

# When Shareholders Are Creditors: Effects of the Simultaneous Holding of Equity and Debt by Institutional Investors<sup>\*</sup>

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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 non-bank institutional investors (“dual holders”). The presence of dual holders offers a unique opportunity to assess the existence and magnitude of shareholder-creditor conflicts. We find that syndicated loans with dual holder participation have loan yield spreads that are 13-20 basis points lower than those without. The difference is even greater after controlling for the selection effect. Further investigation of dual holders’ investment horizons and changes in borrowers’ credit quality lends support to the hypothesis that incentive alignment between shareholders and creditors plays an important role in lowering loan yield spreads.

**Keywords:** shareholder-creditor conflicts; dual holding; institutional investors; syndicated loans; credit quality

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The objectives of shareholders and creditors often diverge. As has been 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 responsibility to shareholders, may take actions that maximize stockholder wealth rather than the total value of the firm. 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 non-bank institutional investors (who are traditionally shareholders) in the syndicated loan market (which is traditionally the exclusive territory of commercial banks) raises this 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 seeks to fill this void.

Dual holding offers a unique angle to explore the effect of shareholder-creditor conflicts in corporate finance, and allows us to test the following two hypotheses. Dual holders should, at least partially, internalize the conflicts between the two roles (shareholder and creditor) they assume. Hence, their presence should mitigate the conflict described above and lead to lower borrowing costs (the “incentive alignment hypothesis”). Alternatively, dual holders may possess better information due to their involvement on both the debt and the equity sides. Therefore, they are able to selectively participate in loans issued by firms with better credit quality (the “information hypothesis”). Both hypotheses predict a negative correlation between loan yield spreads and the presence of dual holders, albeit for different reasons. The focus of our empirical analysis is to assess the relative importance of the two hypotheses.

Using data on syndicated loans for the period 1996-2006 and additional information about borrowing firms and their institutional investors, we document a rising trend in the participation of institutional investors (other than commercial banks) in the syndicated loan market, and a similar trend of 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 of dual holding have commonalities as well as dissimilarities.

We find that institutional investors tend to participate in loans issued by risky borrowers (such as those with high book-to-market, high leverage, poor credit ratings, poor recent stock performance, and high return volatility) and/or for risky purposes (such as LBOs and takeovers). Such a preference for debt is in stark contrast to their general preference for “prudent” investment on the equity side. In fact, they lend to companies that have lower institutional ownership and lower analyst coverage. Not surprisingly, loans with institutional investor participation tend to command a higher loan yield spread. Dual holders, on the other hand, do not exhibit a preference for risky loans and tend to lend to firms after favorable stock returns.

Next, we demonstrate that syndicated loans with dual holders are associated with lower loan yield spreads (by 13 to 20 basis points) as compared to other loans from institutional investors who are not shareholders of the same company. The negative relation remains in the presence of firm fixed effects, and is, therefore, not driven by firm-specific heterogeneity. These results are consistent with both the incentive alignment and the information hypotheses. Thus, we implement additional tests to disentangle the two.

We first apply a two-stage instrumental variable approach to separate a treatment effect from a selection effect of dual holders. The procedure yields a stronger negative correlation between the loan yield spreads and the presence of dual holders, implying that loans involving dual holders are riskier at the point of origination conditional on observable firm and loan characteristics consistent with an allocation of inherently riskier loans to investors who are best positioned to monitor. Second, we find that dual holders exhibit longer investment horizons on both the debt and the equity sides, both before and after the current loan deal. They have a stronger lending relationship with borrowing firms than pure creditors and they hold equity stakes for a longer time than pure shareholders. The longer investment horizon suggests a more favorable benefit-cost trade-off for dual holders to monitor corporate managers and/or other shareholders to prevent them from expropriating creditors.

Finally, we analyze the changes in borrowers’ credit quality and operating performance around loan origination. We determine that companies with dual holders, though riskier before the new loans, experience less borrower risk-shifting and less deterioration in return on equity after assuming the new loans. Proprietary data on credit default swaps (CDSs) allows us to further distinguish the two hypotheses in that CDS prices reflect forward-looking and aggregate information possessed by all market participants (mostly sophisticated institutional investors

including active investors of syndicated loans). Borrowers with dual holders typically have higher default spreads (i.e., riskier debt) during the years prior to loan origination, but not afterward. Thus, if the lower spreads are attributable to dual holders' superior information, then it must be because that information is not yet reflected in the current CDS pricing, or it is unavailable to all CDS market participants, a highly unlikely scenario. In summary, the cumulative evidence in our paper points to a significant effect of dual holders on loan yield spreads due to incentive alignment.

Our paper contributes to several strands of the literature. First, while prior research quantifies shareholder-creditor conflicts in specific corporate events such as LBOs (Asquith and Wizman, 1990; Warga and Welch, 1993), mergers and acquisitions (Billett, King, and Mauer, 2004), and spin-offs (Maxwell and Rao, 2003), this paper provides a direct test of the presence and magnitude of the conflicts of interest between shareholders and creditors during regular financing activities.

Second, this paper adds to the sizeable literature on institutional monitoring demonstrating that certain types of institutional investors are able to exert influence on important corporate decisions, such as mergers and acquisitions (Gaspar, Massa, and Matos, 2005; Chen, Harford, and Li, 2007), and CEO compensation and turnover (Hartzell and Starks, 2003; Parrino, Sias, and Starks, 2003). In this paper, we identify dual holders as emergent and important types of monitors for the opportunistic behavior of shareholders against creditors.

Our piece is closely related to several recent papers that examine the correlation between loan pricing and the extent of connectedness between lending banks and borrowing companies. Santos and Wilson (2007) confirm that banks charge lower rates and impose fewer restrictions on loans to firms in which they have a voting stake, suggesting that banks' controlling stakes in borrowing firms are effective in constraining the latter's risk-shifting incentives. Using data on global syndicated loans, Ferreira and Matos (2009) indicate that bank-firm connections (board representation and direct or indirect equity ownership) increase the banks' chance of being selected as a lead arranger in loan syndication and adversely affect the loan yield spreads. Moreover, firms borrowing from connected banks experience a reduction in credit risk after assuming the loan.

Our paper differs from, as well as complements, the aforementioned papers along the following dimensions. First and foremost, we examine dual holdings by institutional investors

that are not the traditional lenders (i.e., commercial banks), while the previously referenced papers focus on the relationship between banks and borrowers. Second, our focus is on testing the conflicts of interest between shareholders and creditors that arise in the normal course of business, and differentiating the incentive alignment from the information effect. Finally, we explore research questions that have not been previously addressed, such as the characteristics of firms and loans that attract dual holders and the extent of the interaction between dual holders and their invested companies.

The outline of the paper is as follows. Section I 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 institutional participation and dual holding as well as the correlation between the presence of dual holders and loan pricing. Section IV differentiates the two hypotheses regarding the relationship between dual holding and loan yield spreads. Finally, Section V summarizes findings and concludes.

## **I. Hypothesis Development**

According to Jensen and Meckling (1976) and Myers (1977), creditors need to be wary of 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 creditors are entitled. In particular, shareholders have an incentive to increase firm risk or to divert assets after leverage increases. Although creditors could protect themselves from such opportunistic behavior by adding provisions to loan contracts and engaging in covenant monitoring, such protections are far from perfect (Dichev and Skinner, 2002; Chava and Roberts, 2008). As a result, the risk of expropriation is expected to be reflected in the borrowing costs.

The simultaneous holding of equity and debt in the same firm by the same institutional investors offers a unique venue to entertain two hypotheses regarding the conflicts between shareholders and creditors. The first is the incentive alignment hypothesis. Shareholders who are also creditors have an incentive to monitor and prevent managers and/or other large shareholders from taking actions that expropriate creditors because they internalize (at least partially) the cost to creditors arising from the opportunistic behavior of shareholders. Therefore, if shareholder-creditor 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. The above hypothesis leads to two related predictions. First, dual holders tend to have longer investment horizons in the invested company, permitting a more favorable amortization of their monitoring costs. Second, companies borrowing from dual holders should experience less borrower risk-shifting after receiving the new loan than those borrowing from a syndicate without dual holders.

Our second hypothesis of interest is the information hypothesis. Being involved in both equity and debt may provide dual holders an informational edge allowing them to select borrowing firms that are of lower default risk which, in turn, carry lower loan yield spreads. On the equity side, institutions with significant equity stakes are likely to be more informed than other shareholders due to their research efforts and better access to managers.<sup>1</sup> On the debt side, syndicated loans are private financing arrangements through which confidential information about the issuing firm is revealed to lenders.<sup>2</sup> Collectively, dual holders could potentially possess superior information and may be able to seek out companies with better credit quality. As a result, borrowers with dual holders could be associated with lower costs of debt conditional upon observable firm and loan characteristics.

## **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, respectively. Our sample starts in 1996 since there were virtually no dual holders before that time. Syndicated loans are becoming a large and increasingly important source of corporate finance. The ratio of total syndicated loans at origination to total debt outstanding by Compustat companies varies from 5.1% to 9.8% during 1996-2006 with a 7.0% sample period average.

We rely on syndicated loans, rather than corporate bonds, as debt instruments due to the following considerations. First, syndicated loans suit the purpose of our study better than bonds. Amihud, Garbade, and Kahan (1999) argue that when compared to loans, owners of corporate bonds are both more dispersed and fluid, and, therefore, are less likely to engage in monitoring. Syndicated loans, lying somewhere between relational private bank loans and dispersed public debt, require a significant amount of monitoring from syndicate members (Sufi, 2007). Second,

the data on syndicated loans is of superior quality and available since the mid-1980s. Finance researchers have employed the syndicated loan data to address important corporate finance questions, such as the role of information asymmetry in financing arrangements (Sufi, 2007), financing and investment (Chava and Roberts, 2008), and lending relationship and loan contracting (Drucker and Puri, 2008).

To gauge the specificity of the syndicated loan receiving companies, we compare the main characteristics of our sample firms to those of the bond issuing companies and the universe of public companies.<sup>3</sup> When compared to all publicly traded companies, syndicated loan receiving companies are larger, more levered, have lower book-to-market, lower Altman Z-scores, and higher institutional equity ownership and analyst coverage. Firms that issue public bonds differ from the typical public firm in the same direction as syndicated loan receiving companies, but to an even greater extent. Therefore, firms issuing syndicated loans are relatively more representative of the population of public firms than those issuing bonds. A concurrent paper by Manconi and Massa (2009) conducts detailed analyses on the joint holding of equity and corporate bonds in the same firm by institutional investors.

Syndicated loans are usually awarded through a bidding process. The winning arrangers prepare a memo describing the proposed terms of the transaction including pricing, structure, covenants, and collateral. While preparing the information memo, the arrangers solicit informal feedback from potential investors on their interest in the deal, especially in terms of pricing and investment commitment. Once the feedback is incorporated, the arrangers formally market the deal to investors in general. Throughout this process, members of the syndicate can express their preferences on the terms of the transaction.<sup>4</sup>

The initial Dealscan data consists of 67,871 U.S. loan facilities from 1996-2006. We screen the data using the following criteria: 1) the all-in-drawn spread is not missing; 2) LIBOR is the base rate;<sup>5</sup> 3) we exclude bankers acceptance, bridge loans, leases, loan style floating rate notes, standby letters of credit, step payment leases, bonds, notes, guidance lines, traded letters of credit, multi-option facilities, and other or undisclosed loans. The above screening process leaves us with a sample of 48,389 loan facilities associated with 33,260 loan deals. Our analysis is conducted at the loan facility level as the loan-lender relationship is facility specific.<sup>6</sup> That is, within the same loan deal, members of the syndicate may hold different percentages of shares of each facility or participate in a subset of the loan facilities.

We then carefully match the borrowers and/or the borrower's parent name to CRSP/Compustat by a combination of algorithmic matching and manual checking. This match leaves us with a sample of 20,372 loan facilities associated with 14,501 loan deals and 4,249 borrowers that are public companies. These loan facilities are funded by 165,665 facility lenders.

To identify dual holders, we next 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 regarding these lenders' simultaneous holding 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 institutional investors that are not commercial banks. Commercial banks ("banks" hereafter) 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.<sup>7</sup> For brevity, we refer to the non-bank institutions as "institutional investors" or simply "IIs."

For a loan to have non-bank lenders who are also shareholders in the same company (i.e., dual holders), we require that: 1) at least one non-bank 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 non-bank lender must hold at least 1% of the borrower's common stock 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 1,562 loan facilities with dual holders in the lending syndicate out of the 20,372 observations.<sup>8</sup>

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 10,486 loan facilities associated with 7,578 loan deals and 2,589 borrowers.<sup>9</sup> Non-bank dual holders are present in 1,156 loan facilities associated with 870 loan deals and 378 borrowers. The mean (median) equity ownership by a dual holder in our sample is 0.67% (0.20%), or \$119 million (\$17.2 million).<sup>10</sup> The mean (median) loan subscription by a dual holder is 8.69% (6.56%) of the facility, or \$50.1 million (\$30 million). The vast majority of dual holders in our sample (75.2%) already hold significant equity positions in the quarter prior to the first time they ever lend to the same company.



A necessary condition for the presence of dual holders as defined above is the participation of non-bank IIs 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 non-bank lender is involved in the lending syndicate. The sample has 5,154 loan facilities. We define the “II major participation subsample” as the set of facilities where at least one non-bank lender is a major participant of the lending syndicate. The sample has 3,104 loan facilities.<sup>11</sup> For consistency, the dual holders in this subsample are limited to dual holders that are also a major participant of the lending syndicate.

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

Insert Table 1 about here.

In our sample, the average loan spread relative to LIBOR is 172.7 basis points (bps) and the median loan spread is 150 bps. Approximately half of the loan facilities have non-bank IIs as members of the lending syndicate (II participation), and about a quarter of these facilities have at least one major member of the syndicate who is a non-bank II (II major participation). Most interestingly, in 11% of the loan facilities, the non-bank lending institutions are also significant shareholders (dual holders) of the borrowing company. The sample average facility amount is \$366 million in 2006 dollars and the average maturity is 46.3 months. About half of the loans are secured.<sup>12</sup> Over three-quarters of the loans in our sample are revolvers, and about a fifth of the loans are taken out for the risky purposes of either LBOs or takeovers. The average (median) number of lenders involved in a lending syndicate is 8.4 (6.0).

## **B. Participation of Non-bank 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 non-bank II participation in loan syndication that traditionally was the exclusive territory of banks. Figure 1 plots the time series of II participation and II major participation in the syndicated loan market in terms of both the percentage of the total number of loan facilities and the percentage of the total face value of loan facilities. To facilitate comparison, the graph starts at 1987, the first year when the total

number of loans with complete information in DealScan exceeded 100. Our regression analysis will be confined to the 1996-2006 period to be consistent with the fact that dual holding has been a new phenomenon since 1996.

Insert Figure 1 about here.

Figure 1 documents that II participation in the syndicated loans displays an overall increasing trend with a steep rise right after 1996. Several institutional developments might have fueled this spurt. In 1995, loans were first rated by the S&P, and a trade association for syndicated lenders, the Loan Syndications and Trading Association (LSTA), was established. In 1999, the repeal of the Glass-Steagall Act of 1933 further blurred the regulatory division between commercial banking and other financial services.

Moreover, loan facilities with II participation, measured in terms of the fraction of the total face value of loan facilities, are typically larger than when measured in terms of the fraction of the total number of loan facilities. In 1996, over 20% of the facilities had II participation, and, in about half of them, IIs played a major role. By the end of 2006, about 65% (42%) of the facilities had II (major) participation. In value-weighted terms, the percentage was even higher at 74% (50%). These IIs have contributed to the market of “leveraged loans” (i.e., loans with the initial loan yield spread at least 250 basis points above LIBOR and issued by firms with credit ratings below BBB according to the LPC) as they are more willing to extend loans to riskier borrowers or for riskier purposes than traditional bank lenders. In our sample, 54.8% of the II-participated loans are leveraged loans.

Syndicated loans are a highly concentrated business. During our sample period (1996-2006), the top five lenders participate in 75.6% of all syndicated loans. Similar levels of concentration transcend to non-bank lenders where the top five participate in 79.4% of all non-bank lender involved loans (representing 50.7% of all syndicated loans). Most of these IIs are investment banks. Other players include insurance companies, investment advisors, and other proprietary investors. Similarly, eight out of the top ten dual holders (ranked by the total amount of loan facilities) in Table 2 are investment banks. The top three are Credit Suisse First Boston, Lehman Brothers, and Merrill Lynch. The top five players participate in 87.8% of all loans that involve dual holders.

Insert Table 2 about here.

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 3. 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 3 about 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 high leverage, high book-to-market, high growth, 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 (Del Guercio, 1996; Gompers and Metrick, 2001), Column (1) of Table 3 indicates that institutional lenders prefer borrowers with exactly the opposite characteristics (the coefficients on the S&P long-term credit rating, analyst coverage, and stock return volatility are all significant at least at the 5% level). The determinants of II major participation in syndicated loans [Column (2)] are similar to those for II participation. Our evidence is consistent with

Carey, Post, and Sharpe's (1998) finding that non-bank lenders tend to serve observably riskier borrowers.

IIs' preference for risky loans and borrowers, though at odds with their "prudent" tastes for equity investment, reflects their traditional role as equity investors. In other words, the debt in which IIs invest tends to exhibit more "equity-like" features. Presumably lenders in such loan deals are more vulnerable to the ex post expropriation by shareholders. If these IIs are also shareholders in the same company, the agency problem of risky debt should be alleviated, at least to some extent, and be reflected in the cost of borrowing. This is an issue that we analyze next.

### **C. Simultaneous Holding of Debt and Equity by Non-bank Institutional Investors**

The rising trend of these IIs participating in syndicated loans (see Figure 1) leads to an increasing occurrence of IIs' 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 the total number of II-participated loan facilities and the fraction of the total face value of II-participated loan facilities.

Insert Figure 2 about here.

Figure 2 indicates that the simultaneous holding of equity and debt by IIs, while virtually non-existent prior to 1996, 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). For this reason, our statistical analysis will focus on the 1996-2006 period. At the peak of 2001, loans that have dual holder participation account for 22% of all II-participated loan facilities, and 44% in value-weighted terms. The increasing trend has flattened out since 2001, but dual holder participated loans remain at relatively high levels (above 10% in 2006 and close to 20% in all other years). Alternatively, the size of such loans has decreased since 2001. As a result, the value-weighted shares of these loans have decreased from 44% to about 20% 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 4 reports these findings. Column (1) examines the determinants of dual holding using the full sample. We demonstrate that dual holders are more

likely to be associated with unsecured loans with longer maturities and larger lending syndicates. Borrower characteristics are generally in line with IIs' preference for equity investment. Dual holders target large companies that have enjoyed rapid revenue growth, positive excess stock returns, greater analyst coverage, and higher liquidity. Moreover, dual holders tend to invest in the S&P 500 firms.

Insert Table 4 about here.

Given that non-bank 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 non-bank IIs participate and have a major presence, respectively. Dual holding increases from 11% in the full sample to 22% in the II participation subsample and 23% in the II major participation subsample. Results overall are 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 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 IIs' preferences for secured loans (as shown by the significant and positive coefficient on *secured* in Table 3). When compared to IIs without any equity investment in the borrowing company, dual holders are 6.7 percentage points in probability more likely to take an unsecured loan (versus a secured loan) (see Column (2) of Table 4). Nandy and Shao (2007) document that institutional loans are largely collateralized loans in order to meet IIs' investment objectives and constraints, but loans funded by dual holders turn out to be quite different. If collaterals serve to protect against ex post agency costs due to borrowers' opportunistic behavior, this contrast suggests that dual holders might be able to mitigate such agency costs in the absence of collaterals.

### **III. Pricing of Loan Facilities Financed by Non-bank Institutional Shareholders**

#### **A. Dual Holders and Loan Pricing: Overview**

The focus of our research is on the effects of shareholder-turned creditors on the loan deal and on the borrowing company. Naturally, the first question is the effect of dual holding on

the loan yield spread. We run regressions with the loan yield spread as the dependent variable, and focus on the coefficient on the indicator variable for the presence of dual holders, *dual holder*. The regressions employ the same set of control variables used in Table 4.

As we mentioned before, the necessary condition for dual holding is II participation in loan syndication. Table 3 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 an indicator variable for II participation or II major participation for the full sample analysis. Results are reported in Columns (1) and (2) of Table 5.

Insert Table 5 about here.

In Column (1), the coefficient on the indicator variable for the presence of dual holders is 19.6 bps (significant at the 1% level) suggesting that with everything else being 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 savings of \$295,960 in interest payments (= \$151 million  $\times$  19.6 bps). This finding 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 in which they are also lenders, Santos and Wilson (2007) indicate that banks charge lower rates on loans when they also have voting stakes. Ferreira and Matos (2009) find that the positive correlation between connectedness and loan pricing is absent when banks are direct shareholders of the borrowers.

Alternatively, we demonstrate that institutional participation in loan syndication is associated with significantly higher spreads (35.8 bps according to our model specification).<sup>13</sup> The relationship between loan pricing and loan/borrower characteristics is intuitive and consistent with the literature regarding loan spread determination (Stulz and Johnson, 1985; Dennis, Nandy, and Sharpe, 2000). Large and revolving loans are associated with lower spreads, while secured loans and loans for risky purposes (LBOs and takeovers) have higher spreads.<sup>14</sup> Loans with a large lending syndicate are associated with lower spreads. In terms of borrower characteristics, firms with high leverage have to pay more to borrow, while high market-to-book firms enjoy lower spreads. Prior-year stock performance contributes to lower spreads as the rising market value of equity implies lowered leverage. Firms with lower bankruptcy risk, as

summarized in the (high) Altman Z-score excluding leverage (whereas leverage is included as a separate regressor) 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.

Given that II participation is a necessary condition for dual holding, we report the loan yield spreads regression on the subsample conditional on II participation in Column (3). Within this subsample, loans where some of the II lenders are also shareholders in the borrowing firm have spreads that are 12.8 bps lower (significant at the 1% level).

Parallel to Columns (1) and (3), we assess the effect of dual holders as major syndicate participants (see Footnote 11 for definition) in Columns (2) and (4). We replace the regressor *II participation* with *II major participation*. Accordingly, the indicator variable *dual holder* is refined to make sure that at least one dual holder in the syndicate is also a major participant. Again, the coefficients on the indicator variable *dual holder* in both columns are significant (at the 1% level) and take the value of 14.7 and 18.6 bps, respectively.

Results in Table 5 suggest that having some shareholders simultaneously serve as creditors is associated with lower loan yield spreads. The interpretation of a causal effect is subject to the usual challenge of separating a treatment effect from a selection effect.<sup>15</sup> 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 leading to lower loan yield spreads (the treatment effect). Alternatively, if shareholders are more likely to become lenders when the loan is riskier (safer) due to the loan-deal heterogeneity observable to participating IIs, 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 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 firms. Out of our sample of 10,486 loan facilities, 2,349 facilities are taken out by the S&P 500 firms, 761 of which involve dual holders. Untabulated analysis shows that the

coefficient on *dual holder* is 15.3 bps (significant at the 1% level), indicating a significant and negative correlation between the presence of dual holders and loan yield spreads on a subsample with a relatively low level of information asymmetry. Moreover, the difference between this coefficient and the coefficients on *dual holder* from Columns (1) to (4) is not statistically significant using a two sample t-test.

To further examine the effect of the (relative) size of dual holders' equity stakes, we replace the indicator variable *dual holder* with measures of dual holders' influence as shareholders versus their influence as creditors. First, we use the total equity ownership by all dual holders in a borrower. Second, we create an indicator variable to flag cases where the total equity ownership by all dual holders in a borrower exceeds 5%. Third, we compute the ratio of total equity ownership by all dual holders in a borrower (in either dollar amounts or as a percentage) to their aggregate share of loan subscriptions measured in similar ways. In all cases, we find results consistent with those from our main specification; that is, higher equity holding by creditors is associated with lower costs of borrowing. Finally, we introduce an indicator variable for the presence of multiple dual holders, in addition to the indicator variable *dual holder*, and find that multiple dual holders do not change our findings qualitatively conditional on the presence of any dual holder.

## **B. Dual Holders and Stringency of Loan Covenants**

So far, we have not considered another 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.<sup>16</sup> For simplicity, we construct a summary indicator variable, *covenant*, equal to one if there is at least one financial covenant in the loan contract, and zero 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 0.14 indicating that firms with lower credit quality are subject not only to higher interest rates, but also to more disciplinary constraints. However, in unreported analysis, when we add other variables in Table 5 as controls, the marginal effect of *covenant* on loan yield spreads becomes -



9.1 bps (significant at the 1% level). This negative relationship 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 3,350 loan facilities. Following the method used in Chava and Roberts (2008) 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 by the loan contract normalized by the borrower's total assets. The correlation between the indicator variable *dual holder* and the maximum of the two slack variables is weakly negative (-0.05); however, the correlation with the minimum of the two slack variables is very similar. In an untabulated regression of any of the two slack variables (or the maximum/minimum of them) on *dual holder* and other control variables used in Table 5, 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 Two-Stage 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:

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

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  $\delta$ , in front of the indicator variable *dual holder*. *dual holder*<sup>\*</sup> 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  $corr(\varepsilon, \omega) \neq 0$ . A positive (negative) association indicates that loans financed by shareholders are riskier (safer) based on unobservable heterogeneity. Thus, an estimate for  $\delta$  are upward (downward) biased if the endogeneity is not properly accounted for.

If the endogeneity of the residual,  $\omega$ , is associated with a firm-specific, but time-invariant component in  $\varepsilon$ , that is, if  $\varepsilon_{i,t} = \theta_i + v_{i,t}$ , and  $corr(\theta, \omega) \neq 0$ , but  $corr(v, \omega) = 0$ , then  $\delta$  in Equation (1) could be consistently estimated using the conventional linear regressions with firm fixed effects provided that there is within-firm variation in the indicator variable *dual holder* (a condition which is satisfied). Panel B of Table 5 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 typically 10-15 bps lower than a similar loan of the same firm without dual holder participation. The magnitude is comparable to that reported in Panel A, and is statistically significant at the 5% level except for one specification. The significant result also holds for the subsample of the S&P 500 firms (untabulated). The consistency in the results between the two panels of Table 5 suggests that the negative association between the presence of dual holders and loan yield 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 apply a variant of the two-stage least squares (2SLS) method that accommodates an endogenous indicator variable.<sup>17</sup> Moreover, we realize that both *II (major) participation* and *dual holder* could be potentially endogenous (in Column (1) and (2) of Table 5). However, we are not able to come up with two different sets of instrumental variables to separate the effect of *II (major) participation* from that of the presence of dual holders in the full sample.<sup>18</sup> For this reason, we focus on the subsamples conditional on *II (major) participation*, and the results regarding dual holding loans should be interpreted as relative to other loans with *II (major) participation*.

Our choice of the instrumental variable is theoretically as well as econometrically driven. Trading liquidity is a key determinant for institutional equity ownership, and has explanatory power for the presence of dual holders conditional upon *II participation*. In contrast, the liquidity related 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 loan pricing through the effect of equity holding (which, combined with II (major) participation in the loan, becomes dual holding). Indeed, Columns (3) and (4) of Table 5 show that *amihud* (the Amihud (2002) illiquidity measure) is far from being a significant determinant of loan yield spreads when the presence of dual holders is controlled for.

The literature has documented that stock trading liquidity is positively correlated with past returns which, in turn, affect dual holder participation (see Table 4). To disentangle liquidity from momentum, we use the residual of *amihud* from its projection on *stkretindadj* (industry-adjusted stock returns), instead of the original *amihud* measure, as our instrumental variable for dual holders. The identification relies on both the instrument and the non-linearity of the propensity of dual holding.

The results from estimating Equation (1) using the two-stage regression method on the two subsamples of II participated and II major participated loans are reported in Table 6. The coefficient on *dual holder* captures the effect of the presence of at least one dual holder on the loan yield spread, taking into account the possible selection of loan deals by the dual holder. The magnitude of the effect is now in the 84-100 bps range (significant at the 1% level), which is much larger than that of the coefficients in Table 5 without controlling for the selection effect. Such a difference indicates that  $\rho = \text{corr}(\varepsilon, \omega) > 0$ , where  $\varepsilon$  and  $\omega$  are disturbances in loan yield spreads and in the propensity of the presence of dual holders, respectively, as specified in Equation (1). Using the Stock-Yogo (2005) test for weak instruments, we reject the null hypothesis that the instrument is weakly correlated with the endogenous regressor (i.e., the indicator variable *dual holder*). The Wald statistics for both subsamples exceed the critical values at less than the 1% level. The exogeneity test rejects the null hypothesis that  $\rho = 0$  at the 1% level.

Insert Table 6 about here.

Results in Table 6 indicate that there is a selection effect associated with dual holding. In the sample of loans with II participation, dual holders tend to select loans that are riskier conditional on observable loan and borrower characteristics. That is, these loans would otherwise

command even *higher* yield spreads (after controlling for observable characteristics) had there been no involvement of dual holders. To the extent that the instrumental variable is valid, such a selection effect makes the interpretation of a causal effect stronger as it renders the effect of *dual holder* under-estimated using an OLS regression (as in Table 5). It provides further support for the incentive alignment hypothesis in that dual holders should be expected to hold risky loans that are most vulnerable to the agency costs of debt.

Given that the practice of dual holding is dominated by a handful of players, we conduct the following robustness checks to ensure that the effects documented in Table 6 are not due to idiosyncratic behaviors of a few institutions. First, we repeat the regression by eliminating the top five dual holders one at a time. Second, we add the dual holder fixed effects to the same specification. Finally, some institutions (such as JP Morgan Chase), though classified as non-bank by the SIC code and the 13F institutions type code, have commercial banking operations within the firm. We repeat the regression by declassifying all such dual holders (reducing the number of dual holders by 12.9% and the number of dual holding loans by 7.4%). This additional filtering ensures that our results are distinct from the phenomenon of universal banking (especially after the repeal of the Glass-Steagall Act in 1999), where one financial institution engages in both commercial banking and other areas of financial services. Results are qualitatively the same under all these variations.

We acknowledge that the validity of the above results rely on the choice of the instrumental variable. 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 question: Are the lower loan yield spreads associated with the presence of dual holders justified by the improvement in the borrowers' credit quality and operating performance after loan origination?

## **IV. Explaining the Effects of Dual Holders**

### **A. Investment Horizons of Dual Holders**

The incentive alignment hypothesis (or the treatment effect) posits that dual holders have the incentive to align the interest between shareholders and debt holders. Such an incentive should be stronger if the dual holders have a relatively long horizon in the firm both as lenders and shareholders. Prior literature has associated a longer investment horizon with a higher propensity for monitoring. For example, Gaspar et al. (2005) conclude that IIs with low turnover

portfolios are more likely to exert influence on corporate acquisition decisions. Chen, Harford, and Li (2007) report that longer horizons make 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 to hold significant stakes longer in the target company when they launch aggressive activism.

While the literature has focused on investment horizons on the equity side, for dual holders, the same issue is applicable from both the debt and the equity sides. At a first glance, Tables 3 and 4 indicate that loans with longer maturity are indeed more likely to be financed by IIs and dual holders, respectively. Additional evidence regarding dual holders' interaction with the borrowing company as lenders is provided in Table 7 Panel A. We compare the intensity of the lending 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. Since 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.

Insert Table 7 about here.

Results in Panel A of Table 7 demonstrate that before the current loan deal date, dual holders in the current facility generally participate in 42.0% of all the loans issued by the same company. The same measure for non-dual holders is 38.6%. In the post-deal period (up to February 2007 and excluding loans made in 2006), the intensity measure takes the value of 71.0% of all the loans issued by the same company for dual holders versus 56.8% 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.

Another measure of the II investment horizon in syndicated loans is the sale of loans by the syndicate members to the secondary market. According to the LPC, U.S. corporations in 2007 raised about \$1.89 trillion through loan syndication. After syndication, loans are traded in a rapidly growing secondary market. The U.S. secondary loan market trading volume reached \$342.0 billion in 2007 from a mere \$8.0 billion traded in 1991, a compound annual growth rate of 26.5%.

To identify loans that are sold in the secondary market, we use the 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, however, do not provide us with the identities of loan sellers from the syndicate. 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 sample period is 1998-2004 with available data. Gande and Saunders (2006) provide an analysis on the secondary market for loans using the same data.

We find that loans of larger borrowers with higher leverage, lower book-to-market, higher growth, higher institutional equity ownership and analyst coverage, higher past stock returns, and lower Altman Z-scores are more likely to appear in the secondary market (untabulated). These features are broadly in line with findings of papers that specifically examine loan sales, such as Kamstra, Roberts, and Shao (2006), and Drucker and Puri (2008).

More importantly, the probability of trading in the secondary market is lower for loans with dual holders (18%) than for loans without dual holders (23%), and the difference is statistically significant (untabulated). In a regression that examines the determinants of loan sales, the coefficient on *dual holder* is significant and negative (at the 1% level) on its own or with the other usual controls. 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 1% or two million dollars of equity in the borrower, or five million dollars in the

borrower's parent company), we go back in time to find the earliest quarter-end when the dual holding institution's position in the company becomes significant. Similarly, we go forward in time to find the latest quarter-end up to when the position remains 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 in which the dual holder has a continuous significant equity position in the borrower. We then split this measure into holding periods before and after the loan origination.

Panel B of Table 7 indicates 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.<sup>19</sup> To gain some perspective regarding the investment horizons of dual holders on the equity side, we form comparison groups by selecting, among all portfolio companies in which 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 7 demonstrates that IIs tend to hold shares of companies in which they are also creditors for a significantly longer period of time (by 3.7 quarters) than those in which they are merely shareholders. The difference remains virtually the same if we exclude loan facilities initiated in 2006 to mitigate the data truncation problem.

Results in Table 7 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, the results in Table 7 suggest that the lower spreads of loans financed by dual holders can at least, to some extent, be attributed to the monitoring effort of dual holders who could benefit from their own efforts over a longer investment horizon.

The alternative hypothesis ascribes superior information as the primary motivation for dual holdings. Superior (non-public) information about a firm's performance, by definition, should have a zero mean conditional on public information. Therefore, it should not have a systematic bias toward long positions. Investors with superior information about a firm might be able to profit from more frequent trading or changing positions in that firm (Bushee and Goodman, 2007), but should not be expected to have a significantly longer holding period in that firm.

To further assess the possibility of informed trading (on the equity side), we partition the II (major) participation sample by whether dual holders are present and examine stock returns during the year before and the year after loan origination. While companies with dual holding lenders experience significantly better stock returns during the year before the new loans (consistent with the results in Table 4), the difference disappears when the post-loan stock returns are compared. The lack of superior stock performance for companies with dual holders after loan origination does not support the presence of informed stock trading arising from dual holding.<sup>20</sup>

### **B. Borrower Risk-Shifting and Operating Performance after Loan Origination**

In this section, we examine whether the lower yield spreads on loans with dual holders are justified by the reduced borrower risk-shifting. 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 shareholders to take some self-interested actions at the expense of creditors. 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.<sup>21</sup> In the regression:

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

where industry (at the three-digit SIC code level) and year fixed effects are included and firm size (log market capitalization) are controlled for,  $\beta_j^1$  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,  $\beta_j^2$  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. The regression sample is confined to the 1996-2006 period to be consistent with earlier analyses.

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. Given that the leverage ratio would go up mechanically after a firm takes a new loan, we focus on a variant to the Altman Z-score that excludes the leverage component. Results are reported in Panel A of Table 8. Two interesting empirical regularities emerge. First, loan receiving companies with dual holders have an average Altman Z-score (excluding leverage) that is 0.20 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 sample average (median) is 1.83 (1.81)]. Second, loan receiving companies see an overall deterioration in the credit score after the loan receiving year. The difference between year  $t+2$  and  $t-2$  is -0.10 (significant at the 1% level), consistent with the findings of Altman and Kao (1992). In contrast, borrowers with dual holders see no further deterioration in their credit score during the two-year period after loan origination. These two pieces of evidence suggest that borrowers with dual holders are riskier than other borrowers at loan origination, but experience less deterioration in credit quality afterwards.

Insert Table 8 about here.

Next, we employ a "risk shifting" proxy to examine changes in the riskiness of the borrower's debt after loan origination, "distance-to-default." The measure combines three key

credit issues: 1) the value of the firm's assets, 2) its business and industry risk, and 3) its leverage. More specifically, the distance-to-default refers to the number of standard deviation decreases in firm value before the firm is in default. This measure is motivated by Merton's (1974) bond pricing model populated by Moody's KMV, and is now a standard measure for default risk. We estimate distance-to-default for each firm at each year end following the estimation procedure in Vassalou and Xing (2004). A larger distance-to-default indicates a lower likelihood of default.

Panel B of Table 8 reports that firms borrowing from dual holders have significantly smaller values of distance-to-default than other borrowers at the end of year  $t-2$ . The difference is 0.22, as compared to the sample average (median) of 2.53 (2.25). Two years after the new loans, the difference shrinks to 0.01, and is no longer statistically significant. This is because firms borrowing from pure lenders experience significant declines in their distance-to-default in the post-loan years as compared to the pre-loan period, while the opposite is true for firms borrowing from dual holders. Our finding is consistent with Sundaram and Yermack (2007) who confirm that CEOs with more "inside debt" in their own firms (in the form of defined benefit pensions and deferred compensation) relative to their equity holdings operate more conservatively using the same distance-to-default measure.

If the lower loan yield spread is due to better incentive alignment, then it should lead to value creation (due to the lower cost of capital). Moreover, some value creation may accrue to the shareholders since the dual holders, other things being equal, have a stronger incentive to enhance the equity value of the borrower than pure creditors. Panel C of Table 8 illustrates the temporal evolution of return on equity (ROE, the ratio of net income to the book value of equity) as a proxy for the operating performance on the equity side. While ROE tends to deteriorate shortly after a firm receives a new loan (mostly because of the drop in net income due to the increase in interest payments), the deterioration is only significant among the subsample of borrowers without dual holders, and far from significant in the subsample with dual holders.

In unreported analysis, we do not find a significant differential effect between the two subsamples using the return on assets measure (ROA, defined as the ratio of earnings before interest, taxes, depreciation, and amortization to assets) as a proxy for firm-level cash flows. It seems that dual holders have little impact on operating cash flows, and the value creation comes primarily through the reduced cost of capital.

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

Tests in the previous section and results in Panels A and B of Table 8 deliver a coherent message. Companies with equity-holding lenders tend to be riskier before issuing new loans, but experience less borrower risk-shifting after assuming the new loans. Thus, there will be less deterioration in the companies' credit quality. 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 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, the general credit worthiness of the issuer. Prior work has demonstrated that prices on CDS contracts are more informative about the issuing companies' credit quality than the prices of bonds (Blanco, Brennan, and Marsh, 2005; Longstaff, Mithal, and Neis, 2005).

There are several advantages to using the CDS spreads as a measure of 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, the default spreads on the CDS contracts can be directly informative about the default probability of the same borrower's syndicated loans. Second, CDS pricing is a clean 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 December 2007 from Markit, a leading independent source of CDS 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 2001-2006. 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 U.S. 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 starting in late 2007. There was also a minor peak in April 2006, coinciding with the downgrading of GM debt. In the cross section, the average (median) is 137 (57) bps and the 25<sup>th</sup> and 75<sup>th</sup> values are 28 and 145 bps, respectively.

To be consistent with the specifications in Panels A-C, we record for each firm the last trade of each 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 effects from the three-digit SIC code level to the two-digit level. Results are reported in Panel D of Table 8.

In contrast to accounting measures that reflect firms' current conditions, CDS pricing is forward-looking and aggregates all the information that market participants have (including possible insider trading). 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 borrowing from 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 prior to 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% (22%) 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 significantly different from zero) suggesting 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, a summary accounting measure to capture a firm's bankruptcy risk, is significantly negative (-0.38). More importantly, CDS spreads also contain non-public information that is impounded into prices by informed

traders (Archarya and Johnson, 2007) 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 largely occur among sophisticated IIs which could include participants of syndicated loans.

With this in mind, Panel D of Table 8 suggests that conditional on all information (both private and public) that is available to participants in the CDS market (including potential syndicate members); companies with dual holders appear to have riskier debt during the year of the loan origination or the years prior to it. 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, especially in the presence of insider trading on the CDS market. Additionally, even if this is the case, there is little reason for the dual holders to surrender their informational rent to the borrowers in the form of lower loan yield spreads. Thus, the cumulative evidence lends strong support for the incentive alignment hypothesis.

#### **IV. Conclusion**

This paper provides the first comprehensive analysis regarding a new and increasingly important phenomenon, the simultaneous holdings of equity and debt in the same companies by non-bank 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 creditors.

We first demonstrate syndicated loans with the presence of dual holders are associated with lower loan yield spreads (of 13 to 20 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 correlation 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 yield spreads is strengthened when the unobserved heterogeneity is controlled for.

We conclude that the presence of dual holders mitigates the conflicts between shareholders and creditors; thus, lowering the cost of borrowing. Our findings offer one possible

explanation for the emergence of “strip financing,” and point to important extensions to the theories that try to rationalize investor specialization in holding different claims on firms (Berglöf and von Thadden, 1994).<sup>22</sup> Further studies are also called for to examine the presence of dual holders on corporate investment and financing decisions.

## Appendix: Variable Definitions

Variables	Definition
<b>Variables of Interest</b>	
spread	Initial all-in-drawn spread is defined as the basis point coupon spread over LIBOR plus the annual fee and the upfront fee spread, if there is any.
II participation	An indicator variable takes a value of one if at least one non-bank institutional investor participates in a loan syndicate, and zero otherwise.
II major participation	An indicator variable takes a value of one if at least one non-bank institutional investor is a major participant of a loan syndicate, and zero otherwise.
dual holder	An indicator variable takes a value of one if: 1) at least one non-bank 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 non-bank lender must hold at least 1% of the borrower's common stock 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 zero otherwise. Dual holders in the II major participation subsample [Column (3) of Table 3, Columns (2) and (4) of Table 4, and Column (2) of Table 5] are limited to dual holders that are also major participants of the loan syndicate.
<b>Loan Characteristics</b>	
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 a value of one if a loan is secured, and zero otherwise.
missingsecured	An indicator variable takes a value of one if the secured status of a loan is missing, and zero otherwise.
revolver	An indicator variable takes a value of one for revolving credit, and zero for term loans.
lbotakeover	An indicator variable takes a value of one if the primary purpose of the loan is either a leveraged buyout or a takeover, and zero otherwise.
numlender	Natural logarithm of one plus the total number of lenders in a loan syndicate.
<b>Borrower Characteristics</b>	
assets	Natural logarithm of the borrower's total assets.
lev	The borrower's book value of total debt over book value of total assets.
b2m	The borrower's book-to-market ratio, calculated as $TA / (TA + MKVALF - CEQ)$ , where TA is the book value of total assets, MKVALF is the market value of the firm at the fiscal year end, and CEQ is the 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. In regressions, we use Altman bankruptcy Z-scores excluding the term $X_4$ .
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 a value of one if the borrower does not have the S&P credit rating, and zero otherwise.
analyst	Natural logarithm of one plus the total number of analysts who make forecast and/or recommendations for the borrower's stock.
stkvoll	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 1,000 times the square root of $ Return /(Dollar\ Trading\ Volume)$ , using daily data.
sp500	An indicator variable takes a value of one if the borrower belongs to the S&P 500 index, and zero otherwise.
distance-to-default	The number of standard deviation decreases in a firm's asset value that it would take for the firm to default.



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## Endnotes

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<sup>1</sup> For example, Nofsinger and Sias (1999) find that changes in institutional ownership forecast next year's returns. Chen, Harford, and Li (2007) confirm that long-term independent IIs with concentrated holdings appear to be able to predict future performance of acquirers.

<sup>2</sup> In recent years, the loan-side non-public information often became available to traders and potential investors who were not (yet) investors in the loans due to the rapid expansion of a secondary market for syndicated loans and a more aggressive effort by the press to report on the loan market. See *A Guide to the Loan Market*, Standard and Poor's, 2007.

<sup>3</sup> The list of bond issuing firms and the offering dates are retrieved from the Mergent FISD database, available through WRDS.

<sup>4</sup> Standard and Poor's (2007) provides a summary of the syndication process.

<sup>5</sup> Following the literature on syndicated loans, we use the spread over LIBOR rather than the spread over a reference rate of a particular maturity, as the dependent variable. Note that all of our regressions include the maturity of a loan as a control variable.

<sup>6</sup> Sensitivity analysis using information aggregated at the loan deal level yields similar results.

<sup>7</sup> Alternatively, the Form 13F filing with the SEC (from Thomson Financial) classifies institutional investors into five types: 1) banks (narrowly defined as financial institutions that accept and manage deposits and make loans, or loosely "commercial banks"), 2) insurance companies, 3) investment companies, 4) independent investment advisors, and 5) other. Our non-bank institutional investors span four categories excluding banks. We double check our institutional investor list with the 13F type code to make sure that none of these institutions are classified as Type 1 (i.e., banks) by the 13F database.

<sup>8</sup> Due to the level of data aggregation both from DealScan and from Form 13F filings, we are not able to distinguish between investment (of debt or equity) by an institution in its proprietary accounts and in its managed money accounts (such as mutual funds). We take the stance that incentives to enhance investment values apply to both types of accounts, and that there are centralized or coordinated efforts within an institution with regard to research, monitoring, and exercise of shareholder rights (Gaspar, Massa, and Matos, 2006; Davis and Kim, 2007; Chen, Goldstein, and Jiang, 2008).

<sup>9</sup> It is worth noting that our major results remain the same if we remove financial (SIC 6000-6999) and utility (SIC 4900-4999) borrowers.

<sup>10</sup> For comparison, Santos and Wilson (2007) report that in their sample, the average bank controls 0.35% of the borrower's voting rights.

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<sup>11</sup> Due to a variety of lender titles used in different loan syndications, there has not been a consensus on how to identify the lead arranger(s) of a syndicate in the literature. In this paper, we identify major participants of a loan syndicate based on lenders' roles specified in DealScan. The lenders with the following roles are considered as the major participants: admin agent, agent, arranger, book runner, 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.

<sup>12</sup> There is missing information regarding whether the loan is secured or not for about a third of our sample loans.

<sup>13</sup> 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. The institutional loans in their sample typically charge higher loan yield spreads (between 35 to 60 bps) than bank loans. It is worth pointing out that the holders of institutional loans in their sample are not necessarily the dual holders that we focus on.

<sup>14</sup> Secured loans have higher spreads, reflecting the fact that collateral is often required when the loan is perceived as risky (Berger and Udell, 1990; Santos and Wilson, 2007).

<sup>15</sup> See Li and Prabhala (2007) for an overview of self-selection in corporate finance.

<sup>16</sup> Covenants are not recorded for many loan facilities in DealScan. According to the Loan Syndications and Trading Association estimates, approximately 95% of loans to BBB-rated borrowers and 80% of loans to A-rated borrowers from 2003-2004 have financial covenants. However, in DealScan only 64% of such 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.

<sup>17</sup> Wooldridge (2002, Chapter 18) describes the procedure.

<sup>18</sup> When we perform the instrumental variable regression of loan yield spread on II (major) participation and control variables relying on non-linearity of the propensity of II (major) participation for identification, we find that IIs participate in loans that are safer conditional upon observable firm and loan characteristics, and yet they charge higher loan yield spreads. Nandy and Shao (2007) attribute this higher spread to compensation for these investors to engage in costly information production about borrowers. The test, however, is of low power as the exogeneity test fails to reject the null hypothesis that II (major) participation is exogenous at the conventional significance levels.

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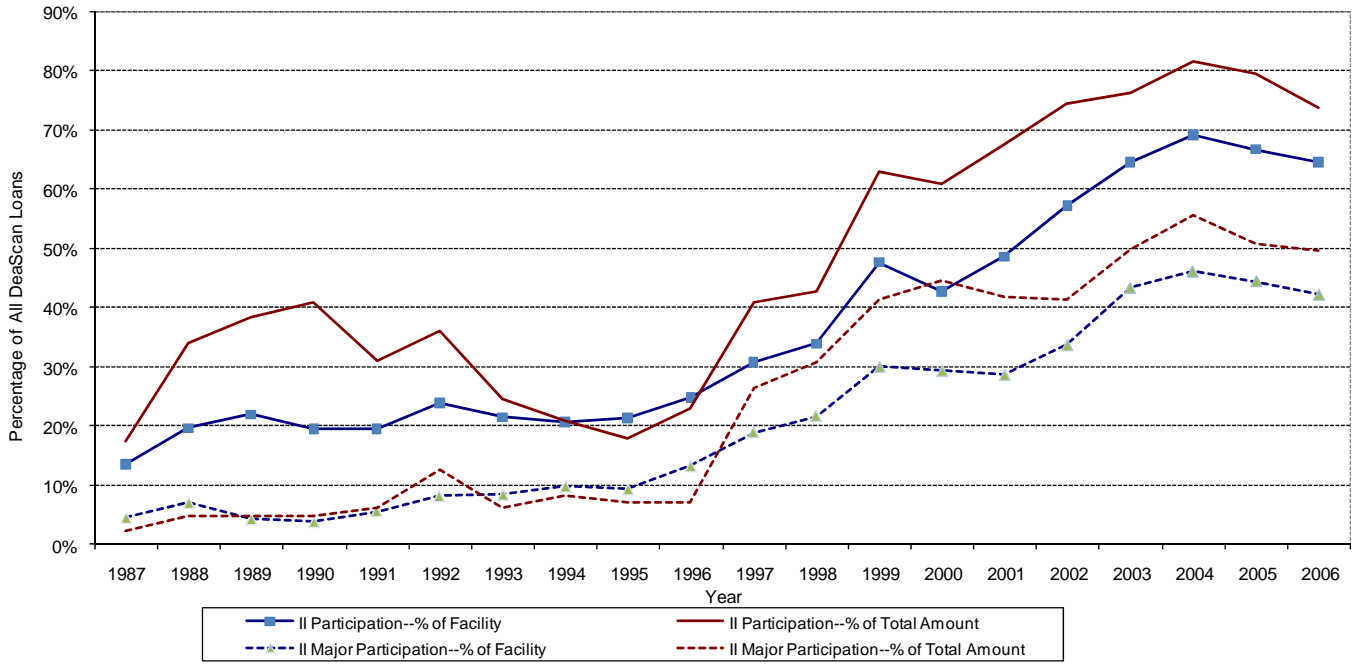
<sup>19</sup> The holding period after the deal could be underestimated if it is censored at the end of 2007. If we exclude the subsample of loan facilities that were initiated in 2006, the median/average post-deal holding period increases by about half a quarter.

<sup>20</sup> Ivashina and Sun (2007) and Massa and Rehman (2008) provide evidence of information spillover from the debt side to the equity side under specific circumstances (loan amendment or mutual fund trading). Such a relation is not a significant force in our set-up.

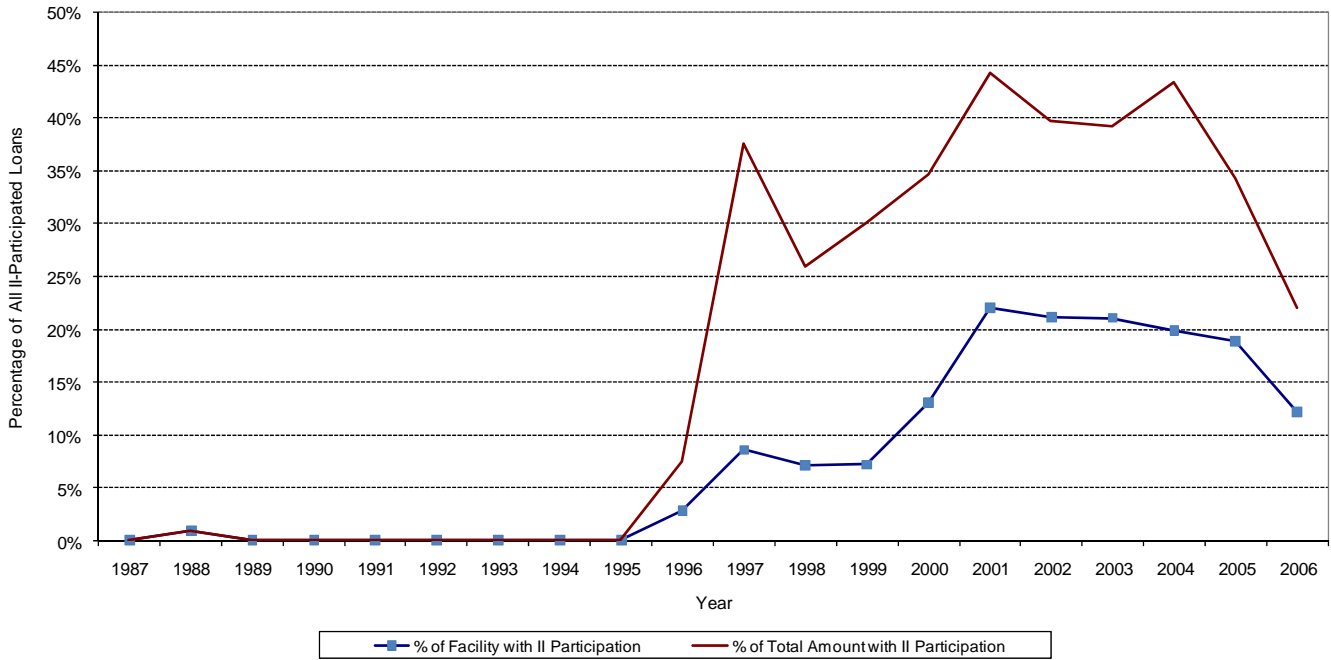
<sup>21</sup> Results are qualitatively the same if we define the  $d^2$  dummies for firms that receive II-participated loans, but without a dual holder.

<sup>22</sup> Strip financing refers to the practice of repackaging different types of obligations, such as debt, preferred stock, and common stock, into one security in order to mitigate conflicts of interest among holders of the separate claims. It is commonly used in venture capital, distress investment, and takeover transactions.

**Figure 1. Non-bank Institutional Investor (II) Participation in Loan Syndication**

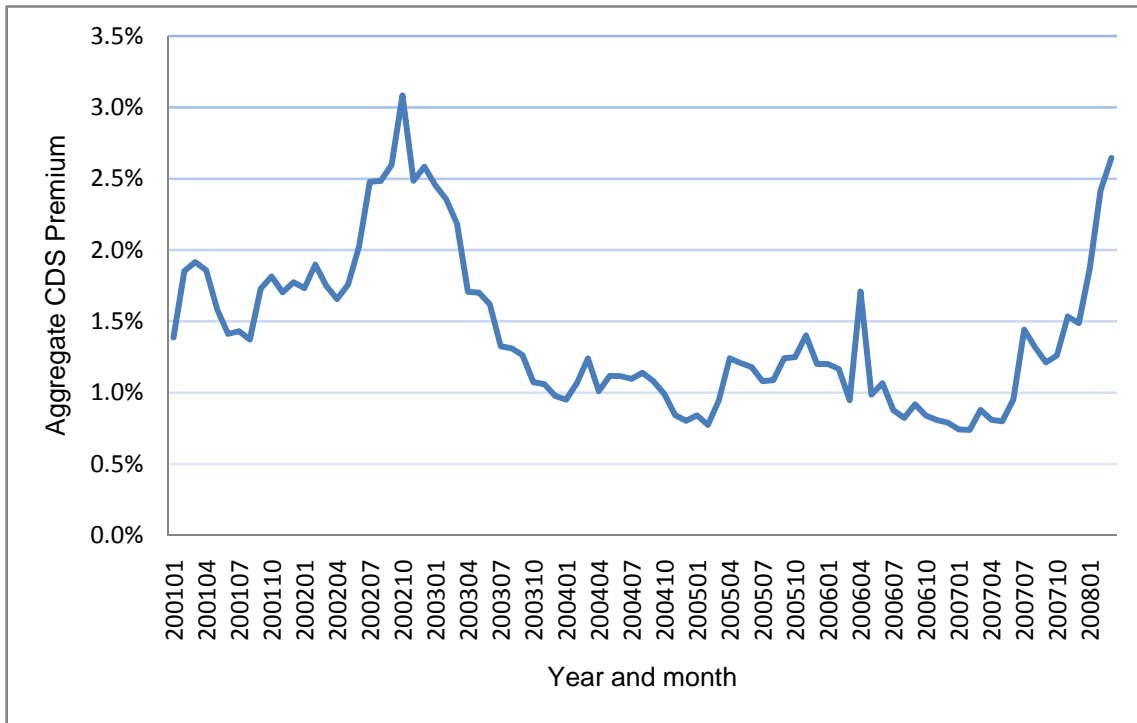


**Figure 2. II-Participated Loans with Non-bank Institutional Dual Holders**





**Figure 3. The Aggregate Time Series of CDS Premium over LIBOR**



**Table 1. Sample Overview**

This table reports 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 10,486. Summary statistics of variables before the log transformation are also reported. Panel A provides descriptive statistics. Panel B reports the pair-wise correlation coefficients among the main variables.

Panel A: Summary Statistics

	Mean	Std. Dev.	25th Percentile	Median	75th Percentile
spread	172.739	124.418	75.000	150.000	250.000
II participation	0.492	0.500	0.000	0.000	1.000
II major participation	0.296	0.457	0.000	0.000	1.000
dual holder	0.110	0.313	0.000	0.000	0.000
facilityamt (mil)	366.266	816.101	50.000	150.729	381.344
facilityamt (log)	4.882	1.545	3.912	5.015	5.944
maturity	46.342	236.535	24.000	47.000	60.000
maturity (log)	3.584	0.713	3.178	3.850	4.094
secured	0.499	0.500	0.000	0.000	1.000
missingsecured	0.295	0.456	0.000	0.000	1.000
revolver	0.756	0.429	1.000	1.000	1.000
lbotakeover	0.198	0.398	0.000	0.000	0.000
numlender	8.381	8.730	2.000	6.000	12.000
numlender (log)	1.882	0.846	1.099	1.946	2.565
assets (mil)	3789.619	8000.998	212.110	738.755	2875.330
assets (log)	6.710	1.827	5.357	6.605	7.964
lev	0.307	0.202	0.164	0.293	0.422
b2m	0.592	0.637	0.274	0.465	0.744
growth	0.222	0.481	0.030	0.117	0.265
herfindahl	0.783	0.263	0.524	1.000	1.000
inst	0.527	0.252	0.340	0.556	0.722
stkretindadj	-0.002	0.042	-0.022	-0.002	0.016
altman	3.582	2.598	1.846	3.010	4.650
sprate	6.029	6.550	0.000	2.000	12.000
notsprated	0.498	0.500	0.000	0.000	1.000
analyst	10.453	9.347	3.000	8.000	16.000
analyst (log)	2.025	1.012	1.386	2.197	2.833
stkvoll	0.133	0.072	0.084	0.116	0.162
amihud	0.285	0.580	0.033	0.086	0.260
sp500	0.224	0.417	0.000	0.000	0.000

Panel B: The Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13
1 spread	1.00												
2 II participation	0.19	1.00											
3 II major participation	0.24	0.66	1.00										
4 dual holder	-0.20	0.36	0.24	1.00									
5 facilityamt (log)	-0.41	0.25	0.13	0.34	1.00								
6 maturity (log)	0.19	0.14	0.13	-0.07	0.01	1.00							
7 secured	0.53	0.11	0.15	-0.20	-0.35	0.25	1.00						
8 missingsecured	-0.26	-0.09	-0.09	0.08	0.17	-0.20	-0.65	1.00					
9 revolver	-0.41	-0.12	-0.13	0.08	0.19	-0.31	-0.27	0.12	1.00				
10 lbotakeover	0.17	0.07	0.10	-0.06	0.00	0.23	0.19	-0.14	-0.24	1.00			
11 numlender	-0.29	0.39	0.15	0.36	0.69	0.06	-0.22	0.05	0.08	0.04	1.00		
12 assets (log)	-0.41	0.23	0.12	0.40	0.81	-0.16	-0.43	0.28	0.15	-0.15	0.62	1.00	
13 lev	0.27	0.21	0.17	0.02	0.09	0.07	0.14	-0.03	-0.17	-0.01	0.12	0.11	1.00
14 b2m	0.21	0.02	0.05	-0.07	-0.16	-0.02	0.16	-0.09	-0.03	-0.05	-0.13	-0.12	-0.06
15 growth	0.07	0.00	0.03	-0.04	-0.07	0.03	0.12	-0.06	-0.04	0.05	-0.06	-0.12	0.05
16 herfindahl	0.11	-0.06	0.01	-0.11	-0.18	0.10	0.15	-0.09	-0.06	0.05	-0.15	-0.26	-0.02
17 inst	-0.26	0.12	0.03	0.19	0.46	0.04	-0.23	0.11	0.07	-0.01	0.39	0.50	-0.14
18 stkretindadj	-0.05	-0.01	-0.02	0.02	0.01	0.08	0.01	0.00	-0.01	0.07	0.02	-0.04	-0.07
19 altman	-0.23	-0.10	-0.10	-0.03	-0.02	0.02	-0.10	0.02	0.09	0.02	-0.03	-0.10	-0.41
20 sprate	0.01	0.27	0.18	0.18	0.42	0.04	-0.07	0.06	-0.05	-0.06	0.37	0.52	0.41
21 notsprated	0.21	-0.24	-0.14	-0.28	-0.57	0.08	0.25	-0.17	-0.05	0.10	-0.47	-0.70	-0.31
22 analyst (log)	-0.42	0.11	0.04	0.30	0.66	-0.12	-0.36	0.21	0.15	-0.08	0.48	0.74	-0.07
23 stkvol	0.45	0.07	0.11	-0.14	-0.33	-0.01	0.32	-0.16	-0.12	-0.04	-0.26	-0.33	0.12
24 amihud	0.30	-0.06	0.01	-0.15	-0.47	0.02	0.25	-0.13	-0.10	0.00	-0.35	-0.51	0.13
25 sp500	-0.40	0.09	0.05	0.37	0.54	-0.23	-0.39	0.24	0.17	-0.13	0.38	0.68	-0.05

		14	15	16	17	18	19	20	21	22	23	24	25
14	b2m	1.00											
15	growth	-0.04	1.00										
16	herfindahl	0.02	0.11	1.00									
17	inst	-0.18	-0.14	-0.15	1.00								
18	stkretindadj	-0.19	0.03	0.03	-0.01	1.00							
19	altman	0.03	-0.08	0.04	0.08	0.06	1.00						
20	sprate	-0.05	-0.05	-0.13	0.29	-0.02	-0.22	1.00					
21	notsprated	0.11	0.09	0.21	-0.35	0.02	0.16	-0.92	1.00				
22	analyst (log)	-0.24	-0.02	-0.09	0.57	-0.05	-0.03	0.34	-0.50	1.00			
23	stkvol	0.10	0.14	0.12	-0.26	0.15	-0.21	-0.04	0.20	-0.23	1.00		
24	amihud	0.27	-0.01	0.10	-0.50	-0.01	-0.03	-0.25	0.32	-0.58	0.24	1.00	
25	sp500	-0.15	-0.11	-0.20	0.28	-0.03	0.01	0.23	-0.46	0.55	-0.27	-0.24	1.00

**Table 2. The Top Ten Non-bank Institutional Dual Holders**

This table lists the top ten non-bank institutional dual holders by the total amount of loan facilities in which these institutions are involved as dual holders. The first two columns show their rankings and names. The third and fourth column report the total amount (in millions of dollars) and number of dual holding loan facilities involved by each institution. The last column presents their rankings among all US syndicated loan lenders (3,373 in total).

Ranking	Name	Total Amount of Dual		Ranking Among All Lenders
		Holding Loans Involved	Total Number of Dual Holding Loans Involved	
1	Credit Suisse First Boston	1,020,000	857	11
2	Lehman Brothers	325,000	160	47
3	Merrill Lynch & Co Inc	322,000	227	49
4	Northern Trust Co	297,000	349	82
5	Morgan Stanley	178,000	181	87
6	Goldman Sachs & Co	73,600	24	98
7	JP Morgan Chase	57,800	67	212
8	Brown Brothers Harriman & Co	26,800	10	375
9	RBC Capital Markets	20,000	8	217
10	Bear Stearns & Co	18,000	9	311

**Table 3. Determinants of Non-bank II Participation in Loans**

Definitions of all variables are provided in the appendix. The dependent variable is an indicator variable for non-bank 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. 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. Superscripts \*\*\*, \*\*, \* correspond to statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1) II Participation			(2) II Major Participation		
	Coef	t-stat	dPr/dx	Coef	t-stat	dPr/dx
facilityamt	0.046	[2.13]**	1.83%	0.098	[4.56]***	3.22%
maturity	0.121	[4.58]***	4.82%	0.140	[5.15]***	4.59%
secured	0.417	[7.10]***	16.51%	0.428	[7.32]***	13.95%
missingsecured	-0.041	[0.79]	-1.63%	-0.009	[0.17]	-0.30%
revolver	-0.224	[6.54]***	-8.90%	-0.171	[5.11]***	-5.76%
lbotakeover	0.209	[3.87]***	8.31%	0.343	[6.17]***	11.86%
numlender	0.709	[19.53]***	28.26%	0.127	[3.53]***	4.15%
assets	0.077	[2.63]***	3.06%	0.104	[3.45]***	3.41%
lev	0.807	[5.91]***	32.16%	0.501	[3.43]***	16.39%
b2m	0.063	[1.68]*	2.52%	0.074	[2.07]**	2.42%
growth	0.077	[1.98]**	3.09%	0.108	[2.43]**	3.55%
herfindahl	0.086	[1.01]	3.41%	0.277	[3.04]***	9.06%
inst	-0.362	[3.14]***	-14.42%	-0.348	[2.86]***	-11.41%
stketindadj	-1.980	[4.11]***	-78.94%	-1.556	[3.03]***	-50.95%
altman	0.032	[1.76]*	1.27%	0.013	[0.69]	0.44%
sprate	0.026	[2.33]**	1.04%	0.025	[2.19]**	0.82%
notsprated	0.228	[1.40]	9.07%	0.264	[1.60]	8.64%
analyst	-0.086	[2.46]**	-3.45%	-0.066	[1.82]*	-2.17%
stkvoll	2.770	[7.44]***	110.45%	1.879	[5.07]***	61.52%
amihud	0.081	[1.59]	3.23%	0.102	[2.07]**	3.34%
sp500	0.140	[1.85]*	5.59%	0.262	[3.35]***	8.92%
#obs and pseudo-R <sup>2</sup>	10486	0.25		10486	0.14	
% (Dep Var = 1)	0.49			0.30		

**Table 4. Determinants of Non-bank 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 non-bank institutional investors, 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, respectively. In column (3), we also require at least one of the dual holders to be a major participant in the loan syndicate. All specifications are estimated by probit. Year fixed effects are included. 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. Superscripts \*\*\*, \*\*, \* correspond to statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1) All Loan Facilities			(2) II Participation			(3) II Major Participation		
	Coef	t-stat	dPr/dx	Coef	t-stat	dPr/dx	Coef	t-stat	dPr/dx
facilityamt	0.042	[1.13]	0.17%	0.032	[0.78]	0.51%	0.080	[1.50]	1.22%
maturity	0.061	[1.73]*	0.24%	0.041	[0.95]	0.64%	0.068	[1.15]	1.03%
secured	-0.268	[3.01]***	-1.07%	-0.413	[4.26]***	-6.74%	-0.543	[4.33]***	-9.04%
missingsecured	-0.164	[2.42]**	-0.61%	-0.078	[0.97]	-1.19%	0.031	[0.29]	0.48%
revolver	0.019	[0.29]	0.07%	0.115	[1.80]*	1.76%	-0.008	[0.11]	-0.12%
lbotakeover	0.146	[1.55]	0.64%	0.077	[0.75]	1.25%	0.035	[0.28]	0.54%
numlender	0.547	[9.89]***	2.17%	0.279	[4.22]***	4.40%	0.331	[4.33]***	5.02%
assets	0.187	[3.60]***	0.74%	0.188	[3.40]***	2.97%	0.202	[2.66]***	3.06%
lev	0.371	[1.43]	1.47%	0.057	[0.21]	0.90%	0.184	[0.55]	2.78%
b2m	-0.004	[0.05]	-0.02%	-0.054	[0.68]	-0.86%	-0.093	[0.94]	-1.41%
growth	0.174	[2.68]***	0.69%	0.124	[1.82]*	1.96%	0.103	[1.27]	1.57%
herfindahl	0.001	[0.01]	0.01%	0.057	[0.42]	0.89%	0.156	[0.86]	2.37%
inst	0.073	[0.36]	0.29%	0.210	[0.96]	3.31%	0.584	[2.15]**	8.85%
stkreindadj	2.702	[2.85]***	10.70%	3.012	[3.01]***	47.44%	4.549	[3.43]***	68.97%
altman	0.013	[0.38]	0.05%	-0.007	[0.19]	-0.11%	0.030	[0.60]	0.45%
sprate	-0.008	[0.46]	-0.03%	-0.021	[1.03]	-0.33%	-0.031	[1.21]	-0.47%
notsprated	-0.107	[0.44]	-0.42%	-0.244	[0.83]	-3.69%	-0.527	[1.42]	-7.46%
analyst	0.127	[1.90]*	0.50%	0.122	[1.64]	1.92%	0.204	[2.01]**	3.09%
stkvoll	-0.702	[1.01]	-2.78%	-1.303	[1.72]*	-20.52%	-1.276	[1.40]	-19.34%
amihud	-0.942	[1.77]*	-3.73%	-1.308	[1.95]*	-20.59%	-0.371	[0.76]	-5.63%
sp500	0.253	[2.42]**	1.17%	0.300	[2.55]**	5.20%	0.120	[0.79]	1.90%
#obs and pseudo-R <sup>2</sup>	10486	0.37		5154	0.35		3104	0.41	
% (Dep Var = 1)	0.11			0.22			0.23		

**Table 5. 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 basis points, and the analysis is conducted at the loan facility level. Column (1) and (2) employ the full sample. Columns (3) and (4) employ the subsamples of loan facilities that have II participation and II major participation, respectively. In columns (2) and (4), we also require at least one of the dual holders 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. Superscripts \*\*\*, \*\*, \* correspond to statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Pooled Regressions

	All Loan Facilities				II Participation		II Major Participation	
	(1)		(2)		(3)		(4)	
	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat
II participation	35.845	[13.44]***						
II major participation			33.210	[11.05]***				
dual holder	-19.626	[5.53]***	-14.743	[4.35]***	-12.801	[3.34]***	-18.614	[3.42]***
facilityamt	-6.254	[4.52]***	-6.757	[4.80]***	-12.983	[5.92]***	-11.295	[4.51]***
maturity	-0.349	[0.19]	-0.367	[0.20]	-0.579	[0.20]	-2.699	[0.61]
secured	59.582	[19.67]***	60.044	[19.69]***	60.925	[12.31]***	64.228	62.933
missingsecured	17.836	[7.25]***	17.687	[7.14]***	22.690	[5.25]***	28.230	[4.32]***
revolver	-54.565	[19.20]***	-54.891	[19.25]***	-68.957	[16.23]***	-71.690	-73.887
lbotakeover	29.624	[10.25]***	28.533	[9.81]***	34.592	[8.06]***	34.588	[6.02]***
numlender	-13.534	[6.38]***	-7.412	[3.62]***	-17.355	[4.86]***	-17.863	[4.10]***
assets	0.664	[0.33]	0.251	[0.12]	5.767	[1.87]*	5.694	[1.35]
lev	53.326	[6.14]***	57.122	[6.56]***	26.973	[2.19]**	16.104	[1.02]
b2m	11.531	[3.87]***	11.339	[3.75]***	8.279	[2.19]**	5.917	[1.35]
growth	-1.314	[0.57]	-1.687	[0.72]	-5.168	[1.42]	-8.787	[1.95]*
herfindahl	3.254	[0.67]	1.362	[0.28]	1.388	[0.20]	2.520	[0.27]
inst	1.935	[0.26]	2.297	[0.31]	3.321	[0.28]	6.592	[0.41]
stkretindadj	-201.911	[5.99]***	-207.705	[6.20]***	-232.967	[4.33]***	-235.915	[3.51]***
altman	-7.374	[6.19]***	-7.158	[6.00]***	-8.731	[4.27]***	-9.601	[3.47]***
sprate	8.780	[9.55]***	8.690	[9.32]***	9.934	[7.50]***	10.500	[5.83]***
notsprated	118.036	[9.79]***	116.097	[9.53]***	138.044	[7.57]***	158.932	[6.24]***
analyst	-13.933	[5.56]***	-14.312	[5.66]***	-17.273	[4.07]***	-17.330	[3.01]***
stkvoll	286.808	[10.54]***	295.051	[10.87]***	340.901	[8.27]***	335.651	[6.47]***
amihud	0.885	[0.26]	0.630	[0.18]	-0.846	[0.14]	-6.425	[0.94]
sp500	4.663	[1.01]	2.793	[0.60]	15.021	[2.35]**	16.827	[1.90]*
#obs and adjusted-R <sup>2</sup>	10486	0.57	10486	0.59	5154	0.59	3104	0.58



Panel B: Regressions with Firm Fixed Effects

	All Loan Facilities				II Participation		II Major Participation	
	Coef	(1) t-stat	Coef	(2) t-stat	Coef	(3) t-stat	Coef	(4) t-stat
II participation	22.578	[8.11]***						
II major participation			19.223	[6.02]***				
dual holder	-14.721	[4.12]***	-10.197	[2.95]***	-10.384	[2.23]**	-15.365	[1.95]*
Other controls included?	Yes		Yes		Yes		Yes	
#obs and R <sup>2</sup>	10486	0.56	10486	0.56	5154	0.55	3104	0.49

**Table 6. Determinants of Loan Yield Spreads – Two-Stage 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. All specifications are estimated by a two-stage method with an endogenous indicator variable. Year fixed effects are included in both stages. Reported are results of the second-stage estimation. 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 at least one of the dual holders to be a major participant in the loan syndicate. Residuals obtained from regressing *amihud* on *stkretindadj* serve as an instrument. The t-statistics are based on standard errors clustered at the firm level. Superscripts \*\*\*, \*\*, \* correspond to statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1) II Participation		(2) II Major Participation	
	Coef	t-stat	Coef	t-stat
dual holder	-84.455	[3.28]***	-99.773	[3.78]***
facilityamt	-12.963	[5.87]***	-10.801	[4.19]***
maturity	-0.469	[0.16]	-2.835	[0.62]
secured	53.727	[9.20]***	52.708	[6.14]***
missingsecured	20.285	[4.33]***	27.853	[3.88]***
revolver	-66.853	[15.89]***	-72.700	[12.65]***
lbotakeover	35.281	[7.96]***	34.628	[5.90]***
numlender	-14.198	[3.67]***	-12.886	[2.67]***
assets	8.522	[2.45]**	8.842	[1.88]*
lev	25.897	[2.12]**	13.667	[0.86]
b2m	7.583	[2.07]**	4.362	[1.00]
growth	-3.324	[0.96]	-6.628	[1.58]
herfindahl	3.135	[0.44]	5.587	[0.59]
inst	3.111	[0.26]	11.076	[0.68]
stkretindadj	-215.846	[4.00]***	-210.614	[3.12]***
altman	-9.235	[4.54]***	-9.973	[3.61]***
sprate	9.050	[6.66]***	9.311	[5.02]***
notsprated	126.142	[6.74]***	140.509	[5.32]***
analyst	-16.030	[3.97]***	-15.114	[2.77]***
stkvoll	328.670	[7.97]***	326.612	[6.26]***
sp500	28.067	[3.55]***	27.733	[2.69]***
Weak identification test (Kleibergen-Paap rk Wald statistic and p-value in the parentheses):				
	133.72		115.28	
	(0.00)		(0.00)	
Exogeneity test (Chi-sq(1) statistic and p-value in the parentheses):				
	8.82		11.51	
	(0.00)		(0.01)	
#obs and R <sup>2</sup>	5154	0.55	3104	0.51

**Table 7. Dual Holder Investment Horizon**

Panel A compares the intensity of the lending relationship between the borrowing firm and two types of lenders: dual holders and non-dual holders. 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 number (amount) of newly initiated loans during the same period. The 2006 deals are excluded from 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 holder in the borrower vis-à-vis the same institution's holding in a similar company (matched by market capitalization) with no concurrent lending relationship.

Panel A: Comparing Lending Relations of Dual Holders and Non-Dual Holders

	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: Dual Holder Equity Investment Horizon

	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: Comparing Equity Investment Horizon of Creditors and Non-Creditors

	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 8. The Before-After Changes in Borrowers' Credit Quality and Return on Equity**

This table examines the difference in various credit quality measures and return on equity 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 year, industry, and 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. Our credit quality measures are Altman score (excluding leverage), distance-to-default, and CDS spread (using the five-year standard contract) measured in logarithm, and our operating performance measure is return on equity.

Panel A: Altman Z score (excluding leverage) (#obs: 23,357, 1996-2006)

	(1) Loans w/ Dual Holders		(2) Other Loans		(1) - (2)	
	Difference	t-stat	Difference	t-stat	Dif-in-Dif	t-stat
t-2	0.001	0.02	0.205	8.30	-0.204	-3.60
t-1	0.045	0.77	0.239	8.60	-0.195	-3.29
T	-0.062	-1.10	0.140	5.08	-0.203	-3.53
t+1	-0.061	-0.97	0.132	4.65	-0.193	-3.04
t+2	-0.057	-0.95	0.102	4.31	-0.159	-2.59
Dif-in-Dif: (t+2) - t	0.006	0.07	-0.038	-1.05		
Dif-in-Dif: (t+2)-(t-2)	-0.058	-0.74	-0.102	-3.08		

Panel B: Distance-to-Default (#obs: 24,439, 1996-2006)

	(1) Loans w/ Dual Holders		(2) Other Loans		(1) - (2)	
	Difference	t-stat	Difference	t-stat	Dif-in-Dif	t-stat
t-2	-0.160	-3.35	0.063	3.79	-0.222	-4.48
t-1	-0.161	-3.16	0.071	3.83	-0.232	-4.54
T	-0.123	-2.28	0.001	0.05	-0.124	-2.29
t+1	-0.107	-1.73	0.002	0.10	-0.108	-1.78
t+2	0.013	0.20	0.006	0.35	0.008	0.11
Dif-in-Dif: (t+2) - t	0.137	1.53	0.005	0.20		
Dif-in-Dif: (t+2)-(t-2)	0.173	2.13	-0.057	-2.59		

Panel C: Return on Equity (ROE) (#obs: 26,097, 1996-2006)

	(1) Loans w/ Dual		(2) Other Loans		(1) - (2)	
	Holders		Difference	t-stat	Dif-in-Dif	t-stat
	Difference	t-stat				
t-2	-0.039	-1.45	0.043	5.21	-0.082	-2.96
t-1	-0.009	-0.37	0.039	4.21	-0.048	-1.96
T	-0.018	-1.09	0.027	3.02	-0.045	-2.54
t+1	-0.033	-1.78	0.014	1.60	-0.047	-2.45
t+2	-0.027	-1.73	-0.014	-1.49	-0.013	-0.78
Dif-in-Dif: (t+2) - t	-0.009	-0.40	-0.041	-3.21		
Dif-in-Dif: (t+2)-(t-2)	0.012	0.40	-0.057	-4.75		

Panel D: CDS Spread (#obs: 2,322, 2001-2007)

	(1) Loans w/ Dual		(2) Other Loans		(1) - (2)	
	Holders		Difference	t-stat	Dif-in-Dif	t-stat
	Difference	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		