traders is to voluntarily keep the whole firm on "the public side" by agreeing not to receive any material non-public information provided by the borrower.[16] Because investors on "the public side" do not receive syndicate confidential information, lead arrangers have a considerable information advantage relative to these investors.

Second, soft information collected by the lead arranger in the process of screening and monitoring the borrower is not available to uninformed investors. Soft information, such as an assessment of a firm's management, is acquired by the lender through ongoing personal communication with the borrower. Soft information cannot be easily documentable or verified and therefore cannot be credibly communicated to a third party (Stein, 2002, and Berger et al., 2005). In addition, because soft information is costly to process, the arranger may have an incentive not to disclose such information in order to retain an informational advantage.

In this paper, by examining the performance of traded loans relative to non-traded loans, we provide evidence on whether lenders exploit their information advantage, leading to low quality loans being sold on the secondary market.

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[16] For example, information providers for loan deals now require investors to self-declare whether they are public or private investors before they gain access to loan documents. Investors who identify themselves as on the public side have access only to loan documents that the arranger deems appropriate for public investors (Sargent, 2005).

3. Implications of reputation and loan purpose for arrangers' incentives

As noted earlier, our objective is to investigate whether the secondary market trading of syndicated corporate loans compromises the quality of bank lending practices. To answer this question we empirically examine the extent to which traded loans underperform relative to non-traded loans. In addition, we also explore the possibility that the influence of secondary market trading on bank lending practices differs across particular subsets of loans due to variation in lenders' incentives to screen and monitor loans. We consider two fundamental partitioning variables. First, we examine whether the performance of traded loans relative to non-traded loans varies with the reputation of the lead arranger of syndication. Second, we examine whether the loan's restructuring purpose, as opposed to other purposes, affects the relative performance of traded versus non-traded loans.

Reputation of the arranger of syndication

The arranger negotiates the loan agreement, coordinates the documentation process, recruits loan participants and performs primary monitoring and enforcement responsibilities (Dennis and Mullineaux, 2000, and Lee and Mullineaux, 2004). The syndicate participants typically rely on information provided by the arranger (Jones et al., 2005). Gorton and Haubrich (1990) and Gorton and Pennacchi (1995) emphasize the importance of the bank's reputation. They show that reputation serves as an implicit guarantee in loan sales with no recourse, a common practice in the sale of syndicated loans.[17]

Highly reputable arrangers are large financial institutions with strong monitoring incentives, and extensive expertise and advanced technologies for monitoring borrowers. The

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[17] These papers analyze the bilateral lender-borrower relationship and therefore refer to the reputation of the selling bank. In the syndicated market setting, where the arranger manages a number of syndicate lenders, we 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.

importance of the arranger's reputation in monitoring the borrower and mitigating incentive problems is supported by 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, Lee and Mullineaux, 2004, and Sufi, 2007). The literature interprets these findings as consistent with the proposition that the arranger's status is a certification of the borrower's financial conditions. A recent paper of Gopalan et al. (2009) shows that defaults by a lead arranger's borrowers adversely affect its subsequent lending activity, further motivating the importance of the arranger's reputation. Thus, to the extent that secondary market trading creates a breakdown in arrangers' incentives, it would seem more likely to occur in the subset of loans syndicated by lower reputation arrangers rather than those of the higher reputation arrangers. We examine this possibility by partitioning loans into two groups, higher reputation lead arrangers and lower reputation leads, and compare the performance of traded and non-traded loans within these partitions.

We consider a loan to be issued by a reputable arranger if it is syndicated by one of the top six arrangers, based on 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 research sample period from 1998 to 2006.

Restructuring purpose loans

We also partition loans on the basis of the purpose of the loan, differentiating between restructuring and non-restructuring loans, on the premise that any potential breakdowns in arrangers' incentives would be more likely to occur for restructuring loans rather than for non-restructuring loans. In motivating this premise we note first that restructuring purpose loans -

loans with the primary purpose of takeover, LBO, MBO and recapitalization - generally involve high risk transactions related to substantial changes in a borrower's capital structure, and are thus associated with higher uncertainty regarding the borrower's future performance. Such higher uncertainty is likely to be associated with a significant information advantage for lead arrangers relative to outside investors, as a lead arranger has access to important private information. Compounding the issue, restructuring purpose loans generate arranger (upfront) fees of up to 2.5% of the total loan commitment, significantly higher than the fees paid for refinancing and general corporate purpose loans (Standard and Poor's, 2007). These higher loan origination fees in conjunction with the information advantage discussed above could present lenders' with a strong motive and fertile opportunities to originate and then sell low quality restructuring loans on the secondary loan market.

Finally, lending standards could also be adversely affected by the 2003-2007 boom in the LBO market. The majority of LBO transactions have been financed by syndicated loans; in recent years they typically comprised over 40% of the capital structure of large LBOs. This generated high institutional investor demand for these loans (Axelson et al., 2007, Ivashina and Kovner, 2008, Kaplan and Strömberg, 2008, and Ivashina and Sun, 2009).[18] A "hot market" for restructuring loans could induce a more severe breakdown in lenders' incentives to screen and monitor. Analogously, a decline in lending standards in the subprime mortgage market has been linked with the rapid expansion of this market. In particular, it has been documented that the standards declined more significantly in the areas that experienced larger subprime credit booms (Dell'Ariccia et al., 2008, and Keys et al., 2009).

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[18] The increase in the institutional investor demand was translated into a significant decrease in the interest rate on leveraged buyout financing. The average All-in-drawn spread (spread paid over Libor) on LBO loans decreased from 375 basis points in 2001 to 250 basis points in 2007. In addition, at the peak of the LBO boom, it took fewer than 23 days for an LBO loan to be fully funded by institutional investors (Ivashina and Sun, 2009).

4. Sample, data and descriptive statistics

4.1. Data sources and sample selection

We use data from the Loan Trade Database (LTD) and the DealScan database, provided by the Loan Pricing Corporation (LPC). Since 1998, LTD has provided the indicative loan bid and ask price quotes on syndicated loans traded on the secondary loan market and, according to LPC, covers 80 percent of the trading volume of the secondary loan market in the U.S. The price quotes are reported to LPC by trading desks at institutions that make a market in these loans. Bid and ask prices are quoted as a percent of par and are aggregated across market makers. In addition to price coverage, the database provides the quote date and the number of market makers reporting indicative price quotes to LPC. DealScan covers a majority of the syndicated loan issues in the U.S. and provides a wide range of loan characteristics, such as interest rate, amount, maturity, seniority, purpose, covenants and syndicate structure.

We obtain firm characteristics from COMPUSTAT. Firms' senior debt ratings, watchlist additions and outlook changes (at the firm level) are retrieved from the S&P historical database. If the S&P historical database does not cover a particular firm, we retrieve the Moody's, Fitch or DPR senior debt rating from Mergent Fixed Income Securities Database (FISD).

Panel A of Table 1 summarizes the sample selection process of the traded syndicated loans employed in the analysis. By matching the LTD and the DealScan databases, we identify 7,350 traded loans over the period from June 1998 to December 2006. From this sample we eliminate loans to non-U.S. firms and those not issued in U.S. dollars. We subsequently match the sample borrowers with the COMPUSTAT database. Firstly, we merge the databases by tickers available on DealScan. To improve the identification, we manually match the rest of the sample firms with COMPUSTAT/CRSP by name, industry and state location. Finally, we eliminate facilities that

lack sufficient loan- and firm-specific data. The remaining sample contains 2,811 facilities related to 924 borrowers (traded sample thereafter).

Panel B of Table 1 describes the selection of the non-traded syndicated loans used in our analysis. We motivate the choice of the non-traded sample by the following two considerations. First, 90 percent of the loans in the traded sample were syndicated starting in 1998. Second, the vast majority of the traded loans (75 percent) became traded within three months after origination. Therefore, the U.S. non-traded loans syndicated in the primary loan market over the period from 1998 to September 2006 are chosen as the most appropriate comparison group for the traded sample. We exclude from the analysis loans syndicated after September 2006 because the 2006 trading data may not be sufficient to correctly identify if these loans become traded on the secondary market.

For the period from 1998 to September 2006, DealScan reports 61,018 facilities outstanding to U.S. firms and issued in U.S. dollars. Merging this data with COMPUSTAT allows us to identify 22,332 facilities issued to public firms. Further excluding facilities with insufficient loan and firm data results in a sample of 10,627 facilities related to 2,173 borrowers (non-traded sample thereafter). The majority of the loans excluded due to insufficient data are related to the borrowers whose credit ratings are absent on both the S&P and FISD databases.

4.2. Descriptive Statistics

Panel A of Table 2 reports that traded loans have a median size of $220M and a median maturity of 67 months (detailed variable definitions are in Appendix A). 65 percent of the loans in the traded sample are syndicated by reputable arrangers; 48 percent are syndicated by a relationship lead arranger. In terms of loan purpose characteristics, 33 percent of the loans are issued with restructuring purposes, such as a takeover, LBO/MBO or recapitalization.

Institutional term loans represent 42 percent of the sample loans, consistent with the high involvement of institutional investors in loan trading (Yago and McCarty, 2004, and Standard & Poor's, 2007). 31 percent of the sample loans are revolvers. A typical sample loan is constrained by three financial covenants. The sample loans have, on average, 13 syndicate participants.

Firms in the traded sample are risky, with a mean and median S&P senior debt rating of BB-. 94 percent of the sample loans are issued to non-investment grade borrowers, consistent with the fact that leveraged loans represent the majority of loans traded on the secondary loan market (LSTA, 2007, and Wittenberg-Moerman, 2008). 10 percent of the sample loans are related to borrowers who are on the S&P negative watch list; 21 percent are related to borrowers with a negative outlook at the time of a loan origination.

Panel B presents summary statistics for the non-traded sample. Non-traded loans are characterized by a considerably shorter maturity than traded ones. The difference in loan maturity is likely to be driven by a large proportion of institutional loans in the traded sample; these loans have a significantly longer maturity relative to banking loans. 64 percent of the loans in the non-traded sample are syndicated by reputable arrangers and 53 percent are syndicated by a relationship lead arranger. Restructuring purpose loans represent 10.0 percent of non-traded facilities; their proportion in the traded sample is significantly higher. Only seven percent of the non-traded loans are institutional. Relative to the traded sample, a higher proportion of non-traded loans are revolvers (47 percent). Non-traded loans are also characterized by a smaller number of financial covenants and by a smaller number of lenders involved in the loan syndicate. On average, non-traded loans have a BBB- S&P senior debt rating.

Panels C and D provide the descriptive statistics for the subsamples based on arranger reputation. Loans syndicated by reputable arrangers are larger, have a shorter maturity, are more

likely to be relationship loans and have a higher number of participants in the syndicate (which is likely to be driven by their larger size). As suggested by the *Interest-spread*, *Credit-rating* and *Speculative* variables, reputable arrangers' loans are issued to less risky borrowers relative to the borrowers of non-reputable arrangers' loans.

5. Empirical Results

5.1. Evolution of loan prices on the secondary loan market

Table 3 provides an analysis of how loan prices evolve on the secondary loan market from the initial trade transaction through the end of the third year subsequent to the year of the initial trade transaction. Panel A reports loan prices for periods of up to three years following the year of a loan's initial trade, while Panel B reports the distribution of changes in loan prices relative to a loan's average price over its first trading month. We exclude from this analysis (and all subsequent analyses) 109 loans that were distressed at the initial trading date (i.e., selling at less than 90 percent of par value).

Focusing first on the initial sale transaction (Row 1), we find that for the sample overall and across all partitions, loans initially trade at amounts that on average exceed 99 percent of par value. The absence of significant price discounting at initial sale suggests that the market does not interpret the act of selling a loan as evidence of enhanced moral hazard or adverse selection problems. Turning to the evolution of pricing after the initial sale, we see that for the total sample (Column 1), prices on average decline steeply over time. While loans initially sell at an average price of 99.22, by the end of the third year following initial sale loans are selling at an average price of 91.87. Note that this pervasive drop in loan prices cannot be attributed to the credit crisis. While our loan price data spans the period from June 1998 to December 2006, the crisis did not affect the syndicated loan market till mid-2007 (Ivashina and Scharfstein, 2009).

We find that the deteriorating price trend differs across subsamples. First, comparing the loans syndicated by reputable arrangers (Column 2) to the loans of the non-reputable arrangers (Column 3), we see that reputable arrangers' loans do not deteriorate as dramatically as do non-reputable arrangers' loans. While both initially trade at close to par, by the third year, loans issued by reputable arrangers trade at 93.01, while those with low reputation arrangers trade at 90.43. These prices are statistically different, as are the loan prices across these groups in both the first and second years subsequent to the initial trade. In Columns 5 and 6, we also document that restructuring loans deteriorate more dramatically than do other loan types.

Panel B provides a different view of the price evolution, but tells the same basic story as Panel A. For example, we see in Columns 4 and 5 that by the third year subsequent to the initial loan sale, 59.5 (38.8) percent of the loans of reputable arrangers experienced a decline (increase) in price versus 66.4 (30.2) percent of the loans of less reputable arrangers. Similarly, 61.0 (29.7) percent of restructuring purpose loans decline (appreciate) in value (Column 6) versus 57.6 (41.3) percent of non-restructuring loans (Column 7).

We perform two additional tests to verify the stability of these results. First, to verify that the reputation and restructuring effects do not subsume each other, we examine the evolution of loan prices for restructuring purpose loans across reputable and non-reputable arrangers. We find that when the loan sample is restricted to restructuring loans, loans issued by reputable arrangers continue to significantly outperform other loans starting from the first year after the initial loan sale (results are untabulated). Further, we find that restructuring purpose loans issued by non-reputable arrangers experience the weakest performance. By the end of the third year following the initial sale these loans trade at the average price of 89.60, which indicates that the majority of

the restructuring purpose loans of non-reputable arrangers become distressed (i.e., selling at less than 90 percent of par value).

Second, we address the possibility that the observed price trend is driven by changes in the loan sample over time; while the loan price at sale is estimated for the sample of 2,702 facilities, the loan price in the third year following the initial sale is based on 728 facilities. When we restrict the sample to the 715 loans whose prices are available at each point in time that we examine, all inferences remain the same. In addition, our main findings remain unchanged when we perform an analysis separately for loans issued over the 1998-2003 and 2004-2006 periods.

To summarize, we find that on average prices of traded loans decrease subsequent to their initial trading date, and further, loans originated by reputable lead arrangers deteriorate significantly less than those issued by less reputable arrangers, while loans issued to support corporate restructuring deteriorate significantly more than loans issued for other purposes. While this pattern of deterioration in secondary loan prices is perhaps suggestive of loan sales adversely affecting lead arrangers' incentives, such a conclusion can only be made after directly comparing the performance of traded loans to that of non-traded loans. We address this next by conducting a series of analyses comparing the performance of traded loans to non-traded loans, controlling for a wide range of loan- and borrower-specific characteristics observable at the time of a loan's origination and sale. Because prices only exist for traded loans, we measure performance by accounting measures of performance and credit ratings.

5.2. Changes in a firm's accounting performance following a loan's sale or issuance

5.2.1. Comparative analysis of borrower profitability across traded and non-traded loans

Table 4 presents an analysis of changes in a firm's performance following a loan sale (for the traded sample) or loan issuance (for the non-traded sample). For traded syndicated loans, the

initial trading event typically occurs within one to three months of loan origination in the primary market. It is for this reason we choose to compare the performance of traded loans after the initial trading event against the performance of non-traded loans following loan origination.

The general message of Panel A is that, for reputable arrangers, traded loans appear to perform *better*, if anything, relative to non-traded loans based on profitability measure. For the traded loans of reputable arrangers, mean profitability for the three years before the initial loan sale (Column 4) is indistinguishable from mean profitability for the three years after (Column 5), although we do see a drop in profitability for the non-traded loans of reputable arrangers (Column 9). In contrast, for non-reputable arrangers non-traded loans appear to perform better. Restructuring loans perform poorly in both the traded and non-traded samples.[19]

In Panel B, we examine the behavior of abnormal accounting accruals around the initial trading event, or around loan origination for non-traded loans. Our objective is to see if there is evidence of earnings management or aggressive accounting behavior more generally by borrowers in the period leading up to loan origination or trading. Such behavior would be characterized by positive (income increasing) abnormal accruals in the period prior to initial trading or origination, followed by negative abnormal accruals in the post period. For reputable arrangers, we find no evidence of extreme reversals of abnormal accruals for the borrowers of either traded or untraded loans. However, we find that in the three year period prior to the year of a loan sale, the borrowers related to the traded loans of non-reputable arrangers show, on average, significantly positive abnormal accruals (Column 4), while after the loan sale the abnormal accruals turn, on average, significantly negative (Column 5). This accruals reversal

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[19]Because of COMPUSTAT data availability, we restrict the accounting performance analysis to loans initially sold/issued over the 1998-2004 period. For these loans, we have financial statement data for the three year period following the year of a loan's initial sale or issuance. To maintain consistency across empirical tests, we impose the same restriction when performing the credit quality analysis (see Section 5.3).

represents 1.7% of total assets and is statistically significant. No such reversal in accruals exists for the non-traded loans issued by non-reputable arrangers. This result suggests a breakdown in due diligence by non-reputable arrangers on loans anticipated to be sold, as the borrowers on these loans appear to engage in aggressive income-increasing accounting reporting in the period leading up to loan origination and trading.[20]

To extend the comparative analysis between the traded and non-traded sample, we examine the distribution of changes in a firm's profitability (Table 5). For traded loans, we measure the change in profitability over the three year period following the year of a loan sale relative to the three year period prior to that year. For non-traded loans, we estimate the change in profitability over the three year period following the year of the loan issuance relative to the three year period prior to that year. To perform this analysis, we restrict both the traded and non-traded samples to speculative loans, which represent the vast majority (94%) of traded loans. For traded loans, we find that the performance of borrowers related to loans of reputable arrangers is significantly better following the initial sale than the performance of borrowers related to loans of non-reputable arrangers (Panel A). For reputable arrangers, the borrowers experience a decrease (increase) in the ratio of EBITDA to total assets in 44.6 (55.4) percent of the cases, while for non-reputable arrangers, the decrease (increase) in profitability characterizes 56.3 (43.7) percent of the cases. No differences exist between these two groups for non-traded loans (Panel B). Consistent with prior analysis, borrowers associated with restructuring loans underperform relative to borrowers of other loan types, both for the traded and non-traded sample.

Comparing traded loans to non-traded loans, we find that for reputable arrangers the borrowers of traded loans actually perform better than the borrowers of non-traded loans (Panel

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[20] Abnormal accruals can also capture abnormally positive operating performance that quickly mean-reverts in subsequent periods. However, this interpretation of abnormal accruals tests' results is also consistent with a breakdown in due diligence by non-reputable arrangers on loans anticipated to be sold.

C). For the borrowers of restructuring loans, there is no difference in performance across traded and non-traded loans, suggesting that secondary trading is not the main driver of poor performance of restructuring purpose loans.

5.2.2. Regression analysis

In Table 6, Panel A we present a regression analysis of the changes in borrower performance. We regress an indicator variable reflecting whether a firm has experienced a decrease in the average profitability over the three year period following the year of a loan's initial sale or issuance relative to the average profitability over the three year period prior to the year of a loan's initial sale or issuance, respectively, on a set of loan- and firm-specific characteristics (Columns 1-3). As an alternative measure of a borrower's performance, we examine changes in the interest coverage ratio (Columns 4-6). The importance of this ratio for lenders is exemplified by the fact that the interest coverage ratio is one of the most commonly used covenants in syndicated loan contracts. In particular, more than 90 percent of traded loans are subject to the interest coverage covenant.

We perform separate analyses for the traded and non-traded samples and for the pooled sample of loans, including both traded and non-traded loans. Our main variables of interest are *Reputable-arranger*, *Purpose-restructuring* and *Traded*. As noted above in the discussion of descriptive statistics in Table 2, there are differences in loan and firm characteristics across traded and non-traded loan subsamples (Panels A and B), and across reputable and non-reputable arranger subsamples (Panels C and D). It is thus important to control for these loan and firm characteristics to address the possibility that these characteristics are associated with changes in a borrower's performance.

In particular, we control for the loan's risk by including the borrower's credit rating, the interest spread on the loan at origination, an indicator variable reflecting whether a loan is institutional, and the number of lenders in the loan syndicate. Institutional loans are typically more risky and are characterized by a longer maturity and a back-end-loaded repayment schedule relative to the amortizing term loans issued by banks (Yago and McCarthy, 2004). A higher number of syndicate participants is typically associated with a higher transparency and a lower probability of borrower default (Sufi, 2007). Note that including the interest spread variable in the regression controls not only for a borrower's riskiness, but also for the pricing at loan origination of a borrower's expected performance.

We also control for the efficiency of ex-post monitoring of the borrower; we expect more efficient lenders' monitoring to be associated with a borrower's better future performance. In this respect, we include in the analysis the number of financial covenants imposed by the loan agreement and an indicator variable reflecting whether the loan is issued by a relationship lender. Financial covenants allow lenders to perform efficient monitoring of a borrower and are especially important for the monitoring of traded loans (Drucker and Puri, 2009, and Wittenberg-Moerman, 2009). However, because lenders impose more extensive covenants when a borrower is risky and informationally opaque (Bradley and Roberts, 2004, and Standard & Poor's, 2007), we cannot predict the sign of the coefficient on the financial covenants variable. Relationship lenders have previously transacted with the firm, and thus have extensive knowledge of the firm's operations as well as well-developed channels of communication with the firm's managers (Sufi, 2007, and Bharath et al., 2009), which should facilitate borrower monitoring.

It is important to note that we control in the regression analysis for all the main determinants of a loan's probability to be traded, as suggested by prior research. Drucker and

Puri (2009) and Wittenberg-Moerman (2009) find that loan riskiness, the number of covenants in a loan contract, the number of syndicate participants, the lead arranger's reputation, whether a loan has a restructuring purpose, whether it is institutional, and whether it is issued by a relationship lender are the primary characteristics associated with secondary loan trading.[21] In Section 5.4, we present alternative specifications to show that our results are robust to the selection issue between traded and non-traded loans.

We also include in the analysis a measure of a borrower's past profitability and an indicator variable reflecting whether a borrower has experienced losses prior to a loan's sale or issuance. While more profitable firms are more likely to continue performing well, the mean-reverting nature of earnings must be considered (e.g., Freeman et al., 1982, and Easton & Zmijewski, 1989). Further, we control for abnormal accruals in the period preceding loan origination and sale because the analysis in Table 4, Panel B suggests that positive abnormal accruals are strongly related to deterioration in a borrower's future profitability. Because of the differences in firm size across the different loan subsamples that we examine, we include this variable in the analysis.[22] Finally, to control for time-varying effects, we include year fixed effects.

Table 6 documents that for traded loans the probability of a future decrease in a borrower's performance is significantly lower for loans issued by reputable lead arrangers. This result holds both for the profitability and interest coverage performance measures. The reputation effect is also economically significant. Having a reputable arranger decreases the probability of a future decrease in a borrower's profitability (interest coverage ratio) by 12 (7) percent, which represents 24 (14) percent of the average probability that a borrower's profitability (interest coverage) will

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[21] Traded loans also have a longer maturity and are less likely to be revolvers. We find that these variables are insignificantly related to changes in a borrower's accounting performance and credit quality.

[22] A high correlation between borrower size and loan size prevents the simultaneous incorporation of both variables in the regression. The analysis incorporating loan size instead of firm size provides almost identical results.

deteriorate after the sale. For the non-traded loans, we find a less considerable reputation effect. Having a reputable arranger decreases the probability of a decrease in a borrower's profitability by 6 percent and does not affect the change in a borrower's interest coverage ratio.[23]

Consistent with the univariate analysis, we find that positive abnormal accruals in the three year period prior to a loan sale are strongly associated with future deterioration in a borrower's performance. This result further emphasizes the importance of the arranger's reputation, because non-reputable arrangers tend to sell the loans of borrowers who experience high positive abnormal accruals in the three years prior to a loan sale.

With regard to loan purpose, borrowers with restructuring purpose loans experience a significantly higher probability of a future decrease in the performance for both traded and non-traded loans. Economically, restructuring purpose loans are associated with a 7 (14) percent increase in the probability of deteriorating profitability (interest coverage ratio) after the sale for the traded loans; the effects for non-traded loans are almost identical. This evidence indicates that the poor quality of restructuring loans cannot be explained by loan sales' effect on the lenders' incentives to screen and monitor these loans.

For the total sample of traded and non-traded loans, for both performance measures used in the analysis, we find a negative and significant coefficient on the *Traded* variable. This result demonstrates that, controlling for borrower and loan characteristics, traded loans do not

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[23]Plausible reasons for the greater impact of reputation on the performance of traded relative to non-traded loans derive from the potential increase in the number of institutional syndicate participants after a loan becomes traded. Ivashina and Sun (2009), who explicitly examine changes in the syndicate structure based on loan renegotiation records, find that the number of institutional investors significantly increases as a result of a secondary market trading, with the size of an average syndicate increasing by 40%. A larger syndicate investor base can exacerbate the reputation losses associated with deterioration in a borrower's performance, as these investors will be wary of participating in subsequent deals syndicated by the arranger. While syndicate participants who join the syndicate in the primary market also rely on the arranger's due diligence, these participants' dependence on the arranger is likely to be less than it is for investors who join the syndicate via the secondary market as the former often have a prior relationship with the borrower, particularly if the borrower is informationally opaque (Sufi, 2007).

underperform non-traded loans. In fact, traded loans appear to have a lower probability of poor future accounting performance.

To further explore this finding, we examine the changes in borrower performance for the two subsamples based on the arranger reputation (Table 6, Panel B). As noted earlier, we control for differences in the observable loan and firm characteristics across reputable and non-reputable arranger subsamples, as documented in Panels C and D of Table 2. We find that the better accounting performance of traded loans that we document is due to the loans issued by reputable arrangers. For reputable arrangers, the probability that a borrower's future performance deteriorates is significantly smaller for traded than for non-traded loans. Economically, traded loans experience a 7.6 (8.3) percent smaller probability of a future decrease in a borrower's profitability (interest coverage), which represents 13 (17) percent of the average probability that a borrower's profitability (interest coverage) will deteriorate after the sale. This evidence indicates that loan sales have a positive effect on reputable arrangers' incentives to monitor and screen, leading to higher quality loans being sold to uninformed investors on the secondary market. Our inferences represent an important contrast to those of Berndt and Gupta (2009), who conclude that loan trading is unequivocally bad news for the future performance of a firm.

5.3. Changes in a firm's credit quality following a loan's sale or issuance

As an additional approach to measuring firm performance, we examine the changes in a borrower's credit quality following a loan's sale or issuance. For traded loans, we measure the change in a borrower's credit rating over the three year period following the year of a loan's initial sale relative to the credit rating at a loan's sale. For the non-traded loans, we estimate the change in a borrower's credit rating over the three year period following the year of the loan issuance relative to the credit rating at a loan's issuance.

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Panel A of Table 7 reiterates the fact that the performance of borrowers related to the loans of reputable arrangers is significantly better than the performance of borrowers related to loans of non-reputable arrangers. In the third year following the year of a loan's initial sale, for reputable arrangers, the borrowers experience deteriorating (improving) credit ratings in 35.5 (30.4) percent of cases, while for non-reputable arrangers, the deteriorating (improving) credit ratings characterize 45.6 (25.9) percent of cases; these distributions are statistically different from each other. Further, we show that for non-reputable arrangers, the borrowers of traded loans significantly underperform relative to the borrowers of non-traded loans (Panel C).

Next, we examine whether our inferences hold when we control for loan- and borrower-specific characteristics that are likely to explain changes in a borrower's credit quality. We regress an indicator variable reflecting whether a firm has experienced a decrease in credit quality in the third year following the year of a loan's issuance or sale relative to a credit rating at the loan's initial sale or issuance, respectively, on the *Reputable-arranger*, *Purpose-restructuring* and *Traded* variables and a set of controls (Table 8). As in the accounting performance analysis, we control for a loan's riskiness and the efficiency of the ex-post monitoring of the borrower. In addition, we include variables reflecting whether a borrower was on the watchlist and outlook at the time of a loan's origination or initial trade.

Consistent with our inferences based on accounting measures of a borrower's performance, we find that for traded loans the probability of a future decrease in a borrower's credit quality is significantly lower for loans issued by reputable lead arrangers. In terms of economic significance, having a reputable arranger decreases the probability of a future deterioration in a borrower's credit rating by 6 percent, which represents 15 percent of the average probability that a borrower's credit rating will decrease after the sale. In contrast, no difference exists between

loans issued by reputable versus non-reputable arrangers for non-traded loans, further emphasizing that the reputation effect is more significant for traded loans. With respect to restructuring purpose loans, controlling for borrower characteristics, we do not find that they underperform in terms of credit quality relative to other loans.

Another key analysis presented in Table 8 is the comparison between traded and non-traded loans. First, we find that the coefficient on the *Traded* variable is insignificant for the total sample of loans. Second, we examine the effect of loan trading separately for the loans issued by reputable and non-reputable arrangers. While we find that loan trading does not affect changes in the credit quality of borrowers related to reputable arrangers, we find that it adversely affects borrowers related to non-reputable arrangers. This evidence further demonstrates that reputation is a powerful mechanism in the secondary loan market.

5.4. Robustness tests

Selection issue

We further consider the selection issue between traded and non-traded loans. In our multi-variate analyses above (Tables 6 and 8) we address this issue by including in the regressions control variables that have been suggested by prior research as the primary characteristics of traded loans (Drucker and Puri, 2009, and Wittenberg-Moerman, 2009). In Table 9, we present the results from applying the "Heckman" selection model (Heckman, 1979). That is, we include in the profitability and credit rating regressions the inverse Mills ratio derived from a first stage estimation of the trade probability model. Panel A of Table 9 presents the estimation of the trade probability model; the results are consistent with those reported by prior studies.[24] As shown in

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[24] Note that Panel A presents the trade probability model for the total sample of loans employed in the profitability test (Column 1 of Panel B). To obtain the inverse Mills ratio, the trade probability model was re-estimated for each of the models presented in Panel B. The decrease in the number of observations in Panel B relative to Tables 6 and 8

Panel B of Table 9, all of our results are robust to the inclusion of the inverse Mills ratio. In the untabulated analysis we perform the same analysis for the interest coverage regressions; all inferences remain the same.

Other robustness issues

We conduct a number of additional tests to verify the stability of our results. First, we address a concern that the arranger reputation effect is potentially explained by the loan fraction held by the arranger. If for traded loans, reputable arrangers keep a higher loan proportion than non-reputable arrangers do, the arranger's incentives to screen and monitor a borrower are likely to be driven by its higher loan exposure. In contrast to this proposition, we find that reputable arrangers keep a significantly smaller loan proportion than non-reputable arrangers do: reputable arrangers on average keep 31.1 percent of a loan, while non-reputable ones keep 38.5 percent (arranger proportion data is available for 18 percent of the loans in the traded sample). The significantly smaller proportion of a loan kept by reputable arrangers that we observe for our traded sample is consistent with Sufi's (2007) finding for the general syndicated loans sample.

Second, we explore whether reputable arrangers tend to hold a revolving facility of the borrower, while selling its institutional loans. Revolvers typically require more extensive monitoring of a borrower (Berger and Udell, 1995). We do not find that arrangers' holding of a non-traded revolving facility explains why the traded loans of reputable arrangers outperform the traded loans of non-reputable arrangers (results are untabulated). Third, we examine whether the reputation effect can be attributed, at least partially, to the relationship between the arranger and syndicate participants. If syndicate participants repeatedly transact with the arranger, the arranger is incentivized to efficiently screen and monitor a borrower to motivate the participants to invest

is explained by the exclusion from the analysis loans missing maturity data, which is required for the trade probability model's estimation.

in the future deals it syndicates. Following Ivashina (2009), to measure arranger-participant relationships, for every syndicate participant, we estimate the number of previous relationships between the lead arranger and that participant over the five year period preceding the loan's issuance, relative to the total number of deals syndicated by the arranger during this period. Then, we average this relationship measure across all syndicate participants. We find that when the arranger-participant relationship variable is incorporated into the regression analysis, it does not affect changes in a borrower's performance, for either accounting-based or credit quality performance measures (results are untabulated).

Fourth, we repeat all the regression tests when we limit the non-traded sample to the loans of borrowers who do not have any traded loans during our sample period. For this purpose, we exclude 1,709 loans from the non-traded sample. The main variables of interest have similar statistical and economic significance to our primary specifications, and all inferences remain the same (untabulated). Fifth, to ensure that the credit crisis does not affect the empirical findings, we exclude from the analysis loans issued starting in 2004. For these loans, the three year period following the year of a loan's sale or issuance includes the year 2007; in 2007, borrowers' performance could be adversely affected by the credit crisis and the economic downturn. Our results are not sensitive to the exclusion of these loans.

Finally, for accounting performance tests, we examine whether our findings are sensitive to how we measure accounting performance. More specifically, in the profitability regressions, we use as a dependent variable the ratio of EBITDA to total assets in the three year period following loan sale or issuance instead of the indicator variable reflecting a change in the EBITDA ratio. Analogously, in the interest coverage regression, we use as a dependent variable the interest

coverage ratio in the three year period following the loan sale or issuance. Our main findings and conclusions remain unchanged both for the traded and non-traded samples (untabulated).

6. Conclusions

The financial crisis that started in 2007 has re-energized debate over the extent to which the "originate-to-distribute" model of bank credit leads to breakdowns in bank lending practices. In this paper, we provide an analysis of performance outcomes associated with one important class of originate-to-distribute transactions, namely, syndicated loans. In particular, we examine whether loans that are originated in the primary market and ultimately traded in the secondary market perform worse than loans that are not traded. We also investigate to what extent the reputation of a loan's lead arranger is associated with the performance of traded loans relative to non-traded loans, or whether the restructuring purpose of the loan impacts relative performance.

We find that for loans originated by the reputable lead arrangers, the borrowers of traded loans actually perform better after the initial trading event than do borrowers of non-traded loans after origination. With respect to loans originated by lower reputation lead arrangers, we find that in terms of profitability and interest coverage measures, borrowers of traded loans do not underperform relative to borrowers of non-traded loans, but that they exhibit a weaker performance in terms of credit quality. For non-reputable arrangers we also find evidence of earnings management via abnormal accruals for the traded loan sample. In addition, we find that loans with the primary purpose of takeover, LBO, MBO or recapitalization perform worse relative to other loans, regardless of whether they are traded. Overall, we find that secondary loan market trading does not have an unequivocally adverse effect on lenders' incentives to ex-ante screen loans and monitor them ex-post. We also show that reputation is a powerful mechanism in mitigating the incentives problems generated by loan sales.

Appendix A: Variable definitions

Variables	Description
Abnormal-accruals	Abnormal accruals estimated by the modified Jones (1991) model, adjusted for the incorporation of the negative cash flow indicator variable (Ball and Shivakumar, 2006): $ACC_{it} = \alpha_0 + \alpha_1 CFO_{it} + \alpha_2 \Delta REV_{it} + \alpha_3 PPE_{it} + \alpha_4 DCFO_{it} + \alpha_5 DCFO_{it} * CFO_{it}$. The model is estimated for each 3-digit industry and provides the corresponding inputs for calculating the normal level of accruals for each borrower:. $NACC_{it} = \hat{\alpha}_0 + \hat{\alpha}_1 CFO_{it} + \hat{\alpha}_2 (\Delta REV_{it} - \Delta AR_{it}) + \hat{\alpha}_3 PPE_{it} + \hat{\alpha}_4 DCFO_{it} + \hat{\alpha}_5 DCFO_{it} * CFO_{it}$. The abnormal accruals are computed by the difference between actual and normal accruals levels. The definitions of the variables are as follows. CFO_{it} is cash flow from operations of firm i in year t. $DCFO_{it}$ is an indicator variable taking the value of one if the firm's contemporaneous cash flow from operations is negative, zero otherwise. ACC_{it} is the accruals of firm i in year t, measured as earnings before extraordinary items less cash flow from operations. $\Delta Rev_{it\,t}$ is a change in revenue of firm i in year t: $REV_{it} - REV_{i(t-1)}$. PPE_{it} is the gross property, plant and equipment of firm i in year t. ΔAR_{it} is the change in accounts receivable of firm i in year t: $AR_{it} - AR_{i(t-1)}$. All the variables (except the intercept and the indicator variable) are standardized by the average total assets.
Abnormal-accruals-mean	Traded sample: a borrower's average abnormal accruals over the three year period prior to the year of a loan's initial sale. Non-traded sample: a borrower's average abnormal accruals over the three year period prior to the year of a loan's issuance.
Credit-rating	The numerical equivalent of the senior debt rating. It is set as equal to one if the S&P senior debt rating is AAA, through 25 when the S&P senior debt rating is D. For firms not rated by S&P, we assign the Moody's senior debt rating, converted to an equivalent S&P rating. For firms not rated by S&P or Moody's, we assign the Fitch or DPR senior debt rating, converted to an equivalent S&P rating.
Covenant-financial	The number of financial covenants imposed by the loan agreement.
Facility-size	A loan's amount in millions.
Firm-size	Traded: a logarithm of the borrower's total assets in the year prior to the year of a loan's initial sale. Non-traded sample: a logarithm of the borrower's total assets in the year prior to a loan's issuance year.
Interest-coverage	Traded sample: the ratio of EBITDA to interest expense in the year prior to the year of a loan's initial sale. Non-traded sample: the ratio of EBITDA to interest expense in the year prior to a loan's issuance year.
Interest-coverage-mean	Traded sample: a borrower's average ratio of EBITDA to interest expense over the three year period prior to the year of a loan's initial sale. Non-traded sample: a borrower's average ratio of EBITDA to interest expense over the three year period prior to a loan's issuance year.
Interest-coverage-decrease	Traded sample: An indicator variable taking the value of one if a borrower has experienced a decrease in the average interest coverage ratio (the ratio of EBITDA to interest expense) over the three-year period following the year of a loan's initial sale relative to the average interest coverage ratio over the three year period prior to the year of a loan's initial sale, zero otherwise. Non-traded sample: An indicator variable taking the value of one if a borrower has experienced a decrease in the average interest coverage ratio over the three-year period following the year of a loan's issuance relative to the average interest coverage ratio over the three year period prior to the year of a loan's issuance, zero otherwise.
Interest-spread	The interest spread is based on the All-In-Drawn-Spread measure reported by DealScan. This measure is equal to the amount the borrower pays in basis points over LIBOR for each dollar drawn down, so it accounts for both the spread of the loan and the annual fee paid to the bank group. LPC always uses the LIBOR spread or the LIBOR-equivalent spread option to calculate the All-In-Drawn spread.

Variables	Description
Institutional	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.
Leverage	Traded sample: the ratio of the long-term debt to total assets in the year prior to the year of a loan's initial sale. Non-traded sample: the ratio of the long-term debt to total assets in the year prior to a loan's issuance year.
Loss-mean	Traded sample: An indicator variable taking the value of one if a borrower's average EBITDA over the three year period prior to the year of a loan's initial sale is negative, zero otherwise. Non-traded sample: An indicator variable taking the value of one if a borrower's average EBITDA over the three year period prior to the year of a loan's issuance is negative, zero otherwise.
Market-book	Traded sample: the ratio of the firm's market value to book value of common equity in the year prior to the year of a loan's initial sale. Non-traded sample: the ratio of the firm's market value to book value of common equity in the year prior to a loan's issuance year.
Maturity	The number of months between the loan's issue date and the date when the loan matures.
Number-of-lenders	Number of participants in the loan syndicate, including the arranger.
Outlook-negative	Traded sample: An indicator variable that takes the value of one if a borrower has a negative S&P outlook at the time of a loan's initial sale, zero otherwise. Non-traded sample: An indicator variable that takes the value of one if a borrower has a negative S&P outlook at the time of a loan origination, zero otherwise.
Outlook-positive	Traded sample: An indicator variable that takes the value of one if a borrower has a positive S&P outlook at the time of a loan's initial sale, zero otherwise. Non-traded sample: An indicator variable that takes the value of one if a borrower has a positive S&P outlook at the time of a loan's origination, zero otherwise.
Price	A loan's price on the secondary loan market. According to secondary loan market convention, loan price is measured by the loan bid price in the secondary trade.
Profitability	Traded sample: the ratio of EBITDA to total assets in the year prior to the year of a loan's initial sale. Non-traded sample: the ratio of EBITDA to total assets in the year prior to a loan's issuance year.
Profitability-mean	Traded sample: a borrower's average ratio of EBITDA to total assets over the three year period prior to the year of a loan's initial sale. Non-traded sample: a borrower's average ratio of EBITDA to total assets over the three year period prior to the year of a loan's issuance.
Profitability-decrease	Traded sample: An indicator variable taking the value of one if a borrower has experienced a decrease in the average profitability (the ratio of EBITDA to total assets) over the three-year period following the year of a loan's initial sale relative to the average profitability over the three year period prior to the year of a loan's initial sale, zero otherwise. Non-traded sample: An indicator variable taking the value of one if a borrower has experienced a decrease in the average profitability over the three-year period following the year of a loan's issuance relative to the average profitability over the three year period prior to the year of a loan's issuance, zero otherwise.
Purpose-restructuring	An indicator variable taking the value of one if the loan'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.
Rating-decrease	Traded sample: An indicator variable taking the value of one if a borrower has experienced a decrease in its credit rating in the third year following the year of a loan's initial sale relative to a credit rating at the loan's initial sale, zero otherwise. Non-traded sample: An indicator variable taking the value of one if a borrower has experienced a decrease in its credit rating in the third year following a loan's issuance relative to a credit rating at the loan's issuance, zero otherwise.

Variables	Description
Relationship-lending	An indicator variable taking the value of one if at least one of the loan's lead arrangers had been a lead arranger of the borrower's previous loans over the five year period preceding the loan's issuance date, zero otherwise.
Reputable-arranger	An indicator variable taking the value of one if the loan is syndicated by one of the top six arrangers, based on the arranger's average market share in the primary 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 2006. In the case of multiple arrangers, we consider the highest market share across the arrangers involved in the loan transaction.
Revolver	An indicator variable taking the value of one if a loan's type is revolver, zero otherwise.
Speculative	An indicator variable taking the value of one if a borrower's credit rating is BBB- or below, zero otherwise.
Traded	An indicator variable taking the value of one if a loan is traded on the secondary loan market, zero otherwise.
Watch-negative	Traded sample: An indicator variable that takes the value of one if a borrower is on the S&P negative watch list at the time of a loan's initial sale, zero otherwise. Non-traded sample: An indicator variable that takes the value of one if a borrower is on the S&P negative watch list at the time of a loan origination, zero otherwise.
Watch-positive	Traded sample: An indicator variable that takes the value of one if a borrower is on the S&P positive watch list at the time of a loan's initial sale, zero otherwise. Non-traded sample: An indicator variable that takes the value of one if a borrower is on the S&P positive watch list at the time of a loan origination, zero otherwise.

References

Ashcraft, A., and J. Santos, 2007, Has the CDS market lowered the cost of corporate debt? *Working paper.*

Axelson, U., T. Jenkinson, M. Weisbach, and P. Strömberg, 2007, Leverage and pricing in buyouts: An empirical analysis, *Working paper.*

Ball, R., R. Bushman, and F. Vasvari, 2007, The debt-contracting value of accounting information and loan syndicate structure, *Journal of Accounting Research*, 46, 247-287.

Ball, R., and L. Shivakumar, 2006, The role of accruals in asymmetrically timely gain and loss recognition, *Journal of Accounting Research*, 44, 204-242.

Berger, A., and G. Udell, 1995, Relationship lending and lines of credit in small firm finance, *Journal of Business*, 68, 351-381.

Berger, A., M. Espinosa-Vega, W. Frame, and N. Miller, 2005, Debt maturity, risk, and asymmetric information, *The Journal of Finance*, 60, 2895-2923.

Benmelech, E., J. Dlugosz and V. Ivashina, 2009, What lies beneath: A look inside CLO collateral, *Working paper.*

Berndt, A., and A. Gupta, 2009, Moral hazard and adverse selection in the originate-to-distribute model of bank credit, *Journal of Monetary Economics*, 56, 725–743.

Bharath, S., S. Dahiya, A. Saunders, and A. Srinivasan, 2009, Lending relationships and loan contract terms, *Working Paper.*

Bradley, M., and M. Roberts, 2004, The structure and pricing of corporate debt covenants, *Working Paper.*

Dahiya, S., M. Puri, and A. Saunders, 2003, Bank borrowers and loan sales: New evidence on the uniqueness of bank loans, *Journal of Business*, 76, 563–82.

Demyanyk, Y., and V. Hemert, 2008, Understanding the subprime mortgage crisis, *Working paper.*

Dennis, S., and D. Mullineaux, 2000, Syndicated loans, *Journal of Financial Intermediation*, 9, 404-426.

Diamond, D., 1984, Financial intermediation and delegated monitoring, *Review of Economic Studies*, 51, 393-414.

Dell'Ariccia, G., D. Igan, and L. Laeven, 2009, Credit booms and lending standards: Evidence from the subprime mortgage market, *Working paper.*

Dennis, S., and D. Mullineaux, 2000, Syndicated loans, *Journal of Financial Intermediation*, 9, 404-426.

Doms, M., F. Furlong, and J. Krainer, 2007, Subprime mortgage delinquency rates, *Working paper.*

Drucker, S., and M. Puri, 2009, On loan sales, loan contracting, and lending relationships, *Review of Financial Studies*, 22, 2635-2672.

Duffee, G., 2009, Discussion: Moral hazard and adverse selection in the originate-to-distribute model of bank credit, *Journal of Monetary Economics*, 56, 744–747.

Duffee, G., and C. Zhou, 2001, Credit derivatives in banking: Useful tools for managing risk? *Journal of Monetary Economics*, 48, 25–54.

Easton, P., and M. Zmijewski, 1989, Cross sectional variation in the stock market response to accounting earnings announcements, *Journal of Accounting and Economics*, 11, 117-141.

Fama, E., 1985, What's different about banks? *Journal of Monetary Economics*, 15, 29-39.

Francois, P. and F. Missonier-Piera, 2004, The agency structure of loan syndicates, *Working paper.*

Freeman, R., J. Ohlson and S. Penman, 1982, Book rate of return and prediction of earnings changes: An empirical investigation, *Journal of Accounting Research*, 2, 639-653.

Gande, A., and A. Saunders, 2008, Are banks still special when there is a secondary market for loans? *Working Paper.*

Gopalan, R., V. Nanda, and V. Yerramilli, 2009, Lead arranger reputation and the loan syndication market, *Working paper.*

Gorton, G., and J. Haubrich, 1990, The loan sales market, *Research in Financial Services,* 2, 85-135.

Gorton, G., and G. Pennacchi, 1990, Financial intermediaries and liquidity creation, *The Journal of Finance*, 45, 49-71.

Greenbaum, S., and A. Thakor, 1987, Bank funding modes: Securitization versus deposits, *Journal of Banking and Finance*, 11, 379-401.

Guner, A., 2006, Loan sales and the cost of corporate borrowing, *Review of Financial Studies,* 19, 687-716.

Heckman, J., 1979, Sample selection bias as a specification error, *Econometrica*, 47, 153-161.

Holmström, B., and J. Tirole, 1997, Financial intermediation, loanable funds, and the real sector, *The Quarterly Journal of Economics*, 112, 663-691.

Ivashina, V., 2009, Asymmetric information effects on loan spreads, *Journal of Financial Economics*, forthcoming.

Ivashina, V., and A. Kovner, 2008, The private equity advantage: Leveraged buyout firms and relationship banking, *Working paper.*

Ivashina, V., and Z. Sun, 2009, Institutional demand pressure and the cost of leveraged loans, *Working paper.*

Ivashina, V., and D. Scharfstein, 2009, Bank lending during the financial crisis of 2008, *Working paper.*

James, C., and Smith, D., 2000, Are banks still special? New evidence on their role in the capital-raising process, *Journal of Applied Corporate Finance*, 13, 52-63.

Jones, J., 1991, Earnings management during import relief investigations, *Journal of Accounting Research*, 29, 193-228.

Jones, J., W. Lang, and P. Nigro, 2005, Recent trends in bank loan syndications: Evidence for 1996-2000, *Journal of Financial Research*, 28, 385-402.

Kaplan, S., and P. Strömberg, 2008, Leveraged buyouts and private equity, *Working paper.*

Keys, B., T. Mukherjee, A. Seru, and V. Vig, 2008, Did securitization lead to lax screening? Evidence from subprime loans, *Working paper.*

Keys, B., T. Mukherjee, A. Seru, and V. Vig, 2009, Financial regulation and securitization: Evidence from subprime loans, *Journal of Monetary Economics*, 56, 700–720.

Kroszner, R., and R. Rajan, 1994, Is the Glass-Steagall Act justified? A study of the U.S. experience with universal banking before 1933, *American Economic Review*, *84*, 810-32.

Lee, S., and D. Mullineaux, 2004, Monitoring, financial distress, and the structure of commercial lending syndicates, *Financial Management*, 33, 107-130.

Leland, H., and D. Pyle, 1977, Informational asymmetries, financial structure, and financial intermediation, *Journal of Finance*, 32, 371-387.

LSTA, 2007, *The Handbook of Loan Syndications and Trading*, A. Taylor and A. Sansone, Editors, McGraw-Hill.

Mian, A., and A. Sufi, 2009, The consequences of mortgage credit expansion: Evidence from the U.S. mortgage default crisis, *Quarterly Journal of Economics, forthcoming.*

Parlour, C., and G. Plantin, 2008, Loan sales and relationship banking, *The Journal of Finance*, 63, 1291-1314.

Pennacchi, G., 1988, Loan sales and the cost of bank capital, *The Journal of Finance*, 43, 375-396.

Purnanandam, A., 2008, Originate-to-distribute model and the sub-prime mortgage crisis, *Working paper*.

Ramakrishnan, R., and A. Thakor, 1984, Information reliability and a theory of financial intermediation, *Review of Economic Studies*, 22, 425–432.

Rajan, R., 1998, The past and future of commercial banking viewed through an incomplete contract lens, *Journal of Money, Credit, and Banking*, 30, 524-550.

Sargent, C., 2005, The new insider trading? *Investment Dealers' Digest Magazine*, June 20.

Simons, K., 1993, Why do banks syndicate loans? *New England Economic Review*, Federal Reserve Bank of Boston, 45-52.

Standard & Poor's, 2006 and 2007, A Guide to the U.S. Loan Market.

Stein, J., 2002, Information production and capital allocation: Decentralized versus hierarchical firms, *Journal of Finance*, 57, 1891-1921.

Sufi, A., 2007, Information asymmetry and financing arrangements: Evidence from syndicated loans, *Journal of Finance*, 62, 629-668.

Weidner, D., 2000, Syndicated lending closes out '90s on a tear, *The American Banker*, January 10th.

Wittenberg-Moerman, R., 2008, The role of information asymmetry and financial reporting quality in debt trading: Evidence from the secondary loan market, *Journal of Accounting and Economics*, 46, 240-260.

Wittenberg-Moerman, R., 2009, The impact of information asymmetry on debt pricing and maturity, *Working Paper.*

Yago, G., and D. McCarthy, 2004, *The U.S. Leveraged Loan Market: A Primer*, Milken Institute.

Table 1: Sample selection process

This table summarizes the sample selection process. Panel A presents the sample selection process of the traded sample. Panel B presents the sample selection process of the non-traded sample.

Panel A: Traded sample

| | Facilities | |
Filters	Number	Percent
Total traded facilities	8,778	100.0
Intersection with the DealScan database	7,350	83.7
After elimination of facilities to non-U.S. firms and/or facilities issued in foreign currencies	6,614	75.3
Intersection with COMPUSTAT	3,186	44.9
After elimination of facilities with missing data	2,811	32.0

Panel B: Non-traded sample

| | Facilities | |
Filters	Number	Percent
Syndicated loans to U.S. borrowers, in U.S. dollars, issued over the period from 1998 to September 2006	61,018	100.0
Intersection with COMPUSTAT	22,332	36.6
After elimination of 3,186 traded facilities	19,146	31.4
After elimination of facilities with missing data	10,627	17.4

Table 2: Descriptive statistics

This table provides descriptive statistics (see Table 1 for sample selection procedure). Panels A and B describe the characteristics of the traded and non-traded samples, respectively. Panels C and D describe the characteristics of the reputable-arranger and non-reputable-arranger samples, respectively. Variables are defined in Appendix A.

Panel A: Traded sample

Loan and Firm Characteristics	Number of observations	Mean	SD	Distribution		
				25%	50%	75%
Loan characteristics:						
Facility-size (in millions)	2,811	445.62	946.7	100.0	220.0	470.0
Maturity	2,761	64.65	22.07	59.00	67.00	83.00
Reputable-arranger	2,811	0.65				
Relationship-lending	2,726	0.48				
Purpose-restructuring	2,811	0.33				
Institutional	2,811	0.42				
Revolver	2,811	0.31				
Number-of-covenants	2,811	2.73	1.68	2.00	3.00	4.00
Number-of-lenders	2,811	12.83	14.01	5.00	9.00	16.00
Interest-spread	2,683	265.5	121.7	200.0	250.00	325.0
Credit risk characteristics:						
Credit-rating	2,811	13.39	2.83	12.00	13.00	14.00
Speculative	2,811	0.94				
Watch-negative (Watch-positive)	2,811	0.10 (0.05)				
Outlook-negative (Outlook-positive)	2,811	0.21 (0.09)				
Additional firm characteristics:						
Firm size (in millions)	2,709	6,122	21,250	684.5	1,485	4 ,248
Market-book	1,773	4.61	10.48	1.33	2.13	3.57
Leverage	2,707	0.48	0.31	0.28	0.45	0.61
Profitability	2,609	0.12	0.11	0.08	0.11	0.16
Interest-coverage	2,577	6.41	14.41	1.76	2.80	5.02

Panel B: Non-traded sample

Loan and Firm Characteristics	Number of observations	Mean	SD	Distribution		
				25%	50%	75%
Loan characteristics:						
Facility-size (in millions)	10,627	492.5	953.5	100.0	250.0	500.0
Maturity	9,975	42.76	30.78	12.00	36.00	60.00
Reputable-arranger	10,627	0.64				
Relationship-lending	10,600	0.53				
Purpose-restructuring	10,627	0.10				
Institutional	10,627	0.07				
Revolver	10,627	0.47				
Number-of-covenants	10,627	1.33	1.57	0.00	1.00	2.00
Number-of-lenders	10,627	9.46	8.83	3.00	7.00	13.00
Interest-spread	9,191	153.3	136.9	50.0	112.5	225.0
Credit risk characteristics:						
Credit-rating	10,627	10.64	4.34	8.00	10.00	14.00
Speculative	10,627	0.55				
Watch-negative (Watch-positive)	10,627	0.08 (0.03)				
Outlook-negative (Outlook-positive)	10,627	0.14 (0.06)				
Additional firm characteristics:						
Firm size (in millions)	10,437	17,447	58,674	895.3	2,635	10 ,026
Market-book	8,472	3.23	3.98	1.42	2.11	3.40
Leverage	10,435	0.34	0.24	0.17	0.30	0.45
Profitability	9,924	0.12	0.09	0.08	0.12	0.16
Interest-coverage	9,712	8.88	15.01	2.39	4.52	8.92

Panel C: Reputable-arranger sample

Loan and Firm Characteristics	Number of observations	Mean	SD	Distribution 25%	50%	75%
Loan characteristics:						
Facility-size (in millions)	8,613	605.5	1,085	150.0	300.0	625.0
Maturity	8,200	45.10	27.66	12.00	48.00	60.00
Relationship-lending	8,527	0.56				
Purpose-restructuring	8,613	0.13				
Institutional	8,613	0.14				
Revolver	8,613	0.45				
Number-of-covenants	8,613	1.48	1.61	0.00	1.00	3.00
Number-of-lenders	8,613	11.62	10.97	4.00	9.00	16.00
Interest-spread	7,869	158.3	131.1	50.0	125	250.0
Traded	8,613	0.21				
Credit risk characteristics:						
Credit-rating	8,613	10.55	4.04	8.00	10.00	13.00
Speculative	8,613	0.57				
Watch-negative (Watch-positive)	8,613	0.09 (0.03)				
Outlook-negative (Outlook-positive)	8,613	0.16 (0.07)				
Additional firm characteristics:						
Firm size (in millions)	8,478	17,969	76,574	1,252	3,294	11,236
Market-book	6,722	3.45	4.22	1.50	2.23	3.61
Leverage	8,475	0.35	0.25	0.18	0.31	0.46
Profitability	8,123	0.13	0.08	0.08	0.12	0.16
Interest-coverage	7,984	9.07	15.34	2.50	4.55	8.87

Panel D: Non-reputable-arranger sample

Loan and Firm Characteristics	Number of observations	Mean	SD	Distribution 25%	50%	75%
Loan characteristics:						
Facility-size (in millions)	4,825	263.4	589.1	60.0	125.0	295.0
Maturity	4,536	51.8	34.57	29.00	57.00	71.00
Relationship-lending	4,799	0.45				
Purpose-restructuring	4,825	0.18				
Institutional	4,825	0.14				
Revolver	4,825	0.43				
Number-of-covenants	4,825	1.87	1.81	0.00	2.00	3.00
Number-of-lenders	4,825	7.55	8.12	2.00	5.00	10.00
Interest-spread	4,005	218.6	152.6	100	210	300.0
Traded	4,825	0.21				
Credit risk characteristics:						
Credit-rating	4,825	12.41	4.32	9.00	13.00	15.00
Speculative	4,825	0.74				
Watch-negative (Watch-positive)	4,825	0.07 (0.03)				
Outlook-negative (Outlook-positive)	4,825	0.15 (0.07)				
Additional firm characteristics:						
Firm size (in millions)	4,668	18,002	97,542	478	1,126	3,627
Market-book	3,523	3.09	4.42	1.27	1.92	3.03
Leverage	4,667	0.40	0.28	0.20	0.37	0.55
Profitability	4,410	0.12	0.11	0.07	0.11	0.16
Interest-coverage	4,305	7.04	14.01	1.78	3.18	6.29

Table 3: Evolution of loan prices on the secondary loan market

This table provides an analysis of the evolution of the loan prices on the secondary loan market. Panel A reports loan prices for the period up to three years following the year of a loan's initial sale. Row (1) reports the average loan price over the first trading month. Row (2) reports the average loan price for the period following the first trading month until the end of the year of a loan's initial sale. Row (3) reports the average loan price over the first year following the year of a loan's initial sale. Row (4) reports the average loan price over the second year following the year of a loan's initial sale. Row (5) reports the average loan price over the third year following the year of a loan's initial sale. Column (1) shows loan prices for the total sample. Columns (2)-(4) report loan prices for loans issued by reputable arrangers, non-reputable arrangers and the difference between the two. Columns (5)-(7) report loan prices for purpose-restructuring and non-purpose-restructuring loans and the difference between the two. Loan prices are measured as the average loan bid price over the relevant estimation period. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Panel B reports the distribution of the changes in loan prices relative to a loan's average price over the first trading month. Column 1 shows the number of loans for which prices decreased, did not change or increased following the first trading month until the end of the year of a loan's initial sale. Column 2 shows the distribution of a loan's price changes in the first year following the year of a loan's initial sale. Column 3 shows the distribution of a loan's price changes in the third year following the year of a loan's sale. Columns 4 and 5 partition the distribution of loan price changes in the third year following a loan's initial sale by the arranger's reputation. Columns 6 and 7 partition the distribution of loan price changes in the third year following the year of a loan's initial sale by loan purpose. The number in parenthesis is the percentage of total loans for that column. The bottom number in each column is the total number of loans for the column. The bottom number in parentheses is the percentage of all loans. The panel also presents chi-square statistics from tests of whether two distributions *within* the panel are different from each other. The number in parentheses is the chi-square statistic *p*-value. For example, the first test statistic provides evidence of whether the distribution of loan price changes for loans issued by reputable arrangers differs from the distribution of loan price changes for loans issued by non-reputable arrangers. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Variables are defined in Appendix A.

Panel A: Loan prices following a loan's sale

	Total sample (1)	Reputable-arranger (2)	Non-reputable-arranger (3)	Diff (4)	Purpose-restructuring (5)	Non-purpose-restructuring (6)	Diff (7)
Price at sale	99.22 (2,702)	99.24 (1,741)	99.18 (961)	0.06	99.16 (909)	99.25 (1,793)	-0.09
Price - Year	98.97 (2,702)	99.02 (1,741)	98.87 (961)	0.15	98.82 (909)	99.04 (1,793)	-0.23**
Price - Year +1	97.87 (2,157)	98.27 (1,372)	97.18 (785)	1.09***	96.88 (730)	98.38 (1,427)	-1.50***
Price - Year +2	94.92 (1,297)	95.94 (774)	93.42 (523)	2.52***	93.37 (487)	95.85 (810)	-2.48***
Price - Year +3	91.87 (728)	93.01 (407)	90.43 (321)	2.58***	90.89 (313)	92.61 (415)	-1.72*

Panel B: Distribution of loan price changes

	Year (1)	Year+1 (2)	Year+3 (3)	Reputable-arranger (4)	Non-reputable-arranger (5)	Purpose-restructuring (6)	Non-purpose-restructuring (7)
Price-decrease (% of Total)	1,154 (42.7%)	1,167 (54.1%)	466 (62.5%)	242 (59.5%)	213 (66.4%)	216 (61.0%)	239 (57.6%)
Price-no-change (% of Total)	688 (25.5%)	152 (7.1%)	18 (2.5%)	7 (1.7%)	11 (3.4%)	4 (1.3%)	14 (3.4%)
Price-increase (% of Total)	860 (31.8%)	838 (38.9%)	255 (35.0%)	158 (38.8%)	97 (30.2%)	93 (29.7%)	162 (41.3%)
Total (% of All)	2,702 (100%)	2,157 (100%)	728 (100%)	407 (55.9%)	321 (44.1%)	313 (43.0%)	415 (57.0%)

Chi-square tests of difference in distribution (p-value):

Reputable-arranger (4) vs. Non-reputable-arranger (5)   7.27** (0.026)

Purpose-restructuring (6) vs. Non-purpose-restructuring (7)   11.32*** (0.004)

Table 4: Changes in a firm's profitability following a loan's sale or issuance

This table presents an analysis of changes in a firm's performance. Panel A presents an analysis of changes in a firm's profitability (the ratio of EBITDA to total assets) following a loan's sale or issuance. Columns (1)-(6) describe the traded sample; Columns (7)-(9) describe the non-traded sample. The first set of columns (1-3) presents the mean profitability for the year before and after the year of a loan's initial sale, and the difference between the two. The second set of columns (4-6) presents the mean profitability for the three years before and after the year of a loan's initial sale, and the difference between the two. The third set of columns (7-9) presents the mean profitability for the three years before and after a loan's issuance year, and the difference between the two. The number in parentheses is the number of loans in the relevant category. Panel B presents an analysis of changes in a firm's abnormal accruals following a loan's sale or issuance. Abnormal accruals are estimated by the modified Jones (1991) model, adjusted for the incorporation of the negative cash flow indicator variable. Columns (1)-(6) describe the traded sample, Columns (7)-(9) describe the non-traded sample. The first set of columns (1-3) presents mean abnormal accruals in the year before and after the year of a loan's initial sale, and the difference between the two. The second set of columns (4-6) presents mean abnormal accruals for the three years before and after the year of a loan's initial sale, and the difference between the two. The third set of columns (7-9) presents mean abnormal accruals for the three years before and after a loan's issuance year, and the difference between the two. The number in parenthesis is the number of loans in the relevant category. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Variables are defined in Appendix A.

Panel A: Changes in a firm's profitability following a loan's sale or issuance

	Traded sample 1 year period			Traded sample 3 year period			Non-traded sample 3 year period		
	Before (1)	After (2)	Diff (3)	Before (4)	After (5)	Diff (6)	Before (7)	After (8)	Diff (9)
Total sample	0.128 (2,217)	0.123 (2,217)	0.004	0.127 (1,272)	0.124 (1,272)	0.003	0.138 (5,490)	0.127 (5,490)	0.011***
Reputable-arranger	0.121 (1,441)	0.121 (1,441)	0.000	0.123 (827)	0.125 (827)	-0.002	0.143 (3,573)	0.130 (3,573)	0.013***
Non-reputable-arranger	0.140 (776)	0.127 (776)	0.013**	0.135 (445)	0.122 (445)	0.012**	0.129 (1,917)	0.122 (1,917)	0.007***
Purpose-restructuring	0.149 (723)	0.129 (723)	0.020***	0.147 (418)	0.131 (418)	0.016***	0.152 (576)	0.135 (576)	0.017***
Non-purpose-restructuring	0.117 (1,494)	0.120 (1,494)	-0.003	0.117 (854)	0.121 (854)	-0.004*	0.137 (4,914)	0.127 (4,914)	0.010***

Panel B: Changes in a firm's abnormal accruals following a loan's sale or issuance

	Traded sample 1 year period			Traded sample 3 year period			Non-traded sample 3 year period		
	Before (1)	After (2)	Diff (3)	Before (4)	After (5)	Diff (6)	Before (7)	After (8)	Diff (9)
Reputable-arranger	0.002 (1,388)	-0.005 (1,388)	0.007	0.003 (783)	0.007 (783)	-0.004	0.014 (3,418)	0.013 (3,418)	0.002
Non-reputable-arranger	0.006 (701)	-0.003 (701)	0.009*	0.008 (409)	-0.009 (409)	0.017***	0.005 (1,779)	0.005 (1,779)	0.000
Purpose-restructuring	0.007 (655)	-0.009 (655)	0.016***	0.008 (384)	-0.005 (384)	0.012**	0.015 (538)	0.001 (538)	0.014***
Non-purpose-restructuring	0.002 (1,434)	-0.002 (1,434)	0.004	0.003 (808)	0.004 (808)	-0.001	0.011 (4,659)	0.011 (4,659)	0.000

Table 5: Distribution of a firm's profitability changes following a loan's sale or issuance

This table reports the distribution of changes in a firm's profitability (the ratio of EBITDA to total assets) following a loan's sale or issuance. Panel A provides the analysis of traded loans, while Panel B replicates this analysis for non-traded loans. Both samples are restricted to loans of speculative grade firms. In Panel A, Column 1 shows the number of loans related to firms for which profitability decreased or increased in the year following the year of a loan's initial sale relative to profitability in the year preceding the year of a loan's initial sale. Column 2 shows the number of loans related to firms for which mean profitability decreased or increased over the period of three years following the year of a loan's initial sale relative to the mean profitability over the three year period prior to the year of a loan's initial sale. Columns 3 and 4 partition the distribution of profitability changes over the three year period by the arranger's reputation. Columns 5 and 6 partition the distribution of profitability changes over the three year period by loan purpose. For Panel B, the columns show the distribution of profitability changes over the period following a loan's issuance year relative to the period prior to it. The top number in each cell is the number of loans. The number in parentheses is the percentage of total loans for that column. The bottom number in each column is the total number of loans for the column. The bottom number in parentheses is the percentage of all loans. Each panel presents chi-square statistics from tests of whether two distributions *within* the panel are different from each other. The number in parentheses is the chi-square statistic *p*-value. For example, in Panel A the first test statistic provides evidence of whether the distribution of profitability changes for firms with loans issued by reputable arrangers differs from the distribution of profitability changes for firms with loans issued by non-reputable arrangers. Panel C presents chi-square statistics from tests of whether the two distributions *across* panels A and B are different from each other. For example, Column 1 of Panel C provides the test statistic for whether the distribution of profitability changes over a one year period for the traded loans (presented in Column 1 of Panel A) is different from the distribution of profitability changes over a one year period for non-traded loans (presented in Column 1 of Panel B). ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Variables are defined in Appendix A.

Panel A: Traded sample restricted to speculative loans - Distribution of profitability changes following a loan's sale

	Year+1 (1)	Year+3 (2)	Reputable-arranger (3)	Non-reputable-arranger (4)	Purpose-restructuring (5)	Non-purpose-restructuring (6)
Profitability-decrease (% of Total)	978 (47.5%)	572 (48.8%)	335 (44.6%)	237 (56.3%)	219 (56.3%)	353 (45.1%)
Profitability-increase (% of Total)	1,083 (52.6%)	600 (51.2%)	416 (55.4%)	184 (43.7%)	170 (43.7%)	430 (54.9%)
Total (% of All)	2,061 (100.0%)	1,172 (100.0%)	751 (64.1%)	421 (35.9%)	389 (33.2%)	783 (66.8%)

Chi-square tests of difference in distribution (*p*-value):
Reputable-arranger (3) vs. Non-reputable-arranger (4)   14.75*** (0.000)
Purpose-restructuring (5) vs. Non-purpose-restructuring (6)   13.08*** (0.000)

Panel B: Non-traded sample restricted to speculative loans - Distribution of profitability changes following a loan's issuance

	Year+1 (1)	Year+3 (2)	Reputable-arranger (3)	Non-reputable-arranger (4)	Purpose-restructuring (5)	Non-purpose-restructuring (6)
Profitability-decrease (% of Total)	2,329 (49.8%)	1,435 (52.0%)	770 (52.6%)	665 (53.4%)	229 (59.6%)	1,206 (51.8%)
Profitability-increase (% of Total)	2,350 (50.2%)	1,276 (47.1%)	695 (47.4%)	581 (46.6%)	155 (40.4%)	1,121 (48.2%)
Total (% of All)	4,679 (100.0%)	2,711 (100.0%)	1,465 (54.0%)	1,246 (46.0%)	384 (14.2%)	2,327 (85.8%)

Chi-square tests of difference in distribution (*p*-value):
Reputable-arranger (3) vs. Non-reputable-arranger (4)   0.18 (0.673)
Purpose-restructuring (5) vs. Non-purpose-restructuring (6)   8.07*** (0.005)

Panel C: Difference in distribution of profitability changes between traded (Panel A) and non-traded loans (Panel B)

	Year+1 (1)	Year+3 (2)	Reputable-arranger (3)	Non-reputable-arranger (4)	Purpose-restructuring (5)	Non-purpose-restructuring (6)
Chi-square tests (*p*-value)	3.09* (0.079)	5.58*** (0.018)	12.56*** (0.000)	1.08 (0.298)	0.883 (0.347)	10.66*** (0.001)

Table 6: Changes in accounting performance controlling for loan and firm characteristics

This table presents a regression analysis of the changes in a firm's performance following a loan's sale or issuance. We regress the indicator variable reflecting whether a firm has experienced a decrease in performance (see column headings) on a set of loan- and firm-specific variables. For the traded loans, we measure the change in performance over the three year period following the year of a loan's initial sale relative to the three year period prior to the year of a loan's initial sale. For the non-traded loans, we estimate the change in performance over the three year period following the year of a loan's issuance relative to the three year period prior to the year of a loan's issuance. Panel A provides the analysis of the traded, non-traded and total loan samples. Panel B provides the analysis of the total loan sample, partitioned by the arranger's reputation.

$$Performance - decrease = \alpha + \beta_1 \operatorname{Re}putable - arranger + \beta_2 Purpose - restructuring + \beta_3 Credit - rating + \beta_4 Interest - spread +$$
$$\beta_5 Institutional + \beta_6 Number - of - lenders + \beta_7 Covenant - financial - count + \beta_8 \operatorname{Re}lationship - lending + \beta_9 \operatorname{Pr}ofitability - mean$$
$$+ \beta_{10} Loss - mean + \beta_{11} Abnormal - accruals - mean + \beta_{12} Firm - size + \beta_{13} Traded$$

We estimate each model with year fixed effects and cluster the standard errors at the firm level. Standard errors are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Variables are defined in Appendix A.

Panel A: Analysis of changes in a firm's profitability and interest-coverage ratio

Dependent variable: Performance-decrease	Pred. signs	Decrease in profitability			Decrease in interest coverage ratio		
		Traded (1)	Non-Traded (2)	Total (3)	Traded (4)	Non-Traded (5)	Total (6)
Reputable-arranger	-	-0.489** (0.22)	-0.267** (0.12)	-0.308*** (0.11)	-0.397** (0.20)	-0.019 (0.11)	-0.053 (0.11)
Purpose-restructuring	+	0.468* (0.25)	0.386** (0.18)	0.253* (0.15)	0.514** (0.24)	0.530*** (0.18)	0.530*** (0.15)
Credit-rating	+	-0.037 (0.05)	-0.073*** (0.02)	-0.063*** (0.02)	-0.152*** (0.05)	-0.012 (0.02)	-0.027 (0.02)
Interest-spread	+	-0.001 (0.00)	0.000 (0.00)	0.000 (0.00)	0.004*** (000)	0.002*** (0.00)	0.002*** (0.00)
Institutional	+	0.154 (0.13)	-0.239 (0.18)	-0.030 (0.11)	0.115 (0.13)	-0.453** (0.18)	-0.164 (0.10)
Number-of-lenders	-	0.005 (0.01)	0.000 (0.01)	0.003 (0.00)	-0.006 (0.01)	0.004 (0.01)	0.001 (0.00)
Covenant-financial-count	?	- 0.019 (0.06)	- 0.030 (0.03)	- 0.036 (0.03)	0.007 (0.07)	0.050 (0.04)	0.036 (0.03)
Relationship-lending	-	0.003 (0.18)	-0.161* (0.08)	-0.123 (0.08)	-0.137 (0.17)	-0.060 (0.08)	-0.072 (0.08)
Profitability-mean	?	13.654*** (3.40)	6.687*** (1.27)	8.009*** (1.25)	4.053** (1.75)	2.972*** (1.05)	3.142*** (0.94)
Loss-mean	?	0.602 (0.92)	-1.056* (0.57)	-0.463 (0.55)	-2.077** (0.97)	-1.670*** (0.58)	-1.936*** (0.54)
Abnormal-accruals-mean	+	4.291** (2.11)	4.836*** (1.25)	4.287*** (1.20)	4.221* (2.33)	4.406*** (1.17)	4.337*** (1.15)
Firm-size	-	0.131 (0.12)	0.018 (0.05)	0.022 (0.05)	0.216** (0.10)	0.062 (0.06)	0.088* (0.05)
Traded	?	-	-	-0.187* (1.11)	-	-	-0.303** (0.12)
Psuedo R-Squared		14.4%	10.2%	11.2%	15.0%	8.2%	9.0%
# of loans		1,141	4,523	5,664	1,117	4,412	5,529

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Panel B: Changes in a firm's performance as a function of arranger reputation

Dependent variable: Performance-decrease	Pred. signs	Decrease in profitability		Decrease in interest coverage ratio	
		Total Reputable-arranger (1)	Total Non-reputable-arranger (2)	Total Reputable-arranger (3)	Total Non-reputable-arranger (4)
Purpose-restructuring	+	0.285* (0.16)	0.209 (0.24)	0.375** (0.19)	0.780*** (0.22)
Credit-rating	+	-0.044* (0.02)	-0.099*** (0.03)	-0.022 (0.02)	-0.042 (0.03)
Interest-spread	+	0.000 (0.00)	0.000 (0.00)	0.003*** (0.00)	0.002*** (0.00)
Institutional	+	0.148 (0.13)	- 0.351** (0.16)	-0.138 (0.13)	-0.194 (0.16)
Number-of-lenders	-	0.001 (0.00)	0.009 (0.01)	0.000 (0.00)	0.002 (0.01)
Covenant-financial-count	?	-0.020 (0.04)	-0.070 (0.05)	0.034 (0.04)	0.026 (0.05)
Relationship-lending	-	-0.092 (0.09)	-0.156 (0.14)	- 0.094 (0.09)	-0.015 (0.14)
Profitability-mean	?	8.474*** (1.41)	6.833*** (2.03)	3.307*** (1.12)	2.587* (1.41)
Loss-mean	?	-0.235 (0.78)	-0.834 (0.74)	-1.949*** (0.67)	-1.931*** (0.77)
Abnormal-accruals-mean	+	5.390** (1.64)	3.008** (1.47)	4.677*** (1.48)	3.874** (1.55)
Firm-size	-	0.052 (0.06)	-0.050 (0.08)	0.118** (0.06)	0.003 (0.08)
Traded	?	-0.313** (0.13)	-0.010 (0.20)	-0.334* (0.15)	0.264 (0.19)
Psuedo R-Squared		11.1%	10.2%	7.6%	13.0%
# of loans		3,832	1,832	3,748	1,781

Table 7: Distribution of credit rating changes following loan sale or issuance

This table provides an analysis of changes in a firm's credit rating following a loan sale or issuance. Panel A provides the analysis for traded loans, while Panel B replicates this analysis for non-traded loans. Both samples are restricted to the loans of speculative grade firms. For Panel A, credit rating changes are estimated relative to the credit rating at a loan's sale. Column 1 shows the number of loans related to firms for which the credit rating decreased or increased following a loan's sale and until the end of the year of a loan's initial sale. Column 2 shows the distribution of credit rating changes in the first year following the year of a loan's initial sale. Column 3 shows the distribution of credit rating changes in the third year following the year of a loan's initial sale. Columns 4 and 5 partition by arranger reputation the distribution of credit rating changes in the third year following the year of a loan's initial sale. Columns 6 and 7 partition by loan purpose the distribution of credit rating changes in the third year following the year of a loan's initial sale. For Panel B, the columns show the distribution of credit rating changes relative to the credit rating at a loan's issuance. The top number in each cell is the number of loans. The number in parentheses is the percentage of total loans for that column. The bottom number in each column is the total number of loans for the column. The bottom number in parentheses is the percentage of all loans. Each panel presents chi-square statistics from tests of whether two distributions *within* the panel are different from each other. The number in parentheses is the chi-square statistic *p*-value. For example, in Panel A the first test statistic provides evidence of whether the distribution of the credit rating changes of firms with loans issued by reputable arrangers differs from the distribution of the credit rating changes of firms with loans issued by non-reputable arrangers. Panel C presents chi-square statistics from tests of whether the two distributions *across* panels A and B are different from each other. For example, Column 1 of Panel C provides the test statistic for whether the distribution of credit rating changes following a loan's sale and until the end of the year of a loan's sale for the traded loans (presented in Column 1 of Panel A) is different from the distribution of credit rating changes following a loan's issuance and until the end of the year of a loan's issuance for non-traded loans (presented in Column 1 of Panel B). ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Variables are defined in Appendix A.

Panel A: Traded sample restricted to speculative loans - Distribution of credit rating changes following a loan's sale

	Year	Year+1	Year+3	Reputable-arranger	Non-Reputable-arranger	Purpose-restructuring	Non-Purpose-restructuring
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Rating-decrease	218	584	712	386	326	265	447
(% of Total)	(9.4%)	(23.4%)	(39.5%)	(35.5%)	(45.6%)	(40.6%)	(38.9%)
Rating-no-change	1,939	1,504	575	371	204	225	350
(% of Total)	(83.7%)	(60.2%)	(31.9%)	(34.1%)	(28.5%)	(34.5%)	(30.4%)
Rating-increase	161	412	516	331	185	163	353
(% of Total)	(7.0%)	(16.5%)	(28.6%)	(30.4%)	(25.9%)	(25.0%)	(30.7%)
Total	2,318	2,500	1,803	1,088	715	653	1,150
(% of All)	(100%)	(100%)	(100%)	(60.3%)	(39.7%)	(36.2%)	(63.8%)

Chi-square tests of difference in distribution (*p*-value):

Reputable-arranger (4) vs. Non-reputable-arranger (5)　　　　18.50*** (<0.001)

Purpose-restructuring (6) vs. Non-purpose-restructuring (7)　　　7.21** (0.026)

Panel B: Non-traded sample restricted to speculative loans - Distribution of credit rating changes following a loan's issuance

	Year	Year+1	Year+3	Reputable-arranger	Non-Reputable-arranger	Purpose-restructuring	Non-Purpose-restructuring
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Rating-decrease	446	1,120	1,453	727	726	219	1,234
(% of Total)	(8.5%)	(20.4%)	(34.8%)	(34.3%)	(35.3%)	(34.9%)	(34.8%)
Rating-no-change	4,450	3,414	1,550	758	792	241	1,309
(% of Total)	(84.8%)	(62.3%)	(37.1%)	(35.7%)	(38.5%)	(38.4%)	(36.9%)
Rating-increase	371	949	1,174	637	537	168	1,006
(% of Total)	(7.0%)	(17.3%)	(28.1%)	(30.0%)	(26.1%)	(26.8%)	(28.4%)
Total	5,267	5,483	4,177	2,122	2,055	628	7,095
(% of All)	(100%)	(100%)	(100%)	(50.8%)	(49.2%)	(15.0%)	(85.0%)

Chi-square tests of difference in distribution (*p*-value):

Reputable-arranger (4) vs. Non-reputable-arranger (5)　　　　8.19** (0.017)

Purpose-restructuring (6) vs. Non-purpose-restructuring (7)　　　0.81* (0.067)

Panel C: Difference in distribution of credit rating changes between traded (Panel A) and non-traded loans (Panel B)

	Year	Year+1	Year+3	Reputable-arranger	Non-Reputable-arranger	Purpose-restructuring	Non-Purpose-restructuring
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Chi-square tests	1.77	8.85**	6.13***	0.88	29.5***	4.51	15.97***
(*p*-value)	(0.413)	(0.012)	(0.013)	(0.643)	(<0.001)	(0.105)	(<0.001)

Table 8: Changes in credit quality controlling for loan and firm characteristics

This table presents a regression analysis of the changes in credit ratings following a loan's sale or issuance. We regress the indicator variable reflecting whether a firm has experienced a decrease in credit rating on a set of loan- and firm-specific variables. For the traded loans, we measure the change in credit ratings in the third year following the year of a loan's initial sale relative to a credit rating at the loan's initial sale. For the non-traded loans, we estimate the change in credit ratings in the third year following a loan's issuance relative to a credit rating at the loan's issuance.

$$Rating-decrease = \alpha + \beta_1 \operatorname{Re}putable-arranger + \beta_2 Purpose-restructuring + \beta_3 Credit-rating + \beta_4 Watch-negative + \beta_5 Watch-positive + \beta_6 Outlook-negative + \beta_7 Outlook-positive + \beta_8 Interest-spread + \beta_9 Institutional + \beta_{10} Number-of-lenders + \beta_{11} Covenant-financial-count + \beta_{12} \operatorname{Re}lationship-lending + \beta_{13} Firm-size + \beta_{14} Leverage + \beta_{15} \operatorname{Pr}ofitability-mean + \beta_{16} Interest-\operatorname{cov}erage-mean + \beta_{17} Traded$$

We estimate each model with year fixed effects and cluster the standard errors at the firm level. Standard errors are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Variables are defined in Appendix A.

Dependent variable: Rating-decrease	Pred. signs	Traded (1)	Non-traded (2)	Total (3)	Total Reputable-arranger (4)	Total Non-Reputable-arranger (5)
Reputable-arranger	-	-0.275** (0.12)	-0.104 (0.10)	-0.149 (0.09)	-	-
Purpose-restructuring	+	-0.173 (0.20)	-0.084 (0.15)	-0.065 (0.12)	-0.311* (0.17)	0.250 (0.18)
Credit-rating	+	-0.161*** (0.04)	-0.158*** (0.02)	-0.155*** (0.02)	-0.143*** (0.02)	-0.174*** (0.02)
Watch-negative	+	0.897*** (0.31)	1.095*** (0.16)	1.043*** (0.16)	1.032*** (0.19)	1.043**** (0.24)
Watch-positive	-	-1.118** (0.46)	-0.404 (0.30)	-0.625** (0.28)	-0.654** (0.32)	-0.575 (0.44)
Outlook-negative	+	0.646*** (0.21)	0.734*** (0.13)	0.710*** (0.11)	0.762*** (0.13)	0.617*** (0.19)
Outlook-positive	-	-0.924** (0.36)	-0.698*** (0.23)	-0.749*** (0.22)	-0.847*** (0.29)	-0.625** (0.28)
Interest-spread	+	0.000 (0.00)	0.001* (0.00)	0.001 (0.00)	0.001 (0.00)	0.001 (0.00)
Institutional	+	-0.024 (0.12)	0.015 (0.15)	-0.018 (0.10)	0.020 (0.12)	-0.073 (0.15)
Number-of-lenders	-	-0.001 (0.01)	-0.002 (0.01)	-0.001 (0.00)	0.000 (0.00)	-0.003 (0.01)
Covenant-financial-count	?	0.108** (0.06)	0.033 (0.03)	0.050* (0.03)	0.040 (0.04)	0.043 (0.04)
Relationship-lending	-	-0.161 (0.16)	-0.166** (0.08)	-0.165** (0.07)	-0.122 (0.08)	-0.255** (0.12)
Firm-size	-	-0.099 (0.10)	-0.088* (0.05)	-0.096** (0.05)	-0.114** (0.06)	-0.084 (0.07)
Leverage	+	0.364 (0.33)	0.945*** (0.25)	0.772*** (0.21)	0.769*** (0.27)	0.666** (0.30)
Profitability-mean	-	-2.019 (1.25)	-2.437*** (0.82)	-2.241*** (0.70)	-3.265*** (0.99)	-0.971 (0.99)
Interest-coverage-mean	-	0.007** (0.00)	-0.002 (0.00)	-0.001 (0.00)	0.000 (0.00)	-0.003 (0.00)
Traded	?	-	-	0.073 (0.11)	-0.003 (0.13)	0.186* (0.11)
Psuedo R-Squared		9.5%	8.0%	7.8%	7.8%	9.0%
# of loans		1,451	5,443	6,894	4,515	2,379

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Table 9: Changes in profitability and credit quality: controlling for selection between traded and non-traded loans

This table presents a regression analysis of the changes in a firm's profitability and credit ratings following a loan's sale or issuance, controlling for selection between traded and non-traded loans. Panel A presents a loan trade probability model. We regress an indicator variable reflecting whether a loan is traded on a set of loan- and firm-specific characteristics. In Panel B, we regress the indicator variable reflecting whether a firm has experienced a decrease in profitability or credit quality (see column headings) on a set of loan- and firm-specific variables and the inverse Milles ratio, as estimated by the trade probability model. For the traded loans, we measure the change in performance over the three year period following the year of a loan's initial sale relative to the three year period prior to the year of a loan's initial sale. For the non-traded loans, we estimate the change in performance over the three year period following the year of a loan's issuance relative to the three year period prior to the year of a loan's issuance. Note that Panel A presents the trade probability model for the total sample of loans employed in the profitability test (Column 1 of Panel B). To obtain the inverse Mills ratio, the trade probability model was re-estimated for each of the models presented in Panel B.

We estimate each model with year fixed effects and cluster the standard errors at the firm level. Standard errors are in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Variables are defined in Appendix A.

Panel A: Trade probability model

Dependent variable: Traded	Pred. signs	Total sample
Reputable-arranger	+	0.095 (0.14)
Purpose-restructuring	+	0.880*** (0.18)
Credit-rating	+	0.184*** (0.02)
Institutional	+	1.429*** (0.17)
Number-of-lenders	+	0.018** (0.01)
Covenant-financial-count	+	0.391*** (0.04)
Relationship-lending	?	- 0.108 (0.11)
Revolver	-	-0.382*** (0.10)
Maturity	+	0.033*** (0.00)
Profitability-mean	?	1.732 (1.31)
Interest-coverage-mean	?	0.000 (0.00)
Leverage	+	1.608*** (0.31)
Firm-size	+	0.645*** (0.06)
Psuedo R-Squared		38.3%
# of loans		5,320

Panel B: Changes in a firm's profitability and credit quality following loan sale or issuance

Dependent variable: Performance-decrease	Decrease in profitability			Decrease in credit rating		
	Total (1)	Total Reputable-arranger (2)	Total Non-Reputable-arranger (3)	Total (4)	Total Reputable-arranger (5)	Total Non-Reputable-arranger (6)
Reputable-arranger	-0.321*** (0.11)	-	-	-0.155 (0.10)	-	-
Purpose-restructuring	0.393** (0.16)	0.429** (0.19)	0.369 (0.27)	-0.060 (0.13)	-0.231 (0.17)	0.130 (0.19)
Credit-rating	-0.039* (0.02)	-0.023 (0.03)	-0.077*** (0.03)	-0.149*** (0.02)	-0.124*** (0.03)	-0.184*** (0.03)
Interest-spread	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)	0.001 (0.00)	0.000 (0.00)	0.001 (0.00)
Institutional	0.126 (0.14)	-0.238 (0.16)	-0.081 (0.23)	0.001 (0.12)	0.115 (0.15)	-0.227 (0.20)
Number-of-lenders	0.005 (0.00)	0.002 (0.00)	0.012 (0.01)	0.000 (0.00)	0.001 (0.00)	-0.004 (0.00)
Covenant-financial-count	0.012 (0.04)	0.024 (0.05)	- 0.018 (0.06)	0.047 (0.04)	0.065 (0.05)	-0.013 (0.06)
Relationship-lending	-0.134 (0.08)	-0.092 (0.10)	-0.179 (0.15)	-0.156** (0.07)	-0.130 (0.07)	-0.219* (0.12)
Profitability-mean	8.107*** (1.29)	8.472*** (1.46)	7.020*** (2.15)	-2.155*** (0.73)	-3.184*** (1.03)	-1.043 (1.06)
Loss-mean	-0.434 (0.55)	-1.189 (0.79)	-0.881 (0.71)	-	-	-
Abnormal-accruals-mean	4.378*** (1.21)	5.802*** (1.68)	2.953** (1.46)	-	-	-
Firm-size	0.079 (0.06)	0.089 (0.07)	0.041 (0.10)	-0.090 (0.06)	-0.076 (0.07)	-0.155* (0.09)
Watch-negative	-	-	-	1.058*** (0.16)	1.043*** (0.19)	1.051*** (0.25)
Watch-positive	-	-	-	-0.584** (0.28)	-0.605* (0.33)	-0.531 (0.44)
Outlook-negative	-	-	-	0.735*** (0.12)	0.793*** (0.14)	0.629*** (0.19)
Outlook-positive	-	-	-	-0.753*** (0.22)	-0.837*** (0.30)	-0.657** (0.28)
Leverage	-	-	-	0.777*** (0.23)	0.826*** (0.30)	0.531 (0.34)
Interest-coverage-mean	-	-	-	0.000 (0.00)	0.000 (0.00)	-0.003 (0.00)
Traded	-0.142 (0.12)	-0.279** (0.13)	0.058 (0.21)	0.104 (0.11)	0.032 (0.13)	0.207** (0.10)
Mills-ratio	0.238* (0.13)	0.175 (0.15)	0.333 (0.21)	0.027 (0.11)	0.139 (0.14)	- 0.185 (0.18)
Psuedo R-Squared	11.2%	11.3%	12.4%	7.7%	7.8%	8.8%
# of loans	5,320	3,610	1,710	6,575	4,313	2,262