The informational advantage of local investors: Evidence from fund managers' trades around credit events

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Abstract

We examine whether actively managed equity mutual funds trade on localised information events - syndicated loan covenant violations and changes in bank loan and entity ratings. Using difference-in-difference regression analysis, we find local investors to be associated with positive stocks' abnormal returns only during covenant violation event period rather than changes in credit ratings due to possible information leakage in syndicated loan network. In addition, we observe local investors to adjust their holdings at least three months prior to covenant violation with some evidences of correlated trades with insiders during credit events. We do not however find local investors involving in syndicated loan network to explain positive stocks' abnormal returns around credit event window. Finally, funds' holding of local stocks affected by covenant violation predict higher fund's performance. Overall, our findings suggest local investors having information advantages over distant counterparts due to their geography proximity to affected firms around credit events.

Keywords: creditors, covenant violations, credit ratings, credit risk, institutional investors, private information

JEL Classifications: G11, G14, G24, G34

1. Introduction

Since Coval and Moskowitz's (2001) seminal paper showed that mutual funds make significantly larger profits in local stocks, a vast literature has been spawned showing the investment value of geography. Domestic and international evidence abounds of individual investors (Grinblatt and Keloharju (2001), Ivkovic and Weibenner (2005), and Massa and Siminov (2006)) and professional traders earning higher returns either on their proximate investments or in comparison to their distant peers (Choe, Kho and Stulz (2005)). The explanations for the profitability of local securities range from information externalities through word of mouth (Ivkovic and Weisbenner (2005), Brown et al. (2008), and Christoffersen and Sarkissian (2009)), and to information coordination among investors to "keep up with the Joneses" (Hong, Jiang and Zhao (2011)). However, there is virtually no evidence of investors using their local advantage to trade around *specific* information events. This is a surprising omission in the literature given that tracing local trading to value relevant information would provide a motive for at least the information stories.

Our primary task in this paper is to investigate whether local investors profit from a particular significant corporate event in comparison to distant investors. Specifically, we examine the equity trades of the population of mutual funds before and after the announcement of value relevant credit events – covenant violations. Covenant violations are perfectly suited to our analysis. First, Nini, Smith and Sufi (2012) show that amendments to credit agreements triggered by loan covenant violations contain stronger restrictions on firm decision making and are followed immediately by CEO turnover, for example. Importantly, they also find that loan covenant violations are followed by a significant recovery in operating and stock price performance. Second, covenant violations are common and they trigger loan renegotiations that generally occur well before a firm is in danger of a payment

default or bankruptcy, which allows us to examine investors' actions in the run-up to the credit event.

We perform a parallel analysis of fund managers' trades around credit rating changes. Bhojraj and Sengupta (2003) and Ashbaugh-Skaife et al. (2006) document a positive relation between a firm's creditworthiness and its governance mechanisms, suggesting credit ratings are considered value relevant by investors. Rating agencies provide market wide information on the credit worthiness of firms. In the case of rating alerts, changes to the firms' credit standing are flagged to the market in advance. In contrast, covenant violations are dealt privately between the borrower and the loan syndicate, requiring investors seeking to profit to either possess inside information or be particularly skilled in processing public information correlated with such events. We hypothesize that local informational advantage is identified in equity trades around covenant violations rather than rating changes.

The empirical analysis used in this paper is agnostic to the source of price sensitive local information, of which there are several possibilities. Syndicated loan covenant violations seem to increase the risk of inside information leaking to syndicate team members and other institutional investors who are located close to affected firms. Bushman, Smith and Wittenberg-Moerman (2010) show that loan syndicate arrangements involving institutional investors are related to timelier price discovery in the borrower's secondary markets for the syndicated loans and equity, signaling insider trading. Massoud et al. (2011) find that hedge funds' involvement in syndicated loan arrangements is preceded by short-selling of the equity of hedge fund borrowers. When a corporate borrower under a syndicated loan arrangement violates its loan covenants, this triggers the potential leakage of inside information on the borrower. Ivashina and Sun (2011) find that "institutional participants in loan renegotiations subsequently trade in the stock of the same company and outperform trades by other managers and trades in other stocks by approximately 5.4% in annualized terms". Griffin,

Shu and Topaloglu (2012) fail to replicate Ivashina and Sun's findings using daily trading data linking loan providers to brokerages. For purposes of our paper though, our primary concern is not with identifying insider trading as the sole channel through which local investors profit. Griffin, Shu and Topaloglu's findings do not address the issue of information sharing outside the loan syndicate, a potential source of local investors' advantage. Through sustained analysis of local firms, it is also plausible, but not observable in Griffin, Shu and Topaloglu's framework, that local fund managers possess sufficient skill to process public information that predicts covenant violations.

To examine the source of information advantage by local investors, we identify two possible information channels. The first source of information can be collected via observing insider trades. Insiders are generally those individuals who have access to inside information around different event windows, in our context, covenant violation, and changes in loan and entity rating. For example, Griffin, Lont and McClune (2012) find net insider selling in the 12 months prior to debt covenant violation disclosure and net insider buying up to 12 months after disclosure. Moreover, there are also pronounced insider trading in credit derivatives market with greater use of private information by informed banks only for negative credit news and for entities that experience subsequent adverse shocks as documented by Acharya and Johnson (2007). Hence, it is reasonable to expect institutional investors to learn from insiders in terms of their trades. This is supported by Cohen, Malloy, and Pomorski (2012) who provide evidences that institutional investors have some ability to decipher between on-average informed opportunistic trades and uninformed routine traders. In particular, institutional investors appear to mimic opportunistic trades in the quarter following these trades. On the other hand, by utilizing daily trading data of eight different types of individual and institutional investors, Griffin, Shu, and Topaloglu (2012) do not find evidences of institutional investors using their inside information from their connections through takeover

advising, IPO and SEO underwriting, or lending relationships. In our study, since insiders do have access to private information around debt covenant violation and other related credit events, we hypothesize that local investors are able to learn from insiders in terms of their trading patterns. If this is true, we should observe changes in local investors' holdings to be associated with lagged insider buy and sell transactions.

Second, there is also possibility that our findings can be explained by the fact that local investors are directly involved in syndicated loan during loan covenant violation and changes in credit ratings. Previous studies find that loan covenant violation seems to increase the risk of information leakage to syndicate team members and other institutional investors located close to affected firms (see Bushman, Smith, and Wittenberg-Moerman (2010), and Ivashina and Sun (2011)). We hypothesize local investors who are also part of syndicated loan network to have greater effect on stocks' abnormal returns than local investors who are not part of syndicated team members.

Our findings can be summarized as follow. First, in Figure 1I, we find local investors to increase their weighting on affected firms for covenant violation, and loan and entity upgrade events while decreasing their weighting on affected firms for loan and entity downgrade events. These findings provide some evidence that local investors do trade their available inside information at least one quarter prior to any events. Second, consistent with informed trading of local institutional investors, we find that the stocks that local investors hold (trade) experience higher abnormal return at around 2% during loan covenant period than those that distant investors hold (trade). We do not find such evidence for loan and entity rating upgrades/downgrades events. We find qualitatively similar results by examining the cumulative abnormal returns (CAR) across several event windows. Our findings suggest that local investors do have access to private information prior to loan covenant month and subsequently trade on the corresponding stocks which translated into higher stocks' abnormal

returns. Local investors do not have such privilege for changes in loan and entity ratings since such information are presumably available publicly to all market participants.

Third, consistent with Baik, Kang, and Kim (2010), we find firms with high local ownership to predict higher stocks' abnormal returns across all credit events. Our interaction variable between local ownership and time suggest that stocks with higher local investor participation are positively related to stocks' higher abnormal returns only during post-covenant violation period. Using difference-in-difference regression analysis, at holdings level, we find supporting evidence that local investors are associated with positive stocks' abnormal returns during covenant violation period which are not observable in other credit events even after controlling for Global Industry Classification Standard (GICS) industry and time fixed effects. Fourth, we find our $Local$ variable to be associated with positive cumulative abnormal returns during [-1,+1] and [-1,0] covenant violation event windows controlling for all stock characteristics. This is not observed in both loan and entity upgrades and downgrades. These findings suggest that local investors are utilizing their informational advantage associated with loan covenant violation to trade on affected firms which lead to speedier price recovery process.

Fifth, we find evidence of local investors trading at least one-quarter prior to covenant violation period and such actions to be positive and significant in explaining stocks' abnormal returns. Sixth, funds with higher fraction value of local stocks in their portfolio to be positive and significant at 1% level in explaining fund's future performance supporting the previous literature of investment value of proximate investments. More importantly, our interaction variable between local stock and event stock (i.e. covenant violation) support our earlier conjecture that local informational advantage is identified in equity trades around covenant violation due either information sharing or geographic proximity to affected firms. This is in contrast to the release of ratings changes which are typically release to the public

hence limiting or preventing local investors' access to any private information. Finally, we find some evidence that local investors are benefiting from following previous quarter insider trades during covenant violations and rating upgrades event time period rather than their connection through syndicated loan network. Overall, our findings suggest that local institutional investors are able to collect soft and possibly private information as a result of covenant violation event due to their geography proximity to such firms.[1]

There are at least two potential concerns about our data and empirical design that need to be addressed. First, we acknowledge that using quarterly mutual fund holdings data is not ideal for observing investors' trading behavior. However, such data limitations face many researchers who have presented compelling evidence on the behavior of investors.[2] Second, there might be an unobservable factor that attracts local investors to stocks that experience covenant violations that bears no relation to local information endowments. To address this issue, we lead our analysis with evidence that the funds in our sample are prone to a local bias of approximately four percent (on average) of their share portfolios. This result is in line with the previous literature on home bias and suggests our local investors behave no differently to those in other settings researched before.

This paper contributes to the literature in several ways. Our first major contribution is to complement studies of how institutional investors trade profitably on otherwise private information on the companies' stocks. For instance, two main lines of inquiry have emerged on the utilization of private credit market information. First, participants in debt transactions are shown to profit from equity trades using the firms' private information (Massoud et al. (2011), Ivashina and Sun (2011)). Second, in the absence of identities of parties in possession

[1] See Gaspar and Massa (2007), Ayers, Ramalingegowda and Yeung (2011), Baik, Kang and Kim (2010), among others.
[2] See, for example, Coval and Moskowitz (2001), Grinblatt and Keloharju (2001), Choe, Kho and Stulz (2005), Ivkovic and Weisbenner (2005), Massa and Siminov (2006), Brown et al. (2008), and Christoffersen and Sarkissian (2009), (Hong, Jiang and Zhao (2011), among others.

of proprietary information, local investors are assumed to be informed owners due to their physical distance in collecting proprietary information and soft information as documented by Agarwal and Hauswald (2010). The economic effects of the supposed trading on private information are considerable. For example, Ivashina and Sun (2011) find institutional participants in loan renegotiations to subsequently trade on the same company and outperform other managers by 5.4% in annualized terms. These magnitudes raise the question of whether a small group of investors alone, be they affiliated parties or locals, would be responsible for the observed stock price effects. The primary task of this paper is to investigate whether investors' reaction to significant corporate events is purely localized, at the exclusion of distant investors.

The second major contribution of this study is in relation to stock price discovery in the post-loan reorganization and changes in bank loan and entity ratings period. Empirical works on how local investors affect prices and returns have emerged in the recent period. Pirinsky and Wang (2006) show that stocks that are headquartered in the same geographic area display strong return comovement. Hong, Kubik, and Stein (2008) show, using data on U.S. states and census regions, that the price of a stock is decreasing in the ratio of the aggregate book value of firms in its region to the aggregate risk tolerance of its investors, using aggregate income as a proxy for the latter. This suggests that local investors have a hand in the valuation of stocks. In addition, Korniotis and Kumar (2010) show that stock returns vary with the business cycles of their local community. Using institutional and retail trading data, they provide evidence that when local economic conditions are good, these local investors tend to invest more in local stocks, and their effect on prices is corrected over time by non-local investors. Furthermore, more recent studies by Shive (2012) and Thurlin (2010) document that local investors and traders dominate the price discovery process for most stocks due to informational advantage. The paper closest to ours in examining the stock

trading of institutional investors on loan market information is Ivashina and Sun (2011). However, their work seeks to identify evidence of institutional investors' usage of private information gathered in their roles as participants in the renegotiation of syndicated loans. In contrast, our work is aimed at contributing to the more general issue of the factors behind the advantage attributed to local investors over their distant peers. By using two channels of investors' connectedness to information, our paper shows that, without negating Ivashina and Sun's findings, insider trading is not the only source of local advantage. If it were, our findings on credit rating changes would mirror those on loan covenant violations.

Finally, our paper contributes to the growing literature on institutional investors' usage of professional connections for gain. Previous studies have documented the sophistication of institutional investors in gaining access to private information either through their board connections (Cohen, Frazzini and Malloy, 2008) or syndicated lending network (Massoud et al., 2011, Ivashina and Sun, 2011) and subsequently profited by trading on such information. In contrast, using daily trading data by individual and institutional investors, Griffin, Shu and Topaloglu (2012) find no evidence of institutional investors taking advantage of their connections through takeover advising, IPO and SEO underwriting, or lending relationships. The authors eventually conclude that institutional investors are reluctant to use their inside information. That these studies provide mixed evidence on the profitability of trading by institutional investors leaves the topic open for further research.

The remainder of the paper is organized as follows. Section 2 provides detailed discussion on the structure of information distribution in the syndicated loan market. Section 3 describes the data and methods used. Section 4 presents our empirical results and section 5 provides further tests on two information channels by local investors. Section 6 concludes.

2. Related literature and institutional background

Our paper relies on the ability of equity investors to observe the interventionist actions of creditors in response to deterioration in the firm's credit quality. Loan covenant violations are generally subject to information leakage due to strong network amongst syndicated lenders who are institutional investors themselves. In Pagano and Jappelli's (1993) theoretical model on information sharing, lenders have incentives to share information with other lenders due to information asymmetry and such actions are positively related to an increase in lending activity and lower borrower default rates.[3] Petersen and Rajan (2002) and Agarwal and Hauswald (2010) argue that local lenders gain an informational advantage over more remote competitors due to collection of "soft" information over time. This is further supported by Hauswald and Marquez (2006) who document the quality of bank's proprietary information to be a decreasing function of the distance between bank and borrower. Such phenomena enable lenders to strategically use their local information advantage to create adverse-selection threats for their rivals. More recently, Hollander and Verriest (2012) argue that reliance on covenants in syndicated loan contracts is positively associated with borrower-lender distance as part of monitoring mechanism.

There has been significant proportion of corporations being affected by loan syndications and covenants. According to Bank for International Settlements (BIS), in 2010, syndicated corporate loans in U.S. itself stand at $635.2 billion, amounting to 36% of the worldwide syndicated loans.[4] A syndicated loan is originated and monitored by one bank, yet it is funded by a group (or a syndicate) of lenders. An important fact about loan syndication is that most participants in lending syndicates are not banks but institutional investors, including collaterized loan obligations, hedge funds, mutual funds, pension funds and insurance

[3] Their findings are supported empirically by few of their follow-up papers. See also Padilla and Pagano (1997), Padilla and Pagano (2000), Jappelli and Pagano (2002), among others.
[4] See http://www.bis.org/statistics/secstats.htm

companies.[5] With such tremendous growth, syndicated loans in U.S. have received great attention not only from financial practitioners but also from academic literature. In Nini, Smith and Sufi's (2012) sample of 3,699 firms covering the period 1997-2008, 40 percent are involved in covenant violations at a certain point during the analysis period.

The structure of information distribution in the syndicated loan market is of interest to this paper. The typical loan agreement requires borrowers to continuously disclose "material" information in timely fashion to lenders. However, the borrower is not required to simultaneously disclose this information to the public. Unless the documentation or other information made available by the borrower to its lenders is already publicly available, it is protected by a confidentiality agreement and, in that sense, is not subject to SEC Regulation Fair Disclosure (Regulation FD). So the fact that the amendment is material should not affect the time of its public disclosure. These arrangements place a premium on the value of the information that could potentially leak from the renegotiation of covenant violations.

3. Data and methods

3.1. Data and sample construction

Our primary source of data is Center for Research in Security Prices' (CRSP) Mutual Fund Database, which contains holdings data of U.S. mutual fund managers from 2002 through 2008 along with their location (city and state). From CRSP-Compustat, we obtain the headquarters location of every U.S. Company covered by our primary database. Next, using latitude and longitude data from the U.S. Census Bureau's Gazetteer Place and Zip code Database, we match each fund manager and the headquarters of each U.S. Company with the

[5] The fraction of mutual funds' portfolios that may be invested in illiquid securities is restricted. At least in the last ten years, however, according to a manager at a prominent mutual fund, most loans would be classified as liquid securities. To the best of our knowledge, there are no other regulatory restrictions on loan investments.

latitude and longitude coordinates. With the coordinate data, we compute an arclength between each fund manager and every firm in their portfolio holdings. Following Coval and Moskowitz (1999), we restrict our analysis to continental United States, excluding firms and funds located in Alaska, Hawaii, or Puerto Rico. We also exclude all index funds from our analysis as we want to focus on the behavior of fund managers that are in a position to make portfolio choices. Due to some restrictions prohibiting mutual funds from investing in certain companies, our universe of available assets consists only of those companies held by at least one mutual fund, and firms not covered by COMPUSTAT are also excluded. Then we merge our dataset with information obtained on covenant loan violation announcements reported by U.S. public firms from Nini, Smith and Sufi (2012).[6] Thus, our final sample consists of 654 Fund Management Companies running 4,576 equity funds with primary holdings in 8,203 different U.S. companies.[7] These managers account for approximately $2.95 trillion of investment in U.S. equities as at June 2008.

Our secondary source of data is obtained from S&P Rating Xpress database which contains information on issuer and instrument credit ratings[8], thereby enabling us to track upgrades and downgrades of bank loan and entity ratings by U.S. corporations. It is important to note that issuer credit ratings reflect Standard & Poor's opinion on obligor's overall financial capacity (its creditworthiness) to pay its financial obligations. This opinion focuses solely on the obligor's capacity and willingness to meet its financial commitments as they come due without taking into consideration of the nature of and provisions of the obligation, its standing in bankruptcy or liquidation, statutory preferences, or the legality and enforceability of the obligation. In addition, it does not take into account the creditworthiness

[6] The loan covenant violation data is made available by Amir Sufi on his webpage as follow: http://faculty.chicagobooth.edu/amir.sufi/data.htm. See Nini, Smith and Sufi (2012) for more information on the data collection process.
[7] In our paper, we examine institutional trading on localized information at both stock and fund portfolio level.
[8] In S&P Rating Xpress database, we rank bank loan and entity ratings as follow: AAA = 1, AA+ = 2, AA = 3, AA- = 4, A+ = 5, A = 6, A- = 7, BBB+ = 8, BBB = 9, BBB- = 10, BB+ = 11, BB = 12, BB- = 13, B+ = 14, B = 15, B- = 16, CCC+ = 17, CCC = 18, CCC- = 19, CC = 20, C = 21, and D = 22.

of the guarantors, insurers, or other forms of credit enhancement on the obligation. As for instrument ratings, namely bank loan ratings in our study, it incorporates both the risk of default and the likelihood of full ultimate recovery in the event of default. Similar to previous studies (Falkenstein, 1996; Gompers and Metrick, 2001, Baik, Kang, and Kim, 2010), we obtain information on stock characteristics such as market-to-book ratio, size (log of market capitalization), return volatility, turnover, stock price, S&P500 inclusion, cumulative market-adjusted return for the preceding and penultimate six months, age, dividend yield, and R&D expenses as control variables which are largely obtained from Compustat database. Insider trading data and information on individual syndicated loan facilities for U.S. corporate borrowers were collected from Thomson Reuters Insider Filings and Loan Pricing Corporation's (LPC) Dealscan database respectively.

3.2. Methods

3.2.1 Computation of distance, local bias and local ownership measure

Following Coval and Moskowitz (1999, 2001), we calculate distance $d_{i,j}$ between fund manager i and the company headquarters of stock j using their respective coordinates in spherical geometry as follows:

$$d_{i,j} = \arccos\{\cos(\mathrm{lat_i})\cos(lon_i)\cos(\mathrm{lat_j})\cos(lon_j) + \cos(\mathrm{lat_i})\sin(lon_i)\cos(\mathrm{lat_j})\sin(lon_j) + \sin(\mathrm{lat_i})\sin(lat_j)\}\, 2\pi r/360, \quad (1)$$

where lat and lon are latitudes and longitudes (measured in degrees) of the fund manager and company headquarters locations and r is the radius of the earth (≈6378km).[9]

[9] See Ivkovic and Weisbenner (2005) and Parwada (2008) for similar application.

To gauge the degree to which a manager invests locally, we compute the fraction of fund assets invested in stocks located within 100 kilometers of the manager.[10] However, since funds differ in terms of the density of available investments within their local area, we compare this fraction to the fraction of the market of available investments that resides within 100 kilometers of the fund.[11] The difference between these two fractions is our local bias measure, representing the degree to which a manager invests locally in excess of what he/she would hold locally if he/she held the market portfolio.

$$Local\ bias_{j,t} = Local\ own\ portfolio\ _{j,t} - Local\ market\ portfolio_{j,t} \quad (2)$$

where $Local\ own\ portfolio\ _{j,t}$ is the fraction of the market value of a fund's total holdings comprising stocks located within 100 kilometers of the fund and $Local\ Market\ Portfolio_{j,t}$ is the proportion of all CRSP/Compustat listed stocks (or the market) based within 100 kilometers of the fund's headquarter. To put it simply, $Local\ own\ portfolio\ _{j,t}$ is fraction of local stocks that are actually held by funds and $Local\ market\ portfolio_{j,t}$ is fraction of stocks that funds could hold within 100 kilometers of their radius.

Next, following Coval and Moskowitz (2001), we compute local ownership variable as proxy for local investors' participation in a particular security as presented in equation (3). The first term is the fraction of the firm held by local mutual funds relative to the total fund holdings of the firm. We call this ratio raw local ownership. The second term is the fraction of the fund assets managed by funds within the 100 kilometers vicinity of stock j. This term is subtracted from raw local ownership to correct for the fact that fund managers are not uniformly located across the U.S.

[10] To be consistent with prior literature, we define a mutual fund as "local" if fund is located within a 100 kilometers radius of the company's headquarters.

[11] Only those firms being held by at least one fund are considered as the universe of assets available for investment, since funds may be restricted from holding or simply ignore certain firms. We also ran tests using all available stocks (regardless of whether they were held by at least one of our funds) as the set of equities available for investment and found very similar results.

$$Local\ ownership\ (LO) = \frac{\sum_{i \in N_j} D_{i,j}}{\sum_{i \in M} D_{i,j}} - \frac{\sum_{i \in N_j} V_i}{\sum_{i \in M} V_i} \quad (3)$$

where N_j is the set of local mutual funds within 100 kilometers of stock $j's$ headquarters, M is the universe of mutual funds, $D_{i,j}$ is the dollar value of fund $i's$ stake on stock j, and V_i is the total asset value of fund i.

3.2.2 Determinants of stocks' abnormal returns

To examine the contribution of local investors on stocks' abnormal returns, we utilize two proxies for local investors' participation around our credit events. First, at stock level, we compute local ownership variable following Coval and Moskowitz (2001) which measure the popularity of a particular security by local institutional investors in their investment portfolio. Second, at holdings level, we classified funds as either local or distant investors based on its geography proximity to its portfolio of stocks. Following previous literature, we define local fund as funds that are located within 100 kilometers of firms' headquarter.

Using ordinary least-squares (OLS) regression, at stock level, we expect our interaction variables between local ownership and time variable to be positively and statistically significant in explaining stock abnormal returns around covenant violation and loan and entity rating changes period. The regression model is specified as follows:

$$\begin{aligned} AR_{i,t} = {} & \alpha_i + \beta_1 Market\ to\ Book\ Ratio_{i,t-1} + \beta_2 Firm\ Size_{i,t-1} + \beta_3 Return\ Volatility_{i,t-1} \\ & + \beta_4 Turnover_{i,t-6,t-1} + \beta_5 Price_{i,t-1} + \beta_6 S\&P500_{i,t} + \beta_7 MRET_{i,t-6,t-1} \\ & + \beta_8 MRET_{i,t-12,t-7} + \beta_9 Age_{i,t-1} + \beta_{10} Dividend\ Yield_{i,t-1} + \beta_{11} R\&D_{i,t-1} \\ & + \beta_{12} LO_{i,t} + \beta_{13} Time_{i,t} + \beta_{13} LO_{i,t} * Time_{i,t} + \beta_{14} GICS\ Fixed\ Effects_{i,t} \\ & + \beta_{15} Time\ Fixed\ Effects_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (5)$$

where $AR_{i,t}$ is stock's abnormal returns computed using 36 months as estimation window in CAPM, Fama-French three factor and Carhart four factor regression model. For brevity, we only report results on abnormal returns computed using Carhart four factors model. Results using CAPM and Fama-French three factors models are largely consistent with our reported results.

Next, at holdings level, we apply *difference-in-difference* (DD) regression analysis alongside OLS regression outputs for comparison. To do this, we replace local ownership variable by interacting our $Local$ variable which is equals to one if funds are located within 100 kilometers of firms' headquarter with $Time$ variable which is a binary indicator of pre-, during, and post-event window. We expect similar results in comparison to OLS regression models. Using difference-in-difference approach enables us to observe the impact of our treatment funds on stocks' abnormal returns given a control sample (i.e. distant funds) pre- and post-event window across different credit events. In practice, we evaluate the effect of a given intervention (in our context, local investors) as the average abnormal return of the firms related to the credit events minus the average abnormal returns of the unrelated firms. Thus, our control sample includes the firm's abnormal return outside of the event window and the abnormal returns of firms that are not affected by the event.

Finally, we extend our regression analysis to *difference-in-difference-in-difference* (DDD) regression analysis by taking into account of connection with syndicated loan network by local and distant investors. Similar to the above interpretations, we implement DDD regression analysis to examine the average effects of local investors who are also part of syndicated loan network on stocks' abnormal returns during post-event window given control sample (i.e. distant investors who are not part of syndicated loan network). The regression model is specified as follows:

$$AR_{i,t} = \alpha_i + \beta_1 X_{i,t-1} + \beta_2 dL_{i,t} + \beta_3 dS_{i,t} + \beta_4 dL_{i,t} \bullet dS_{i,t} + \delta_0 dT_{i,t} + \delta_1 dT_{i,t} \bullet dL_{i,t} + \delta_2 dT_{i,t} \bullet dS_{i,t} + \delta_3 dT_{i,t} \bullet dL_{i,t} \bullet dS_{i,t} + \mu \quad (6)$$

where $X_{i,t-1}$ represents control variables used in earlier regression model, dL is a dummy variable for local investors, dS is dummy variable for investors part of syndicated loan network, dT is a time dummy.

$$\delta_3 = [\bar{y}_{L,S,2} - \bar{y}_{L,S,1}] - [\bar{y}_{L,NS,2} - \bar{y}_{L,NS,1}] - [\bar{y}_{D,S,2} - \bar{y}_{D,S,1}] - [\bar{y}_{D,NS,2} - \bar{y}_{D,NS,1}] \quad (7)$$

where the NS subscript refers to funds not connected to syndicated loan network and the D subscript represents distant investors. This is the *difference-in-difference-in-differences* (DDD) estimate.

3.2.3 Computation of security's abnormal return

We use CAPM, Fama and French's (1993) three factor and Carhart's (1997) four factor models to compute stocks' abnormal returns as shown in equation (8), (9) and (10).

CAPM:

$$r_i - R_f = \alpha + \beta_1 (R_m - R_f) + \varepsilon_i \quad (8)$$

Fama-French Three Factor:

$$r_i - R_f = \alpha + \beta_1 (R_m - R_f) + \beta_2 SMB + \beta_3 HML + \varepsilon_i \quad (9)$$

Carhart Four Factor:

$$r_i - R_f = \alpha + \beta_1 (R_m - R_f) + \beta_2 SMB + \beta_3 HML + \beta_4 UMD + \varepsilon_i \quad (10)$$

In the specifications, r_i is security monthly return, R_f is risk-free return rate, R_m is the return of the S&P500 market, SMB is "Small Minus Big" which accounts for the spread in returns between small and large-sized funds based on total net assets under management, HML is "High Minus Low" which accounts for the spread in returns between value and growth funds, and UMD which represents the momentum factor loadings. To compute abnormal returns, in every month, we run the CAPM, three and four factor regression models using the previous 36 months (3 years) of security returns as estimation window.

3.2.4 Changes in %shares holdings by local investors

Next, we interact our $Local$ and $\Delta\%Shares_{i,t}$ to examine whether funds anticipate any credit events in advance by increasing their weighting on affected firms. Our regression model is specified as follows:

$$AR_{i,t} = \alpha_i + \beta_1 X_{i,t-1} + \beta_2 Local_{i,t} + \beta_3 \Delta\%Shares_{i,t} + \beta_4 Local_{i,t} * \Delta\%Shares_{i,t} + \beta_5 GICS\ and\ Time\ Fixed\ Effects_{i,t} + \varepsilon_{i,t} \quad (11)$$

where $X_{i,t-1}$ represents control variables used in earlier regression model, and $\Delta\%Shares_{i,t}$ measures the change of firms' number of shares as a percentage of firms' prior-quarter total number of share outstanding.

3.2.5 Determinants of fund's performance

Finally, we regress funds' objective adjusted returns ($OAR_{i,t}$) on our independent variables to examine whether funds with larger fraction of local stocks and/or firms affected by credit events in their investment portfolio to subsequently generate higher performance. Our regression model is specified as follows:

$$OAR_{i,t} = \alpha_i + \beta_1 LN\ Fund\ Size_{i,t} + \beta_2 LN\ Fund\ Age_{i,t} + \beta_3 LN\ Family\ Size_{i,t}$$
$$+ \beta_4 Turnover\ Ratio_{i,t} + \beta_5 Expense\ Ratio_{i,t} + \beta_6 Cash\ Ratio_{i,t}$$
$$+ \beta_7 Fund\ Flow_{i,t-1} + \beta_8 Fund\ Flow_{i,t-2} + \beta_9 Local\ Stock_{i,t-1}$$
$$+ \beta_{10} Event\ Stock_{i,t-1} + \beta_{11} Local\ Stock_{t-1} * Event\ Stock_{i,t-1}$$
$$+ \beta_{12} Objective\ Dummies_{i,t} + \varepsilon_{i,t} \quad (12)$$

where $Return_{i,t}$ are funds' objective adjusted returns and funds' abnormal return calculated using Carhart four factors regression models. In our study, we use the previous 36 months (3 years) of fund returns as estimation window. LN Fund Size is the natural logarithm of funds' total net assets. LN Fund Age is the natural logarithm of funds' age since inception. LN Family Size is the natural logarithm of funds' total net assets aggregated at family level. Turnover Ratio is the level of turnover for the fund calculated by dividing the average assets during the period by the lesser of the value of purchases and the value of sales during the same period. Expense Ratio is the ratio of funds' operating expenses over the total net assets. Cash Ratio is the ratio of fund assets in cash. $Local\ Stock$ is the fraction of stocks located within 100 kilometers of fund's headquarters at time t. $Event\ Stock$ is fraction value of stocks experiencing credit events in fund's portfolio at time t. $Local\ Stock * Event\ Stock$ is interaction between $Local\ Stock$ and $Event\ Stock$ variables. Objective Dummies are binary indicators for each investment objective. We construct our fund flow variable following Sirri and Tufano (1998):

$$Fund\ Flow_{i,t} = \frac{TNA_{i,t} - TNA_{i,t-1} * (1 + R_{i,t})}{TNA_{i,t-1}}, \quad (13)$$

where $Fund\ Flow_{i,t}$ is the level of individual fund flow, $TNA_{i,t}$ is the total net assets of the fund, and $R_{i,t}$ is the fund's return over the prior year.

3.2.6 Computation of net insider demand and syndicated loan network measure

To facilitate comparison with previous studies (Rozeff and Zaman (1998), Piotroski and Roulstone (2005), Sias and Whidbee (2010), Ali, Wei, and Zhou (2010), we focus on open market transactions and define insiders as the directors and officers of a company, since they are the people who are most likely to possess information about firm fundamentals and be able to exploit the potential mispricing of their company's stock. To avoid filing errors, we exclude duplicate filings, insider buying and selling of fewer than 100 shares or more than 20% of the firm's total shares outstanding, and transactions whose trade prices deviate from CRSP prices by more than 50%. We calculate net insider demand ($NID_{i,t}$) as the net number of shares purchased by all insiders during the quarter as a fraction of prior-quarter shares outstanding.

$$NID_{i,t} = \frac{(\#\ of\ shares\ purchased_{i,t} - \#\ of\ shares\ sold_{i,t})}{\#\ shares\ outstanding_{i,t-1}} \quad (4)$$

Next, to determine fund's connection with syndicated loan network, we match fund names to a list of syndicated loan members in Loan Pricing Corporation's (LPC) Dealscan database. Ideally, we want to interpret funds as connected to syndicated loan network if they are part of syndicated loan members and at the same time investing in borrowing firms affected by credit events. However, such strict restriction results in low number of funds connected to syndicated loan network which prevent us from pursuing our empirical analysis. In our study, we define funds as connected to syndicated loan network ($Syndicated$) if they appear to be part of any syndicated loan facilities at time t. We argued that funds that are connected to syndicated lending network are more able to gain access to private information (Massoud et al., 2011, Ivashina and Sun, 2011).

4. Results

4.1. Descriptive statistics

We start our analysis for this study by presenting graphical illustrations of covenant violation, loan rating upgrades/downgrades, and entity rating upgrades/downgrades occurrence throughout our sample period. In Figure 1, we observe a declining trend in the incidence of financial covenant violations in our sample which resemble the latter part of figure 2 presented in Nini, Smith and Sufi (2012). The dotted line in Figure 1 plots the fraction of firms that reported new financial covenant violations in each year.[12] New violations are observed to follow the same pattern as total violations throughout our sample period. The incidence of bank loan and entity rating upgrade appears to be cyclical, peaking during 2007 and decline in 2008. The opposite is true for incidence of bank loan and entity rating downgrade which suggests an upgrade/downgrade of credit rating is dependent on the state of economy and financial market.[13]

< *Insert Figure 1 here* >

One may argue that higher local investor participation (i.e. local ownership) may simply reflect continuous monitoring efforts by institutional investors due to their geography proximity (Gaspar and Massa (2007), Ayers, Ramalingegowda and Yeung (2011)). In order to make sure that local investors are indeed reacting to our five informational events, we examine how local investors change their shares (as a percentage of total number of share outstanding) of affected firms during 12 months before and after the events. In Figure 1I, for covenant violation, we observe local investors to sell aggressively on affected firms one

[12] Following Nini, Smith and Sufi (2012), we interpret new financial covenant violation as financial covenant violation by a firm that has not violated a covenant in the previous four quarters. Similar interpretation applies to our bank loan and entity rating upgrades and downgrades.

[13] In our empirical analysis, we include both industry and time fixed effects to control for industry and market-wide factors.

quarter prior to event period. Interestingly, local investors appear to increase their weighting on affected firms for loan and entity upgrade events while decreasing their weighting on affected firms for loan and entity downgrade. These findings provide some evidence that local investors do trade on their available inside information at least one quarter prior to any credit events in comparison to their distant counterparts. We subject our preliminary findings to more rigorous tests by controlling for industry and time fixed effects.

< Insert Figure 2here >

In Table 1, we provide descriptive statistics on firm characteristics of local and distant investors' holdings during the time period from 2002 to 2008. Market to Book Ratio is calculated as the ratio of the market capitalization to the book value of equity for the current quarter. Return volatility is estimated as the standard deviation of monthly returns for the past 12 months. Turnover is defined as the average monthly volume to number of shares outstanding over the past six months. Stock price is share price from CRSP and S&P500 is a dummy variable for S&P500 index membership. Firm age is calculated as the number of months since a firm's first stock return appears in CRSP. Dividend yield is cash dividend divided by share price and research expense is expressed as a ratio of total assets. Raw Local Ownership and Local Ownership are computed following Coval and Moskowitz (2001). By comparing both Panel A and B in Table 1, we find local investors to invest in stocks with larger market capitalization ($15,554 million) and one with higher market-to-book ratio (3.35) in comparison to distant investors and differences in mean statistics are significant at 1% level. The average local ownership in our sample for both local and distant investors is 2% and 1% respectively. Other main variables were largely identical to other previous studies examined to date. At mutual fund holdings level, Table 2 presents evidence of U.S. equity funds having local bias of around 4.42% in 2002 towards local stocks around their headquarter radius throughout our sample period and such local bias to decrease to 2.78% in

2008. On average, we document funds exhibiting a local bias of around 4% which is consistent with previous literature on home bias.

< *Insert Table 1 and II here* >

Next, we examine stock's abnormal returns around event window using three standard performance measurements used in prior literature being CAPM, Fama-French three factor, and Carhart four factor regression models. For brevity, we only report abnormal returns calculated using Carhart four-factor with results using both CAPM and Fama-French three factors being largely consistent. To compare local and distant investors, we classify funds as local (Local = 1) for funds that invest in security within 100 kilometers of their radius or zero otherwise (Local = 0). As presented in Panel A of Table 3, these two subsamples yield several interesting results. First, consistent with informed trading of local institutional investors, we find that the stocks that local investors hold (trade) experience higher abnormal return at around 1.7% during loan covenant period than those that distant investors hold (trade). This finding is robust across three performance models described earlier on. Second, such abnormal returns available to local funds due to their informational advantage last till the following quarter with outperformance of 0.9%. Lastly, finding of positive stock abnormal return in covenant violation is not observed for loan and entity rating upgrades and downgrades. Consistent with our earlier conjecture, we find stocks hold by local investors during loan and entity rating changes to experience negative abnormal returns suggesting the inability of local investors to take advantage of the release of public information by rating agencies.

< *Insert Table 3 here* >

Given abnormal returns pre- and post-event period for covenant violation and rating changes, we extend our analysis by computing cumulative abnormal returns (CAR) for

several event windows to gain further insight on stock abnormal return of local versus distant investors. In Panel A of Table 4, while stocks that are hold by local investors appear to generate negative CAR across all event windows, such stocks are found to outperform stocks that are hold by distant investors by approximately 2% on average. This finding could be attributed to local funds having access to private information whether through their involvement in syndicated network or the geography proximity to the corresponding stocks. This is also consistent with Ivashina and Sun (2011) findings that institutional participants in loan renegotiations subsequently trade in the stock of the same company resulting in their outperformance of 5.4% in annualized terms in comparison with other managers. We do not however find such observation for bank loan and entity rating upgrades and downgrades suggesting that the element of network in syndicated loan is imperative in gaining access to inside information. We explore such finding further using both ordinary least-squares and difference-in-difference regression models.

< Insert Table 4 here >

4.2: Impact of local investors and local ownership around event window

In this section, we use two variables as proxy for local investors' involvement surrounding our credit events namely $Local\ Ownership$ which is constructed following Coval and Moskowitz (2001) and $Local$ which is equals to one if fund managers are located within 100km from stocks' headquarters. At stock level, we use OLS regression analysis to examine the contribution of local investors before, during, and after event window. In Table 5, we find local ownership to be positively related to stocks' abnormal returns across all credit events and time periods. This supports a study by Baik, Kang and Kim (2010) on the contribution of local institutional investors in predicting higher stock returns. Turning our focus into our interaction variable between local ownership and time dummy, in Panel A of

Table 5, we find local investors' ownership to have positive effect on stocks' abnormal return during post-loan covenant violation period. In line with Nini, Smith and Sufi's (2012) findings, our results suggest that local investors are monitoring creditors' intervention during post-loan reorganization period and such actions to explain positive stock performance. Interestingly, in Panel C and E, despite loan and entity rating downgrades, we find interaction variable between local ownership and time to have significant and positive effect on stocks' abnormal returns. We attributed such findings to the tendency of local investors to participate more aggressively during rating downgrades than upgrades due to greater credit risk exposures and their actions explain higher stocks' abnormal returns. Such high abnormal returns reflect the risk taken in investing on stocks experiencing higher credit risk. We do not however observe such findings for loan and entity rating upgrades. These findings suggest that while local investors continuously invest in firms over time potentially due to their monitoring efforts (Gaspar and Massa (2007), Ayers, Ramalingegowda and Yeung (2011)), they appear to take advantage of their geography proximity to process private and public information linked to affected firms before and during the event which lead to positive stocks' abnormal returns.

By extending our test to difference-in-difference (DD) regression analysis, at holdings level, we find interaction variable between $Local$ and $Time$ to be positively associated with stocks' abnormal returns during event period with insignificant findings for pre- and post-event of covenant violations as reported in Panel A of Table 5. Such positive interaction effect is however not observed in bank loan and entity rating upgrades and downgrades. Instead, we find significant negative interaction effect during event period of loan rating upgrades and downgrades which suggest local investors having informational advantage only during covenant violation period.

< Insert Table 5 here >

Next, we examine the impact of local investors on stocks' cumulative abnormal returns across several different event windows. As presented in Panel A of Table 6, we find our $Local$ variable to be associated with positive cumulative abnormal returns during [-1,+1] and [-1,0] covenant violation event windows controlling for all stock characteristics. This is not observed in both loan and entity upgrades and downgrades. These findings suggest that local investors are utilizing their informational advantage associated with loan covenant violation to trade on affected firms which lead to speedier price recovery process.

< Insert Table 6 here >

4.3: Changes in %Shares holdings by local investors

While we manage to link local investors to stocks' abnormal returns, no explanations are provided yet as to how local investors impact on stocks' abnormal returns. It is a natural question to ask whether local investors increase their weighting on affected firms in response to different credit events. In Panel A of Table 7, that is for loan covenant violation, we find evidence of local investors increasing their shareholdings on affected firms and such actions to be positive and significant in explaining stocks' abnormal returns during event time period. These findings suggest that local investors are trading at least one-quarter prior to the event period on affected firms in anticipation of future stocks' abnormal returns consistent with our earlier argument that local investors do have informational advantages in comparison to their distant counterparts due to their geography proximity to affected firms. We do not however find such findings in loan and entity rating upgrades and downgrades. As robustness test, we use changes in $\%TNA$ holdings as replacement for changes in $\%Shares$ holdings and our results are qualitatively similar.[14]

< Insert Table 7 here >

[14] %TNA represents the weighting of a stock as a percentage of the total net assets in a portfolio.

4.4: Determinant of fund's performance

Next, we examine the impact of local and event stocks composition in fund's portfolio on fund's future performance. In other words, do funds with higher fraction of local and event stocks generate higher fund performance? We utilize two different proxies for institutional investors' informational advantage. First, $Local\ Stock$ is the fraction value of stocks located within 100 kilometers of fund's headquarters at time t. Second, $Event\ Stock$ is fraction value of stocks experiencing credit events in fund's portfolio at time t. We conjecture both $Local\ Stock$ and $Event\ Stock$ to be positive and significantly related to future funds' returns due to geography proximity to local stocks and firms affected by credit events. From Panel A and B of Table 8, we find funds with higher fraction value of local stocks in their portfolio to generate higher objective adjusted return with findings significant at 1% level. Controlling for composition of local stocks in fund's portfolio, in Panel A, we find $Event\ Stock$ namely, covenant violation, loan upgrades and downgrades to predict fund's performance while no significant findings on entity upgrades and downgrades. From both Panel A and B of Table 8, we only observe our interaction variable between $Local\ Stock_{t-1}$ and $Cov\ Viol_{t-1}$ to be positive and significant in explaining fund performance. In terms of economic significance, 1% increase in our interaction variable between $Local\ Stock_{t-1}$ and $Cov\ Viol_{t-1}$ predicts 0.36% of fund's objective returns. Interaction variable for other credit events (i.e. loan and entity rating upgrades and downgrades) however are found to be negative instead. We repeat our overall analysis using fund's abnormal returns calculated using Carhart's four factors regression models and found qualitatively similar albeit weaker.

< Insert Table 8 here >

5: Further tests

In this section, we are interested in examining how information being shared among market participants during credit events. In other words, where did local investors obtain their information from in generating positive stocks' abnormal returns and fund performance? There are several explanations as to why local investors are observed to profit from their geography proximate investments than their distant counterparts. Previous studies suggest that word of mouth effect (see Ivkovic and Weisbenner (2005), Brown et al. (2008) and Christoffersen and Sarkissian (2009)), information coordination among investors to "keep up with the Joneses" (see Hong, Jiang, and Zhao (2011), and collection of soft information (see Petersen and Rajan (2002) and Agarwal and Hauswald (2010)) to be few reasons in explaining local investors' informational advantage. As further tests, we examine insider trading and connection with syndicated loan network as two major sources of information channels which benefited local investors.

5.1: Relationship between local investors and insider trading

Based on previous literature, it is reasonable to expect insiders to get access to private information easily and benefited from their corresponding trades. In Figure 3, we compute cumulative net insider demand (CUM NID) by summing up net insider demand from time t-12 onwards. Similarly, for cumulative abnormal return (CUM AR), we apply the same technique and plot both CUM NID and CUM AR for covenant violation, and changes in loan and entity rating. We find evidence of insiders increasing their weighting on firms affected by covenant violation, loan rating upgrade, and entity rating upgrade three months prior to the event. As for loan and entity rating downgrades, we find insiders to decrease their weighting on affected firms due to high credit risk exposures.

< *Insert Figure 3 here* >

In Panel B and C of Table 9, we define loan and entity rating upgrades as "Rating Upgrade" and loan and entity rating downgrades as "Rating Downgrade" to examine local investors' response to insider trades on positive and negative credit events. By separating our sample into Local (Local = 1) and Distant (Local = 0) subsamples, we find local investors to be following previous quarter insider trades for during covenant violations and rating upgrades event time period. In other words, stocks with high net insider demand in previous quarter are positively related to stocks' ownership by local investors. We do not however find any evidences of distant investors mimicking insider trades. We attributed such findings to the economic value of geography in collecting inside and soft information.

< Insert Table 9 here >

5.2: Relationship between local investors and syndicated loan network

One may argue that our findings could also be explained by the involvement of institutional investors (both local and distant investors) in syndicated loan network. Moreover, there are reasons to expect local investors participating in syndicated loan facilities to explain stocks' abnormal returns during credit events. In Table 5, we find funds' connection with syndicated loan network to explain stocks' abnormal return before, during, and after credit events consistent with a recent study by Ivashina and Sun (2010). However, contrary to our earlier conjecture hypothesis, using difference-in-difference-in-difference (DDD) regression analysis, we did not find local investors participating in syndicated loan network to explain stocks' abnormal returns. Our results are robust to the inclusion of GICS and time fixed effects to control for industry specific and market-wide factors.[15] This suggests that local investors who are connected to syndicated loan network to be reluctant in using their inside information.

[15] Our results are also consistent across three performance models to compute stocks' abnormal returns, namely CAPM, Fama-French three factors, and Carhart four factors regression models.

< *Insert Table 10 here* >

6. Conclusion

This study examines institutional investors, namely U.S. equity funds trading on localized information event – the release of confidential information around syndicated loan covenant violations and changes in firms' credit ratings. While many studies have considered connections and networks in explaining institutional trading profitability, the benefit of geography proximity of investors profited from trading on localized information has received virtually no attention.

By separating our sample into local and distant investors groups, we find that the stocks that local investors hold (trade) experience higher abnormal return at around 2% during loan covenant period than those that distant investors hold (trade). This is also reflected in our cumulative abnormal return analysis in which we find stocks that are hold by local investors to outperform stocks hold by distant investors by similar percentage terms (i.e. approximately 2% on average). By extending our test to difference-in-difference (DD) regression analysis, at holdings level, we find interaction variable between $Local$ and $Time$ to be positively associated with stocks' abnormal returns during covenant violation event period. Such findings are however not observed in bank loan and entity rating upgrades and downgrades suggesting the possible information leakage on covenant violation through syndicated loan network. We also find our $Local$ variable to be associated with positive cumulative abnormal returns during [-1,+1] and [-1,0] covenant violation event windows controlling for all stock characteristics and not other credit events. Our results are robust to the inclusion of GICS and time fixed effects to control for industry specific and market-wide factors.

Furthermore, we find evidence of local investors increasing their shareholdings on affected firms and such actions to be positive and significant in explaining stocks' abnormal returns during event time period. These findings suggest that local investors are trading at least one-quarter prior to the event period on affected firms in anticipation of future stocks' abnormal returns consistent with our earlier argument that local investors do have informational advantages in comparison to their distant counterparts due to their geography proximity to affected firms. We do not however find such findings in loan and entity rating upgrades and downgrades. Finally, we find higher composition of local stocks in mutual fund holdings to predict positive fund's objective adjusted returns. We find our interaction variable between $Local\ Stock_{t-1}$ and $Cov\ Viol_{t-1}$ to be positive and significant in explaining fund performance. In terms of economic significance, 1% increase in our interaction variable between $Local\ Stock_{t-1}$ and $Cov\ Viol_{t-1}$ predicts 0.36% of fund's objective returns.

We conclude that while connections and networks are important in explaining institutional trading profitability as documented by prior literature, the geography proximity of investors trading on localized information event is also central in understanding institutional investors' behaviours in utilizing their private information. Taken together, our findings support the economic value of geography as documented by Coval and Moskowitz (1999, 2001) and presenting consistent evidence reported by Nini, Smith and Sufi (2012) that the actions taken by creditors and local institutional investors increase firm value.

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Figure 1

Events occurrence from 2002 to 2008

These figures present the probability of firms experiencing loan covenant violation, upgrade and downgrade of bank loan ratings, and upgrade and downgrade of entity ratings. A new covenant violation is a financial covenant violation by a firm that has not violated a covenant in the previous four quarters. Such interpretations apply to new loan upgrade/downgrade and entity upgrade/downgrade.

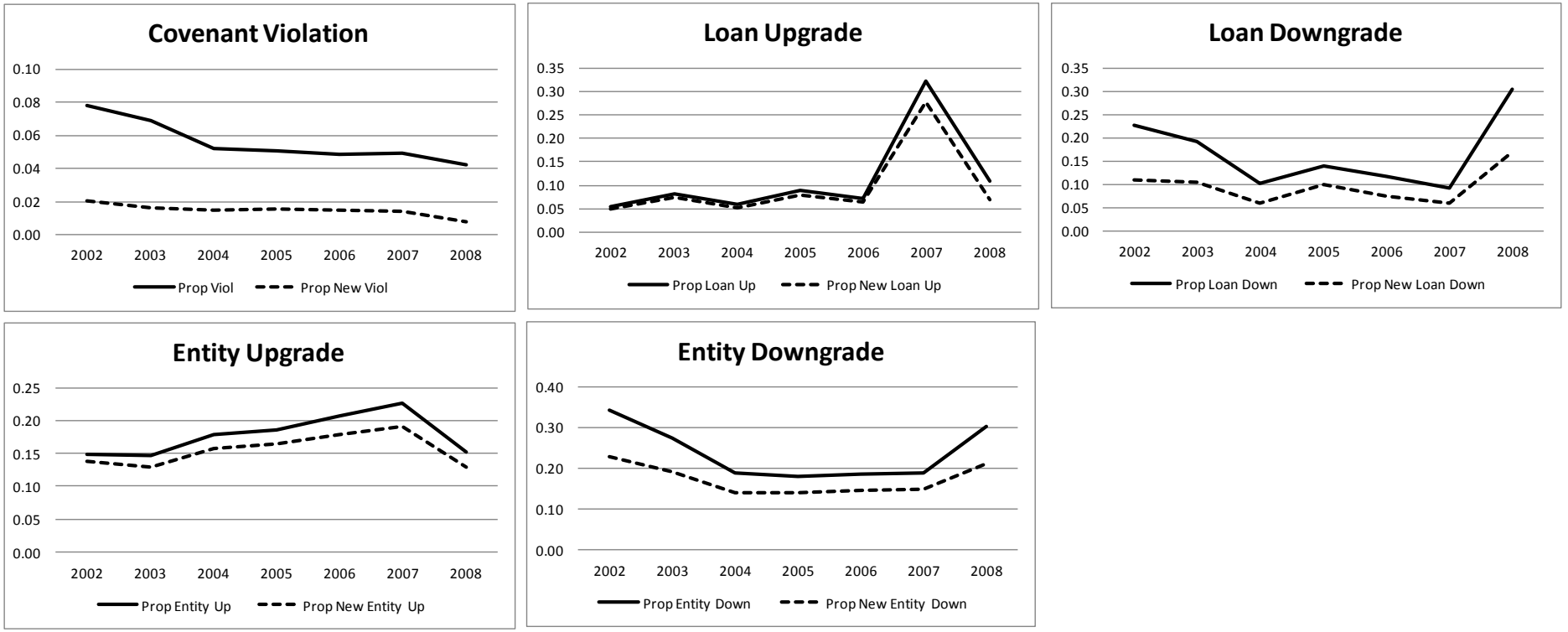

Figure 2

Percentage shares traded by local and distant investors

These figures present the fraction of local and distant investors' trades on firms experiencing loan covenant violation, upgrade and downgrade of bank loan ratings, and upgrade and downgrade of entity ratings. %Shares is the number of shares as a percentage of total number of shares outstanding of affected firms. Local fund is defined as fund located within 100 kilometers of the firms.

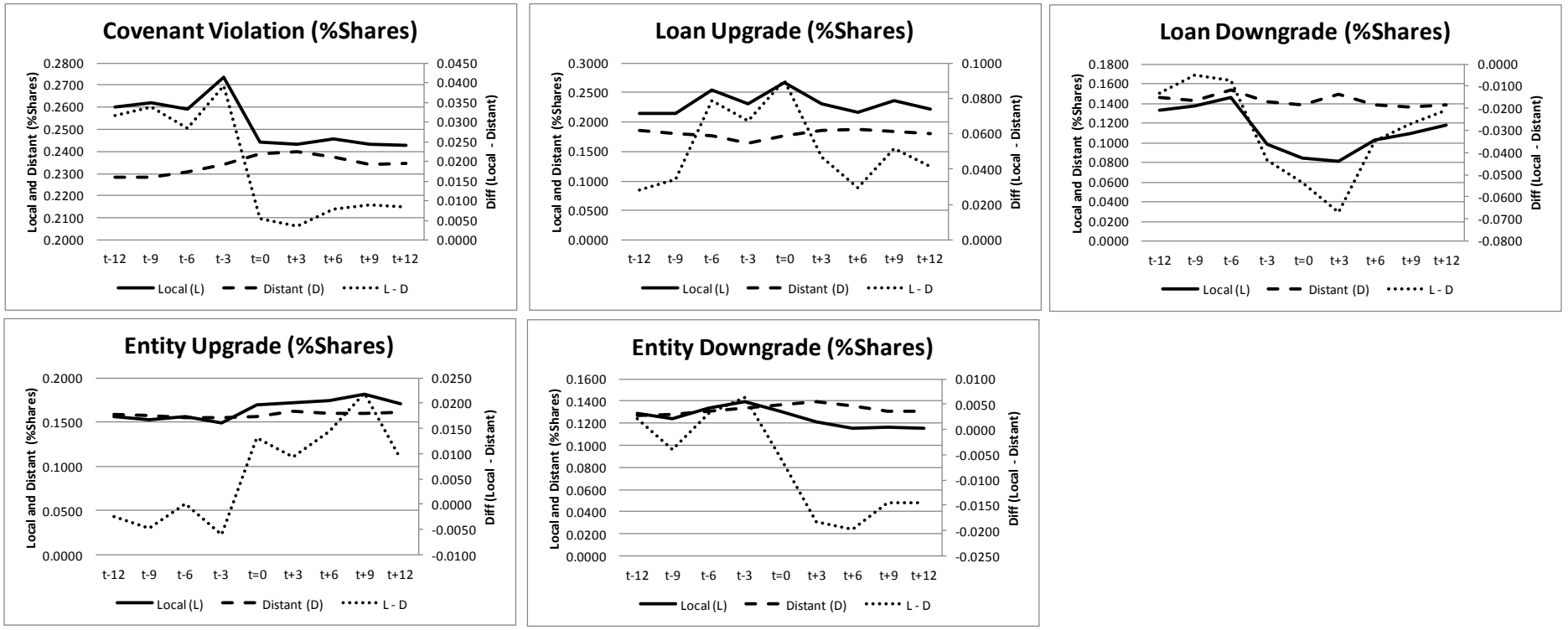

Figure 3

Cumulative net insider demand and cumulative abnormal return around credit events

This figure presents the fraction of local funds that trade firms experiencing loan covenant violation, upgrade and downgrade of bank loan ratings, and upgrade and downgrade of entity ratings. Cumulative stocks' abnormal return (CUM AR) equals the cumulative mean excess returns of affected firms in our sample starting at month t-12 based on Carhart four factors model.

Net insider demand (NID): $NID_{i,t} = \frac{(\#\ of\ shares\ purchased_{i,t} - \#\ of\ shares\ sold_{i,t})}{\#\ shares\ outstanding_{i,t-1}}$

Cumulative net insider demand (CUM NID): $\sum_{t=12,\dots T}\left[NID_{i,t} \right]$

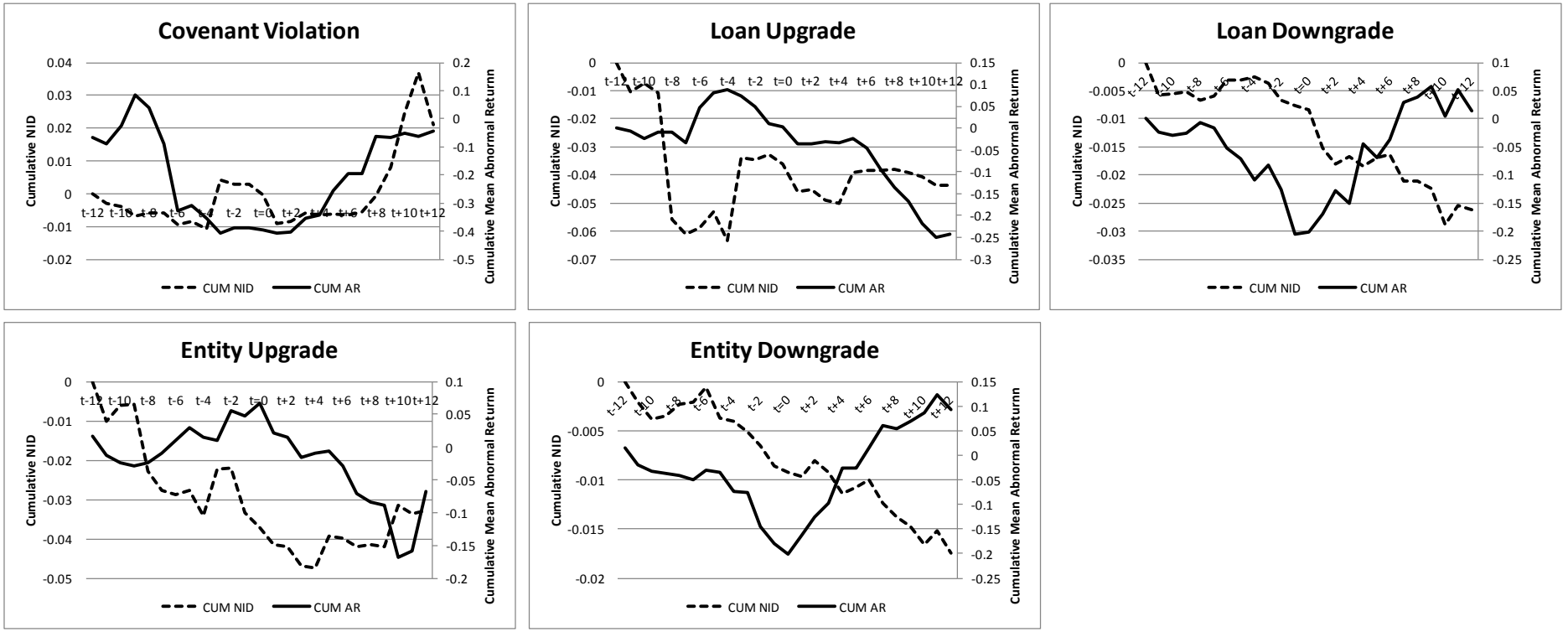

Table 1

Descriptive statistics of local and distant investors and firm characteristics

This table provides descriptive statistics of firm characteristics of local and distant investors' holdings during the period from 2002 to 2008. Market to Book Ratio is calculated as the ratio of the market capitalization to the book value of equity for the current quarter. Return volatility is estimated as the standard deviation of monthly returns for the past 12 months. Turnover is defined as the average monthly volume to number of shares outstanding over the past six months. Stock price is share price from CRSP and S&P500 is a dummy variable for S&P500 index membership. MRET_1_6 (MRET_7_12) is cumulative market-adjusted return for the preceding six months (penultimate six months). Firm age is calculated as the number of months since a firm's first stock return appears in CRSP. Dividend yield is cash dividend divided by share price and research expense is expressed as a ratio of total assets. Raw Local Ownership and Local Ownership are computed following Coval and Moskowitz (2001).

Panel A: Firm characteristics of local investors' holdings

Variables	Mean	Median	StdDev	Min	Max	Q1	Q3
Market to Book Ratio	3.35	2.33	3.41	-1.82	20.05	1.44	4.06
Market Cap ($M)	15554.16	2342.74	42094.26	0.32	505713.22	707.40	9479.69
Return Volatility (%)	10.90	8.61	16.77	0.42	1967.80	5.85	13.25
Turnover_1_6 (%)	21.24	15.00	246.82	0.00	109055.47	8.83	25.36
Stock Price	34.17	29.69	24.32	2.43	130.35	16.27	45.55
S&P500	0.37	0.00	0.48	0.00	1.00	0.00	1.00
MRET_1_6 (%)	3.00	3.56	7.16	-18.03	18.57	-3.14	8.80
MRET_7_12 (%)	2.30	4.80	8.28	-18.03	18.57	-3.04	7.74
Age	20.22	15.75	14.68	-0.08	46.67	8.08	34.42
Dividend Yield (%)	5.19	0.04	22.87	0.00	747.71	0.00	1.39
Research Expense (%)	1.15	0.00	2.70	-1.04	212.73	0.00	1.67
Raw Local Ownership	0.18	0.11	0.20	-0.03	1.00	0.04	0.26
Local Ownership	0.02	0.01	0.16	-0.98	0.99	-0.02	0.08

Panel B: Firm characteristics of distant investors' holdings

Variables	Mean	Median	StdDev	Min	Max	Q1	Q3
Market to Book Ratio	3.05	2.19	2.99	-1.82	20.05	1.39	3.63
Market Cap ($M)	10330.46	1836.32	31260.82	0.10	505713.22	643.78	6780.77
Return Volatility (%)	10.60	8.61	15.31	0.25	3208.30	6.03	12.90
Turnover_1_6 (%)	19.89	15.15	36.81	0.00	19944.05	8.92	24.93
Stock Price	33.31	28.89	22.72	2.43	130.35	16.95	44.16
S&P500	0.31	0.00	0.46	0.00	1.00	0.00	1.00
MRET_1_6 (%)	2.87	3.56	7.00	-18.03	18.57	-3.14	7.74
MRET_7_12 (%)	2.42	4.80	8.04	-18.03	18.57	-3.04	7.74
Age	20.75	16.17	14.53	-0.17	46.67	8.92	35.17
Dividend Yield (%)	3.21	0.06	24.71	-0.04	1458.54	0.00	1.07
Research Expense (%)	0.83	0.00	2.32	-41.41	508.91	0.00	0.82
Raw Local Ownership	0.10	0.03	0.14	-0.03	1.00	0.00	0.13
Local Ownership	0.01	0.00	0.12	-0.98	0.99	-0.01	0.03

Panel C: Differences in mean statistics

Mean	Local = 1	Local = 0	Diff	Sig
Market to Book Ratio	3.35	3.05	-17.36	***
Market Cap	15554.16	10330.46	5223.70	***
Return Volatility (%)	10.90	10.60	0.30	***
Turnover_1_6 (%)	21.24	19.89	1.34	***
Price	34.17	33.31	0.86	***
SP500	0.37	0.31	0.06	***
MRET_1_6 (%)	3.00	2.87	0.12	***
MRET_7_12 (%)	2.30	2.42	-0.12	***
Age	20.22	20.75	-0.54	***
Dividend Yield (%)	5.19	3.21	1.99	***
Research Expense (%)	1.15	0.83	0.32	***
Raw Local Ownership	0.18	0.10	0.09	***
Local Ownership	0.02	0.01	0.01	***

Table 2

Mutual fund holdings on U.S. securities

This table reports the concentration of mutual fund holdings on U.S. securities over our sample period. Local Own Portfolio denotes the fraction of the market value of a fund's total holdings comprising stocks located within 100 kilometers of the firm and Local Market Portfolio is the proportion of all CRSP/Compustat listed stocks (or the market) based within 100 kilometers of the fund's headquarter. Local bias represents the degree to which a manager invests locally in excess of what he/she would hold locally if he/she held the market portfolio.

Year	Local Own Portfolio	Local Market Portfolio	Local Bias
2002	6.74%	2.32%	4.42%
2003	7.31%	2.32%	5.00%
2004	6.94%	2.00%	4.93%
2005	6.52%	1.85%	4.66%
2006	5.23%	1.70%	3.53%
2007	5.11%	1.81%	3.30%
2008	4.38%	1.60%	2.78%

Table 3

Abnormal returns (Local = 1 and Local = 0)

This table presents results of t-test mean differences on stocks' abnormal returns calculated using Carhart four factors for funds located within 100 kilometers of event firms (Local = 1) versus distant funds (Local = 0). ***, **, * denote statistical significance in the differences at the 1%, 5% and 10% levels.

Panel A: Covenant Violation

Time	All	Local = 1	Local = 0	Difference	
t-4	0.002	-0.009	0.002	-0.012	*
t-3	0.006	-0.009	0.007	-0.016	***
t-2	-0.014	-0.015	-0.014	-0.001	
t-1	-0.017	-0.016	-0.017	0.001	
t=0	-0.027	-0.011	-0.028	0.017	***
t+1	-0.008	0.000	-0.009	0.009	*
t+2	0.018	0.008	0.018	-0.010	**
t+3	-0.001	0.002	-0.002	0.003	
t+4	0.001	0.009	0.000	0.009	

Panel B: Loan Upgrade

Time	All	Local = 1	Local = 0	Difference	
t-4	-0.017	-0.018	-0.017	0.000	
t-3	0.015	0.022	0.015	0.007	
t-2	-0.002	-0.012	-0.002	-0.010	**
t-1	-0.009	0.003	-0.009	0.013	**
t=0	-0.010	-0.055	-0.008	-0.047	***
t+1	-0.003	0.006	-0.003	0.009	
t+2	-0.012	-0.025	-0.012	-0.013	**
t+3	0.011	-0.033	0.013	-0.046	***
t+4	-0.024	-0.017	-0.024	0.007	

Panel C: Loan Downgrade

Time	All	Local = 1	Local = 0	Difference	
t-4	-0.005	-0.023	-0.004	-0.019	***
t-3	-0.010	0.002	-0.010	0.012	*
t-2	0.001	-0.017	0.002	-0.019	**
t-1	0.009	0.022	0.008	0.014	*
t=0	-0.019	-0.059	-0.017	-0.042	***
t+1	0.030	0.007	0.031	-0.024	**
t+2	-0.015	-0.036	-0.014	-0.022	**
t+3	-0.024	0.011	-0.026	0.037	***
t+4	0.001	0.035	0.000	0.035	***

Panel D: Entity Upgrade

Time	All	Local = 1	Local = 0	Difference	
t-4	-0.011	-0.006	-0.012	0.005	
t-3	0.001	0.000	0.001	-0.001	
t-2	-0.011	-0.005	-0.011	0.006	
t-1	-0.008	-0.015	-0.008	-0.007	
t=0	-0.017	-0.021	-0.016	-0.005	
t+1	-0.021	-0.023	-0.021	-0.002	
t+2	-0.014	-0.021	-0.013	-0.008	
t+3	-0.013	-0.029	-0.013	-0.016	***
t+4	-0.003	0.017	-0.004	0.021	***

Panel E: Entity Downgrade

Time	All	Local = 1	Local = 0	Difference	
t-4	-0.010	-0.013	-0.010	-0.003	
t-3	-0.014	-0.015	-0.013	-0.001	
t-2	0.007	0.009	0.007	0.002	
t-1	-0.010	-0.018	-0.009	-0.009	**
t=0	-0.018	-0.032	-0.017	-0.016	***
t+1	0.006	-0.017	0.007	-0.024	***
t+2	-0.013	-0.022	-0.013	-0.009	*
t+3	0.003	0.017	0.003	0.014	***
t+4	0.013	0.024	0.012	0.012	***

Table 4

Cumulative abnormal returns (Local = 1 and Local = 0)

This table presents results of t-test mean differences on the cumulative abnormal returns based on the respective event window for funds located within 100 kilometers of event firms (Local = 1) versus distant funds (Local = 0). ***, **, * denote statistical significance in the differences at the 1%, 5% and 10% levels.

Panel A: Loan Covenant Violation

Event Window	[-4,+1]	[-3,+1]	[-2,+1]	[-1,+1]	[-1,0]	[0]	[0,+1]	[-1,+2]	[-1,+3]	[-1,+4]
All	-0.0532	-0.0543	-0.0594	-0.0475	-0.0428	-0.0270	-0.0330	-0.0290	-0.0285	-0.0264
Local = 1	-0.0474	-0.0413	-0.0352	-0.0227	-0.0266	-0.0112	-0.0094	-0.0138	-0.0112	-0.0023
Local = 0	-0.0535	-0.0551	-0.0609	-0.0490	-0.0438	-0.0279	-0.0345	-0.0300	-0.0296	-0.0279
Local (1) - Local (0)	0.0061	0.0137	0.0257	0.0263	0.0172	0.0167	0.0251	0.0162	0.0183	0.0257
Significance			***	***	***	***	***	*	*	**

Panel B: Loan Rating Upgrade

Event Window	[-4,+1]	[-3,+1]	[-2,+1]	[-1,+1]	[-1,0]	[0]	[0,+1]	[-1,+2]	[-1,+3]	[-1,+4]
All	-0.0245	-0.0099	-0.0235	-0.0213	-0.0185	-0.0102	-0.0131	-0.0317	-0.0189	-0.0390
Local = 1	-0.0521	-0.0376	-0.0566	-0.0460	-0.0515	-0.0549	-0.0494	-0.0668	-0.0937	-0.1090
Local = 0	-0.0232	-0.0085	-0.0219	-0.0202	-0.0169	-0.0080	-0.0113	-0.0301	-0.0155	-0.0359
Local (1) - Local (0)	-0.0289	-0.0291	-0.0347	-0.0258	-0.0347	-0.0469	-0.0381	-0.0367	-0.0782	-0.0731
Significance	*	*	***	**	***	***	***	***	***	***

Panel C: Loan Rating Downgrade

Event Window	[-4,+1]	[-3,+1]	[-2,+1]	[-1,+1]	[-1,0]	[0]	[0,+1]	[-1,+2]	[-1,+3]	[-1,+4]
All	0.0096	0.0132	0.0215	0.0203	-0.0103	-0.0186	0.0125	0.0049	-0.0172	-0.0157
Local = 1	-0.0640	-0.0427	-0.0446	-0.0286	-0.0366	-0.0586	-0.0497	-0.0633	-0.0509	-0.0193
Local = 0	0.0128	0.0156	0.0244	0.0224	-0.0091	-0.0168	0.0152	0.0077	-0.0158	-0.0155
Local (1) - Local (0)	-0.0768	-0.0584	-0.0690	-0.0510	-0.0275	-0.0418	-0.0649	-0.0710	-0.0351	-0.0038
Significance	***	***	***	***	*	***	***	***	*	

Panel D: Entity Rating Upgrade

Event Window	[-4,+1]	[-3,+1]	[-2,+1]	[-1,+1]	[-1,0]	[0]	[0,+1]	[-1,+2]	[-1,+3]	[-1,+4]
All	-0.0604	-0.0518	-0.0525	-0.0435	-0.0242	-0.0165	-0.0363	-0.0540	-0.0612	-0.0607
Local = 1	-0.0606	-0.0577	-0.0575	-0.0535	-0.0346	-0.0212	-0.0414	-0.0696	-0.0905	-0.0759
Local = 0	-0.0604	-0.0515	-0.0522	-0.0429	-0.0236	-0.0162	-0.0360	-0.0529	-0.0594	-0.0597
Local (1) - Local (0)	-0.0002	-0.0062	-0.0053	-0.0106	-0.0110	-0.0049	-0.0054	-0.0166	-0.0312	-0.0162
Significance					*			**	***	*

Panel E: Entity Rating Downgrade

Event Window	[-4,+1]	[-3,+1]	[-2,+1]	[-1,+1]	[-1,0]	[0]	[0,+1]	[-1,+2]	[-1,+3]	[-1,+4]
All	-0.0332	-0.0252	-0.0142	-0.0205	-0.0271	-0.0178	-0.0116	-0.0319	-0.0276	-0.0176
Local = 1	-0.0800	-0.0692	-0.0564	-0.0645	-0.0489	-0.0323	-0.0483	-0.0852	-0.0648	-0.0430
Local = 0	-0.0301	-0.0223	-0.0114	-0.0176	-0.0256	-0.0168	-0.0092	-0.0285	-0.0251	-0.0158
Local (1) - Local (0)	-0.0499	-0.0469	-0.0450	-0.0469	-0.0233	-0.0155	-0.0391	-0.0567	-0.0397	-0.0271
Significance	***	***	***	***	***	***	***	***	***	***

Table 5

Determinants of firm's abnormal returns (event window)

This table reports ordinary least-squares and difference-in-difference regression models of stocks' abnormal returns before, during, and after credit events. The dependent variable is stocks' abnormal return calculated using Carhart four factors. Control variables include lagged variables of market-to-book ratio, firm size based on market capitalization, return volatility, turnover, stock price, S&P500 inclusion, cumulative market-adjusted returns for the preceding and penultimate six months, firm age, dividend yield, and R&D expenses as explained in Table 1. Local Ownership is computed following Coval and Moskowitz (2001), Time is a binary indicator of respective event time window. Local is a binary indicator equals to one if funds are located within 100km of the firms and zero otherwise. GICS Fixed Effects are indicators of the sector and industry of the securities. Time Fixed Effects are dummy variables for each quarter. ***, **, * denote statistical significance in the differences at the 1%, 5% and 10% levels.

Panel A: Covenant Violation	OLS Regression			Diff-in-Diff Regression		
	Pre	Event	Post	Pre	Event	Post
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Local Ownership	0.016**	0.014**	0.009			
	(0.007)	(0.007)	(0.007)			
Local				0.001	0.001	0.001
				(0.001)	(0.001)	(0.001)
Time	-0.008	0.002	0.001	-0.006***	-0.017***	0.008***
	(0.007)	(0.014)	(0.007)	(0.001)	(0.002)	(0.001)
Local Ownership * Time	-0.080**	-0.123*	0.065**			
	(0.035)	(0.067)	(0.030)			
Local * Time				-0.001	0.012*	0.004
				(0.003)	(0.007)	(0.003)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
GICS Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of Observations	21,084	21,084	21,084	1,746,849	1,746,849	1,746,849
Adjusted R^2	0.0397	0.0395	0.0396	0.0241	0.0242	0.0242

Panel B: Loan Upgrade	OLS Regression			Diff-in-Diff Regression		
	Pre	Event	Post	Pre	Event	Post
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Local Ownership	0.013*	0.013*	0.013*			
	(0.007)	(0.007)	(0.007)			
Local				0.001	0.001*	0.001
				(0.001)	(0.001)	(0.001)
Time	0.004	-0.010	-0.011	-0.001	0.004**	-0.009***
	(0.011)	(0.027)	(0.010)	(0.001)	(0.002)	(0.001)
Local Ownership * Time	-0.068	-0.036	-0.087			
	(0.077)	(0.169)	(0.079)			
Local * Time				-0.001	-0.057***	0.000
				(0.004)	(0.010)	(0.004)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
GICS Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of Observations	21,084	21,084	21,084	1,746,849	1,746,849	1,746,849
Adjusted R^2	0.0394	0.0393	0.0394	0.0241	0.0241	0.0242

Panel C: Loan Downgrade	OLS Regression			Diff-in-Diff Regression		
	Pre	Event	Post	Pre	Event	Post
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Local Ownership	0.013*	0.012*	0.013*			
	(0.007)	(0.007)	(0.007)			
Local				0.001*	0.001*	0.001
				(0.001)	(0.001)	(0.001)
Time	-0.009	-0.095*	0.002	0.002**	0.021***	0.008***
	(0.012)	(0.052)	(0.013)	(0.001)	(0.004)	(0.001)

Local Ownership * Time	0.015	0.674***	0.024			
	(0.084)	(0.261)	(0.094)			
Local * Time				-0.013***	-0.084***	-0.001
				(0.004)	(0.022)	(0.005)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
GICS Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of Observations	21,084	21,084	21,084	1,746,849	1,746,849	1,746,849
Adjusted R^2	0.0394	0.0399	0.0393	0.0241	0.0241	0.0241

Panel D: Entity Upgrade	OLS Regression			Diff-in-Diff Regression		
	Pre	Event	Post	Pre	Event	Post
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Local Ownership	0.013*	0.013*	0.015**			
	(0.007)	(0.007)	(0.007)			
Local				0.001	0.001*	0.001*
				(0.001)	(0.001)	(0.001)
Time	0.002	-0.001	-0.008	0.003***	0.009***	-0.003***
	(0.006)	(0.021)	(0.006)	(0.001)	(0.002)	(0.001)
Local Ownership * Time	-0.015	0.103	-0.099*			
	(0.049)	(0.138)	(0.053)			
Local * Time				0.000	-0.011	-0.004*
				(0.002)	(0.008)	(0.002)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
GICS Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of Observations	21,084	21,084	21,084	1,746,849	1,746,849	1,746,849
Adjusted R^2	0.0393	0.0394	0.0396	0.0241	0.0241	0.0241

Panel E: Entity Downgrade	OLS Regression			Diff-in-Diff Regression		
	Pre	Event	Post	Pre	Event	Post
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Local Ownership	0.014*	0.012*	0.014**			
	(0.007)	(0.007)	(0.007)			
Local				0.001	0.001*	0.001*
				(0.001)	(0.001)	(0.001)
Time	-0.005	-0.047**	0.013**	0.001	-0.004***	0.011***
	(0.006)	(0.021)	(0.007)	(0.001)	(0.002)	(0.001)
Local Ownership * Time	-0.030	0.238*	-0.050			
	(0.045)	(0.129)	(0.046)			
Local * Time				0.001	-0.009	-0.002
				(0.002)	(0.007)	(0.002)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
GICS Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of Observations	21,084	21,084	21,084	1,746,849	1,746,849	1,746,849
Adjusted R^2	0.0394	0.0397	0.0396	0.0241	0.0241	0.0243

Table 6

Determinants of firm's cumulative abnormal returns

This table reports the results of OLS regression models on the determinants of firms' cumulative abnormal returns based on different event windows surrounding our credit events. The dependent variable is stocks' abnormal return calculated using Carhart four factors. Control variables include lagged variables of market-to-book ratio, firm size based on market capitalization, return volatility, turnover, stock price, S&P500 inclusion, cumulative market-adjusted returns for the preceding and penultimate six months, firm age, dividend yield, and R&D expenses as explained in Table 1. Local is a binary indicator equals to one if funds are located within 100km of the firms and zero otherwise. GICS Fixed Effects are indicators of the sector and industry of the securities. Time Fixed Effects are dummy variables for each quarter. ***, **, * denote statistical significance in the differences at the 1%, 5% and 10% levels.

CAR Event Window	[-4,+1]	[-3,+1]	[-2,+1]	[-1,+1]	[-1,0]	[0]	[0,+1]	[-1,+2]	[-1,+3]	[-1,+4]
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A: Covenant Violation										
Local	-0.021**	-0.009	0.006	0.014*	0.013*	0.008	0.009	0.007	0.014	0.010
	(0.011)	(0.010)	(0.009)	(0.008)	(0.007)	(0.005)	(0.007)	(0.009)	(0.010)	(0.011)
Panel B: Loan Upgrade										
Local	-0.012	-0.014	-0.032***	-0.026***	-0.038***	-0.039***	-0.028***	-0.033***	-0.091***	-0.074***
	(0.013)	(0.012)	(0.009)	(0.009)	(0.007)	(0.005)	(0.008)	(0.010)	(0.012)	(0.013)
Panel C: Loan Downgrade										
Local	-0.066***	-0.067***	-0.048***	-0.011	-0.011	0.000	-0.006	-0.032	-0.007	-0.032
	(0.022)	(0.020)	(0.016)	(0.015)	(0.013)	(0.011)	(0.014)	(0.020)	(0.019)	(0.022)
Panel D: Entity Upgrade										
Local	-0.009	-0.017**	-0.012	-0.018**	-0.017***	-0.010**	-0.011	-0.020**	-0.030***	-0.010
	(0.009)	(0.008)	(0.008)	(0.008)	(0.005)	(0.004)	(0.007)	(0.009)	(0.008)	(0.009)
Panel E: Entity Downgrade										
Local	-0.029***	-0.034***	-0.033***	-0.030***	-0.006	0.000	-0.024***	-0.006	-0.025**	-0.012
	(0.009)	(0.008)	(0.008)	(0.007)	(0.006)	(0.005)	(0.007)	(0.009)	(0.010)	(0.010)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
GICS Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 7

Impact of changes in shares holdings on stocks' abnormal returns

This table reports the results of OLS regression models on changes in %Shares holdings of affected firms by local investors in response to different credit events. The dependent variable is stocks' abnormal return calculated using Carhart four factors. Control variables include lagged variables of market-to-book ratio, firm size based on market capitalization, return volatility, turnover, stock price, S&P500 inclusion, cumulative market-adjusted returns for the preceding and penultimate six months, firm age, dividend yield, and R&D expenses as explained in Table 1. Local is a binary indicator equals to one if funds are located within 100km of the firms and zero otherwise. Change share holdings are measured by number of shares as a percentage of total number of shares outstanding of affected firms. GICS Fixed Effects are indicators of the sector and industry of the securities. Time Fixed Effects are dummy variables for each quarter. ***, **, * denote statistical significance in the differences at the 1%, 5% and 10% levels.

Panel A: Covenant Violation	(t - 12)	(t - 9)	(t - 6)	(t - 3)	(t = 0)	(t + 3)	(t + 6)	(t + 9)	(t + 12)
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Local	0.000	-0.015**	0.000	0.010*	-0.003	0.014**	-0.006	0.007	-0.002
	(0.007)	(0.006)	(0.005)	(0.006)	(0.006)	(0.006)	(0.007)	(0.006)	(0.006)
Δ%Shares	0.000	-0.007***	-0.005**	-0.009***	-0.009***	0.009***	-0.005**	-0.015***	-0.022***
	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)
Local * Δ%Shares	-0.029**	0.002	-0.001	0.018*	0.023*	-0.026***	-0.007	0.016	0.020
	(0.014)	(0.011)	(0.012)	(0.011)	(0.012)	(0.008)	(0.012)	(0.014)	(0.013)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
GICS Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of Observations	6,738	7,671	8,268	8,913	7,747	9,122	9,423	9,628	9,500
Adjusted R^2	0.0378	0.0324	0.1459	0.1317	0.0594	0.0548	0.0517	0.1055	0.0751

Panel B: Loan Upgrade	(t - 12)	(t - 9)	(t - 6)	(t - 3)	(t = 0)	(t + 3)	(t + 6)	(t + 9)	(t + 12)
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Local	0.002	0.012**	-0.017**	0.014***	-0.041***	0.020***	0.012	0.006	-0.003
	(0.006)	(0.006)	(0.007)	(0.005)	(0.006)	(0.006)	(0.007)	(0.021)	(0.007)
Δ%Shares	-0.018***	-0.001	-0.016***	0.003	-0.004*	-0.018***	-0.009***	-0.002	-0.021***

	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.003)	(0.008)	(0.003)
Local * Δ%Shares	0.005	0.001	-0.044***	0.021	-0.025**	-0.016	0.015	-0.022	0.024***
	(0.012)	(0.013)	(0.012)	(0.013)	(0.011)	(0.011)	(0.012)	(0.031)	(0.009)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
GICS Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of Observations	6,005	6,509	6,885	6,569	3,914	7,458	7,334	8,257	8,953
Adjusted R^2	0.2921	0.1011	0.1229	0.1651	0.317	0.1634	0.1389	0.0277	0.122

Panel C: Loan Downgrade	(t - 12)	(t - 9)	(t - 6)	(t - 3)	(t = 0)	(t + 3)	(t + 6)	(t + 9)	(t + 12)
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Local	-0.017*	0.015***	-0.002	0.007	0.013	-0.008	-0.021***	0.027***	-0.001
	(0.009)	(0.005)	(0.006)	(0.006)	(0.013)	(0.008)	(0.008)	(0.008)	(0.008)
Δ%Shares	-0.009***	-0.003*	-0.003	-0.003	-0.006	0.000	-0.001	-0.017***	0.002
	(0.003)	(0.002)	(0.002)	(0.002)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Local * Δ%Shares	-0.024	0.005	-0.009	0.000	0.000	0.020	0.009	0.031**	-0.017
	(0.016)	(0.010)	(0.007)	(0.009)	(0.015)	(0.012)	(0.016)	(0.013)	(0.016)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
GICS Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of Observations	4,972	5,609	5,973	5,482	1,251	4,342	4,575	4,171	4,449
Adjusted R^2	0.0975	0.2669	0.1567	0.1697	0.7769	0.196	0.2019	0.3619	0.2033

Panel D: Entity Upgrade	(t - 12)	(t - 9)	(t - 6)	(t - 3)	(t = 0)	(t + 3)	(t + 6)	(t + 9)	(t + 12)
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Local	0.005*	0.007**	-0.004	-0.005*	-0.009*	-0.002	0.002	-0.010***	-0.009**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)	(0.004)	(0.004)	(0.003)	(0.003)

Δ%Shares	-0.012***	-0.005***	-0.008***	-0.008***	0.004**	-0.009***	-0.017***	-0.015***	-0.013***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
Local * Δ%Shares	0.006	0.003	-0.019***	0.011*	-0.001	-0.023***	0.009	0.010*	0.005
	(0.006)	(0.005)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.006)	(0.005)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
GICS Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of Observations	16,213	16,957	18,457	17,676	5,818	17,814	18,516	18,823	18,805
Adjusted R^2	0.1551	0.0424	0.064	0.0623	0.1442	0.0816	0.1285	0.0887	0.0632

Panel E: Entity Downgrade	(t - 12)	(t - 9)	(t - 6)	(t - 3)	(t = 0)	(t + 3)	(t + 6)	(t + 9)	(t + 12)
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Local	0.003	0.000	0.012***	-0.002	0.001	-0.001	0.001	-0.005	-0.004
	(0.003)	(0.002)	(0.003)	(0.003)	(0.006)	(0.004)	(0.004)	(0.004)	(0.011)
Δ%Shares	-0.011***	0.000	-0.003***	-0.004***	-0.015***	0.004***	-0.014***	-0.010***	-0.021***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)	(0.002)	(0.002)	(0.002)	(0.004)
Local * Δ%Shares	-0.013**	0.003	0.008*	-0.007	0.011	-0.002	0.020**	0.007	0.023
	(0.005)	(0.004)	(0.005)	(0.005)	(0.011)	(0.006)	(0.008)	(0.008)	(0.024)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
GICS Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of Observations	20,768	22,616	24,365	21,526	6,462	17,275	15,941	15,099	15,520
Adjusted R^2	0.0691	0.1214	0.0657	0.0437	0.2699	0.0836	0.1053	0.1324	0.0375

Table 8

Determinants of fund performance

This table reports the results of OLS regression models on the impact of local and event stocks on future fund returns. Our dependent variable is objective adjusted return. The objective adjusted return is computed as the funds' net return less the return of the median fund in the matched investment objective. Our control variables are: LN Fund Size is the natural logarithm of fund's total net assets, LN Fund Age is the natural logarithm of fund's age, LN Family Size is the natural logarithm of aggregate total net assets under fund family, $Turnover\ Ratio_{t-1}$ is the level of fund's turnover activities, $Expense\ Ratio_{t-1}$ is the ratio of funds' operating expenses over the total net assets, $Cash\ Ratio_{t-1}$ is the ratio of fund assets in cash, $Fund\ Flow_{t-1}$ is the level of money flows computed following Sirri and Tufano (1998), $Local\ Stock_{t-1}$ is the fraction value of stocks located within 100 kilometers of fund's headquarters at time t, $Event\ Stock_{t-1}$ is fraction value of stocks experiencing credit events in fund's portfolio at time t, $Local\ Stock_{t-1}$ * $Event\ Stock_{t-1}$ is interaction between $Local\ Stock_{t-1}$ and $Event\ Stock_{t-1}$ variables. Objective Dummies are binary indicators for each investment objective. Time Fixed Effects are dummy variables for each quarter. Standard errors are clustered at fund level and reported in parentheses. ***, **, * denote statistical significance in the differences at the 1%, 5% and 10% levels.

Panel A: Covenant Violation	Objective Adjusted Return		
	(1)	(2)	(3)
$Local\ Stock_{t-1}$	0.022***	0.035***	0.028***
	(0.007)	(0.004)	(0.004)
$Cov\ Viol_{t-1}$		0.197***	0.295***
		(0.048)	(0.029)
$Local\ Stock_{t-1} * Cov\ Viol_{t-1}$			0.036***
			(0.005)
Control Variables	Yes	Yes	Yes
Objective Dummies	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes
No. of Observations	23,522	23,522	23,522
Adjusted R^2	0.024	0.029	0.030

Panel B: Loan and Entity Ratings	Objective Adjusted Return								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$Local\ Stock_{t-1}$	0.022***	0.022***	0.022**	0.022***	0.021***	0.022***	0.030***	0.021***	0.030***
	(0.007)	(0.007)	(0.008)	(0.007)	(0.007)	(0.006)	(0.004)	(0.007)	(0.004)
$Loan\ Up_{t-1}$		0.353***	0.358***						
		(0.025)	(0.037)						
$Local\ Stock_{t-1} * Loan\ Up_{t-1}$			-0.124						
			(0.462)						
$Loan\ Down_{t-1}$				0.085**	0.079**				
				(0.035)	(0.037)				
$Local\ Stock_{t-1} * Loan\ Down_{t-1}$					0.200				
					(0.290)				
$Entity\ Up_{t-1}$						0.004	-0.011		
						(0.012)	(0.010)		
$Local\ Stock_{t-1} * Entity\ Up_{t-1}$							-0.018***		
							(0.002)		
$Entity\ Down_{t-1}$								-0.014	-0.039***
								(0.017)	(0.012)
$Local\ Stock_{t-1} * Entity\ Down_{t-1}$									-0.029***
									(0.003)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Objective Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of Observations	23,522	23,522	23,522	23,522	23,522	23,522	23,522	23,522	23,522
Adjusted R^2	0.024	0.037	0.037	0.024	0.024	0.024	0.024	0.024	0.025

Table 9

Local investors and insider trading

This table reports the results of OLS regression models on local investors' response to insider trading. The dependent variable is local ownership computed following Coval and Moskowitz (2001). Control variables include lagged variables of market-to-book ratio, firm size based on market capitalization, return volatility, turnover, stock price, S&P500 inclusion, cumulative market-adjusted returns for the preceding and penultimate six months, firm age, dividend yield, and R&D expenses as explained in Table 1. Net insider demand (NID) measure is defined as the net number of shares purchased by all insiders during the quarter as a fraction of prior-quarter shares outstanding. GICS Fixed Effects are indicators of the sector and industry of the securities. Time Fixed Effects are dummy variables for each quarter. ***, **, * denote statistical significance in the differences at the 1%, 5% and 10% levels.

Panel A: Covenant Violation	All			Local = 1			Local = 0		
	Pre-Event	Event	Post-Event	Pre-Event	Event	Post-Event	Pre-Event	Event	Post-Event
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
NID_{t-1}	-0.566***	-0.394	-0.602***	0.170	2.364*	0.037	-0.632***	0.715	-0.585***
	(0.190)	(0.430)	(0.100)	(0.500)	(1.211)	(0.497)	(0.200)	(0.504)	(0.163)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
GICS Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of Observations	24,375	5,646	31,676	932	185	1,052	16,275	3,627	19,247
Adjusted R^2	0.0034	0.0932	0.0061	0.0403	0.1142	0.0243	0.0007	0.1178	0.0074

Panel B: Loan and Entity Upgrades	All			Local = 1			Local = 0		
	Pre-Event	Event	Post-Event	Pre-Event	Event	Post-Event	Pre-Event	Event	Post-Event
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
NID_{t-1}	-0.364***	-0.194	-0.608***	0.296	4.271**	1.331	-0.350***	0.230	-0.485***
	(0.074)	(0.190)	(0.101)	(0.272)	(2.014)	(1.403)	(0.099)	(0.232)	(0.181)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
GICS Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of Observations	90614	10832	100688	2933	325	3209	49464	6068	54352
Adjusted R^2	0.0103	0.0569	0.0067	0.0225	0.1081	0.0033	0.0094	0.0322	0.0115

Panel C: Loan and Entity Downgrades	All			Local = 1			Local = 0		
	Pre-Event	Event	Post-Event	Pre-Event	Event	Post-Event	Pre-Event	Event	Post-Event
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
NID_{t-1}	-0.198	0.255	-0.450***	-0.640	-2.040	-1.603	-0.278	0.428	-0.724**
	(0.274)	(0.430)	(0.138)	(1.207)	(1.840)	(2.101)	(0.300)	(0.581)	(0.339)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
GICS Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of Observations	81350	5395	67228	3257	229	2337	45197	2933	34399
Adjusted R^2	0.0044	0.0156	0.0058	0.0087	-0.0226	0.0043	0.0043	0.0149	0.0107

Table 10

Local investors and syndicated loan network

This table reports the results of difference-in-difference-in-difference (DDD) regression models to examine the impact of local investors' connection with syndicated loan network on stocks' abnormal returns. The dependent variable is stocks' abnormal return calculated using Carhart four factors. Control variables include lagged variables of market-to-book ratio, firm size based on market capitalization, return volatility, turnover, stock price, S&P500 inclusion, cumulative market-adjusted returns for the preceding and penultimate six months, firm age, dividend yield, and R&D expenses as explained in Table 1. Local is a binary indicator equals to one if funds are located within 100km of the firms and zero otherwise. Syndicated is a binary indicator for funds connected to syndicated loan network at time t GICS Fixed Effects are indicators of the sector and industry of the securities. Time Fixed Effects are dummy variables for each quarter. ***, **, * denote statistical significance in the differences at the 1%, 5% and 10% levels.

Panel A: Covenant Violation	Covenant Violation		
	Pre	Event	Post
Variables	(1)	(2)	(3)
Local	0.001	0.001	0.000
	(0.001)	(0.001)	(0.001)
Time	-0.006***	-0.018***	0.007***
	(0.001)	(0.002)	(0.001)
Local * Time	-0.001	0.015**	0.003
	(0.004)	(0.007)	(0.003)
Syndicated	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)
Local * Syndicated	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)
Syndicated * Time	0.001	0.005	0.005**
	(0.002)	(0.005)	(0.002)
Local * Syndicated * Time	-0.002	-0.019	0.002
	(0.009)	(0.020)	(0.009)
Control Variables	Yes	Yes	Yes
GICS Fixed Effects	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes

No. of Observations			1,746,849	1,746,849	1,746,849	
Adjusted R^2			0.0242	0.0242	0.0242	

Panel B: Loan Rating	Loan Upgrade			Loan Downgrade		
	Pre	Event	Post	Pre	Event	Post
Variables	(1)	(2)	(3)	(1)	(2)	(3)
Local	0.001	0.001	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Time	-0.001	0.005**	-0.009***	0.003***	0.020***	0.008***
	(0.001)	(0.002)	(0.001)	(0.001)	(0.004)	(0.001)
Local * Time	0.000	-0.062***	-0.001	-0.016***	-0.078***	0.000
	(0.004)	(0.010)	(0.004)	(0.005)	(0.025)	(0.006)
Syndicated	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Local * Syndicated	0.001	0.001	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Syndicated * Time	0.001	-0.010	0.001	-0.002	0.010	-0.001
	(0.002)	(0.006)	(0.002)	(0.003)	(0.012)	(0.003)
Local * Syndicated * Time	-0.007	0.036	0.009	0.015	-0.032	-0.003
	(0.011)	(0.028)	(0.010)	(0.010)	(0.051)	(0.014)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
GICS Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of Observations	1,746,849	1,746,849	1,746,849	1,746,849	1,746,849	1,746,849
Adjusted R^2	0.0241	0.0241	0.0242	0.0241	0.0241	0.0242

Panel C: Entity Rating	Entity Upgrade			Entity Downgrade		
	Pre	Event	Post	Pre	Event	Post
Variables	(1)	(2)	(3)	(1)	(2)	(3)
Local	0.000	0.001	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Time	0.002***	0.009***	-0.003***	0.000	-0.006***	0.011***
	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)
Local * Time	0.002	-0.012	-0.005**	0.001	-0.004	-0.001
	(0.002)	(0.009)	(0.002)	(0.002)	(0.008)	(0.003)
Syndicated	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Local * Syndicated	0.002	0.001	0.001	0.001	0.001	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Syndicated * Time	0.003*	-0.001	-0.001	0.002	0.009*	0.000
	(0.002)	(0.005)	(0.001)	(0.001)	(0.005)	(0.002)
Local * Syndicated * Time	-0.013**	0.009	0.006	0.002	-0.034*	-0.008
	(0.006)	(0.023)	(0.006)	(0.006)	(0.020)	(0.007)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
GICS Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of Observations	1,746,849	1,746,849	1,746,849	1,746,849	1,746,849	1,746,849
Adjusted R^2	0.0241	0.0241	0.0242	0.0241	0.0241	0.0243