When Shareholders Are Creditors: Effects of the Simultaneous Holding of Equity and Debt by Institutional Investors[*]

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Abstract

This paper provides a comprehensive analysis of a new and increasingly important phenomenon: the simultaneous holding of both equity and debt claims of the same company by nonbank institutional investors ("dual-holders"). The presence of dual-holders offers a unique opportunity to assess the existence and magnitude of shareholder-debtholder conflicts. We find that syndicated loans with dual-holder participation have loan yield spreads that are 12 to 22 basis points lower than those without, and the difference is even larger after controlling for the selection effect. Further investigation of dual-holders' investment horizon and changes in borrowers' credit quality lends support to the hypothesis that better incentive alignment between shareholders and creditors is responsible for the lower loan yield spreads.

Keywords: shareholder-debtholder conflicts; dual-holding; institutional investors; syndicated loans; investment horizon

JEL classification: G20; G32

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The objectives of stockholders and debtholders often diverge. As has been well understood since the seminal work of Jensen and Meckling (1976) and Myers (1977), this divergence can result in a conflict of interest whereby managers, who ultimately bear fiduciary responsibilities to stockholders, may take actions that maximize stockholder wealth rather than the total value of the firm. For example, managers may accept risky, negative-NPV projects, where the value decrease consists of a decrease in the value of debt but a smaller increase in the value of equity (the asset substitution problem). Not surprisingly, the expected cost of such opportunistic behavior on the part of managers (on behalf of the shareholders) should be incorporated into the *ex ante* contracting of the debt, including its pricing.

What happens if shareholders are also creditors? The increasing presence of nonbank institutional investors (who are traditionally shareholders) in the corporate lending business (which is traditionally the exclusive territory of banks) raises this important question. The simultaneous holding of both significant equity positions and debt claims of the same firm by institutional investors (henceforth, "dual-holding") is a relatively recent phenomenon that to date has not been systematically analyzed in the literature. Our paper aims to fill this void.

Dual-holding offers a unique angle to explore the effect of stockholder-debtholder conflicts in corporate finance, and allows us to test two major hypotheses. On the one hand, dual-holders should at least partially internalize the conflicts between the two roles (shareholder and debtholder) they assume. Hence, their presence should mitigate the conflict described above and lead to lower borrowing costs (the "incentive alignment hypothesis"). On the other hand, dual-holders may possess better information due to their involvement on the equity side so that they are able to selectively participate in loans issued by better quality firms (the "information hypothesis"). Both hypotheses predict a negative correlation between loan yield spreads and the presence of institutional dual-holders, albeit for different reasons. The focus of our empirical analysis is to disentangle the two hypotheses.

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Using data on syndicated loans for the twenty-year period 1987 to 2006 and additional information on borrowing firms and their institutional investors, we first document a rising trend in nonbank institutional investors' participation in the syndicated loan market, and a similar trend in these investors being dual-holders. The correlation between the two trends is not surprising given that the former is a necessary condition for the latter. However, the loan and borrower characteristics that are associated with institutional investor participation and those with dual-holding have commonalities as well as dissimilarities.

Both nonbank institutional lenders and dual-holders are more likely to be involved in loans of large size as measured by borrower asset size, principal amount, or number of syndication members. Interestingly, institutional investors' choice of companies for debt investment is very different from their choice for equity investment. In contrast to their preference for equity investment, they tend to participate in loans that are for riskier purposes (such as LBOs and takeovers) and in loans issued by firms with poor past stock market performance, poor credit ratings, high return volatility, and low liquidity. As a result, they end up lending to companies that have lower institutional ownership on the equity side. Dual-holders, on the other hand, are more attracted to companies with good past stock market performance. Among the loans that involve institutional investors, borrowers with dual-holders tend to have lower stock return volatilities.

Next, we show that syndicated loans with dual-holders are associated with lower loan yield spreads (by 12 to 22 basis points) than loans for which the institutional creditors are not the shareholders of the same company. The negative association between the presence of dual-holders and loan yield spreads is consistent with both the incentive alignment and the information hypotheses. We therefore implement several tests to disentangle the two hypotheses, including fixed-effects regressions, treatment regressions, and analyses of investment horizons as well as before-after changes in borrower credit quality around loan origination.

We find that loans involving dual-holders are riskier at the point of loan origination conditional on observable characteristics. Moreover, the negative effect of dual-holders on loan yield spreads is strengthened when unobserved heterogeneity is controlled for. Dual-holders tend to have a longer investment horizon on both the debt and the equity sides: They have a stronger bilateral lending relationship with borrowing firms than non-dual-holders, and they also hold equity stakes in their borrowers for longer periods than they do for non-borrowers. The longer horizon suggests that dual-holders possess strong incentives to monitor corporate managers and/or other shareholders to prevent them from expropriating debtholders.

Finally, using proprietary data on credit default swaps (CDSs), we make further attempts to distinguish the incentive alignment effect from the information effect. We find that, on average, borrowers with dual-holders have higher default spreads (i.e., riskier debt) during the year of loan origination or the two years before that, but not afterwards. It is worth noting that prices on the CDS market are forward looking and aggregate information possessed by all market participants (which mostly comprise sophisticated institutional investors, including active investors of syndicated loans). This implies that the prospective change in a company's credit quality should already be reflected in current CDS pricing as long as it is predicted by some participants. Thus, if the negative relation between the presence of dual-holders and loan spreads is due to dual-holders' superior information, then it must be the case that such information is not yet reflected in the current CDS pricing, or it is unknown to all CDS market participants. This is unlikely; and even if the dual-holders did enjoy such an advantage, it is not clear why they should surrender their informational rent in the form of lower loan yield spreads. In summary, the cumulative evidence in our paper lends more support for the incentive alignment hypothesis.

Our paper contributes to two strands of the literature. First, while prior research has tried to quantify the shareholder-debtholder conflicts in specific corporate events (such as LBOs and divestitures), no study has explored the unique circumstance of interest in this paper, namely, the

setting in which the shareholders are also debtholders. The difference in the cost of borrowing with and without dual-holders provides a direct test of the presence and the magnitude of the conflicts of interest between shareholders and debtholders. Second, this paper also makes a novel contribution to the literature on institutional monitoring. Prior research has suggested that not all institutional investors are effective monitors. This paper provides evidence suggesting that dual-holders are an emergent and important type of monitor.

The outline of the paper is as follows. Section I briefly reviews the related literature and develops our hypotheses. Section II describes our data and provides an overview of institutional investors' participation in syndicated loans and the phenomenon of dual-holding. Section III examines the determinants of dual-holding and its relation with loan pricing. Section IV differentiates the two hypotheses on the relation between dual-holding and loan yield spreads. Finally, Section V summarizes findings and concludes.

I. Literature Review and Hypothesis Development

A. Related Literature

Our research is motivated by the literature that tries to empirically capture the effects of stockholder-bondholder conflicts. Prior work has assessed this conflict using specific corporate events. Examples include LBOs (Asquith and Wizman (1990), and Warga and Welch (1993)), adoption of new projects (Parrino and Weisbach (1999)), mergers and acquisitions (Billett, King, and Mauer (2004)), spin-offs (Maxwell and Rao (2003)), and share repurchases (Maxwell and Stephens (2003)). Overall, these papers find that wealth transfers from debtholders to shareholders are associated with these corporate events, and covenant protections are important for debtholders. By examining syndicated loan yield spreads in the case in which shareholders are also lenders, this paper offers direct insight on the shareholder-debtholder conflicts that arise in the normal course of business.

This paper is also related to the vast literature on institutional monitoring. Prior work has shown that some types of institutional investors are able to exert influence on important corporate decisions, such as mergers and acquisitions (Gaspar, Massa, and Matos (2005), and Chen, Harford, and Li (2007)), antitakeover amendments (Brickley, Lease, and Smith (1988), and Borokhovich, Brunarski, Harman, and Parrino (2006)), and CEO compensation and replacement (Hartzell and Starks (2003), and Parrino, Sias, and Starks (2003)). This paper identifies a new aspect of institutional monitoring: When shareholders are debtholders, they mitigate the expropriation of debtholders by shareholders, thus lowering the cost of borrowing.

Further, this paper is closely related to several recent papers that examine the relation between loan pricing and the extent of connectedness between lending banks and borrowing companies. Using data on global syndicated loans, Ferreira and Matos (2007) explore the impact of connections (board representation and direct or indirect equity ownership) between banks and firms on the choice of lead arranger and loan pricing. The authors show that these connections have a positive and significant effect on both the borrower's choice of lead arranger banks and the yield spread of the loan. Santos and Wilson (2007) examine the role of banks' control rights in firms' borrowing costs. They show that banks charge lower rates and impose fewer restrictions on loans to firms in which they have a voting stake. Their results suggest that banks' corporate control over firms is effective in constraining the risk-shifting incentives of borrowers.

Our paper differs from as well as complements the above papers along the following dimensions. First and foremost, we examine dual-holdings by nonbank institutional investors (an emerging force in corporate lending), while the above papers focus on the relationship between banks and borrowers. Second, our focus is on testing the conflicts of interest between shareholders and debtholders, and differentiating incentive alignment from the information

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effect.[1] Finally, we explore research questions that have not been previously addressed, such as the loan and firm characteristics that attract dual-holders and dual-holders' investment horizons.

B. Hypotheses

According to Jensen and Meckling (1976) and Myers (1977), debtholders need to watch out for wealth expropriation by shareholders or by managers who act on behalf of shareholders. The incentive to expropriate is rooted in the different nature of cash flow claims to which shareholders and debtholders are entitled. In particular, shareholders have an incentive to increase firm risk or to divert assets after leverage increases. Although debtholders could protect themselves from such opportunistic behavior by adding provisions to the loan contracts and engaging in covenant monitoring, such protections are far from perfect (Dichev and Skinner (2002), and Chava and Roberts (2008)). As a result, the risk of expropriation is expected to be reflected in the form of higher borrowing costs.

The simultaneous holding of equity and debt in the same firm by the same institutional investors offers a unique venue to entertain several hypotheses regarding the conflicts between shareholders and debtholders. The first is the incentive alignment hypothesis. When shareholders are also debtholders, they should at least partially internalize the cost to debtholders from the opportunistic behavior of shareholders. As such, the presence of dual-holders can mitigate conflicts of interest between shareholders and debtholders by monitoring and preventing managers and/or other large shareholders from taking actions that expropriate debtholders. Therefore, if shareholder-debtholder conflicts are significant enough to affect the cost of debt, we would expect to see a decrease in borrowing costs when dual-holders are present.

This aspect of our analysis naturally links our work to the literature on institutional monitoring that aims to increase the value of the firm. Dual-holders do not necessarily have a

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[1] A couple of papers explore the causes and consequences of the informational advantage of institutional shareholders when they also have access to the loan market information either through the lending arm of a financial conglomerate (Massa and Rehman (2008)) or through direct lending (Ivashina and Sun (2007)). All these papers conclude that informational advantages lead to greater trading profits.

greater incentive and are not necessarily better positioned to monitor every corporate activity (such as CEO pay) compared to other large shareholders (who are not creditors). Instead, monitoring by dual-holders is specific to surveillance of managerial actions that take advantage of debtholders. Specific as it is, dual-holder monitoring still shares common features with institutional monitoring in general. For example, we find that dual-holders tend to have a longer investment horizon, on both the equity and the debt sides, indicating a more favorable cost and benefit tradeoff for monitoring.

Our second hypothesis of interest is the information hypothesis. Being involved in both equity and debt may provide dual-holders an informational edge, which allows them to select borrowing firms that are of lower default risk (conditional on observables). If dual-holders truly have superior information and they surrender some of their informational rent to the firm, then the cost of debt should be lower in the presence of dual-holders, conditional on observable firm and loan characteristics.

Note that the information hypothesis encompasses two possibilities that are related to each other. First, institutional shareholders are informed about some of the firm heterogeneities that affect loan quality but are unobservable to the public. As a result, they are able to pick borrowers with lower risk (conditional on observable characteristics), which justifies lower loan spreads at the time of loan origination. Second, institutional shareholders may have superior ability in predicting future credit improvement and hence invest in loans issued by borrowers that will experience favorable evolution of credit quality. The difference between this second possibility of the information hypothesis and the incentive alignment hypothesis lies in that under the former, favorable performance changes in the borrower will occur without any further actions taken by the dual-holders (other than selecting the borrower); while under the latter, performance improvement is due to dual-holders' monitoring effort.

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Our last hypothesis of interest is the wealth transfer (tunneling) hypothesis. Suppose dual-holders' equity holdings are large enough to gain them control power, but still smaller than their percentage shares in the loan. These investors could realize a net gain from the higher interest charged on their loan after netting out the cost on the equity side. This hypothesis follows from prior work that shows entrenched large shareholders expropriating small shareholders (see the survey by Holderness (2003)). This tunneling effect can be tested on a subsample of dual-holding institutions that have relatively large equity stakes. Under the wealth transfer hypothesis, we would expect a positive association between the presence of dual-holdings (particularly, the size of equity holdings by dual-holders) and the cost of debt; while our first two hypotheses would predict the opposite.

II. Data Overview

A. Sample Description

Our primary data sources for debt and equity holdings by institutional investors are from the Reuters Loan Pricing Corporation's (LPC) DealScan syndicated loan database and the Thomson Financial Form 13F database.[2]

First, we retrieve all the US-originated syndicated loan facilities from 1987 to 2006. We choose 1987 as the beginning of our sample period because this was the first year when the number of qualified loan facilities exceeded 100. The initial data consists of 95,221 loan facilities. We screen the data using the following criteria: (1) the all-in spread drawn is not missing; (2) LIBOR is the base rate; (3) we exclude bankers acceptance, bridge loan, lease, loan-style floating rate note, standby letter of credit, step payment lease, bond, note, guidance line, traded letter of credit, multi-option facility, and other or undisclosed loan. The above screening

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[2] Syndicated loans, lying somewhere between relational private bank loans and dispersed public debt, require significant amount of monitoring from syndicate members (Sufi (2007)).

process leaves us with a sample of 60,302 loan facilities associated with 41,917 loan deals. Our analysis is conducted at the loan facility level because the loan-lender relation is facility specific. That is, within the same loan deal, members of the syndicate may hold different percentage shares of each facility or participate in a subset of the loan facilities. Sensitivity analysis using information aggregated at the loan deal level yields similar results.

Second, we carefully match borrower's and/or borrower's parent name to CRSP/Compustat by a combination of algorithmic matching and manual checking. This match leaves us with a sample of 26,690 loan facilities associated with 19,175 loan deals and 5,015 borrowers that are public companies. These loan facilities are funded by 212,694 facility lenders.

Third, to identify dual-holders, we match the lenders from the above sample with the Thomson Financial Form 13F database by the lenders' names and by the quarter of loan origination to obtain information on these lenders' simultaneous holdings of equity (if there is any) using a combination of algorithmic matching and manual checking. Given our research interest, we only retain information on simultaneous equity holdings by nonbank institutional investors. Banks are identified by the lender's primary four-digit SIC code provided in DealScan (SIC code of 6011-6082 and 6712 represent the banking sector) and are excluded. For brevity, we refer to the nonbank institutions as "institutional investors" or simply "IIs." For a loan to have nonbank lenders who are also shareholders in the same company (i.e., dual-holders), we require that (1) at least one nonbank lender of the facility has equity holdings in the borrowing firm or in the borrower's parent firm in the same quarter in which the loan is originated; and (2) the nonbank lender must hold at least one percent of the borrower's common stock and/or the value of its equity holding in the borrowing firm must exceed two million dollars or five million dollars if the lender is a shareholder of the borrower's parent. (All dollar values are in 2006

constant dollars using the CPI deflator.) Applying these two criteria, we identify 6,782 loan

facilities with dual-holders in the lending syndicate out of the 26,690 observations.[3]

Finally, to implement our empirical investigation, firm characteristics are retrieved at the

year-end prior to the loan origination date. Due to data availability from Compustat, our final

sample contains 13,375 loan facilities associated with 9,776 loan deals and 2,998 borrowers.[4]

Nonbank dual-holders are present in 1,157 loan facilities associated with 871 loan deals and 378

borrowers. The mean equity ownership by a dual-holder in our sample is 0.67%.[5]

A necessary condition for the presence of dual-holders as defined above is the

participation of nonbank institutional investors in loan syndication. Naturally, some of our

empirical analyses will focus on subsamples of loan facilities with II involvement. We define

the "II participation subsample" as the set of facilities where at least one nonbank lender is

involved in the lending syndicate and the sample has 5,654 loan facilities. We define the "II

major participation subsample" as the set of facilities where at least one nonbank lender is a

major participant of the lending syndicate and the sample has 3,281 loan facilities.[6] For

consistency, the dual-holders in this subsample are limited to dual-holders that are also a major

participant of the lending syndicate.

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[3] It is worth noting that 13F forms reveal the total shareholdings of a filing institution. For example, a mutual fund family usually files one 13F form on behalf of all funds within the complex. Therefore, it is possible that different divisions within a dual-holding institution hold the debt and equity of the company separately. We take the stance that there are centralized or coordinated efforts within an institution with regard to research, monitoring, and exercising of shareholder rights (such as voting). In the case of mutual fund families, this is well-documented by the prior research (see, e.g., Gaspar, Massa, and Matos (2006), David and Kim (2007), and Chen, Goldstein, and Jiang (2008)). Therefore, the institution-level debt and equity holdings are relevant for the purpose of our research.

[4] It is worth noting that our main results remain the same if we remove financial (SIC 6000-6999) and utility (SIC 4900-4999) borrowers.

[5] For comparison, Santos and Wilson (2007) report that in their sample, the average bank controls 0.35% of the borrower's voting rights.

[6] Due to the vast difference across loan syndications, there has not been a consensus on how to define the lead banks in the literature. In this paper, we identify major participants of a loan syndicate based on lenders' role specified in DealScan. The lenders with the following roles are considered as the major participants: admin agent, agent, arranger, bookrunner, co-agent, co-arranger, co-lead arranger, co-lead manager, co-manager, co-syndications agent, coordinating arranger, documentation agent, joint arranger, joint lead manager, lead arranger, lead bank, lead manager, manager, managing agent, mandated arranger, senior arranger, senior co-lead manager, senior lead manager, senior lender, senior managing agent, sole lender, and syndications agent.

Table 1 provides summary statistics on our key variables of interest as well as firm and loan characteristics. Detailed variable definitions are given in the Appendix.

[Insert Table 1 here]

In our sample, the average loan spread relative to LIBOR is 164.7 basis points (bps) and the median loan spread is 150 bps. Over 40 percent of the loan facilities have nonbank institutional investors as members of the lending syndicate (II participation), and about a quarter of these facilities have at least one major member of the syndicate to be a nonbank II (II major participation). Most interestingly, in 8.7 percent of the loan facilities, the nonbank lending institutions are also significant shareholders (dual-holders) of the borrowing company. The sample average facility amount is $358 million in 2006 dollars and average maturity is 47.2 months. About half of the loans are secured.[7] Over three-quarters of the loans in our sample are revolvers, and about a fifth of the loans are taken out for risky purposes of either LBOs or takeovers.[8] The average (median) number of lenders involved in a lending syndicate is 8.2 (5.0).

On borrower characteristics, the average (median) size of the borrowing firms measured by total assets is $3.4 (0.64) billion. The sample average book-to-market ratio is 0.59. On average, three-year sales growth for our borrowing firms is 23 percent. To capture the extent of diversification for borrowers, we compute the Herfindahl index using segment sales. The average Herfindahl index is 0.79. The average (median) total institutional ownership in the borrowing firm is 50 percent (52 percent). The borrowing firms have close to zero industry-adjusted stock returns, their average Altman Z-score (a weighted sum of return on assets, sales-assets turnover ratio, equity-to-debt or leverage ratio, working-capital-to-assets or liquidity ratio, and retained-

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[7] About a third of our sample loans has missing information on whether the loan is secured or not.
[8] Another measure for risky loans is loans being classified as "leveraged loans," which according to the LPC, are the loans that meet the following two criteria: (1) the initial loan yield spread is at least 250 bps above LIBOR; and (2) the loan is taken out by a company with a credit rating below BBB at loan origination. The data quality on the leveraged loan classification is not very good from the LPC. More importantly, our main analysis has loan spreads as the dependent variable, and therefore a variable classified based on the level of spreads (the leveraged loan indicator variable) cannot be a proper regressor.

earnings-to-assets ratio) is 3.6, and their average Standard & Poor (S&P) long-term credit rating is 5.8 (corresponding to a letter rating between AA and AA-).[9] More than half of the sample firms are not rated by the S&P. On average, there are more than 10 analysts following the borrowing firms. The sample average monthly stock market volatility is 0.13, and the average of Amihud's (2002) illiquidity measure is 0.30. Close to a quarter of the sample firms are members of the S&P 500 index.

B. Participation of Nonbank Institutional Investors in Loan Syndication

Before analyzing the determinants of dual-holding and its impact on loan pricing and firm performance, we first document a new and growing phenomenon of nonbank institutional investor (II) participation in loan syndication which traditionally was an exclusive territory of banks. Figure 1 plots the time series, from 1987 to 2006, of II participation and II major participation in the syndicated loan market, in terms of both the percentage of total number of loan facilities and the percentage of total face value of the loan facilities.

[Insert Figure 1 here]

Figure 1 shows that II participation in the syndicated loans displays an overall increasing trend, with a steep rise around 1996.[10] Moreover, loan facilities with II participation, measured in terms of the fraction of total face value of the loan facilities, are on average larger than measured in terms of the fraction of total number of loan facilities. In 1996, over 20 percent of the facilities had II participation, and in about half of them IIs played a major role. By the end of 2006, about 65 percent (42 percent) of the facilities had II (major) participation, and in value-weighted terms, the percentage was even higher at 74 percent (50 percent).

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[9] The S&P long-term credit rating for an issuer is usually at the highest issue level rating that the issuer has at the senior level if the issue level ratings are available. Therefore the average issuer rating tends to be higher than the average debt rating.

[10] Several institutional developments might have fueled the spurt in 1996. In 1995, bank loans were first rated by the S&P, and a trade association for syndicated lenders – the Loan Syndications and Trading Association (LSTA) was formed.

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Top nonbank institutional investors ranked by the face value of total loan facilities participated include investment banks (such as Credit Suisse First Boston, Lehman Brothers, and Merrill Lynch & Co.) and investment advisors (such as Oppenheimer and RBC Capital). The top ten IIs involved in syndicated loan facilities account for 37.5% of the full sample.

This new phenomenon of II participation in loan syndication is interesting on its own and is a necessary condition for firms to have II dual-holders of both equity and debt. To examine the determinants of II participation in loan syndication, we present results of probit regressions in Table 2. The dependent variables are the indicator variables for II participation and II major participation. The explanatory variables include both loan facility and borrower characteristics.

[Insert Table 2 here]

We first examine the determinants of II participation in syndicated loans (column (1)). In terms of the loan characteristics, we find that IIs are more likely to participate in large secured term loans with long maturities. IIs also tend to participate in loans for risky purposes (LBOs and takeovers) and be members of a large syndicate (measured by the number of lenders). In terms of the borrower characteristics, IIs are more likely to lend to large companies (measured by total assets) with poor recent stock market performance (measured by industry-adjusted stock returns), and to those that are members of the S&P 500 index.

Interestingly, II lenders seek out companies with low institutional equity ownership (conditional on the size of the companies): A one-percentage point increase in a company's institutional equity ownership is associated with a 14 bps drop in the probability that the lending syndicate will include at least one II (significant at the 1% level). This contrast is confirmed in the characteristics of borrowers that attract institutional lenders. While institutions are known to prefer "prudent" stocks with low volatility, high liquidity, high analyst coverage, and robust debt ratings (see for example, Del Guercio (1996), and Gompers and Metrick (2001)), column (1) of Table 2 indicates that institutional lenders prefer borrowers with exactly the opposite

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characteristics (the coefficients on the Altman Z-score, S&P long-term credit rating, analyst coverage, stock return volatility, and the Amihud (2002) stock illiquidity measure are all significant at the 1% level). The determinants of II major participation in syndicated loans (column (2)) are similar to those for II participation.

C. Simultaneous Holding of Debt and Equity by Nonbank Institutions

Nonbank institutions traditionally are investors on the equity side. The rising trend of these IIs participating in syndicated loans (see Figure 1) also leads to increasing occurrence of an II simultaneously holding both equity and debt positions in the same company (dual-holding). Figure 2 presents the time series plots of dual-holding from 1987-2006, in terms of both the fraction of total number of the loan facilities and the fraction of total face value of the loan facilities.

[Insert Figure 2 here]

Figure 2 indicates that the simultaneous holding of equity and debt by IIs, while virtually non-existent before 1995, has been a growing phenomenon since, coinciding with the remarkable growth of II participation in the loan market in the same year (see Figure 1). At the peak of 2001, loans that have dual-holder participation account for 22 percent of all II-participated loan facilities, and 44 percent in value-weighted terms. The increasing trend has flattened out since 2001, but dual-holder participated loans remain at relatively high levels (above 10 percent in 2006 and close to 20 percent in all other years). On the other hand, the size of such loans has decreased since 2001, and as a result, the value-weighted shares of these loans have decreased from 44 percent to about 20 percent during the 2001-2006 period.

One goal of our paper is to examine the loan and borrower characteristics that are associated with II dual-holding. Table 3 reports the findings. Column (1) examines the determinants of dual-holding using the full sample. We show that dual-holders are more likely to be associated with unsecured loans with longer maturities and many lenders. Borrower

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characteristics are generally in line with institutional investors' preference for equity investment: Dual-holders target large companies that have enjoyed fast revenue growth and positive excess stock returns (all significant at the 1% level). Moreover, dual-holders tend to invest in the S&P 500 member firms.

[Insert Table 3 here]

Given that nonbank II participation in loan syndication is a necessary condition for dual-holding, columns (2) and (3) further examine the determinants of dual-holding among the subsamples of loan facilities where nonbank IIs participate or have a major presence, respectively. The frequency of dual-holding increases from 8.7 percent in the full sample to 20.5 percent in the subsample with II participation. Within the subsample of II major participation, 17.1 percent of the loan facilities have a dual-holder who is a major participant of the loan syndicate. Results are overall consistent with those from the full sample: Dual-holders are more likely to be present in unsecured loans with many lenders and issued by large companies with fast revenue growth and positive excess stock market returns. It is worth noting that dual-holders' preference for unsecured loans (significant at the 1% level) prevails in the full sample as well as in the two subsamples. This is in stark contrast with non-dual-holding institutions' preferences for loan participation (as shown by the significant and positive coefficient on *secured* in Table 2). Compared to IIs without any equity investment in the borrowing company, dual-holders are 5.3 percentage points in probability more likely to take an unsecured loan (vs. a secured loan) (see column (2) of Table 3). Nandy and Shao (2007) document that institutional loans are mostly collateralized loans in order to meet IIs' investment objectives and constraints, but loans funded by dual-holders turn out to be quite different.

III. Pricing of Loan Facilities Financed by Nonbank Institutional Shareholders

A. Dual-Holders and Loan Pricing: Overview

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The focus of our research is on the effects of shareholder-turned creditors on the loan deal and on the borrowing company. The first question naturally is the effect of dual-holding on the loan yield spread. We run regressions of the loan yield spread on an indicator variable for the presence of dual-holders, *dual-holder,* and the same set of control variables used in Table 3.

As we mentioned before, the necessary condition for dual-holding is II participation in loan syndication. Table 2 indicates that II participation is strongly associated with risky characteristics of loans and borrowers. As a result, these loans should naturally command higher spreads. To control for this effect, we include indicator variables for II participation and II major participation for the full-sample analysis. Results are reported in columns (1) and (2) of Table 4, respectively.

[Insert Table 4 here]

In column (1), the coefficient on the indicator variable for the presence of dual-holders is 22.3 bps (significant at the 1% level), suggesting that all else equal the presence of dual-holders is associated with a lower loan yield spread. For a typical (median) loan in our sample, this represents an annual saving of $303,280 in interest payment (= $136 million × 22.3 bps). This finding with respect to nonbank institutional investors complements results from two recent papers that examine the relation between banks' multiple roles and loan pricing. Focusing on the control rights of banks in companies of which they are also lenders, Santos and Wilson (2007) show that banks charge lower rates on loans when they also have voting stakes. Ferreira and Matos (2007) find that the positive relation between connectedness and loan pricing is absent when banks are direct shareholders of the borrowers.

On the other hand, we show that institutional participation in loan syndication is associated with significantly higher spreads (35.3 bps according to our model specification).[11]

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[11] This result is consistent with the work by Nandy and Shao (2007) who examine the pricing of "institutional loans," defined by the LPC as loan facilities designed to be sold to institutional investors. They find that, compared to bank loans, institutional loans are made to larger companies with higher levels of institutional shareholding, lower

The relations between loan pricing and loan/borrower characteristics are intuitive and consistent with the literature on loan spread determination.[12] Large and revolving loans are associated with lower spreads, while secured loans and loans for risky purposes (takeovers and LBOs) have higher spreads.[13] Loans with a large lending syndicate are associated with lower spreads. In terms of the borrower characteristics, high market-to-book firms enjoy lower spreads. Prior-year stock performance contributes to lower spreads because the rising market value of equity implies lowered leverage. Firms with lower bankruptcy risk, as summarized in the (high) Altman Z-score, enjoy lower spreads as expected. The S&P rating also has a significant effect on the spreads, as firms with low ratings or no ratings generally have to pay higher spreads. Higher analyst coverage is associated with lower spreads, possibly due to greater information transparency. High return volatility is associated with higher spreads, reflecting the higher value of the default option held by equity holders.

Alternatively, we run the loan yield spread regressions on the II participation and II major participation subsamples. In the latter subsample, we tighten the definition of dual-holders to require that they be major participants in the loan syndicate. Hence, both II participation and II major participation are necessary conditions for dual-holding in each subsample. Results are reported in columns (3) and (4), respectively. Conditional on II participation (or major participation), those loans where the II lenders are also shareholders in the same firm have spreads that are 12 to 15 bps lower (significant at the 1% level).

Results in the first four columns of Table 4 suggest that having some shareholders simultaneously serve as creditors is associated with lower loan yield spreads. The interpretation

levels of market-to-book ratio, higher levels of leverage and for riskier purposes (such as takeovers and LBOs). The institutional loans in their sample on average charge higher loan yield spreads (between 35 to 60 bps) than bank loans, which could serve as compensation for information production and continuous participation by the institutional investors who are the less informed investors in the syndicated loan market. It is worth pointing out that the holders of institutional loans in their sample are not necessarily the dual-holders that we focus on.

[12] See, for example, Stulz and Johnson (1985), Dennis, Nandy, and Sharpe (2000), Hubbard, Kuttner, and Palia (2002), Moerman (2005), and Güner (2006).

[13] Secured loans have higher spreads, reflecting the fact that collaterals are often required when the loan is perceived as risky (Berger and Udell (1990), and Santos and Wilson (2007)).

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of a causal effect is subject to the usual challenge of separating a treatment effect from a selection effect. If the presence of dual-holders is exogenous, then the negative coefficient on *dual-holder* suggests that the simultaneous holding of debt and equity by some IIs alleviates the conflicts of interest between creditors and shareholders, and hence leads to lower loan yield spreads (the treatment effect). On the other hand, if shareholders are more likely to become lenders when the loan is riskier (safer) because of the loan-deal heterogeneity observable to participating institutional investors but unobservable to the public, then the causal effect of dual-holders on spreads is under- (over-) estimated using simple regressions (the selection effect).

Before we conduct formal analysis to separate these two effects, we run the loan yield spread regression on the subset of the S&P 500 member firms, which are arguably the most transparent among public firms. If the information selection effect is present, it should be minimized among the S&P 500 member firms. Out of our sample of 13,375 loan facilities, 3,010 facilities are taken out by the S&P 500 member firms, 761 of which involve dual-holders. Column (5) presents the results. The coefficient on dual-holder is 16 bps (significant at the 1% level), indicating a significant and negative relation between the presence of dual-holders and loan yield spreads on a subsample with relatively low level of information asymmetry.

The negative correlation between *dual-holder* and *spread* is clearly inconsistent with the hypothesis that a dual-holder might use its power on the equity side to benefit its debt position by extracting a higher interest on the loan (the wealth transfer (tunneling) hypothesis). To further examine the effect of dual-holders with large equity stakes, we replace the *dual-holder* indicator variable with the actual equity stakes of dual-holders or an indicator variable for a 10 percent or higher equity stake by dual-holders, both coefficients are negative and highly significant (at the 1% level). Therefore, there is no evidence that dual-holders who have controlling power on the equity side expropriate wealth from other shareholders.

B. Dual-Holders and Stringency of Loan Covenant

So far we have not considered the other main aspect of debt contracting: covenants. Given that loan spreads and covenants are likely to be determined simultaneously, it is less than ideal to use the presence or tightness of covenants as control variables in the spread regression. In addition, the data on loan covenants are incomplete and are often difficult to standardize.[14] For simplicity, we construct a summary indicator variable, *covenant*, equal to 1 if there is at least one financial covenant in the loan contract and 0 otherwise. Common financial covenants include: minimum quick and current ratios, minimum net worth, minimum return on assets and/or return on equity, minimum working capital, and maximum debt to worth.

In our sample, the unconditional correlation between *spread* and *covenant* is 0.11, indicating that firms with lower credit quality are subject to both higher interest rates and more disciplinary constraints. However, in unreported analysis, when we add other variables in Table 4 as controls, the marginal effect of *covenant* becomes -9.7 bps (significant at the 1% level). This negative relation indicates that loan interest rates and financial covenants are used as substitutes conditional on other loan and firm characteristics. Most importantly, in such a regression, the coefficient on *dual-holder* is almost unchanged.

We are able to construct refined measures for the stringency of financial covenants in a subsample of about 5,000 loan facilities. Following the method used in Chava and Roberts (2007) and Drucker and Puri (2008), we construct the following two variables: *CRslack* and *NWslack. CRslack* is defined as the loan borrower's current ratio at the fiscal year end prior to the loan origination minus the minimum level allowed in the loan contract. *NWslack* is defined as the difference between the loan borrower's (tangible) net worth and the minimum level allowed

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[14] Covenants are not recorded for many loan facilities in the DealScan. According to the Loan Syndications and Trading Association estimates, approximately 95 percent of loans to BBB-rated borrowers and 80 percent of A-rated loans issued during 2003-2004 have financial covenants. However, in the DealScan only 64 percent of loan facilities issued during the period have recorded financial covenants. In addition, there is ambiguity with respect to the measurement of covenants. For example, covenants that restrict the firm to a maximum debt-to-equity ratio may have different definitions of debt or equity.

by the loan contract normalized by the borrower's total assets. The correlation between the *dual-holder* indicator variable and the maximum of the two slack variables is weakly negative (-0.019) (The correlation with the minimum of the two slack variables is very similar). In an untabulated regression of any of the two slack variables (the maximum or minimum of them) on *dual-holder* and other control variables used in Table 4, the sign of the coefficient on *dual-holder* varies, and the magnitude is far from being statistically significant. Overall, the low spreads associated with dual-holders do not seem to come as a tradeoff for more stringent covenants.

C. Endogenous Dual-Holding: Fixed Effects and Treatment Regressions

To account for the possible selection effect, the processes of loan yield spreads and the presence of dual-holders can be modeled as follows (Li and Prabhala (2007)):

$$spread_i = X_i\beta + \delta dual\text{-}holder_i + \varepsilon_i,$$
$$dual\text{-}holder_i^* = X_i\gamma_1 + Z_i\gamma_2 + \omega_i, \tag{1}$$
$$dual\text{-}holder_i = 1, \text{ if } dual\text{-}holder_i^* > 0; \ = 0, \text{ if otherwise.}$$

In equation (1), *spread$_i$* is the spread over LIBOR of the *i*-th loan. X_i is a vector of covariates that include loan and firm characteristics. The coefficient of key interest is δ, in front of the *dual-holder* indicator variable. *dual-holder** is a latent variable that captures the propensity of the presence of dual-holders, it is a function of the X_i variable, and an additional set of covariates Z_i that affect the propensity of dual-holding but does not affect spreads directly other than through the effect of dual-holders. The indicator variable *dual-holder* is allowed to be endogenous in the sense that *corr(ε, ω) $\neq$ 0*. A positive (negative) correlation indicate that loans financed by shareholders are riskier (safer) based on unobservable heterogeneity, and hence an estimate for δ are upward (downward) biased if the endogeneity is not properly accounted for.

If the endogeneity of the residual, ω, is associated with a firm-specific but time-invariant component in ε, that is, if $\varepsilon_{i,t} = \theta_i + \upsilon_{i,t}$, and *corr($\theta$,$\omega$) $\neq$ 0* but *corr(υ,ω) = 0*, then δ in (1) could be consistently estimated using the conventional linear regressions with firm fixed effects

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provided that there is within-firm variation in the indicator variable *dual-holder* (a condition which is satisfied). Panel B of Table 4 repeats the exercise in Panel A with the additional firm fixed effects. For the economy of space, only the coefficients on the key variables of interest are reported though the same set of control variables are included in the regression, together with the year fixed effects.

Results in Panel B indicate that when a firm receives a loan from lenders that are also shareholders, the loan spread is on average 10-19 bps lower than a similar loan from the same firm without dual-holder participation. The magnitude is comparable to that reported in Panel A, and is statistically significant at the 1% level in all specifications. The significant result also holds for the subsample of S&P 500 member firms. The consistency in the results between the two panels of Table 4 suggests that the correlation between the presence of dual-holders and lower loan spreads is not driven by unobserved heterogeneity at the firm level.

Naturally questions arise about the possibility that the unobserved heterogeneity among borrowers is time-varying. To allow such a possibility, we resort to the treatment regression using the maximum likelihood estimator developed by Maddala (1983, Chapter 5). The identification of the system in (1) relies on the existence of the Z variables. If the set of Z is non-empty and combined they are able to explain a significant amount of variation in the propensity of a loan to be financed by dual-holders, equation (1) could be estimated using the maximum likelihood estimation method.

Using standard tests for the over-identification of instrument variables, we do not find a set of qualified instruments among the list of variables in Tables 3 and 4 for the full sample. However, we are able to use *inst* (the fraction of institutional equity ownership) and *amihud* (the Amihud (2002) illiquidity measure) as our Z variables for the subsample of loans with II participation and II major participation. Our choice of instrumental variables is both theoretically and empirically driven. On the one hand, high institutional equity ownership

increases the chance that some institutions also participate on the lending side, and trading liquidity is a key determinant for institutional equity ownership. Combined, *inst* and *amihud* are expected to have explanatory power for the presence of dual-holders conditional on II participation. In fact, they are jointly significant at the 5% level as determinants for the presence of dual-holders. On the other hand, characteristics that make a firm more or less attractive for institutional equity investing, conditional on II participation and loan and firm characteristics, should not directly affect the loan yield spread. They could, however, indirectly affect the loan pricing through the effect of the dual-holders. Indeed, columns (3) and (4) of Table 4 show that neither *inst* nor *amihud* is close to being a significant determinant of loan yield spreads when the presence of dual-holders is controlled for. Their joint significance also fails to reach the 10% level.

The results from estimating equation (1) using the treatment regression on the two subsamples of II-participated and II-major-participated loans are reported in Table 5. The coefficient on *dual-holder* captures the effect of the presence of at least one equity-and-debt holding institutional investor on the loan yield spread, taking into account the possible selection of loan deals by these dual-holders. The magnitude of the effect is now in the 49-55 bps range (significant at the 1% level), which is much larger than that of the coefficients in Table 4 without controlling for the selection effect. Such a difference indicates that $\rho = corr(\varepsilon, \omega) > 0$, where ε and ω are disturbances in loan yield spreads and in the propensity of the presence of dual-holders, respectively, as specified in equation (1). In other words, dual-holders tend to invest in firms and loan deals that are riskier conditional on the observable characteristics, and hence a simple regression in the form of Table 4 would under-estimate the effect of dual-holders. Table 5 also reports estimates for $\hat{\rho}$ and $\hat{\lambda}$ where λ is the coefficient in the linear projection of ω on ε. The correlation coefficient $\hat{\rho}$ is in the range of 0.21-0.29 and is larger in the II participation subsample. The $\hat{\lambda}$ coefficients are significantly positive, indicating that the increase in loan

yield spreads is significantly positively correlated with the unobservable preferences of dual-holders for riskier loans and/or borrowers.

[Insert Table 5 here]

Tables 4-5 thus present robust evidence that loan facilities financed by nonbank II shareholders are associated with lower yield spreads. The treatment regression results support the interpretation of a causal effect to the extent that the instrumental variables are valid. However, there is no ultimate test for the validity of instruments, and hence the usual criticism for instrumental variables applies. In the rest of the paper, we will conduct additional tests that do not rely on instrumental variables. These tests will serve to answer the following important questions. First, is the lower yield spreads associated with the presence of dual-holders justified by the improvement in the borrowers' credit quality after loan origination? A positive answer will lead to the next question: Do dual-holders have a *treatment effect* on the borrower's credit quality, or do they just predict such improvement?

IV. Explaining the Effects of Dual-Holders

A. Investment Horizon of Dual-Holders

The incentive alignment hypothesis (or the treatment effect) posits that dual-holders have the incentive to align the interest between shareholder and debt-holder. Such incentives should be stronger if the dual-holders have a relatively long investment horizon in the firm both as lenders and shareholders. Prior literature has associated longer investment horizon with a higher propensity of monitoring. For example, Gaspar, Massa, and Matos (2005) conclude that institutional investors with low-turnover portfolios are more likely to exert influence on corporate acquisition decisions. Chen, Harford, and Li (2007) show that longer horizon makes the cost-benefit calculation more favorable to monitoring than to trading. Among a sample of hedge fund activism events, Brav, Jiang, Partnoy, and Thomas (2008) find that hedge funds tend

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to hold significant stake (five percent or above) longer in the target company when they launch aggressive activism.

While the literature has focused on investment horizon on the equity side, for dual-holders the same issue is applicable from both debt and equity sides. At a first glance, Tables 2-3 indicate that loans with longer maturity are indeed more likely to be financed by IIs and dual-holders. Additional evidence on dual-holders' investment horizon in corporate loans is provided in Table 6 Panel A. We compare the intensity of the bilateral relationship between the borrowing firm and two types of lenders (dual-holders and non-dual-holders) before and after the loan deal. The intensity of the lending relationship is measured in terms of both the number of deals and the dollar amount involved. Specifically, we calculate the total number of loan facilities (or the total dollar amount of these facilities) in which the same lender participates before and after the current loan deal date, scaled by the borrower's total newly initiated number of loans (amount of loans) during the same period. Because our information on loan deals extends only to February 2007, we exclude loan deals initiated in 2006 for the post-deal analysis to mitigate the data truncation problem. We compute this intensity measure separately for dual-holders and non-dual-holders. Given that each loan facility has multiple lenders, we first take the average at the loan facility level before averaging over all facilities, and then conduct a comparison between dual-holders and non-dual-holders. Results in Panel A of Table 6 show that before the current loan deal date, dual-holders in the current facility on average participate in 42 percent of all the loans issued by the same company, the same measure for non-dual-holders is 39 percent. In the post-deal period (till February 2007 and excluding loans made in 2006), the intensity measure takes the value of 71 percent of all the loans issued by the same company for dual-holders versus 57 percent for non-dual-holders. The differences in both the pre- and post-deal periods are significant at the 1% level. Using the dollar amount measure yields very similar results.

[Insert Table 6 here]

Another measure of II investment horizon in syndicated loans is the sale of loans by the syndicate members to the secondary market. According to the LPC, US corporations in 2007 raised about $1.89 trillion through loan syndications. After syndication, loans are traded in a fast growing secondary market. The US secondary loan market trading volume reached $342.02 billion in 2007 from a mere $8.0 billion traded in 1991, a compound annual growth rate of 26.5 percent.

To identify loans that are sold in the secondary market, we use the Loan Syndications and Trading Association (LSTA) Mark-to-Market Pricing database, a dataset of daily secondary market loan quotations gathered by third-party providers (LPC and LSTA) from relationships with over thirty leading dealers and traders. The unit of observation in the database is a pair between a loan facility and a quotation date. The data do not provide us with the identities of loan sellers from the syndicate and therefore we cannot trace out loan sales by individual lenders. Instead, we are only equipped with the knowledge of whether a particular loan ends up trading in the secondary market. The available sample period is 1998-2004.

The correlation between the indicator variable *dual-holder* and the indicator variable for a loan trading on the secondary market is negative (-.03). In a regression that examines the determinants of loan resale, the coefficient on *dual-holder* is significant and negative (at the 1% level) on its own or with the other usual covariates. The limited evidence indicates that dual-holders may be less likely (or at least no more likely) to resell their loans to the secondary market.

On the equity side, using information from the Thomson Financial Form 13F filings (updated to the end of 2007) we investigate the length of time over which dual-holders have significant equity positions in the borrower before and after the loan deal. For each loan facility with at least one dual-holder (which, by construction, holds a significant equity position, that is, at least one percent or two million dollars of equity in the borrower, or five million dollars in the

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borrower's parent company), we look back in time to find the earliest quarter-end since when the same institution's position in the company has been significant. Similarly, we look forward to find the last quarter-end up till when the position has been significant. We call these two quarters q_1 and q_2 (i.e., the institution's equity holding falls below being significant in quarters q_1 $-1$and q_2+1). Then $q_2 - q_1+1$ is the total number of quarters surrounding the loan origination date that the dual-holder has a continuous significant equity position in the borrower. We then split this measure to holding periods before and after loan origination. Panel B of Table 6 shows that the median (average) holding period by the dual-holders before the loan deal is 20 (23.4) quarters; and that after the loan deal is 12 (15.3) quarters.[15]

To get a perspective on the investment horizon of dual-holders on the equity side, we form comparison groups by selecting, among all portfolio companies that a dual-holding institution has significant equity positions during the quarter of loan origination, the company that is closest in market capitalization to the borrowing firm with which our institution is the dual-holder. Panel C of Table 6 shows that IIs tend to hold shares of companies in which they are also creditors for a much longer period of time (by 3.7 quarters) than those in which they are merely shareholders. The difference is statistically significant at the 1% level, and remains virtually the same if we exclude loan facilities initiated in 2006 to mitigate the data truncation problem.

Results in Table 6 indicate that dual-holding institutions tend to have long-term relationships with firms of which they are both creditors and shareholders. Combined with the evidence from other papers on investment horizon and institutional monitoring, results in Table 6 suggest that the lower spreads of loans financed by dual-holders can at least to some extent be

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[15] The holding period after the deal could be underestimated if it is censored at the end of 2007. If we exclude the subsample of loan facilities that were initiated in 2006, the median/average post-deal holding period increases by about half a quarter.

attributed to the monitoring effort of dual-holders who could benefit from their own efforts over a longer investment horizon.

The alternative hypothesis of superior information possessed by dual-holders, on the other hand, does not necessarily lead to our finding of their longer investment horizon. Superior (non-public) information about a firm's performance, by definition, should have a zero mean conditional on public information, and therefore should not have a systematical bias toward long positions. That is, IIs with superior information about an investment target might be able to trade in and out more frequently, but should not be expected to have a significantly longer holding period in that target.

B. Credit Quality of Borrowers around Loan Origination

In this section we examine whether the lower yield spreads on loans with dual-holders are justified by the relative improvement in the credit quality of the borrowers. It is natural to expect that the credit quality of firms would deteriorate at least temporally after assuming new loans. The deterioration could persist if the increase in leverage encourages managers and shareholder to take some self-interested actions at the expense of the debtholders. It would be interesting to see whether loans with dual-holders are associated with smaller unfavorable changes in the borrower's credit worthiness. To this end, we use the following differences-in-differences regression specifications.

Let d_{t+j}^1, j=-2, -1, 0, 1, 2, be the indicator variable for a firm-year where j years before/after the firm receives a syndicated loan and there is at least one dual-holder among the lenders. Let d_{t+j}^2, j=-2, -1, 0, 1, 2, be the indicator variable for a firm-year where j years before/after the firm receives a syndicated loan *and* there is no dual-holder. In the regression

$$y_{i,t} = \sum_{j=-2}^{2} \beta_j^1 d_{t+j}^1 + \sum_{j=-2}^{2} \beta_j^2 d_{t+j}^2 + \lambda \ln(MV_{i,t}) + \alpha_{SIC3} + \alpha_t + \varepsilon_{i,t},$$ (2)

where industry (at the three-digit SIC code level) and year fixed effects are included and firm size (log market capitalization) are controlled for, β_j^1 represents the difference in the dependent variable (to be discussed later) for firms that are j years after (negative values mean "before") a loan with dual-holders and that for control firms in the same year-industry combination and of similar size but without any loan. Similarly, β_j^2 represents the difference in the dependent variable for firms that are j years after a loan without involving any dual-holders and that for control firms in the same year-industry and of similar size but without any loan. To make sure that the control firms are comparable to the new-loan-receiving ones, we only include in regression (2) firms that appear in the DealScan database at least once during the period from January 1981 to February 2007 (the coverage of the database at the time of data retrieval). That is, the control firms are eligible for syndicated loans but do not receive a new loan during the [t-2, t+2] window defined by the new-loan-receiving firms.

We will also examine the differences-in-differences, $\beta_{t+j}^1 - \beta_{t+j}^2$ (the differential effects of dual-holders, year by year, relative to other loan-receiving firms), $\beta_{t+2}^1 - \beta_{t-2}^1$ (the before-after difference of loan receiving firms with dual-holders) and $\beta_{t+2}^2 - \beta_{t-2}^2$ (the before-after difference of loan receiving firms without dual-holders). Such differences could be tested using the estimates and the variance-covariance matrices from equation (2).

The most natural summary indicator for a firm's credit worthiness is the Altman Z-score. Results are reported in the Panel A of Table 7. The "difference" coefficient represents the level of the dependent variable for the borrowers in excess of that of the no-loan control firms (of similar size and in the same industry-year).

[Insert Table 7 here]

Several interesting empirical regularities emerge. First, loan receiving companies with dual-holders have an average Altman Z-score that is 0.66 lower than those without dual-holders

at the end of year *t-2*. The difference is both statistically (at the 1% level) and economically significant (the median Altman Z-score across all firm-years in our sample is 3.02). Therefore it is clear that higher credit quality of the borrowers is not the reason behind our finding of lower yield spreads on loans with dual-holders (results from Tables 4-5). Second, loan receiving companies see an overall deterioration in the Altman Z-score: On average the score is 0.44 (= -1.063 – (-.621)) lower at the end of the loan-receiving year compared to two years before, and the difference is significant at the 1% level, consistent with findings by Altman and Kao (1992).[16] Finally and most interestingly, borrowers with dual-holders see no further deterioration in the Altman Z-score during the two-year period after loan origination. In fact, there is a slight improvement (not significant) during the time period. In contrast, the deterioration in credit quality among loan-receiving companies without dual-holders keeps its momentum by experiencing a further drop of 0.14 (significant at the 1% level).

Next, we look at a variant to the Altman Z-score that excludes the leverage component. By construction, this modified score is not directly affected by the new loan on the borrower's leverage ratio. Results are reported in Panel B of Table 7, and they deliver the same message as results in Panel A. This result corroborates the findings of Ferreira and Matos (2007) on the comparison of credit quality change after loan origination for loans from connected banks (where banks have board representation or equity stake in the borrower) and those from non-connected ones. The authors show that there is a lower estimated probability of default for firms borrowing from connected banks, and conclude that banks take less risk when they are connected with the company they are lending. Unlike Ferreira and Matos (2007), our paper focuses on nonbank institutional investors and the identification of the information and incentive alignment effects.

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[16] Because firms with dual-holders are less than 10 percent of all loan-receiving companies, the summary statistics of all loan-receiving companies are indistinguishable from those for the subsample of loan-receiving companies without dual-holders.

Finally, we employ a proxy for "risk shifting" to examine changes in the riskiness of the borrower after loan origination. To the extent that volatility in equity increases the option value to the equity holders, it tends to have an adverse impact on the value accrued to the debt holders of the same firm. We use the standard deviation of residuals from the Fama-French three-factor model estimated with daily stock return data during the year to measure the intensity of risk shifting activities. This measure filters out the return volatilities elicited by the aggregate market and factor movements, and is the closest measure to capture firm-specific volatilities that are under the control of shareholders and managers. Results are reported in Panel C of Table 7. Again, we find that firms with dual-holders tend to be riskier than those without: The equity returns of loan-receiving company with dual-holders are more volatile than those without dual-holders. The differences-in-differences coefficients are significant at the 1% level in all years except in year $t+2$. However, borrowers with dual-holders have no further increase in return volatility during the two-year period after the loan origination, while other borrowers do.

C. Information or Monitoring: Further Evidence from Credit Default Swaps (CDS)

Tests in the previous section and results in Panels A to C of Table 7 deliver a coherent message: Companies with equity-holding lenders tend to be riskier before the new loans, but experience less credit deterioration and risk-shifting after assuming the new loans. On their own, these tests do not strictly disentangle the predictive information story (i.e., dual-holders have an informational advantage in predicting the future evolution of the borrower's credit quality) from the incentive alignment hypothesis (i.e., dual-holders are more willing to internalize the potential harm on creditors from the opportunistic behavior of the shareholders).

To further separate these two effects, we resort to the credit default swap (CDS) market. A CDS is a contract written on a firm that issues publicly traded bonds. It represents a sequence of payments paid in return for protection against the losses in the event of default. CDS spreads are usually taken as the insurance premium for the senior unsecured debt of the issuer, and hence

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the general credit worthiness of the borrowing company. Prior work has shown that prices on CDS contracts are more informative about the issuing companies' credit quality than the prices of bonds (Blanco, Brennan, and Marsh (2005), and Longstaff, Mithal, and Neis (2005)).

There are several advantages of using the CDS spreads as a measure for a firm's general credit worthiness that are relevant to syndicate loan lenders.   First, due to the prevalence of cross-default and cross-acceleration clauses in firms' debt contracts (Wei (2005)), the default spreads on the CDS contracts can be directly informative about the default probability of the same borrowers' syndicated loans. Second, CDS pricing is a cleaner measure of the spread for bearing a firm's default risk that investors require by virtue of the homogeneity of the contracts. In contrast, prices and yields on loans or bonds need to be assessed together with a diversity of coupon structures, embedded options, and covenant restrictions, all of which can be endogenous to the debt contracts.

One of the authors purchased the price information for CDS contracts for 500 firms for the period of January 2001 to March 2008 from Markit, a leading independent source of credit default pricing. The 500 firms include all the 139 firms that are in the intersection of Markit coverage and our sample firms that have dual-holders at least sometime during the period of 2001 to 2006. Other firms serve as the control sample. There are usually multiple CDS contracts traded on the same firm. We focus on the most liquid five-year US dollar denominated contracts. The aggregate time series (averaged over all 500 firms) of CDS premium over LIBOR is plotted in Figure 3. There have been two major peaks in the time series, corresponding to the wave of high-profile bankruptcies (including WorldCom and United Airlines) in late 2002 and the sub-prime crisis from late 2007 to 2008. There was also a minor peak in April of 2006, coinciding with the downgrading of the GM debt. In the cross section, the average (median) is 137 (57) bps and the 25th and 75th values are 28 and 145 bps, respectively.

For each firm, we record the last trade of a year as the year-end default premium of the firm, and repeat the exercises specified by equation (2) using the logarithm of the CDS spread as the dependent variable. Because the sample of firms with the CDS information is much smaller than the universe of public companies in the DealScan database, we modify the industry fixed effect from the three-digit SIC level to the two-digit level. Results are reported in Panel D of Table 7.

In contrast to accounting measures which reflect firms' current conditions, CDS pricing is forward-looking and aggregates all information that market participants have. As a result, the coefficient estimates reported in Panel D should be interpreted as the market's best estimates at each point in time for the borrowers' default premium during the subsequent five years. Interestingly, firms with new loans offered by dual-holders see their CDS spread drop (i.e., their default probabilities decrease), while other new-loan receiving companies see a change in the opposite direction. During the two years before loan origination, borrowers with dual-holders have significantly (at the 1% level) higher default premiums. Translating from the logarithm scale, the default spread on a borrower with dual-holders in year t-2 (t-1) is on average 34 percent (22 percent) higher than that of a borrower without any dual-holder. At the median spread (60 bps), this difference amounts to about 13-20 bps. In year t+2, however, the difference is reversed to a small negative number (not significant) to indicate that borrowers with dual-holders now compare favorably to those without dual-holders in terms of default probability.

As expected, CDS spreads incorporate public information. For example, the cross-sectional correlation between CDS spreads and the Altman Z-score is significantly negative (-0.38). More importantly, CDS spreads also contain non-public information that is impounded into prices by informed traders, including forward-looking information that is not yet reflected in the current accounting variables (such as the Altman Z-score). Such an effective information aggregation is made possible by the fact that transactions of CDS contracts mostly occur among

sophisticated institutional investors, which could include participants of syndicated loans (Ashcraft and Santos (2007), and Acharya and Johnson (2007)). With this in mind, Panel D of Table 7 suggests that conditional on all information that is available to participants in the CDS market (including potential syndicate lenders), companies with dual-holders appear to have riskier debt during the year of loan origination or the years before that. Therefore, if the lower yield spread on the new loan results from the superior information about the borrowers' prospects, *in the absence of monitoring*, the information must be out of reach of *any* participants in the CDS market (so that it has not yet been impounded into the price). Such a scenario is highly unlikely. And even if it is the case, there is little reason for the dual-holders to surrender their informational rents to the borrowers in the form of lower loan yield spreads. The cumulative evidence thus lends strong support for the incentive alignment hypothesis.

IV. Conclusion

This paper provides the first comprehensive analysis on a new and increasingly important phenomenon: the simultaneous holdings of equity and debt in the same companies by nonbank institutional investors, or dual-holding. The presence of dual-holders offers a unique setting for testing the existence and magnitude of the conflicts of interest between shareholders and debtholders, and the importance of institutional investor monitoring.

We first show syndicated loans with the presence of dual-holders are associated with lower loan yield spreads (of 12 to 22 bps) than loans without dual-holders. We then conduct a series of tests to differentiate between the incentive alignment hypothesis and the information hypothesis that both predict a negative relation between the presence of dual-holders and loan yield spreads. Results lend strong and consistent support to the first hypothesis. Moreover, the effect of the presence of dual-holders on loan spreads is strengthened when the unobserved heterogeneity is controlled for.

We conclude that the presence of dual-holders mitigates the conflicts between shareholders and debtholders, thus lowering the cost of borrowing. Further studies are called for to examine the presence of dual-holders on corporate investment and financing decisions.

Appendix: Variable Definitions

Variables	Definition

Variables of Interest

spread — Initial all-in spread drawn is defined as the basis point coupon spread over LIBOR plus the annual fee and plus the upfront fee spread, if there is any.

II participation — An indicator variable takes the value of 1 if at least one nonbank institutional investor participates in a loan syndicate and 0 otherwise.

II major participation — An indicator variable takes the value of 1 if at least one nonbank institutional investor is a major participant of a loan syndicate, and 0 otherwise.

dual-holder — An indicator variable takes the value of 1 if (1) at least one nonbank lender of the facility has equity holdings in the borrowing firm or in borrower's parent firm in the same quarter in which the loan is originated; and (2) the nonbank lender must hold at least one percent of the borrower's common stock and/or the value of its equity holding in the borrowing firm exceeds two million dollars or five million dollars in the case of the lender being the shareholder of the borrower's parent, and 0 otherwise. Dual-holders in the II major participation subsample (column (3) of Table 3, column (4) of Table 4, and column (2) of Table 5) are limited to dual-holders that are also major participants of the loan syndicate.

Loan Characteristics

facilityamt — Natural logarithm of the loan facility amount in 2006 dollars.

maturity — Natural logarithm of the loan maturity in months.

secured — An indicator variable takes the value of 1 if a loan is secured, and 0 otherwise.

missingsecured — An indicator variable takes the value of 1 if the secured status of a loan is missing and 0 otherwise.

revolver — An indicator variable takes the value of 1 for revolving credit, and 0 for term loans.

lbotakeover — An indicator variable takes the value of 1 if the primary purpose of a loan is either leveraged buyout or takeover, and 0 otherwise.

numlender — Natural logarithm of one plus the total number of lenders in a loan syndicate.

Borrower Characteristics

assets — Natural logarithm of the borrower's total assets.

b2m — The borrower's book-to-market ratio, calculated as TA / (TA+MKVALF-CEQ), where TA is book value of total assets, MKVALF is market value of firm at the fiscal year end and CEQ is book value of total common equity.

growth — The borrower's sales growth of the past three years (or as many years as possible).

herfindahl — The sum of squares of the fractions of sales contributed by the borrower's different business segments, measured in real numbers.

inst   The fraction of total institutional ownership in the borrower measured in real numbers.

stkretindadj   The borrower's stock return in excess of the corresponding 3-digit SIC industry return.

altman   Altman bankruptcy Z-score is calculated $Z = 1.2\,X_1 + 1.4\,X_2 + 3.3\,X_3 + 0.6\,X_4 + 1.0\,X_5$ where X_1 is working capital/total assets, X_2 is retained earnings/total assets, X_3 is earnings before interest and taxes/total assets, X_4 is market value equity/book value of total liabilities, and X_5 is sales/total assets (Altman (1968)). All X variables are winsorized at -4.0 and +8.0.

sprate   The borrower's S&P long-term domestic issuer credit rating. Higher value corresponds to lower rating. Missing ratings are assigned to zero.

notsprated   An indicator variable takes the value of 1 if the borrower does not have the S&P credit rating and 0 otherwise.

analyst   Natural logarithm of one plus the total number of analysts who make forecast and/or recommendations for the borrower's stock.

stkvol   The borrower's stock return volatility using two prior years of monthly stock returns ending in the year of loan syndication (minimum three monthly returns over the last two-year period).

amihud   The Amihud (2002) illiquidity measure is defined as the yearly average of 1000 times the square root of |Return|/(Dollar Trading Volume), using daily data.

sp500   An indicator variable takes the value of 1 if the borrower belongs to the S&P 500 index, and 0 otherwise.

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Figure 1. Nonbank Institutional Investor (II) Participation in Loan Syndication
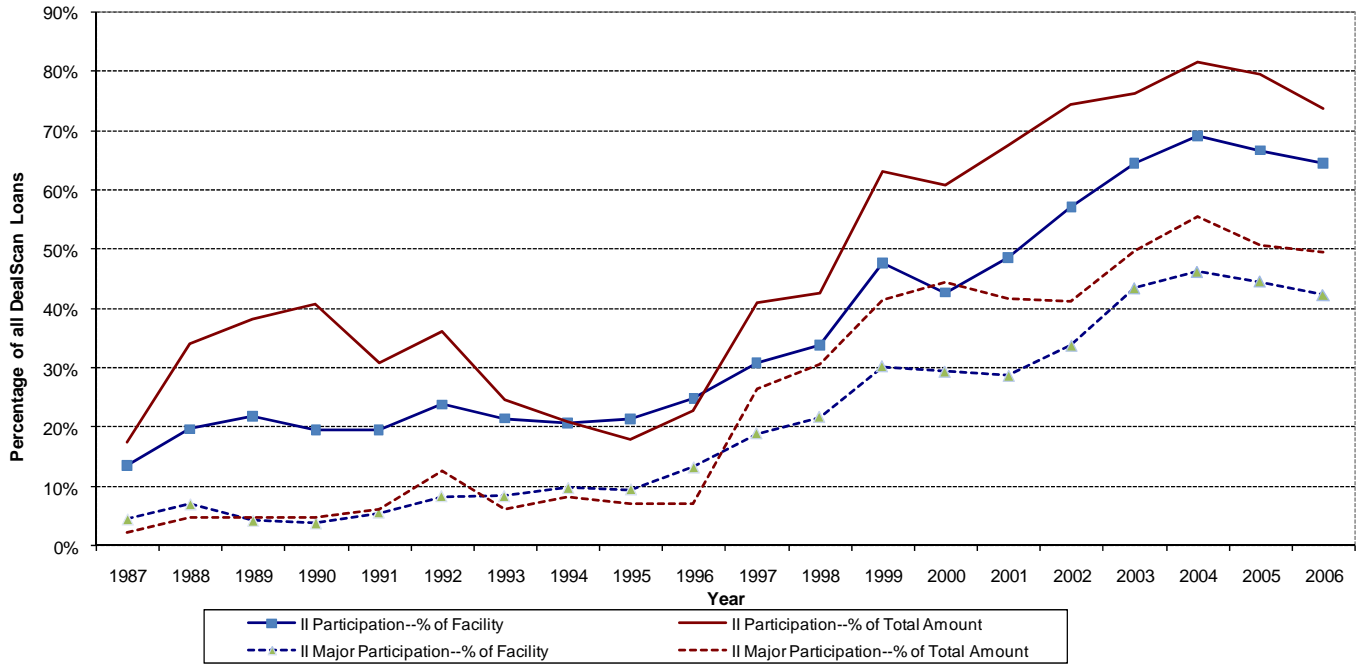
Figure 2. Percentage of II-Participated Loans with II Dual-Holders
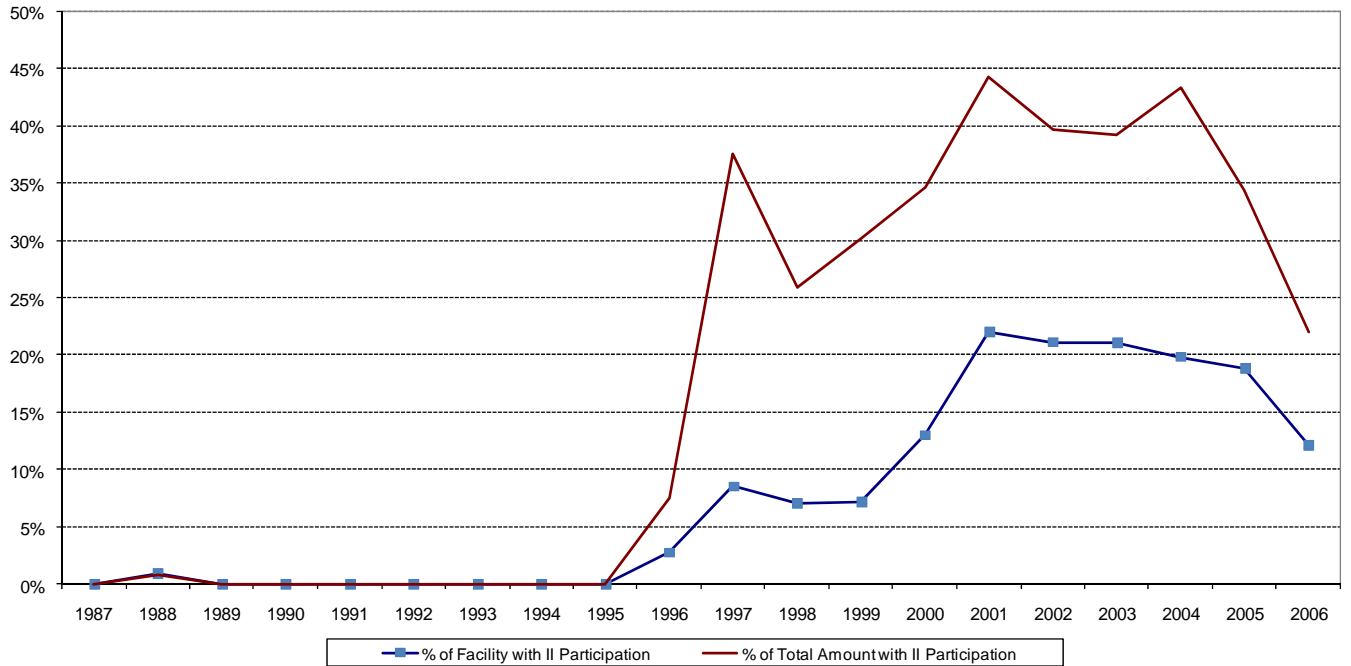
Figure 3. The Aggregate Time Series of CDS Premium over LIBOR
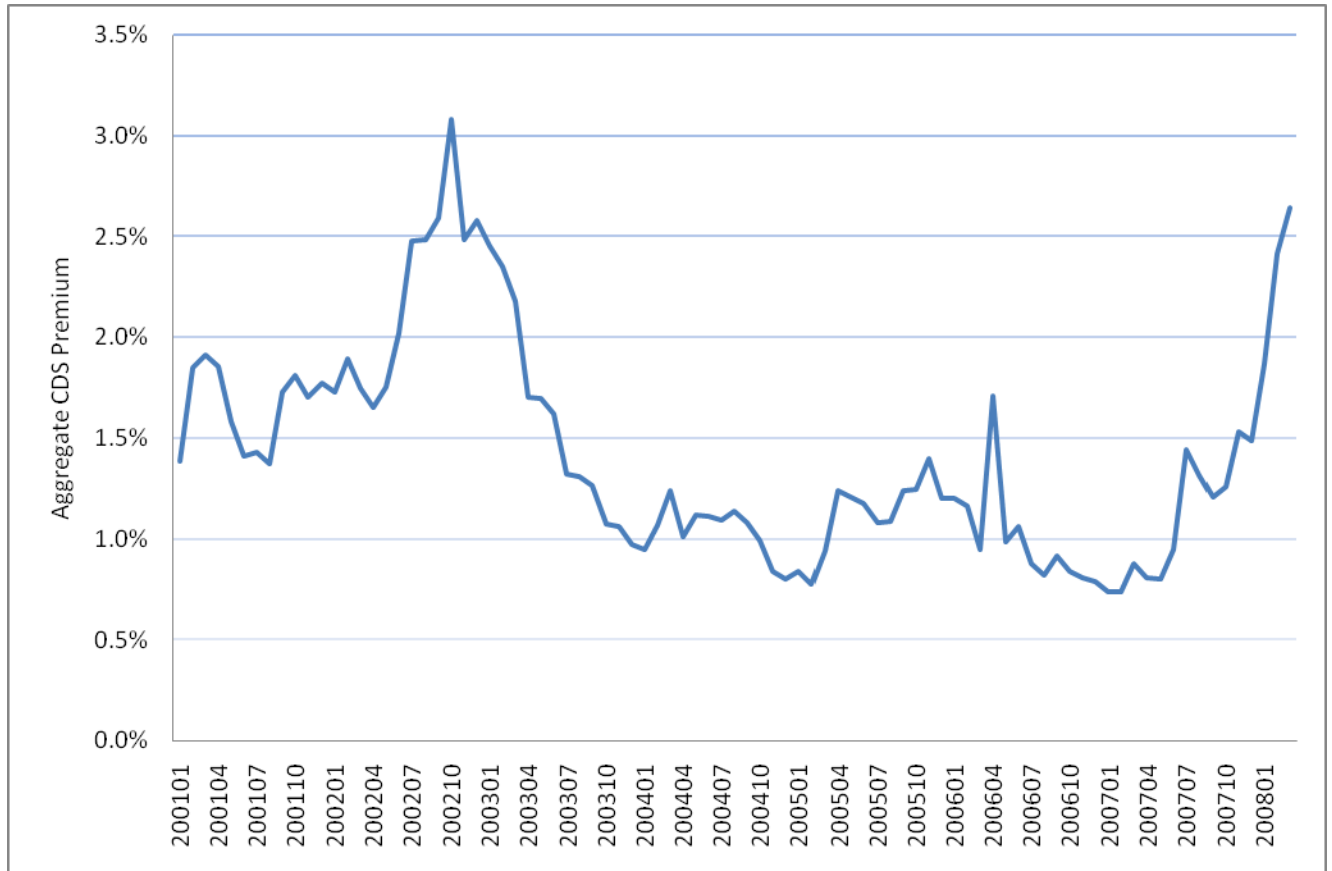
Table 1. Summary of Variables

This table reports the summary statistics of the main variables. Definitions of the variables are provided in the Appendix. The total number of loan facilities with matched information from Compustat is 13,375. Summary statistics of the variable in its original form are reported before the log transformation. Panel A provides descriptive statistics. Panel B reports the pair-wise correlation coefficients among main variables.

Panel A: Summary statistics of main variables

	Mean	Std. Dev.	25th Percentile	Median	75th Percentile
spread	164.704	118.551	67.500	150.000	250.000
II participation	0.423	0.494	0.000	0.000	1.000
II major participation	0.245	0.430	0.000	0.000	0.000
dual-holder	0.087	0.281	0.000	0.000	0.000
facilityamt (mil)	358.092	817.972	44.825	136.032	363.025
facilityamt (log)	4.824	1.542	3.803	4.913	5.894
maturity	47.190	209.830	24.000	48.000	60.000
maturity (log)	3.615	0.711	3.178	3.871	4.094
secured	0.478	0.500	0.000	0.000	1.000
missingsecured	0.335	0.472	0.000	0.000	1.000
revolver	0.761	0.426	1.000	1.000	1.000
lbotakeover	0.194	0.396	0.000	0.000	0.000
numlender	8.172	8.899	2.000	5.000	11.000
numlender (log)	1.840	0.863	1.099	1.792	2.485
assets (mil)	3363.470	7431.981	190.600	643.590	2487.150
assets (log)	6.579	1.801	5.250	6.467	7.819
b2m	0.592	0.608	0.287	0.479	0.754
growth	0.230	0.516	0.030	0.118	0.266
herfindahl	0.794	0.260	0.540	1.000	1.000
inst	0.501	0.247	0.315	0.517	0.694
stkretindadj	-0.001	0.040	-0.021	-0.001	0.017
altman	3.568	2.533	1.898	3.021	4.595
sprate	5.773	6.519	0.000	0.000	12.000
notsprated	0.520	0.500	0.000	1.000	1.000
analyst	10.425	9.390	3.000	8.000	16.000
analyst (log)	2.022	1.011	1.386	2.197	2.833
stkvol	0.132	0.067	0.085	0.120	0.155
amihud	0.303	0.599	0.037	0.100	0.288
sp500	0.225	0.418	0.000	0.000	0.000

Panel B: Correlations among main variables

		1	2	3	4	5	6	7	8	9	10	11	12
1	spread	1.00											
2	II participation	0.25	1.00										
3	II major participation	0.21	0.67	1.00									
4	dual-holder	-0.16	0.26	0.36	1.00								
5	Facilityamt (log)	-0.38	0.13	0.25	0.31	1.00							
6	maturity (log)	0.16	0.09	0.11	-0.08	0.03	1.00						
7	secured	0.53	0.15	0.13	-0.16	-0.30	0.22	1.00					
8	missingsecured	-0.29	-0.12	-0.13	0.04	0.15	-0.16	-0.68	1.00				
9	revolver	-0.39	-0.12	-0.11	0.07	0.18	-0.29	-0.25	0.12	1.00			
10	lbotakeover	0.17	0.09	0.07	-0.05	0.01	0.21	0.20	-0.14	-0.24	1.00		
11	numlender	-0.25	0.15	0.38	0.32	0.69	0.08	-0.17	0.01	0.07	0.04	1.00	
12	assets (log)	-0.39	0.13	0.24	0.38	0.80	-0.14	-0.39	0.25	0.13	-0.14	0.61	1.00
13	b2m	0.20	0.05	0.00	-0.07	-0.16	-0.02	0.13	-0.07	-0.02	-0.04	-0.13	-0.12
14	growth	0.08	0.02	-0.01	-0.03	-0.08	0.03	0.12	-0.07	-0.05	0.05	-0.07	-0.13
15	herfindahl	0.11	0.00	-0.07	-0.11	-0.20	0.08	0.14	-0.08	-0.06	0.05	-0.16	-0.28
16	inst	-0.23	0.07	0.15	0.20	0.46	0.01	-0.20	0.08	0.07	-0.01	0.38	0.52
17	stkretindadj	-0.06	-0.03	-0.03	0.01	0.00	0.08	0.00	0.00	-0.01	0.06	0.02	-0.05
18	altman	-0.26	-0.12	-0.15	-0.02	-0.07	-0.03	-0.12	0.02	0.11	0.06	-0.09	-0.16
19	sprate	0.01	0.17	0.25	0.17	0.42	0.03	-0.05	0.04	-0.03	-0.06	0.37	0.51
20	notsprated	0.19	-0.13	-0.23	-0.26	-0.56	0.07	0.21	-0.14	-0.06	0.09	-0.46	-0.69
21	analyst (log)	-0.42	0.03	0.09	0.27	0.64	-0.11	-0.34	0.21	0.15	-0.08	0.46	0.72
22	stkvol	0.44	0.10	0.07	-0.12	-0.32	0.00	0.30	-0.15	-0.12	-0.03	-0.25	-0.33
23	amihud	0.29	0.00	-0.06	-0.14	-0.46	0.02	0.22	-0.12	-0.10	0.01	-0.34	-0.51
24	sp500	-0.38	0.04	0.09	0.32	0.53	-0.18	-0.35	0.23	0.15	-0.11	0.37	0.67

		13	14	15	16	17	18	19	20	21	22	23	24
13	b2m	1.00											
14	growth	-0.06	1.00										
15	herfindahl	0.02	0.11	1.00									
16	inst	-0.16	-0.15	-0.16	1.00								
17	stkretindadj	-0.20	0.03	0.03	-0.02	1.00							
18	altman	-0.19	0.02	0.11	0.12	0.14	1.00						
19	sprate	-0.05	-0.06	-0.15	0.29	-0.02	-0.34	1.00					
20	notsprated	0.10	0.10	0.23	-0.35	0.03	0.26	-0.92	1.00				
21	analyst (log)	-0.22	-0.06	-0.10	0.56	-0.05	0.11	0.34	-0.49	1.00			
22	stkvol	0.09	0.13	0.12	-0.26	0.15	-0.11	-0.04	0.19	-0.24	1.00		
23	amihud	0.25	0.01	0.11	-0.49	-0.02	-0.13	-0.25	0.32	-0.58	0.23	1.00	
24	sp500	-0.15	-0.12	-0.22	0.29	-0.03	0.02	0.25	-0.47	0.54	-0.26	-0.25	1.00

Table 2. Determinants of Nonbank Institutional Investors' Participation in Loans

Definitions of all variables are provided in the Appendix. The dependent variable is an indicator variable for nonbank institutional investors' (II) participation in loan syndication: measured by II participation in column (1) and II major participation in column (2). The analysis is conducted at the loan facility level. Both specifications are estimated by probit. Year fixed effects are included but not reported. The t-statistics are based on standard errors clustered at the firm level. dPr/dx represents incremental change in predicted probability change for one unit of change in the regressor, while holding other regressors at their respective mean levels.

	(1) II Participation			(2) II Major Participation		
	coef	t-stat	dPr/dx	coef	t-stat	dPr/dx
facilityamt	0.060	3.03	2.29%	0.105	5.25	2.92%
maturity	0.102	4.30	3.93%	0.127	5.01	3.54%
secured	0.405	7.57	15.47%	0.407	7.55	11.43%
missingsecured	-0.028	-0.58	-1.06%	0.003	0.06	0.09%
revolver	-0.234	-7.68	-9.10%	-0.166	-5.41	-4.79%
lbotakeover	0.172	3.56	6.69%	0.302	5.92	9.07%
numlender	0.684	20.65	26.24%	0.111	3.42	3.11%
assets	0.061	2.23	2.35%	0.094	3.22	2.61%
b2m	0.002	0.05	0.06%	0.052	1.60	1.46%
growth	0.057	1.55	2.19%	0.097	2.35	2.71%
herfindahl	0.122	1.51	4.67%	0.329	3.81	9.16%
inst	-0.375	-3.57	-14.41%	-0.337	-3.00	-9.40%
stkretindadj	-2.216	-4.88	-85.07%	-1.460	-3.01	-40.73%
altman	-0.020	-2.17	-0.77%	-0.018	-1.76	-0.50%
sprate	0.036	3.69	1.37%	0.032	3.13	0.90%
notsprated	0.318	2.19	12.12%	0.351	2.30	9.72%
analyst	-0.103	-3.24	-3.94%	-0.057	-1.74	-1.60%
stkvol	2.419	7.05	92.89%	1.581	4.58	44.09%
amihud	0.110	2.54	4.21%	0.120	2.84	3.36%
sp500	0.122	1.78	4.73%	0.205	2.77	5.99%
#obs and Pseudo-R^2	13375	0.269		13375	0.169	
% (Dep Var = 1)	0.42			0.25		

Table 3. Determinants of Nonbank Institutional Dual-Holding

Definitions of all variables are provided in the Appendix. The dependent variable is an indicator variable for the occurrence of dual-holding of debt and equity in the same borrowing company by nonbank institutional investors (II), and the analysis is conducted at the loan facility level. Column (1) analyzes the full sample, while columns (2) and (3) focus on the subsamples of loan facilities that have II participation and II major participation. In column (3), we also require the dual-holder to be a major participant in the loan syndicate. All specifications are estimated by probit. Year fixed effects are included but not reported. The t-statistics are based on standard errors clustered at the firm level. dPr/dx represents incremental change in predicted probability change for one unit of change in the regressor, while holding other regressors at their respective mean levels.

	(1) All Loan Facilities			(2) Subsample: II Participation			(3) Subsample: II Major Participation		
	coef	t-stat	dPr/dx	coef	t-stat	dPr/dx	coef	t-stat	dPr/dx
facilityamt	0.045	1.21	0.07%	0.024	0.61	0.32%	0.097	1.81	1.08%
maturity	0.063	1.79	0.10%	0.034	0.80	0.44%	0.019	0.33	0.21%
secured	-0.256	-2.94	-0.40%	-0.389	-4.12	-5.26%	-0.326	-2.37	-3.87%
missingsecured	-0.176	-2.68	-0.25%	-0.098	-1.26	-1.23%	0.170	1.53	2.03%
revolver	0.014	0.22	0.02%	0.115	1.77	1.44%	-0.051	-0.64	-0.57%
lbotakeover	0.133	1.43	0.23%	0.063	0.62	0.84%	0.031	0.24	0.35%
numlender	0.539	9.81	0.83%	0.275	4.19	3.58%	0.123	1.64	1.37%
assets	0.207	4.05	0.32%	0.231	4.22	3.00%	0.313	3.93	3.48%
b2m	-0.035	-0.50	-0.05%	-0.057	-0.77	-0.74%	-0.070	-0.72	-0.78%
growth	0.182	2.80	0.28%	0.134	1.95	1.74%	0.126	1.73	1.40%
herfindahl	0.012	0.10	0.02%	0.039	0.29	0.51%	0.254	1.41	2.83%
inst	0.072	0.37	0.11%	0.219	1.02	2.84%	0.482	1.76	5.37%
stkretindadj	2.671	2.83	4.13%	2.953	2.96	38.43%	5.324	3.65	59.25%
altman	0.006	0.29	0.01%	0.025	1.16	0.33%	0.041	1.40	0.46%
sprate	0.000	0.00	0.00%	-0.011	-0.58	-0.15%	0.001	0.04	0.01%
notsprated	-0.049	-0.21	-0.08%	-0.145	-0.52	-1.84%	-0.180	-0.49	-1.95%
analyst	0.103	1.58	0.16%	0.100	1.37	1.30%	0.220	2.08	2.45%
stkvol	-0.890	-1.31	-1.38%	-1.552	-2.09	-20.21%	-2.344	-2.42	-26.09%
amihud	-0.734	-1.56	-1.13%	-1.032	-1.77	-13.43%	0.059	0.24	0.65%
sp500	0.226	2.19	0.41%	0.246	2.14	3.49%	-0.122	-0.78	-1.29%
#obs and Pseudo-R^2	13375	0.406		5654	0.366		3281	0.371	
% (Dep Var = 1)	0.087			0.205			0.171		

Table 4. Determinants of Loan Yield Spreads

Definitions of all variables are provided in the Appendix. The dependent variable is the all-in-drawn loan yield spread in bps, and the analysis is conducted at the loan facility level. Column (1) and (2) employ the full sample. Columns (3) and (4) focus on the subsamples of loan facilities that have II participation and II major participation, while column (5) uses the subsample of loan facilities with borrower being the S&P 500 members. In column (4), we also require the dual-holder to be a major participant in the loan syndicate. All specifications are estimated by linear regression with year fixed effects. The t-statistics are based on standard errors clustered at the firm level.

Panel A: Pooled Regressions

| | All Loan Facilities | | | | II Participation | | II Major Participation | | S&P 500 Member | |
| | (1) | | (2) | | (3) | | (4) | | (5) | |
	coef	t-stat	coef	t-stat	coef	t-stat	Coef	t-stat	coef	t-stat
II participation	35.318	14.78							21.350	5.32
II major participation			34.357	11.97						
dual-holder	-22.346	-6.33	-18.072	-5.29	-12.268	-3.21	-15.009	-2.83	-16.030	-3.69
facilityamt	-4.684	-3.75	-5.060	-4.02	-12.26	-5.89	-11.276	-4.64	-3.803	-1.95
maturity	-0.602	-0.39	-0.642	-0.41	-0.322	-0.12	-3.188	-0.74	0.071	0.04
secured	61.04	23.73	61.588	23.76	62.685	13.72	64.655	9.64	89.436	12.11
missingsecured	15.704	7.42	15.567	7.33	22.682	5.60	26.382	4.25	0.302	0.10
revolver	-51.04	-21.35	-51.624	-21.51	-67.815	-17.28	-72.647	-13.02	-51.575	-8.11
lbotakeover	26.923	10.79	25.999	10.31	34.452	8.79	35.430	6.44	19.549	3.97
numlender	-10.935	-6.07	-5.092	-2.94	-16.846	-4.96	-17.854	-4.4	-7.174	-3.09
assets	-3.002	-1.64	-3.403	-1.84	2.476	0.83	3.956	0.95	10.348	3.25
b2m	6.522	2.50	5.868	2.22	6.053	1.77	3.456	0.85	5.549	0.52
growth	-0.116	-0.05	-0.470	-0.20	-5.089	-1.36	-9.361	-2.00	-8.686	-0.83
herfindahl	6.580	1.50	4.811	1.10	5.945	0.90	4.373	0.49	-4.660	-0.76
inst	-5.200	-0.80	-5.331	-0.82	-1.262	-0.11	1.617	0.10	-6.725	-0.51
stkretindadj	-191.413	-6.45	-199.413	-6.77	-218.21	-4.30	-226.509	-3.47	-377.567	-3.26
altman	-5.670	-10.12	-5.726	-10.21	-5.950	-5.74	-5.654	-3.91	-2.302	-2.44
sprate	8.646	10.78	8.631	10.64	9.567	8.02	10.306	6.06	9.413	8.05
notsprated	111.845	10.25	110.711	10.07	132.821	8.02	157.362	6.47	106.424	8.16
analyst	-8.742	-4.10	-9.326	-4.33	-11.207	-2.75	-12.690	-2.28	-9.401	-1.82
stkvol	284.138	11.18	291.599	11.50	337.113	8.42	350.303	6.96	363.855	4.90
amihud	3.471	1.33	3.385	1.26	0.100	0.02	-6.036	-0.96	-32.352	-0.53
sp500	5.749	1.38	4.729	1.11	15.022	2.55	13.370	1.60		
#obs and Adjusted R^2	13375	0.57	13375	0.57	5654	0.58	3281	0.54	3010	0.66

Panel B: Regressions with Firm Fixed Effects

	All Loan Facilities				II Participation		II Major Participation		S&P 500 Member	
	(1)		(2)		(3)		(4)		(5)	
	coef	t-stat	coef	t-stat	coef	t-stat	coef	t-stat	coef	t-stat
II participation	23.885	9.66							9.193	2.37
II major participation			22.106	7.23						
dual-holder	-18.177	-5.19	-14.152	-4.13	-9.512	-2.11	-19.055	-2.46	-10.199	-2.26
Other controls	Yes		Yes		Yes		Yes		Yes	
#obs and Adjusted R^2	13375	0.55	13375	0.55	5654	0.55	3281	0.51	3010	0.64

Table 5. Determinants of Loan Yield Spreads – Treatment Effect Analysis

Definitions of all variables are provided in the Appendix. The dependent variable is the all-in-drawn loan yield spread, and the analysis is conducted at the loan facility level. Columns (1) and (2) employ the subsamples of loan facilities that have II participation and II major participation, respectively. In column (2), we also require the dual-holder to be a major participant in the loan syndicate. All specifications are estimated by treatment regressions with year fixed effects. *inst* and *amihud* serve as instruments. The t-statistics are based on standard errors clustered at the firm level.

	(1) II Participation		(2) II Major Participation	
	coef	t-stat	coef	t-stat
dual-holder	-54.576	-4.42	-48.509	-2.83
Facilityamt	-12.347	-7.77	-10.974	-4.93
Maturity	-0.693	-0.32	-3.757	-1.17
Secured	58.573	14.49	62.821	10.58
Missingsecured	20.731	5.47	27.920	4.75
Revolver	-66.775	-22.37	-72.399	-17.73
Lbotakeover	34.755	10.68	35.974	7.95
Numlender	-15.511	-7.24	-17.181	-6.01
Assets	4.345	2.35	6.319	2.37
b2m	5.585	3.11	2.532	1.06
Growth	-3.889	-1.67	-8.552	-2.93
Herfindahl	7.284	1.53	6.126	0.87
Stkretindadj	-210.900	-7.03	-212.987	-5.22
Altman	-5.862	-9.62	-5.361	-6.31
Sprate	9.055	14.52	10.070	11.24
Notsprated	126.065	13.14	153.723	10.76
Analyst	-11.064	-5.69	-10.759	-3.85
Stkvol	329.796	15.89	341.267	12.03
sp500	21.435	4.70	13.995	2.17
Exogeneity test:				
ρ	0.29		0.21	
λ	26.18	7.3	20.41	10.10
#obs	5654		3281	

Table 6. Debt and Equity Investment Horizons of Dual-Holders

Panel A compares the total number of loan facilities (or the total dollar amount of these facilities) that the same lender participates before and after the current loan deal date, scaled by the borrower's total number (amount) of newly initiated loans during the same period, between dual-holders and non dual-holders. The 2006 deals are excluded from the post-period calculation. Panel B reports the investment horizon (in quarters) between the first time that a dual-holder's quarter-end equity position in the company rises to be significant ($2 million or $5 million in the case of borrowers' parent firm in 2006 dollars or 1% of the borrowing firm) and the loan deal date, between the loan deal date and the first time that the same institution's quarter-end position falls below to be significant, and the total duration. Panel C compares the equity investment horizon by the dual-holders in the borrowers vis-à-vis the same institutions' holdings in a similar company (matched by industry and market capitalization) with no concurrent lending relationship.

Panel A: Debt Investment Horizons – Comparison of Lending Relations between Borrowers and Creditors

	Dual-Holders	Non-Dual-Holders	Difference	t-stat
Prior #Deals	0.420	0.386	-0.034	-4.77
Prior Amount	0.455	0.419	-0.036	-4.97
Post #Deals (Ex. 2006 loans)	0.710	0.568	-0.142	-20.38
Post Amount (Ex. 2006 loans)	0.709	0.568	-0.141	-19.02

Panel B. Equity Investment Horizon in the Borrower by Dual-Holders

	25th percentile	median	75th percentile	mean
Before Loan Deal	8	20	33	23.439
After Loan Deal	6	12	21	15.255
Total Holding Period	14	31	41	32.306

Panel C. Comparison of Equity Investment Horizon by Dual-Holders

	Creditors	Non-Creditors	Difference	t-stat
Before Loan Deal	23.439	20.764	-2.68	-8.78
After Loan Deal	15.255	14.458	-0.80	-4.71
Total Holding Period	32.306	28.600	-3.71	-12.85

Table 7. The Before-After Changes in Borrowers' Credit Quality

This table examines the difference in various credit quality measures between new loan-receiving companies (with and without dual-holders) and comparable companies. Comparable companies are drawn from the universe of companies that ever appear in the DealScan database from 1981 to 2007, and are matched based on the same year, same industry, and similar size. Also reported are the differences-in-differences of each type of borrowers across time, and that between the two types of borrowers. The time horizon is from two years before the loan origination year (t-2) to two years afterwards (t+2). Standard errors are clustered at the firm level. The credit quality measures in Panels A to C are the Altman Z-score, the modified Altman Z-score excluding the leverage component, and stock return idiosyncratic volatility (from a Fama-French three-factor model), respectively. The number of observations is 43,330. In Panel D, the dependent variable is the spread on the credit default swaps (five-year standard contract), in logarithm. The data spans from 2001 to 2006, and the number of observations is 2,322.

Panel A: Altman Z-scores

	(1) Loans w/ Dual-Holders		(2) Other Loans		(1) - (2)	
	Difference	t-stat	Difference	t-stat	Dif-in-Dif	t-stat
t-2	-0.621	-5.00	0.037	0.97	-0.657	-5.19
t-1	-0.712	-5.22	0.008	0.19	-0.720	-5.29
T	-1.063	-8.22	-0.386	-8.78	-0.677	-5.28
t+1	-1.107	-7.88	-0.581	-13.14	-0.526	-3.77
t+2	-0.955	-6.78	-0.530	-13.72	-0.424	-2.99
Dif-in-Dif: (t+2) - t	0.108	0.55	-0.144	-2.44		
Dif-in-Dif: (t+2)-(t-2)	-0.334	-1.82	-0.567	-10.74		

Panel B: Altman Z-scores Excluding Leverage

	(1) Loans w/ Dual-Holders		(2) Other Loans		(1) - (2)	
	Difference	t-stat	Difference	t-stat	Dif-in-Dif	t-stat
t-2	-0.020	-0.40	0.136	7.71	-0.156	-3.03
t-1	0.018	0.32	0.164	7.94	-0.146	-2.59
T	-0.096	-1.69	0.062	2.86	-0.158	-2.81
t+1	-0.096	-1.52	0.036	1.57	-0.132	-2.11
t+2	-0.080	-1.34	0.021	1.05	-0.102	-1.68
Dif-in-Dif: (t+2) - t	0.015	0.18	-0.041	-1.36		
Dif-in-Dif: (t+2)-(t-2)	-0.060	-0.78	-0.115	-4.37		

Panel C: Stock Return Idiosyncratic Volatility

	(1) Loans w/ Dual-Holders		(2) Other Loans		(1) - (2)	
	Difference	t-stat	Difference	t-stat	Dif-in-Dif	t-stat
t-2	-0.375%	-0.44	-2.144%	-7.34	1.769%	2.01
t-1	-0.314%	-0.42	-1.968%	-6.44	1.653%	2.14
T	0.614%	0.92	-1.033%	-3.37	1.647%	2.39
t+1	1.377%	1.89	-0.712%	-2.24	2.089%	2.84
t+2	1.398%	2.00	-0.003%	-0.01	1.401%	1.93
Dif-in-Dif: (t+2) - t	0.784%	0.79	1.030%	2.30		
Dif-in-Dif: (t+2)-(t-2)	1.773%	1.65	2.141%	5.05		

Panel D: Spread on Credit Default Swaps

	(1) Loans w/ Dual-Holders		(2) Other Loans		(1) - (2)	
	Difference	t-stat	Difference	t-stat	Dif-in-Dif	t-stat
t-2	0.245	2.44	-0.039	-0.47	0.296	2.36
t-1	0.295	3.27	0.093	1.17	0.201	2.04
T	0.234	3.15	0.138	1.88	0.109	1.24
t+1	0.231	3.30	0.109	1.69	0.132	1.62
t+2	0.116	1.64	0.152	2.77	-0.032	-0.37
Dif-in-Dif: (t+2) - t	-0.118	-1.15	0.014	0.15		
Dif-in-Dif: (t+2)-(t-2)	-0.129	-1.01	0.191	2.05		