Hedge Funds, Syndicated Lending, and Short Selling: Their Impact on Corporate Performance

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ABSTRACT

This paper investigates important contemporary issues relating to hedge fund involvement in the syndicated loan market. In particular, we investigate these three major issues: first, what type of firm is more likely to be financed by hedge funds? Second, how does hedge fund participation in the syndicated loan market impacts firms' future performance? And third, the potential conflicts of interest that arise due to lack of regulation relating to hedge funds permissible dual holding of loans and equity (long and short) especially given the restrictions on commercial banks equity holdings. Our results show that hedge funds are more likely to lend to highly leveraged, low credit quality firms in comparison to bank lenders. Interestingly, for those firms who borrowed from hedge funds, our results show that firms' performance deteriorates post-lending and the short-selling of those firms' equity is much larger in comparison to propensity score matched firms that financed their loans purely from commercial banks. This is important since it implies that hedge funds can, and do, offset potential losses on their credit exposure by short selling the equity of the potential distressed firms. And, suggests that regulations prohibiting commercial banks short-selling of equity, imposes a constraint on their ability to insulate themselves from credit losses.

Over the last five years, hedge funds have made significant inroads into the syndicated loan market. Anecdotal evidence suggests that hedge funds are willing to lend to borrowers that commercial banks are unwilling to lend to.[1] Until very recently the syndicated loan market was dominated by commercial banks, however, the entry of hedge funds into these markets raises a number of issues. In particular, we propose to investigate three major issues: first, what type of firm is more likely to be financed by hedge funds? Second, how does hedge fund participation in the syndicated loan market impacts firms' future performance? And third, what are the potential conflicts of interest that arise due to lack of regulation with respect to hedge funds syndicated lending. Especially since hedge funds can take positions in the equity of the firms they lend to, e.g. short-selling the equity of borrowing firms, which is restricted in case of commercial bank lending.

Our first issue is motivated by market share data which show that as of 2005, hedge funds and other institutional investors provided almost 50% of the $509 billion loans made in the "highly leveraged" segment of the markets.[2]

The second issue we investigate is how hedge fund participation in the syndicated loan market impacts a borrowing firm's performance. A major reason to suspect that hedge fund participation in syndicated lending might adversely impact corporate performance is that there is a well recognized difference between the objectives of hedge funds and traditional lenders such as commercial banks, see for example Diamond (1984) and Fama (1985). Hedge funds seek to maximize their short term profits while commercial banks tend to seek to maximize their long term profits by building customer relationships over time. Prior research has shown strong support for the existence of customer relationship effects when a loan is extended by commercial

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[1] James Sprayregen, a bankruptcy lawyer with Kirkland & Ellis LLP in Chicago says, "They (hedge funds) are willing to take more risk for more return. And they are agnostic about outcomes as long as they are protected." Further, an article in *Business Week*, Hedges: The New Corporate ATMs, October 2005, mentions that hedge funds are willing to cut deals quickly, without the red tape big banks require to meet regulator's demands. As one anonymous hedge fund executive mentioned, "We do an enormous amount of analysis very fast and provide these companies with rescue financing that allows them to preserve value in their businesses." Also see, *The New York Times* cover story, "As Lenders, Hedge Funds Draw Insider Scrutiny" by Jenny Anderson, October 16, 2006.
[2] The new definition for highly leveraged transactions set by regulators includes loans to companies whose debts exceed 75% of assets after a transaction, or whose debts double and rise to a level that is more than 50% of assets.

banks[3]. In particular, empirical evidence supports the view that commercial banks help firms in financial distress[4]. What has not been established is whether or how short term profit maximizers (such as hedge funds) impact the ability of the financially troubled firms to recover from financial distress.

The third issue we investigate relates to conflicts of interest that arise in hedge fund lending since they can take long or short position in the equity of the borrowing firm. Anecdotally, it has been known that hedge funds enforce very strict covenants on the loans they have granted to financially troubled firms. In particular, they can use these covenants as a tool to push a firm into bankruptcy or renegotiation while holding short positions in the equity of that firm. That is, one way hedge funds might exploit the conflict of interest (in their role as both lenders and equity investors) results from a common practice of hedge funds acting as short sellers of the equity of firms to whom they could and may also generate "private information" in the case of that lending. As is well known, lenders are quasi-insiders and as such have access to information unavailable to the equity market at large[5].

Some of these issues have been raised in the media. For example, in the October 2005 issue of *Business Week*, "Hedges: The New Corporate ATMs," reported that this new source of capital (i.e. hedge fund loans) comes with new dangers, including the possibility that hedge funds will make loans and exploit information gained as lenders to benefit their trading objectives. Information so gathered may also create benefit for hedge funds in their trading of bonds as well. The freedom of hedge funds to simultaneously lend and hold equity is in contrast

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[3] See Petersen and Rajan (1994), Berger and Udell (1995), and more recently Bharath, Dahiya, Saunders and Srinivasan (2007).
[4] See Hoshi, Kayshap and Scharfstein (1990), for example.
[5] See Diamond (1984), Ramakrishnan and Thakor (1984), and Fama (1985) for theoretical analysis; James (1987), James and Smith (2000), Lummer and McConnell (1989), Billet, Flannery, and Garfinkel (1995, 2005) for empirical analysis.

to traditional commercial banks that have strict internal and external rules on separating lending from equity investments and trading. For example by making a loan hedge funds can endogenously affect the timing of a corporate bankruptcy by deciding on covenant violation and can profit by short selling the companies stock or bonds (i.e. by "front running").

Some countries regulators have raised serious concerns with respect to these issues. For example in Britain, the Financial Services Authority is examining whether hedge funds are illegally using sensitive private information they gather as lenders when they trade a company's bonds and stocks.[6]

Interestingly, these uncertainties and potential conflicts have not stopped companies from lining up to borrow from hedge funds. The list of the companies turning to alternative lenders includes U-Haul International's parent, AMERCO, Krispy Kreme, Aloha Airlines, textile manufacturer Dan River, Tower Automotive Inc., SLS International Inc. and Salton Inc., which makes George Foreman grills[7].

One example of the potential linkage between hedge funds, syndicated loans and short selling is Krispy Kreme. In early 2005 Krispy Kreme obtained $225 million in second lien loans from a group led by Credit Suisse First Boston and Hedge Fund Silver Point Capital. As of September 2007 12.64 million shares (20% of the outstanding shares) were sold short.

Our results show that hedge funds are more likely to lend to highly leveraged, low credit quality firms, in comparison to traditional bank lenders. Interestingly, for the firms that borrowed

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[6] See the *Business Week* editorial article, The Invisible Lenders, October 31, 2005.
[7] As of 2005, Hedge funds and other institutional investors provided almost 50% of the $509 billion market for riskier, "highly leveraged" loans to corporations. That's up from less than 20% in 2000, according to Loan Pricing Corp., a unit of Reuters. In the first quarter of 2007, $7.5 billion was raised for distressed securities funds, mounting to a record $80.3 billion in 238 funds, according to Hedge Fund Research in Chicago. Funds that invest in distressed debt rose 0.95% in June 2007 and are up 9.1% year-to-date, according to the Credit Suisse/Tremont Hedge Fund Index. That outperformed the fund's general index which rose 0.78% in June and 8.7% year-to-date, Reuters July 23, 2007. The new definition for highly leveraged transactions set by regulators includes loans to companies whose debts exceed 75% of assets after a transaction, or whose debts double and rise to a level that is more than 50% of assets.

from hedge fund, our results show that their performance deteriorates post-borrowing and that the short selling of their equity is much larger in comparison to similar firms that financed their loans purely from commercial banks.

The paper is organized as follows. In Section I, we present our hypothesis and the empirical methodology. In section II, we describe our data. Section III presents the empirical results. Finally, Section IV concludes.

I. Hypotheses Development and Empirical Methodology

In this section we develop testable hypotheses to investigate the three issues raised above relating to hedge fun involvement in syndicated lending. Our first two hypotheses examine whether hedge fund loans are different from commercial bank loans, in terms of the quality of firms to whom they lend and in the post-borrowing performance of those firms. In particular we will test the following two hypotheses:

- **Hypotheses 1:** *Hedge funds are more likely to lend to highly leveraged and riskier (financially distressed) firms.*
- **Hypotheses 2:** *The post-borrowing performance of the firms with hedge fund loans is much worse than similar firms borrowing from commercial banks*

Positive support for these hypotheses would imply that hedge fund not only lend to ex-ante riskier firms they are also less likely to support them (and their performance) in times of distress.

To test these hypothesis our syndicated loan sample will include all loans financed by at least one hedge fund lender while our control group will include all loans financed by only traditional lenders, i.e. commercial banks. One important aspect of our paper is that we build a

comprehensive database using seven major, widely used, hedge fund data bases. (See the data section).

To test the two hypotheses above, we employ utilize logistic regression and propensity score matching. We employ the logit tests to test Hypothesis 1, where the binary dependent variable is one for the sample group (loans financed by a hedge fund) and zero otherwise. This allows us to identify the characteristics of borrowers who are more likely to obtain financing from hedge funds rather than traditional lenders. We include many market and accounting variables to measure the performance and riskiness of the borrowing firm. We include its leverage and Altman Z-score as a measure of riskiness while we include profitability, growth of sales as a measure of performance. Also, as control variables we include size, cash flow, institutional ownership, Beta, momentum and idiosyncratic risk.

The propensity score tests allow us to examine what happens to sample (borrowing) firms *after* receiving loans from a hedge fund in comparison to a similar commercial bank control group. This method is implemented in three steps. In the first step, we calculate each firm's propensity score, based on the probability (p) that a firm with given characteristics will be financed by a hedge fund. In the second step, firms are matched using Leuven and Sianesi's (2003) propensity score matching procedure at the nearest neighborhood within a 0.1 caliper. In the third step, we employ a univariate tests to compare the post-borrowing change in a firm's performance and credit quality between matched commercial banks and hedge fund borrowing firms.

In addition, as discussed above, we examine the potential conflict of interest that arises due to lack of regulations relating to hedge fund simultaneous involvement in both syndicated loans and short selling of equity. Specifically, we test the following hypothesis:

- **Hypothesis 3:** *The equity of the firms that have hedge funds as lenders is more likely to be short sold.*

To test this hypothesis we also use the data from Self Regulatory Organizations (SROs) tick-data on short-sales. Similar to hypothesis 2, we again employ propensity score matching, but here the thirds step we employs a univariate tests to compare the abnormal short-selling activities between matched commercial banks and hedge fund borrowing firms around the loan origination period.

II. Data and Sample Construction

II. A. *Loan Database*

We use loan information from the *DealScan* database provided by Reuters' Loan Pricing Corporation (LPC). We restrict using a loan sample that covers 1995 to the first quarter of 2008, due to the fact that the number of institutional loans prior to 1995 was insignificant (Nandy and Shao (2007)). We remove observations with missing borrower name, deal active date, facility active date, facility amount, all-in-drawn-spread, or loan maturity and then restrict our loan sample to include revolver loans and term loans made to U.S. borrowers. We merge our loan sample with *Compustat* and *CRSP* either by borrowers' ticker and year of loan origination or by borrower name when the ticker information is missing in *DealScan*. To ensure that we have correct matches, we manually double-check our merged sample by comparing borrower names with company names from *Compustat/CRSP*.[8] After merging, our loan sample consists of 21,830 loans at the deal level consisting of 30,832 loan facilities. Table I shows the distribution of the loan sample by year and industry.

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[8] Finally, as some borrowers in *DealScan* are subsidiaries of publicly traded companies, we matched their parents' information to Compustat and CRSP.

<Insert Table I>

II.B. Hedge Fund Database

Partly due to the absence of strict regulations and reporting requirements, there is no single comprehensive database on hedge funds and/or hedge fund management firms. One crucial step therefore is to identify syndicated loan lenders that are hedge funds or hedge fund management firms. In order to accomplish this task, we exploit seven major, widely used, hedge fund data bases that have been used in the prior literature, namely: the TASS Hedge Funds Database (TASS), the Hedge Fund Research database (HFR), Center for International Securities and Derivatives Markets database (CISDM), *Nelson's Directory of Investment Managers* 2004 to 2006 (Nelson), *Institutional Investor* magazine's annual Hedge Fund 100 List (II100) 2003 to 2007, the database of Cottier (1997), and the Private Equity Information Hedge Fund Database (PEI), which collects hedge fund information from SEC ADV forms. Each of the seven listed sources of hedge fund names reports both hedge fund names and their managing company's names.

We compile a comprehensive list of hedge funds from these sources by including hedge fund names from TASS (4,590 firms and 10,838 funds), HFR (2,328 firms and 8,052 funds), CISDM (4,058 firms and 12,367 funds), Nelson (288 firms and 639 funds), II100 (170 firms and 603 funds), Cottier's (28 firms and 34 funds), and PEI (6,555 firms and 27,338 funds) at both the fund level and the firm level. We identify and remove duplicate observations by manually checking hedge fund names and their addresses from our compiled hedge fund data. Specifically, when observations from PEI are duplicated with those from one or more of the other six sources, we keep the former to preserve the information from SEC's ADV forms. We do this separately at the both the management firm as well as the fund level.

Many hedge fund managing firms, especially large ones, have more than one functional area. For example, the II100 2007 Hedge Fund List ranked J.P. Morgan Asset Management as the largest hedge fund firm. However, the company manages different asset classes other than hedge funds, such as fixed income, currency, real estate, infrastructure, and private equity, etc. Therefore it is particularly difficult to define hedge funds at the managing firm level. Fortunately, investment advisers managing assets of $25 million or more are generally required to register with the SEC and to file ADV forms. Using the information on the ADV forms (from PEI) and following Griffin and Xu (2007) and Huang (2008), we are able to apply the following criteria to define a hedge fund management firm: the company charges performance-based fees, and at least 50% of its clients are "high net worth individuals" or at least 50% of its clients are in "Other pooled investment vehicles (e.g., hedge funds)". After excluding duplicates and hedge fund firms that do not meet these criteria, we end up with a comprehensive hedge fund sample comprising 9,525 unique hedge fund management firm names and 48,601 unique fund names with detailed hedge fund information from each source.

II.C. *Hedge Fund-Syndicated loan Sample Construction*

We construct our final sample and identify syndicated loan lenders who are hedge funds by merging *DealScan* lender names with hedge fund names (at both the management firm level and fund level). We verify the robustness of the merged results by comparing lender domiciles from *DealScan* with hedge fund addresses, and by conducting web-based searches for merged lender names and hedge fund names. We find 341 unique lender names in our *DealScan* loan sample that can be identified as hedge funds (193) or as hedge fund management firms (148).

We then categorize our Dealscan syndicated loan sample into three distinct lender categories: hedge fund lender, other institutional lender, and commercial bank lender. The hedge fund lender category consists of all loan deals where at least one of the 341 hedge fund lenders participated in the loan. We define institutional loan facilities following Nandy and Shao (2007). If *DealScan* reports one of the market segments for the loan facility as "institutional" and if none of the lenders involved in the facility are hedge funds, we define the loan deal as institutional. Our bank lender category comprises loan deals where all lenders are banks. Finally, we remove overlapping loan deals within 60 trading days of the same borrower. This leaves us with 1,723, 461, and 11,486 loan deals for the hedge fund lender, other institutional lender, and bank lender categories respectively. In order to control for firm characteristics in different categories, we utilize a propensity score matching algorithm based on logistic regression and construct a matched sample of 943 loan deals with hedge fund lenders and the same number of bank lenders.

II.D. Short Selling Data

On June 23 2004, U.S. Securities and Exchange Commission (SEC) adopted Regulation SHO (*REGSHO*) under the Securities Exchange Act of 1934. According to *REGSHO*, all Self Regulatory Organizations (SROs) had to make tick-data of short sales available to the public after January 1st 2005. This short sales data includes information on ticker name, short sale volume, short sale price, transaction time and date, listing exchange, and trade type. These data are available from January 2nd 2005 to July 6th 2007 (after which the mandatory public disclosure of short-sale data was eliminated).

We collected short sale information on stocks traded on nine major U.S. exchanges from the NYSE TAQ database, and from the websites of the American Stock Exchange (AMEX),

National Association of Securities Dealers Automated Quotations (NASDQ), National Stock Exchange (NSX), Archipelago (ARCA), Boston Stock Exchange (BSE), Chicago Stock Exchange (CHX), National Association of Securities Dealers (NASD) and Philadelphia Stock Exchange (PHLX). We first aggregate the raw data at the transaction level to a daily level by ticker symbol, trading date and the stock exchange on which the stock is traded (some stocks might be traded on more than one exchange). In the second step, we merge this daily short sale database with CRSP daily equity price data by ticker and date, and verify our merged results by comparing the daily average short prices with CRSP stock prices. Then we exclude short sales of stocks not listed in NYSE, AMEX and NASDAQ and generate aggregated daily non-exempted short sale volumes for each equity in our sample from January 2nd 2005 to July 6th 2007. This leaves us with short sale sample consisting of 3,117, 1,353 and 3,915 NYSE, AMEX and NASDAQ, respectively. We then merge the short-sale data to the syndicated borrowers in our propensity score matched loan sample; leaving us with 226 loan deals in the hedge fund sample and 223 loan deals in the matching bank sample with short sale information.

III. Results

Our results relating to the three hypotheses are presented in Tables II to V and in Figure I. Table II summarizes the correlations between variables and the firm characteristics of borrowers across different lender categories. The statistics are reported at the loan deal level.

<Insert Table II>

Table III presents the coefficient score results of the logit analysis together with the elasticity (economic importance) for each of the explanatory variables described above. In Table III, we examine five models to show the robustness of our results by including a new variable or

an alternative variable in the logit tests. In total we have 11, 603 observations, although, the number of observations vary from model to model based on data availability.

<Insert Table III>

As can be see from Table III our results are consistent with our Hypothesis **1:** *Hedge funds are more likely to lend to highly leveraged, risky (financially distressed) firms.* In particular, we find that the coefficient on the leverage variable is positive and significant at 1% in all specifications while the Altman's Z score is negative and significant at 1% level in all specifications (i.e. high score implies a high quality borrower). Our results are also economically significant. For a 1% increase in leverage the probability of hedge fund lending increases by 1.028% (from its mean value), see Model V, while for a 1% decrease in Altman's Z score the probability of hedge fund lending increases by 0.959%, see Model III.

Table IV presents the propensity score matching tests relating to changes in firm performance after borrowing from hedge funds or banks. Panel A and B present univariate tests for the change in firm performance for the hedge fund sample and its propensity score matched banking sample, respectively, while panel C presents the paired mean difference between the hedge funs sample firms and its propensity score matched banking firms sample. The propensity scores for the sample and the matching group are computed based on Model IV of Table III. We are able to find a match for 943 sample firms.

<Insert Table IV>

Our results offer strong support for Hypotheses 2: *Firm performance post borrowing from hedge fund loans is much lower than for similar firms borrowing from commercial banks.* In particular, the performance of firms that borrowed from hedge funds deteriorated after loan initiation (see Panel A) and the change in firm performance is significantly worse than for the

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bank matching sample (see Panel C). In particular, for the hedge fund sample firms, leverage and number of bankruptcies significantly increased after loan was made (see Panel A) and that increase is significantly larger than that for the bank matching firms (see Panel C). In addition, for the hedge fund sample firms, we find that a firm's Altman's Z score, interest coverage ratio and Tobin's q significantly decreased after borrowing from a hedge fund the lending contract (see Panel A) and the decrease much greater than for the bank matching firms (see Panel C).

In summary, we find support for our first two hypotheses, i.e. hedge funds are more likely to lend to more risky, highly leveraged borrowers and these borrowers are more likely to underperform after borrowing from hedge fund in comparison to similar firms that relied on loans from traditional lenders (commercial banks).

Next we present our results for Hypothesis 3: *The equity of the firms that have hedge funds as lenders is more likely to be short sold.* Our short selling results are presented in Figure I and Table V. Shorting selling is measured as the ratio of daily total number of shares being shorted to the number of shares outstanding (Short/SHROUT). See Zheng (2008) and Henry and Koski (2008). For robustness, we consider two alternative measure of normal short selling. In the first measure, the "normal" short selling is defined as the firm's average Short/SHROUT ratio over the period from January 1st 2005 to July 6th 2007 but excluding event period(s), which is the window (-60, +60) around the borrowing event. In the second definition, we use the mean of the stock exchange of the firm daily short selling over its outstanding shares. This is equivalent to the market short-selling activities. Abnormal short selling is defined as the difference between the daily short selling during the event window minus the "normal" short selling (using either of the two measures above). Using the propensity score matching, 227 firms from the hedge fund

sample and 224 firms from the bank matching sample have short selling data for the time period from January 1st 2005 to July 6th 2007. Of which, there are 199 matched pairs.

Figure I, Panel A shows the plot of the abnormal short selling of the hedge fund sample against its propensity score bank matched sample, Panel B presents the cumulative abnormal short selling and Panel C and D plot the raw daily short selling ratio over windows of (-60, +60) and (-30, +30), respectively around borrowing event. As you can see from Panels A the abnormal short selling is much larger for the hedge fund sample in comparison to the bank sample. This result is confirmed in Panel B for the cumulative abnormal short selling and Panel C and D for the raw short selling.

<Insert Figure I>

In addition, Table V presents the results from univariate tests that compare differences in abnormal short selling between the hedge fund sample and its paired bank matched sample. Panels A and B present the cumulative abnormal short selling for the hedge fund sample and its propensity score matched bank sample, respectively, using different event windows (-5,+5),(-10,+10) and (-5,+20). Panel C, presents the mean difference of the cumulative abnormal short selling between the hedge fund sample and its match using the same event windows. In this table, for robustness, we consider the two alternative measure of abnormal short selling.

<Insert Table V>

As can be seen from Table V, the cumulative abnormal short selling is significantly larger for the hedge fund sample in comparison to its bank match. In particular for window (-10, +10) using the first definition of abnormal short selling, the cumulative abnormal short selling is 0.6% for the hedge fund sample while it is -0.4% for its bank match. The difference is positive

and significant at the 1% level. We obtain similar results if we consider other windows or an alternative definition of abnormal short selling but its statistical significance might drop to 10%.

In summary, our results consistent with anecdotal evidence that hedge funds as lenders exploit their ability to take potentially beneficial position in the equity of firms to whom they lend. In addition to the deterioration of the firm performance post-borrowing, hedge fund lenders seem to be involved in short selling the equity of their borrowers.

References:

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

Bharat, S., S. Dahiya, A. Saunders, and A, Srinivasan, 2007, So What do I get: A bank's view of lending relationships? *Journal of Financial Economics,* 85(2), 368-419.

Billett, M, Flannery, M., Garfinkel, J., 1995. The effect of lender identity on a borrowing firm's equity return. *Journal of Finance* 50, 699-718.

Billett, M., Flannery, M., Garfinkel, J., 2005. Are Bank Loans Special? Evidence on the Post-Announcement Performance of Bank Borrowers. *Journal of Financial and Quantitative Analysis*, Forthcoming.

Cottier, P., 1997, Hedge Funds and Managed Futures: Performance, Risks, Strategies and Use in Investment Portfolios (Bern: Verlag Paul Haupt).

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

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

Griffin, John M., and Jin Xu, 2007, How smart are the smart guys? A unique view from hedge fund stock holdings, Review of Financial Studies, forthcoming.

Henry, Tyler R., and Jennifer L. Koski, 2008, Short Selling Around Seasoned Equity Offerings, Working paper, University of Georgia.

Hoshi, T., A. Kashyap, and D. Scharfstein, 1990, The Role of Banks in Reducing the Costs of Financial Distress in Japan, *Journal of Financial Economics*, September 1990, 67-88.

Huang, Jiekun, Hedge Fund Activism in Leveraged Buyouts, 2008, Working paper, Boston College.

Ivashina, V., 2005, The effects of syndicate structure on loan spreads, Working paper, Harvard Business School.

Lummer, S. L., McConnell, J. J., 1989. Further evidence on the bank lending process and the capital-market response to bank loan agreements. Journal of Financial Economics 25, 99-122.

James, C. M., 1987. Some evidence on the uniqueness of bank loans. *Journal of Financial Economics* 19, 217-235.

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

Nandy, D. and P. Shao, 2007, Institutional Investment in Syndicated Loans, Working paper, York University.

Peterson, M., and R. Rajan, 1994, The benefits of lending relationships: Evidence from small business data, *Journal of Finance* 49, 3-37.

Ramakrishnan, R., Thakor, A., 1984. Information reliability and a theory of financial intermediation. *Review of Economic Studies* 51, 415-432.

Zheng, Lin, 2008, Short Sales and Post Earnings Announcement Drift, Working paper, Cornell University.

Table I
Distribution of Loan Sample by Year and Industry

Panel A reports the number of loans (at deal level) by lender category for each year from 1995 to 2008 (*DealScan* data of 2008 is incomplete and covers only the first quarter). The Hedge Fund Lender sample includes all loan deals with at least one lender defined as a hedge fund or as a hedge fund management company. Other Institutional Lender sample includes all loan deals with an institutional lender that is not identified as a hedge fund. Bank Lender sample covers all loan deals that are made by a lender or a syndicate of lenders where all lenders are commercial banks. Panel B reports the number of borrowers in each lender category by year. Panel C summarizes the number of borrowers by the Fama-French industry classification. Specifically, we categorize borrower's 4-digit SIC codes into 30 major industry classes as defined by Fama-French.

Panel A: Number of Deals in each Lender Category by Year							
	Hedge Fund Lender Sample			Other Institutional Lender Sample		Bank Lender Sample	
Year	N	Pct (%)		N	Pct (%)	N	Pct (%)
1995	86	10.79		8	1	703	88.21
1996	122	10.54		14	1.21	1,021	88.25
1997	186	14.14		22	1.67	1,107	84.18
1998	125	11		39	3.43	972	85.56
1999	135	12.55		37	3.44	904	84.01
2000	119	10.45		45	3.95	975	85.6
2001	92	8.51		31	2.87	958	88.62
2002	115	9.93		47	4.06	996	86.01
2003	187	16.02		39	3.34	941	80.63
2004	218	17.44		46	3.68	986	78.88
2005	184	15.41		51	4.27	959	80.32
2006	150	13.86		90	8.32	842	77.82
2007	157	16.65		72	7.64	714	75.72
Q1 2008	7	3.7		6	3.17	176	93.12
All	1,883	12.82		547	3.73	12,254	83.45

	Hedge Fund Lender Sample			Other Institutional Lender Sample			Bank Lender Sample	
Year	N	Pct (%)		N	Pct (%)		N	Pct (%)
1995	79	10.51		8	1.06		665	88.43
1996	116	10.73		12	1.11		953	88.16
1997	165	13.56		16	1.31		1,036	85.13
1998	118	11.13		32	3.02		910	85.85
1999	126	12.33		34	3.33		862	84.34
2000	113	10.65		38	3.58		910	85.77
2001	88	8.74		30	2.98		889	88.28
2002	113	10.29		40	3.64		945	86.07
2003	161	14.88		33	3.05		888	82.07
2004	185	16.14		40	3.49		921	80.37
2005	168	15.33		40	3.65		888	81.02
2006	136	13.71		74	7.46		782	78.83
2007	148	17.05		58	6.68		662	76.27
2008	7	3.72		6	3.19		175	93.09
All	1,723	12.6		461	3.37		11,486	84.02

Panel B: Number of unique Borrower's in each Lender category by Year

Industry Categories	Industry Descriptions	Hedge Fund Lender Sample		Other Institutional Lender Sample		Bank Lender Sample	
		N	Pct (%)	N	Pct (%)	N	Pct (%)
1	Food Products	32	1.88	10	2.22	261	2.31
2	Beer & Liquor	8	0.47	2	0.44	43	0.38
3	Tobacco Products	5	0.29	2	0.44	11	0.1
4	Recreation	98	5.77	14	3.1	213	1.88
5	Printing and Publishing	33	1.94	8	1.77	150	1.32
6	Consumer Goods	27	1.59	12	2.66	186	1.64
7	Apparel	14	0.82	7	1.55	213	1.88
8	Healthcare, Medical Equipment, Pharmaceutical Products	108	6.36	40	8.87	714	6.31
9	Chemicals	57	3.36	5	1.11	183	1.62
10	Textiles	10	0.59	9	2	71	0.63
11	Construction and Construction Materials	41	2.41	16	3.55	416	3.67
12	Steel Works Etc	26	1.53	12	2.66	215	1.9
13	Fabricated Products and Machinery	52	3.06	7	1.55	446	3.94
14	Electrical Equipment	19	1.12	15	3.33	151	1.33
15	Automobiles and Trucks	51	3	12	2.66	153	1.35
16	Aircraft, ships, and railroad equipment	11	0.65	1	0.22	89	0.79
17	Precious Metals, Non-Metallic, and Industrial Metal Mining	9	0.53	3	0.67	103	0.91
18	Coal	7	0.41	1	0.22	19	0.17
19	Petroleum and Natural Gas	89	5.24	14	3.1	613	5.41
20	Utilities	46	2.71	5	1.11	589	5.2
21	Communication	199	11.72	20	4.43	288	2.54
22	Personal and Business Services	162	9.54	66	14.63	1,247	11.01
23	Business Equipment	95	5.59	36	7.98	967	8.54
24	Business Supplies and Shipping Containers	82	4.83	9	2	192	1.7
25	Transportation	66	3.89	17	3.77	322	2.84
26	Wholesale	53	3.12	22	4.88	540	4.77
27	Retail	66	3.89	32	7.1	856	7.56
28	Restaurants, Hotels, Motels	42	2.47	19	4.21	220	1.94
29	Banking, Insurance, Real Estate, Trading	153	9.01	32	7.1	1,784	15.76
30	Everything Else	37	2.18	3	0.67	67	0.59

Panel C: Industry classification of Borrowers in each Lender category

Table II
Summary Statistics and Correlations

Panel A of Table II summarizes firm characteristics of borrowers across different lender categories. The statistics are reported at the loan deal level. All operating performances are measured with COMPUSTAT data at the last fiscal year-end at least 3 months prior to the loan origination date. Firm Size refers to the natural logarithm of total assets. For manufacturing companies, Altman's Z score is define as 1.2* (Working Capitals/Total Assets) + 1.4*(Retained Earnings/Total Assets) + 3.3*(EBIT/Total Assets) + 0.6*(Mkt Value of Equity/ Book Value of Total Liabilities) + 1.0* Sales/Total Assets. For non-manufacturing companies, Z-score is defined as 6.56*(Working Capitals/Total Assets) + 3.26*(Retained Earnings/Total Assets) + 6.72*(EBIT/Total Assets) + 1.05*(Mkt Value of Equity/ Book Value of Total Liabilities). Cash/assets ratio refers to the ratio of cash and equivalents to total assets. Net worth/assets ratio is defined as net worth divided by total assets. EBIT/assets ratio is defined as earnings before interests and tax divided by total assets. Book to Market refers to the book-to-market ratio of equity. Tobin's q is the ratio of the market value of assets to the book value of assets. Leverage is measured as the sum of long-term debt plus debt in current liabilities divided by total assets. Sales Growth refers to the average rate of sales growth over 3 years prior to loan origination date. Profit margin is defined as the ratio of earnings to sales. Interest coverage ratio is measured as gross earnings divided by the sum of total interest expense and capitalized interests. Beta and RMSE are the estimated coefficients and root mean squared error based on the market model, calculated over the interval [-360, -61] with respect to the loan origination date. Run-up is the holding period return over the same estimation window [-360, -61]. Institutional ownership is the percentage of shares held by institutional investors, measured as the average of last 4 quarters at least 3 month prior to loan origination date. Panel B summarizes the correlations between the variables. All variables are winsorized at 2.5 and 97.5 percentile.

Panel A: Summary Statistics of Borrower Characteristics								
	Hedge Fund Lender Sample			Other Institutional Lender Sample			Bank Lender Sample		
	N	Mean	Median	N	Mean	Median	N	Mean	Median
Firm Size	1,798	7.507	7.365	515	5.931	5.936	11,799	6.474	6.390
Altman's Z Score	1,341	2.816	1.910	442	3.894	2.629	8,891	4.756	3.424
Cash/assets	1,798	0.071	0.034	515	0.092	0.037	11,797	0.097	0.044
Net worth/assets	1,796	0.273	0.277	515	0.390	0.400	11,778	0.426	0.425
EBIT/assets	1,789	0.058	0.066	513	0.053	0.066	11,754	0.061	0.076
Book to Market	1,539	0.507	0.412	468	0.608	0.528	10,724	0.585	0.490
Tobin's q	1,396	1.549	1.343	448	1.644	1.358	9,912	1.730	1.379
Leverage	1,793	0.430	0.426	514	0.332	0.313	11,749	0.268	0.247
Beta	1,482	1.160	1.065	445	1.061	0.974	10,760	1.051	0.952
RMSE	1,482	0.029	0.024	445	0.033	0.027	10,760	0.029	0.024
Run-up	1,482	0.200	0.164	445	0.170	0.093	10,760	0.151	0.097
Sales Growth	1,717	0.236	0.093	507	0.202	0.081	11,275	0.231	0.110
Profit Margin	1,787	-0.004	0.028	513	0.004	0.028	11,731	0.025	0.046
Interest Coverage	1,588	7.105	2.141	456	9.525	2.823	10,071	12.821	4.123
Institutional Ownership	1,364	0.553	0.596	439	0.507	0.509	10,074	0.484	0.501

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
							Panel B: Correlations between Variables									
1	Firm Size	1.00														
2	Altman's Z Score	-0.18	1.00													
3	Cash/assets	-0.21	0.46	1.00												
4	Net worth/assets	-0.27	0.63	0.31	1.00											
5	EBIT/assets	0.17	0.33	-0.14	0.15	1.00										
6	Book to Market	-0.09	-0.26	-0.17	0.14	-0.16	1.00									
7	Tobin's q	-0.13	0.67	0.40	0.24	0.17	-0.59	1.00								
8	Leverage	0.10	-0.54	-0.36	-0.68	-0.07	-0.02	-0.25	1.00							
9	Beta	-0.05	0.17	0.27	0.12	-0.14	-0.16	0.24	-0.13	1.00						
10	RMSE	-0.56	-0.03	0.19	0.07	-0.44	0.21	0.03	-0.01	0.28	1.00					
11	Run-up	0.00	0.09	0.05	0.00	0.18	-0.15	0.12	-0.02	0.01	-0.17	1.00				
12	Growth of sales	-0.18	0.17	0.16	0.11	-0.14	-0.09	0.18	0.02	0.16	0.21	-0.04	1.00			
13	Profit Margin	0.25	0.18	-0.23	0.10	0.76	-0.03	-0.02	-0.06	-0.23	-0.47	0.13	-0.20	1.00		
14	Interest Coverage	-0.01	0.50	0.22	0.33	0.41	-0.15	0.31	-0.38	0.06	-0.11	0.07	-0.03	0.28	1.00	
15	Institutional Ownership	0.41	0.09	-0.01	0.06	0.19	-0.16	0.07	-0.07	0.17	-0.40	0.02	-0.12	0.15	0.11	1.00

Table III
Logit Regressions on the Probability of Borrowing from Hedge Funds

This Table reports our logit regression results. The dependant variable in these regressions takes the value of 1 if there is at least one hedge fund lender in a given loan deal, otherwise it takes the value of 0 if all lenders are commercial banks. This analysis is based on loan deals during the sample period 1995 to the first quarter of 2008. Elasticity (Elast.) was calculated as $d(lnF)/d(lnx)$, where d is the first derivative, $ln(F)$ is the natural logarithm of the density function and $ln(x)$ is the natural logarithm of the explanatory variable and is evaluated at the sample means of the explanatory variables. Heteroskedasticity corrected robust standard errors (Std. Err.) are reported in all specifications. * , ** and *** indicate p value of 10%, 5% and 1%, respectively.

	Model I				Model II				Model III			
	Coef.	Std. Err.		Elast.	Coef.	Std. Err.		Elast.	Coef.	Std. Err.		Elast.
Firm Size	0.266	0.020	***	1.585	0.270	0.018	***	1.674	0.242	0.023	***	1.471
Altman's Z	-0.192	0.021	***	-0.791	---	---		---	-0.224	0.027	***	-0.959
Leverage	---	---		---	3.626	0.159	***	0.913	---	---		---
Cash/assets	---	---		---	-0.212	0.347		-0.018	-1.045	0.418	**	-0.094
Ebit/assets	2.087	0.382	***	0.123	1.040	0.341	***	0.061	1.974	0.460	***	0.129
Book-to-Market	-0.480	0.087	***	-0.243	-0.082	0.074		-0.043	-0.486	0.095	***	-0.249
Beta	0.289	0.049	***	0.289	0.350	0.049	***	0.339	0.235	0.057	***	0.238
RMSE	15.559	2.549	***	0.437	11.596	2.321	***	0.308	23.449	2.938	***	0.645
Run-up	0.243	0.060	***	0.033	0.265	0.059	***	0.037	0.299	0.065	***	0.044
Sales Growth	0.268	0.083	***	0.054	0.159	0.083	*	0.033	0.322	0.100	***	0.062
Institutional Ownership	---	---		---	---	---		---	1.343	0.167	***	0.632
Year Dummies	No				No				No			
Industry Dummies	No				No				No			
Number of obs	9720				11603				8754			
Pseudo R2	0.086				0.123				0.108			
Log likelihood	-3351				-3751				-2842			

Table III (Continued)

	Model IV				Model V			
	Coef.	Std. Err.		Elast.	Coef.	Std. Err.		Elast.
Firm Size	0.296	0.022	***	1.867	0.333	0.024	***	2.132
Altman's Z	---	---		---	---	---		---
Leverage	3.807	0.178	***	0.963	4.022	0.201	***	1.028
Cash/assets	-0.436	0.388		-0.037	-0.309	0.439		-0.027
Ebit/assets	0.965	0.390	**	0.062	0.884	0.411	**	0.058
Book-to-Market	-0.014	0.084		-0.008	0.247	0.091	***	0.132
Beta	0.135	0.060	**	0.132	-0.015	0.067		-0.015
RMSE	27.753	2.990	***	0.720	21.234	3.556	***	0.556
Run-up	0.286	0.067	***	0.043	0.292	0.071	***	0.045
Growth of sales	0.194	0.101	*	0.039	0.261	0.111	**	0.053
Institutional Ownership	1.318	0.158	***	0.621	1.369	0.162	***	0.653
Year Dummies	Yes				Yes			
Industry Dummies	No				Yes			
Number of obs	10518				10365			
Pseudo R2	0.147				0.204			
Log likelihood	-3183				-2925			

Table IV
Propensity Score Match Adjusted Changes in Operating Performance after Loan Origination

This table reports changes in operating performance after loan origination. All changes in performance (except change in sales) is defined as performance at (t+1) minus performance at (t-1). Performance at (t+1) is measured at the earliest fiscal year end at least 3 months after the loan origination date. Similarly performance at (t-1) is measured at the last fiscal year-end at least 3 months prior to the loan origination date. Changes in sales (ΔSales) refers to the ratio of $(Sales_{t+1} - Sales_{t-1})/Sales_{t-1}$. We also identify the number of borrowers that filed for bankruptcy and/or get delisted because of unfavorable performance after loan origination. We include delisting codes of 400, 450, 460, 470, 480, 490, 520, 550, 552, 560, 570, 572, 573, 574, 580, 584 and 591. . * , ** and *** indicate p value of 10%, 5% and 1%, respectively.

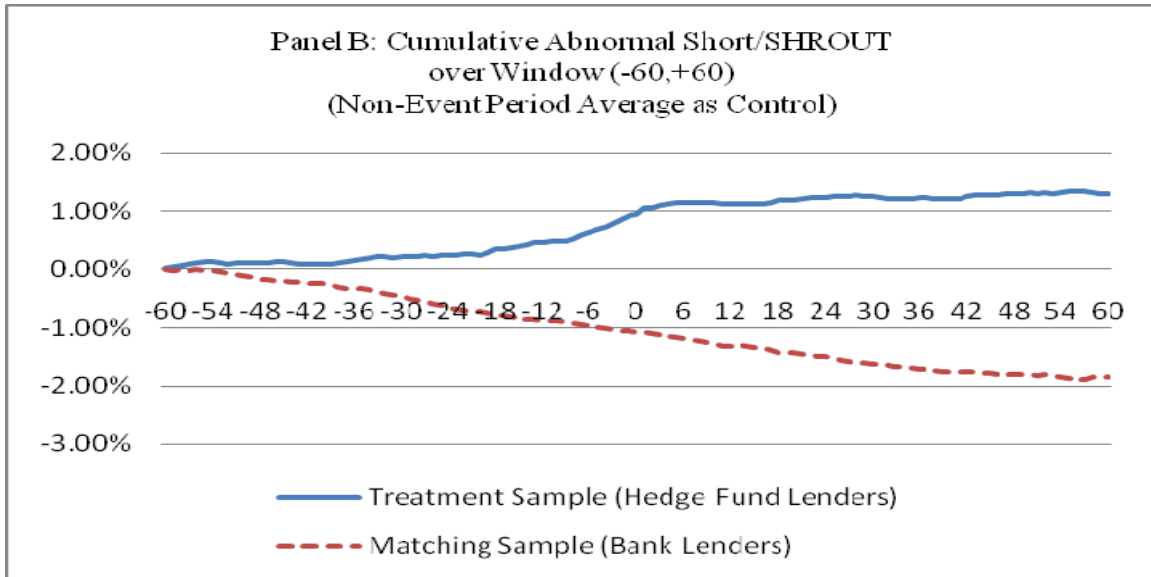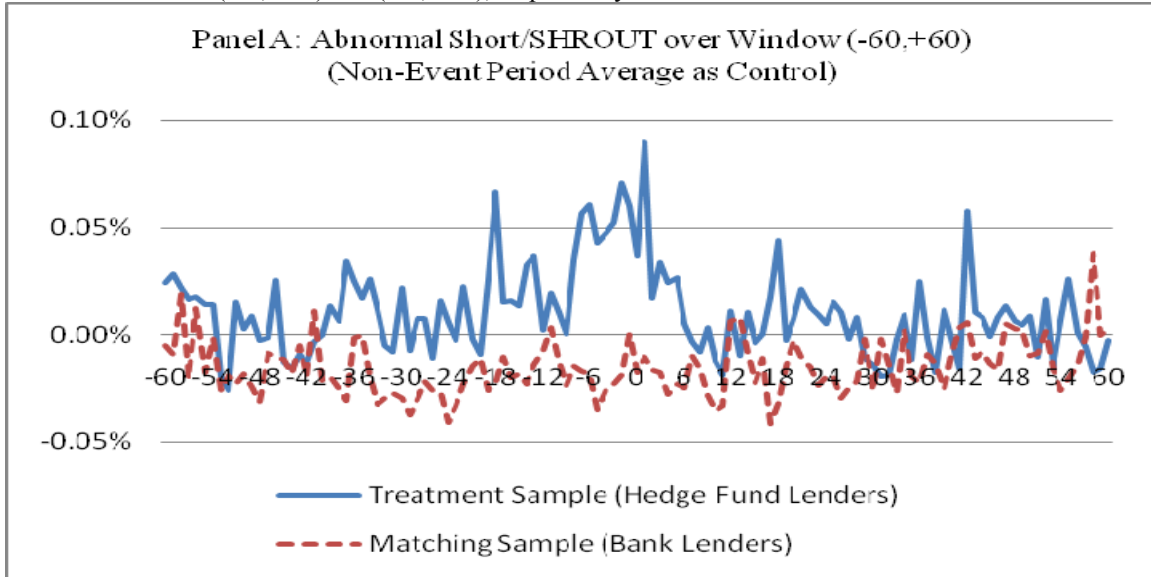| Variables	Panel A: Hedge Fund Lenders				Panel B: Matching Bank Lenders				Panel C: Paired Mean Difference Test (A-B)			
	N	Mean	t value		N	Mean	t value		Mean Diff	DF	t value	
ΔSize	836	0.225	13.881	***	848	0.14	10.164	***	0.085	757	3.619	***
ΔAltman's Z	714	-0.811	-7.958	***	654	-0.213	-2.096	**	-0.598	495	-4.872	***
ΔCash/assets	836	-0.012	-4.929	***	848	-0.004	-1.700	*	-0.008	757	-2.382	**
ΔNet worth/assets	836	-0.04	-7.309	***	847	0.001	0.125		-0.04	757	-6.892	***
ΔEBIT/assets	836	-0.004	-1.238		848	0.006	1.832	*	-0.009	757	-2.305	**
ΔBook-to-Market	831	-0.063	-3.405	***	844	-0.02	-1.412		-0.042	751	-2.658	***
ΔTobin's q	743	-0.068	-3.229	***	751	-0.038	-1.599		-0.03	598	-0.973	
ΔLeverage	836	0.03	5.762	***	848	-0.013	-2.751	***	0.043	757	7.321	***
ΔSales	838	0.422	5.376	***	848	0.263	9.591	***	0.159	759	1.632	
ΔProfit margin	838	0.006	1.154		848	0.015	3.537	***	-0.01	759	-1.386	
ΔInterest coverage	729	-2.653	-4.375	***	729	-1.835	-2.604	***	-0.818	568	-1.262	
Num of observations		**943**				**943**						
Num. of bankruptcies		**80**				**57**			**23**			

Table V
Propensity Score Match Adjusted Abnormal Short Selling Activity around Loan Origination
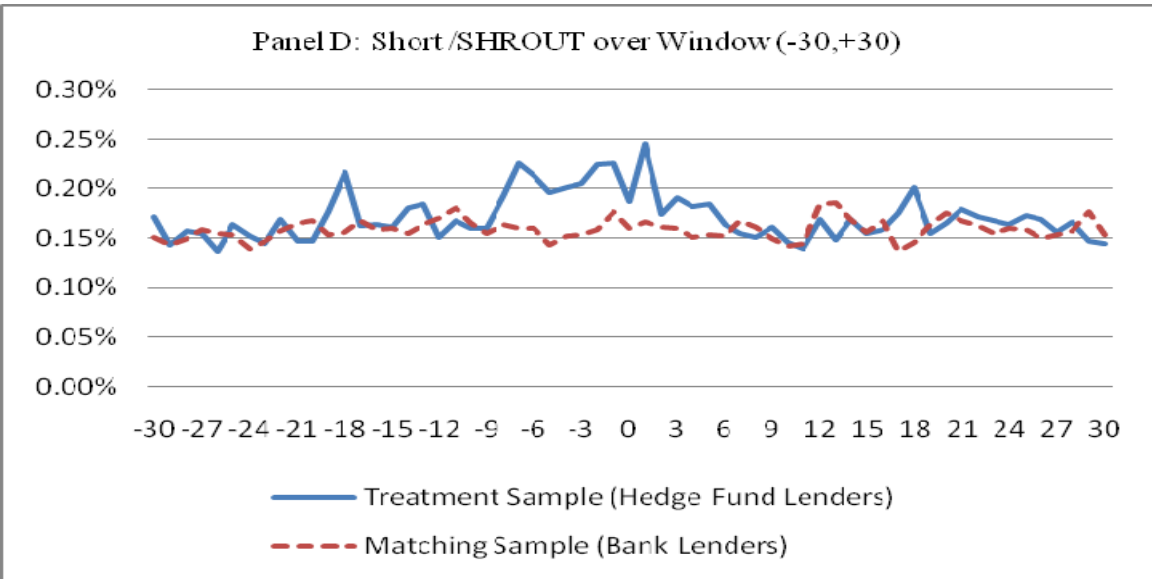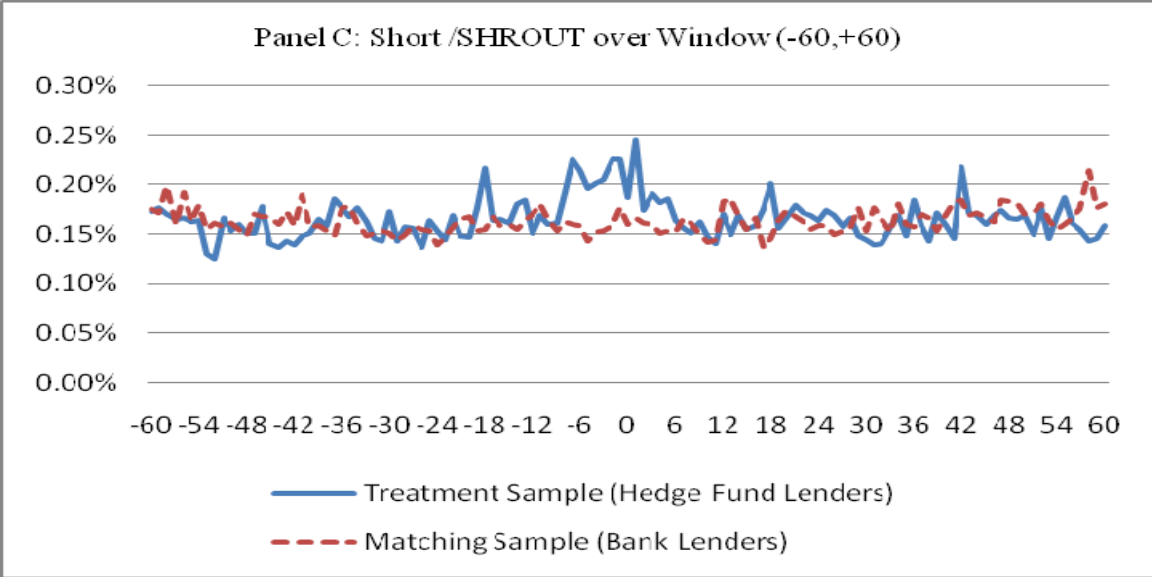
This table reports the cumulative abnormal short selling activity around the loan origination date. We use the propensity score matching methodology to construct a matched sample of commercial bank loan borrowers (bank matching sample) for every hedge fund loan borrower (hedge fund sample), based on Regression 4 in Table 3. Abnormal short selling is calculated as the (Short/SHROUT) ratio over the windows (-5, +5), (-10, +10) and (-5, +20) for the hedge fund borrower sample and matched commercial bank borrower sample. Shorting actitivity (Short/SHROUT), is measured as the ratio of daily total number of shares being shorted to the number of shares outstanding. We use two alternative definitions for abnormal short selling. Abnormal Short/SHROUT 1 and 2 differ as follows: in terms of abnormal Short/SHROUT1, for any borrower, we use the average Short/SHROUT ratio over the period from January 2nd 2005 to July 6th 2007 but excluding event periods as the benchmark for "normal" shorting activity; for abnormal Short/SHROUT2, we use the mean Short/SHROUT ratio on the same day and in the same stock exchange as the borrowing company as our benchmark of "normal" shorting activity. * , ** and *** indicate p value of 10%, 5% and 1%, respectively.

Windows	Cumulative Abnormal Short/SHROUT1			Cumulative Abnormal Short/SHROUT2		
	(-5,+5)	(-10,+10)	(-5,+20)	(-5,+5)	(-10,+10)	(-5,+20)
	Panel A: Hedge Fund Lenders					
Mean cumulative abnormal Short	0.452%***	0.579%**	0.487%**	0.710%***	1.100%***	1.154%***
t-value	2.764	2.312	2.009	3.386	3.234	3.243
Degree of freedom	222	222	222	226	226	226
	Panel B: Matching Bank Lenders					
Mean cumulative abnormal Short	-0.202%***	-0.390%***	-0.463%***	0.204%*	0.381%*	0.537%**
t-value	-2.839	-3.092	-2.991	1.893	1.864	2.201
Degree of freedom	223	223	223	223	223	223
	Panel C: Paired Mean Difference Test (Hedge Fund lender – Bank lender)					
Mean difference (A-B)	0.654%***	0.969%***	0.950%***	0.506%**	0.718%*	0.616%*
t-value	3.775	3.399	3.241	2.375	1.941	1.702
Degree of freedom	194	194	194	198	198	198

Figure I
Short Selling Activity around Loan Origination

Figure one depicts short selling activity around the loan origination date (day$_0$), defined as the deal origination date in DealScan. Panel A plots the abnormal shorting activity of the treatment sample (hedge fund lender) and those of the matched sample (bank lenders only). Shorting actitivity is measured as the ratio of daily total number of shares being shorted to the number of shares outstanding (Short/SHROUT). For any given borrower, the benchmark "normal" shorting activity is defined as the company's average Short/SHROUT ratio over the period from January 2nd 2005 to July 6th 2007 but excluding the event period(s), which is the window (-60, +60). The solid line plots the abnormal daily Short/SHROUT ratio of the treatment, and the dashed represents the ratio of the matched sample. Panel B presents the cumulative abnormal Short/SHROUT ratios over the same window. Panel C and D descibe the raw Short/SHROUT ratios over window (-60, +60) and (-30, +30), respectively.

Panel C: Short /SHROUT over Window (-60,+60)

Panel D: Short /SHROUT over Window (-30,+30)

Appendix A: Variable Description

Variable	Description
Short/SHROUT	Ratio of daily non-exempted shorting volume to number of shares outstanding
Abnormal Short/SHROUT1	Short/SHROUT minus benchmark1, which is defined as the average Short/SHROUT ratio over the period from January 1st 2005 to July 6th 2007 but excluding event periods
Abnormal Short/SHROUT1	Short/SHROUT minus benchmark2, which is defined as the mean Short/SHROUT ratio on the same day and in the same stock exchange as the borrowing company
Firm Size	Natural logarithm of total assets (COMPUSTAT data 6) in 2007 dollars. All operating performances are measured with COMPUSTAT data at the last fiscal year-end at least 3 months prior to the loan origination date.
Altman's Z Score	For manufacturing firms, Z=1.2* (Working Capitals/Total Assets) + 1.4*(Retained Earnings/Total Assets) + 3.3*(EBIT/Total Assets) + 0.6*(Mkt Value of Equity/ Book Value of Total Liabilities) + 1.0* Sales/Total Assets. For non-manufacturing firms, Z=6.56*(Working Capitals/Total Assets) + 3.26*(Retained Earnings/Total Assets) + 6.72*(EBIT/Total Assets) + 1.05*(Mkt Value of Equity/ Book Value of Total Liabilities).
Cash/assets	Ratio of cash and equivalents to total assets (data1/data6)
Net worth/assets	Ratio of net worth to total assets ([data6-data181]/data6)
EBIT/assets	Ratio of Earnings Before Interests and Tax to total assets ([data18+data16+data15]/data6)
Book to Market	Ratio of book value of equity to market value of equity (data60/[data25*data199])
Tobin's q	Ratio of the market value of assets to the book value of assets ([data6+data25*data199-data60-data74]/data6)
Leverage	Sum of long-term debt plus debt in current liabilities divided by total assets ([data9+data34]/data6)
Growth of sales	Average rate of sales (data12 in 2007 dollars) growth over 3 years prior to loan origination date
Profit Margin	Ratio of income before extraordinary items to sales (data18/data12)

Interest Coverage	Ratio of gross earnings divided to the sum of total interest expense and capitalized interests ([data178+data61]/[data15+data147])
Institutional Ownership	Percentage of shares held by institutional investors, measured as the average of last 4 quarters at least 3 month prior to loan origination date based on Thomason Financial 13F database
Beta	Estimated coefficients based on the market model, calculated over the interval [-360, -61]
RMSE	Estimated room mean squared error based on the market model, calculated over the interval [-360, -61]
Run-up	Holding period return over the estimation window [-360, -61]
ΔPerformance	Performance at (t+1) minus performance at (t-1). Performance at (t+1) is measured at the earliest fiscal year end at least 3 months after the loan origination date. Similarly performance at (t-1) is measured at the last fiscal year-end at least 3 months prior to the loan origination date. Changes in sales (ΔSales) refers to the ratio of $(Sales_{t+1} - Sales_{t-1})/Sales_{t-1}$.
Year Fixed Effects	Indicators for year of loan deal origination
Industry Fixed Effects	Indicators of 30 major industry classes defined by Fama-French