Fire-sales and Information Advantage:

When Bank-Affiliation Helps

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Abstract

We study how information flows within international financial conglomerates and how such a flow reduces the transmission of liquidity crisis due to fire-sales. We focus on the role of international institutional investors affiliated with banks during the 2008-2009 global financial crisis. We argue that affiliation with banks provides international asset managers with an information advantage that lowers their incentive to herd with the uninformed fire-sales as the crisis emerges. This effectively provides price support to foreign stocks. We test this intuition using a comprehensive sample of non-North American firms with detailed information on international institutional holdings. We show that bank affiliation provides an informational advantage that more than offsets the disadvantages of foreign investors due to geography. During the crisis, the bank-affiliated investors increase stock liquidity, reduce extreme negative return realizations, lower short-selling demand and increase price informativeness.

JEL Classification: G10, G15, G21
Keywords: fire-sales, crisis, bank-affiliation, foreign ownership, liquidity

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Introduction

Fire-sales – i.e., forced sales by investors facing liquidity shocks – (e.g., Shleifer and Vishny, 1997, 2012, Coval and Stafford, 2007, Ellul et al., 2011) provide a channel of cross-country transmission of financial crises (e.g., Hau and Lai, 2011, Bartram et al., 2011, Jotikasthira et al., 2012, Boyer et al., 2005). For example, consider US funds holding equities in both Japanese and US firms. A liquidity shock to the US market that induces massive withdrawals from the US funds can be transmitted to the Japanese market, as the constrained US funds facing withdrawals at home, *also* liquidate their Japanese stocks, leading to a deterioration of liquidity in the Japanese market.

We can graphically see the effects of world-wide fire-sales in Figure I. It displays a stunning strong relationship between the liquidity of foreign stocks and the fire-sale pressure generated by international mutual funds subject to significant fund outflows.[1] Not surprisingly, during the 2008-2009 global crisis, there is a significant jump for both stock illiquidity and fire-sale pressure of foreign stocks. In fact, both of them more than doubled compared to the pre-crisis period of 2007.

However, fire-sales should not affect all the assets in the same way. Indeed, the decision to sell assets to meet liquidity needs is related to the information the fund managers have on them. Some assets are prioritized to be sold, while some are held longer. One of the factors affecting such a choice is information. Asset managers facing liquidity needs should have a lower incentive to sell the assets in which they have information advantage, and will prioritize for sales of the assets in which they do not have such information advantage. This implies that during financial crises, the presence of asset managers may mitigate the effects of fire-sales on the stocks on which they have better information.

In this paper, we focus on one specific source of information advantage: the information that international asset managers affiliated with banks derive from the bank lending units. Many major

[1] In Figure I, we plot the evolvement of the average Amihud stock illiquidity and the average stock fire sale pressure of international firms during the period of 2001 to 2009. The blue bar represents the average Amihud illiquidity (the left vertical axis), and the red line represents the average stock fire sale pressure (the right vertical axis). The Amihud illiquidity is defined as the average of daily Amihud's (2002) measure of price impact of trading over the year. We quantify the stock fire-sale pressure as the ownership-weighted selling pressure of open-end international mutual funds subject to significant fund outflows (below the 5%-quantile of the fund flow distribution). For example, the average fire-sale pressure in year 2008 is around 0.5, which suggests that 50% of foreign mutual funds that invest in the stock are subject to significant fund outflows. We provide more detailed definitions later in the paper as well as in the Appendix.

international institutional investors are part of financial conglomerates that include commercial banks actively participating in the lending market. Affiliation with a banking conglomerate may provide the fund manager with information arising from the lending activities of the affiliated bank. This may span from access to credit analysis and risk valuation to information about loan investigations for foreign customers. Even without resorting to inside information, this generic flow of information can help the affiliated asset managers to have better information about specific countries/sectors if not directly about specific firms.[2]

We argue that this informational effect should be even more important in the international context, where information asymmetry facing foreign stocks is more acute, and lending to companies in foreign countries makes banks acquire information not only about the firms, but overall about the countries' business conditions as well that can be shared with the affiliated asset managers. This helps to overcome the information disadvantage related to distant location. Moreover, the availability of even slightly better information reduces the conditional risk of investing in a foreign country (Grossman, 1976, Brennan and Cao, 1996), as well as increases the tendency of the investors with limited ability to process all the available information to specialize in it (Van Nieuwerburgh and Veldkamp, 2009).

This suggests that, during a period of financial crisis, when liquidity constrained international investors rush to sell off their foreign assets to meet redemption needs (Jotikasthira et al., 2012), the asset managers affiliated with banks will be better able to assess the quality of the stocks and less willing to herd with the uninformed fire-sales on the stocks on which he has better information because of the bank affiliation.

Let us consider an example. Suppose a stock is worth $10 and a sudden liquidity shock due to unexpected fire-sales of foreign investors drives the price down to $5. The bank-affiliated investors know the true value of the stock – i.e., $10. However, they don't know whether the price in the future

[2] In the extreme, the lending relationship may allow the fund to be privy to private information about important decisions of the firm – e.g., debt refinancing or financing for a merger or acquisition – as well as about specific events such as the breach of covenants(Ritter and Zhang, 2007, Acharya and Johnson, 2007, Massa and Rehman, 2008, Ivashina and Sun, 2010). Also, the rise of the percentage of hedge funds participating in lending syndicates in the US during the last decade has been attributed to the access to the lending syndicate's inside information (Massoud et al., 2011).

would reverse or would even deteriorate due to further fire-sales. If they have limited horizon (Shleifer and Vishny, 1997), they will refrain from buying and hold their shares, while if they have a longer horizon, they may even increase their stake and take advantage of the temporary mispricing. In contrast, the uninformed investors either will interpret the $5 price drop as a change in fundamentals, or will not be able to explain it and this will increase their uncertainty about the true value of the stock. In either case, they will, most likely, be induced to sell the stock.

Therefore, we hypothesize that, during a period of financial crisis, the presence of bank-affiliated investors should mitigate the effects of fire-sales. These investors, by holding their stakes or buying the stock subject to non-informationally driven fire-sale shocks, effectively provide price support, increase stock liquidity and buffer extreme price fluctuations. The fact that the bank-affiliated investors provide price support will reduce the incentives of the short-sellers to take positions and will therefore induce the short-selling demand to drop, further improving liquidity conditions. Overall, at the time of the crisis, this will increase the price informativeness of the stock and reduce its comovement with market fluctuations.

In this paper, we endeavor to test these hypotheses by using a comprehensive sample of 11,922 international (non-North American) firms with detailed information on foreign institutional investor holdings over the period 2001-2009. We provide evidence that international lending generates superior information for asset managers affiliated with banking conglomerates. With these results, we investigate the role played by such investors with information advantage around the 2008-2009 global financial crisis.

We begin by providing evidence that international bank-affiliated asset managers derive superior knowledge and information from the international lending activity of their affiliated banks. This helps them to select foreign stocks. First, following the methodology of Cohen et al. (2008), we show that bank-affiliated funds tend to invest more in foreign firms related by a close borrowing relationship with their affiliated banks *and* that such a stock picking delivers superior performance. Firms from

countries that borrow one standard deviation more from a bank displays a 9% (25%) higher (excess)[3] percentage investment by the funds affiliated with the bank. This stock selection delivers an average outperformance for the affiliated funds ranging between 30 bps and 60 bps per quarter.

As a second test, we rely on the findings of Acharya and Johnson (2007) that, in the presence of a flow of information inside a banking conglomerate, banks do exploit such information in the trading of credit default swaps (CDS). Therefore, CDS spread changes on the debt of the firm should help to explain the returns on its stock. The increased explanatory power should be directly related to the level of bank-affiliated equity ownership. Indeed, we show that changes in CDS spreads help to explain stock returns, and the increased R-squared is positively related to bank-affiliated foreign ownership. Stocks with a one standard deviation higher bank-affiliated ownership display a 13% higher ability of the change in CDS spreads to explain stock returns. This effect is entirely concentrated in the cases in which the funds are affiliated with banks that have a close lending relationship with the firm/country.

Then, we test the informativeness of bank-affiliated trades by looking at the relationship between such trades and stock returns. We argue that bank-affiliated trades – i.e., the information-based ones – should be less correlated with contemporaneous price movements when such movements are less informationally motivated – i.e., around the crisis period when the presence of non-informationally motivated trades was abundant – and more correlated at times in which prices changes are more informationally motivated. Therefore, we expect the correlation between bank-affiliated trades and price movements to be lower during the crisis and higher before the crisis.

And indeed, we find that during normal times (the pre-crisis period of 2006-2007), the change in ownership by bank-affiliated foreign investors are more correlated with the change in stock prices (three times stronger) than that of non-bank affiliated foreign investors. During the crisis period of 2008-2009, however, the relationship between stock returns and the trades of bank-affiliated foreign investors is insignificant. In contrast, the correlation between trades by non-bank affiliated investors and stock returns deepens.

[3] The excess percentage of holdings is defined as the actual percentage of holdings in excess of a country's market weight in the global markets by total market value.

Finally, we look at price reversals. Given that informed trading does not lead to price reversion, while uninformed trading does (Campbell et al., 1993, Llorente et al., 2002), we expect bank-affiliated trades to be unrelated to return reversals. And indeed, we find no evidence of a relationship between bank-affiliated trades and price reversals, while trades by non-bank affiliated investors are significantly related to future price reversals. This provides a clear evidence of a differential behavior of bank-affiliated institutional investors and the non-bank-affiliated ones around the crisis, further supporting the information advantage of bank-affiliated investors. Overall, these results indicate that bank-affiliated international investors do condition their investment decisions on the lending activities of their affiliated banks.

Once we have ascertained the information advantage of bank-affiliated international investors, we formally test our hypotheses, by examining the impact of those investors on foreign stock characteristics around the 2008-2009 crisis period. We find strong evidence that during the crisis period, bank-affiliated international investors increase stock liquidity and reduce negative stock return skewness.[4] Stocks characterized by a one standard deviation higher pre-crisis bank-affiliated foreign ownership display a 14% lower increase in stock illiquidity and a 17% lower increase in negative return skewness. The effect is mostly concentrated among investors affiliated with banks with close lending relationships. Placebo tests show that no such effect exists during the pre-crisis period of 2006-2007.

More importantly, the liquidity provision role of bank-affiliated investors is stronger among the stocks that are more subject to fire-sales of international investors. In line with Figure I, also in the cross-section, after controlling for a whole series of firm-specific characteristics, we find that the fire-sale pressure by itself significantly increases the illiquidity of foreign stocks. One standard deviation higher fire-sale pressure leads to 9% higher increase in stock illiquidity. Bank-affiliated foreign ownership significantly reduces such impact of fire-sales. Consistently, this effect is mostly concentrated among investors affiliated with banks with close lending relationships.

[4] We follow Chen et. al (2001) and measure the degree of extreme return realizations by the negative stock return skewness of the stock. Detailed definitions are provided in the Appendix.

We find similar patterns on the negative skewness of foreign stocks during the crisis period – i.e., the fire-sale pressure by itself increases the negative stock return skewness, while bank-affiliated ownership in the presence of a lending relationship significantly reduces the impact of it. These results confirm the previous ones and suggest that the bank-affiliated investors reduce the effects of fire-sales at the very time in which these effects reach their peak, i.e., the crisis period.

Additional evidence on the role of bank-affiliated investors can be gleaned by looking at their impact on short-selling. During the crisis, the stocks characterized by a higher presence of bank-affiliated investors experience a downward shift in short-selling demand. A one standard deviation increase in bank-affiliated ownership is related to an 8% higher probability of downward shift in short-selling demand. In contrast, other non-bank affiliated foreign ownership is significantly increasing short-selling demand, in line with Chen et al. (2008) that at the individual stock level, short interest rises around mutual fund fire-sales.

These results suggest that the market impact of bank-affiliated investors is related to their information advantage. Therefore, in a more direct test, we focus on whether these investors do indeed affect stock-specific informativeness. We use as proxy of stock informativeness the R-squared of the regression of stock returns on market returns ("price synchronicity"). A lower price synchronicity indicates a higher the stock-specific informational content (Morck et al., 2000, Piotroski and Roulstone, 2004). As expected, we find a strong negative relationship between the pre-crisis bank-affiliated ownership and the change in stock price synchronicity during the crisis. Stocks characterized by a one standard deviation higher pre-crisis bank-affiliated foreign ownership display a 11% lower increase in the price synchronicity during the crisis.[5] Again, this effect is concentrated among stocks held by funds affiliated with banks with close lending relationships.

These findings suggest bank-affiliated investors provide price support. And indeed, a direct test on prices confirms it. The stocks owned by bank-affiliated investors display higher returns (lower declines). During the crisis, a one standard deviation increase in bank-affiliated foreign ownership is

[5] This can be interpreted as a lower co-movement with the market of stocks held by bank-affiliated investors– i.e., the investors that, thanks to their superior information, are less likely to herd with the market.

related to a 1.9% (2.3%) higher abnormal return defined as excess returns with respect to the Fama-French 3-factor model (4-factor model). Again, the effect is concentrated in ownership by funds affiliated with banks with close lending relationships.

Overall, these results support our main argument that during the crisis their superior information induces the bank-affiliated funds to diverge from the other investors and to resort less to the fire-sales of the stocks on which they know more. This provides price support, ameliorates liquidity, reduces the risk of stock price crashes and lowers short-selling demand. They provide new insights into the anatomy of the financial crisis in the international markets, contributing to our understanding of the relative importance of various causes of the crisis and the factors amplifying its magnitude, such as withdrawal risks, fire-sales, and informational channels within banking conglomerates.

Our paper offers several contributions to the literature. First, it provides evidence at the international level of information transfer within international banking conglomerates. We show that international mutual funds exploit the affiliated banks' superior information and knowledge to improve their performance. Our findings are the first evidence on an international scale. We think it is of great importance, particularly because of its implications for the integration of global financial markets and the current debate on whether keeping under the same roof of commercial lending, investment banking and asset management is beneficial. By confirming the evidence available in the US market that the funds within banking conglomerates use to their advantage the information flowing from the lending activities, our results contrast with the fears that a bank based system ("European-type") must be detrimental to investors.

Second, our findings show the implications for the firms borrowing from banks affiliated with mutual funds. The implications for the market liquidity and stability have not yet been analyzed. We contribute to the literature on the cross-country transmission of liquidity shocks through the channel of international institutional investors (Hau and Lai, 2011, Bartram et al., 2011, Jotikasthira et al., 2012) and show that bank affiliation may mitigate such contagion effects.

Third, our results contribute to the existing evidence on the impact of foreign ownership on stock liquidity (Ng et al., 2011). We show that foreign investors affiliated with banks behave strikingly differently from other foreign investors without lending ties. This increases our understanding of how foreign investors may affect stock liquidity, especially during the financial crisis period.

Fourth, our evidence has important normative implications contributing to the overall debate on financial intermediation, the globalization of banking conglomerates and the distinction between bank-based and market-based financial systems. Indeed, banks can actually impact the stability of the system even in a market-based system. However, the channel of influence is quite different with respect to the traditional monitoring role in the bank-based system (Stulz, 1998, Allen and Gale, 2000).

The remainder of the paper is organized as follows. In Section II, we describe the data and the construction of the main variables. In Section III, we test whether bank-affiliated funds derive information from affiliated banks. In Section IV, we investigate the link between bank-affiliated foreign ownership and changes in stock characteristics during the crisis. A short conclusion follows.

II. Data and Main Variables

We now describe the different sources of the data and the construction of our main variables. The data on holdings come from the Factset/LionShares over the period 2001-2009. FactSet/LionShares provides portfolio holdings for institutional investors worldwide. It compiles institutional ownership from public filings by investors (such as 13-F filings in the US), company annual reports, stock exchanges, and regulatory agencies around the world. Institutions are defined as professional money managers, including mutual fund companies, investment advisors, pension funds, bank trusts and insurance companies.[6] FactSet/LionShares international institutional ownership data have been used in

[6] Factset/LionShares contains two layers of data. The first layer is at the fund level, providing detailed information on the amount of holdings in international stocks. The second layer is at the institutional level (managing company for each fund), providing information on the location, type, and ultimate parent of asset managers.

several other studies investigating the investment behavior of foreign investors (Ferreira and Matos, 2007, Bartram et al., 2010, Ng et al., 2011).[7]

The firm-level stock market data are drawn from Compustat Global. Specifically, annual accounting data are from the Compustat Global - Fundamentals Annual database, and daily stock price data are from the Compustat Global - Security Daily database. Compustat Global provides data covering publicly traded companies in more than 80 non-North American countries, representing over 96% of the European market capitalization and 88% of the Asian market capitalization. We combine the Compustat Global data with the holdings data, matching them by SEDOL and ISIN codes.

In Table I, we report descriptive statistics of the levels of foreign institutional ownership in different countries. In Panel A, we report the mean and standard deviation of foreign ownership by country at the end of December 2007. We define as "foreign ownership" the ratio between the level of foreign investor holdings and the year-end market capitalization of the stock. We include all the fund holdings based on the last reporting dates. For each country, we report both the equal-weighted average foreign ownership and the value-weighed foreign ownership. The weights are represented by the market capitalization of the stock.

As pointed out by Dahlquist et al. (2003) and Jotikasthira et al. (2012), the pure percentage ownership under-represents the true impact of foreign ownership.[8] This implies that a better perspective on the potential relevance of the ownership can be gleaned by focusing on the ownership of floating shares ("floating"). Therefore, in column (5), we also report the floating adjusted value-weighted foreign ownership. This value is calculated by scaling market capitalization to adjust for the percentage of not closely held shares, as reported in Table 1 of Dahlquist et al. (2003). We see that on average foreign investors hold 5.6% (equally-weighted), 10.3% (value-weighted) and 21.4% (floating-adjusted) of international stocks. These figures are consistent with Ferreira and Matos (2007),

[7] We consider all types of stock holdings (common shares, ADR, GDR and dual listings). We address the issue of different reporting frequencies by institutions from different countries by selecting the latest year-end available holdings updates.
[8] Indeed, a significant fraction of a firm's capital is tied down in the controlling stake. This may belong to the government, families or private entities and as such contributes less to determine the daily stock price and would therefore be a less relevant factor to determine stock liquidity.

Jotikasthira et al. (2012) and Bartram et al. (2010) and suggest a role of these institutions in affecting the characteristics of foreign stocks.

In Panel B, Table I, we report the ultimate parents of the top 10 largest asset managers holding non-US stocks at the end of December 2007. We report the name of the ultimate parent, the amount of holdings in billions of dollars and the country in which the ultimate parent is headquartered. We classify asset managers into bank-affiliated and non-bank affiliated institutions. We identify an asset management company as bank-affiliated if either its ultimate parent is a bank or among the companies controlled by the same ultimate parent there is a bank.[9] We obtain the identities of the ultimate parents of the institutional investors from Factset. Then, we manually match these names with the names of banks in Bankscope to determine the total amount of loans in assets.

In particular, we look at all the ultimate parents of asset managers and we retain only the ones that have an amount of loans exceeding 10 billion USD on the asset side of its balance sheet. This is very important, as Factset misclassifies as bank-affiliated also sovereign wealth funds and other non-lending entities. For example, the Norwegian Sovereign Wealth Fund, managed by the "Norges Bank", the Central Bank of Norway, is classified as bank-affiliated in Factset. A misclassification like this has huge implications as this fund manages 150 billion non-US stocks at the end of 2007 (6^{th} largest asset managers in the world) and its inclusion among the "bank-affiliated" may significantly alter the results. Therefore we expend much effort to make sure that the definition of bank-affiliated funds is correct.

In general, although the assets held by the largest bank-affiliated funds are relatively smaller than those held by the non-bank affiliated funds, the former still represent a significant amount of non-US stock holdings in the market. For example, the JP Morgan Chase asset management division holds 130 billion in foreign equities, followed by the Deutsche Bank asset management division (109 billion) and the Credit Agricole asset management division (i.e., SAS Rue La Boétie) (94 billion).

[9] Factset/Lionshares has its own classification of investor types according to which an investment company managed by a bank is called a "Bank Management Division". Factset defines this investor type as "a general buyside firm whose ultimate parent is a bank". However, as acknowledged by Factset, there are serious misclassifications of investor types in the original data. For instance, "BNP Paribas asset management (Singapore) ltd." is classified as a bank-affiliated division, whereas "BNP Paribas asset management Asia ltd." is classified as investment advisor; "BNP Paribas investment partners (Germany)" is classified as investment advisor, whereas "BNP Paribas investment partners Belgium" is classified as bank-affiliated division. To address this issue, we strictly follow Factset's definition of bank management division by manually checking the ultimate parents of all asset managers.

Interestingly, unlike non-bank affiliated funds, the largest bank-affiliated asset managers are mostly from Europe instead of the US, consistent with the fact that banking conglomerates dominate the European financial structure.

In Panel C of Table I, we report for each country the percentage of foreign stock holdings that are managed by banks. We use the same methodology as in Panel B to classify asset managers. For each stock, a bank-affiliated fraction is defined as the ratio of bank-affiliated foreign holdings divided by the total amount of foreign holdings. For each country, we report the mean and standard deviations of bank-affiliated fractions. The fraction is set to zero if there are no foreign bank-affiliated holdings. We also report the descriptive statistics for a subset of firms with foreign bank-affiliated holdings greater than zero. On average, bank-affiliated funds hold 16% of foreign equity holdings, with a standard deviation of 26% across different countries. This means that bank-affiliated funds manage a significant fraction of foreign equity investment. The considerable amount of cross-sectional variation will allow us to explore the impact of bank-affiliated foreign ownership on stock characteristics.

In Table II, we provide summary statistics of the firm-level variables. The sample period ranges from 2001 to 2009. For each variable, we report the data source, the mean, the 1st-percentile, the 99th-percentile, the standard deviation and the number of observations. We report the summary statistics for the ownership variables in Panel A, and for the subsample of firms with non-zero bank-affiliated foreign ownership in Panel B. We break down bank-affiliated foreign ownership into two parts: foreign ownership managed by funds affiliated with banks with close lending relationships and foreign ownership managed by funds affiliated with banks without close lending relationships.

We define lending relationship at the bank-country level. The data on bank loans are from LPC Dealscan. We proceed as follows. For a given bank-foreign country pair, we calculate the total loans outstanding that all the firms located in the country have with the specific bank. Let us assume that the firms of country i in year t borrow from a set of banks J. For each bank, we calculate the fraction of borrowings of country i from this bank as: $b_{ij} = B_{ij} / \sum_{k \in J} B_{ik}$. Country i is defined as a "high lending-

relationship country to bank j" if b_{ij} is above the median value calculated across all the countries that borrow from bank j. Similarly, country i is defined as a "low lending-relationship country to bank j" if b_{ij} is below the median value calculated across all the countries that borrow from bank j[10].

For example, HSBC has lending relationships with 50 countries. The median fraction of borrowing from HSBC among these 50 countries is 4.1%. Overall, Chinese companies have 10.1% of their bank loans with HSBC, and French companies have 6.5% of their bank loans with HSBC, whereas Austrian companies have 3.5% of their bank loans with HSBC, and Italian companies have 2.5% of their bank loans with HSBC. Therefore, China and France are "high lending-relationship countries to HSBC", whereas Australia and Italy are "low lending-relationship countries to HSBC". Next, for each stock in country i, we define "Foreign bank-affiliated ownership-high lending" (Foreign bank-affiliated ownership-low lending) as the sum of the foreign holdings managed by bank-affiliated funds whose affiliated bank has high (low) lending relationships with country i, standardized by the year-end market capitalization of the stock.

We can see in Panel A of Table II that slightly over half of the bank-affiliated foreign holdings are managed by banks with a high lending relationship. In Panel C of Table II, we present the summary statistics for the other major stock characteristics we will use in later analyses. These variables include Amihud illiquidity (Amihud (2002)), negative stock return skewness, shifts in short-selling demand, stock return synchronicity, market value, market-to-book, profitability, an ADR dummy, return volatility, share turnover, number of analysts, and stock returns. The definitions of each variable are detailed in the Appendix.

III. Does Bank Affiliation Provide Information Advantage?

We now ascertain whether bank-affiliated funds derive superior information from the lending activities of the affiliated bank. We consider three tests.

[10] The underlying assumption is that a bank would have higher monitoring power and therefore would be able to receive (stock) price-sensitive information for stocks located in countries with which it has an intense lending relationship.

A. Information and Holdings

The first test is based on the foreign equity holdings of bank-affiliated funds. Specifically, we link the holdings to lending information and then we look at the implications of such an investment decision in terms of performance.

We start by linking the investment decisions of the foreign bank-affiliated funds to the lending activities of the affiliated bank. As we argued, we expect that those investors condition their investment decisions on the lending activities of their affiliated banks. We perform the analysis at the ultimate parent-foreign country level and proceed as follows. First, for each ultimate parent j of asset management companies in year t, consider a set of foreign countries I. For each country i, we calculate the percentage of holdings $h_{ji} = H_{ji} / \sum_{s \in I} H_{js}$, where H_{ji} is the holdings that the all the funds belonging to asset managers with ultimate parent j invest in the stocks headquartered in country i. Then, we regress h_{ji} on the previously constructed borrowing/lending relationship linking the ultimate parent j to the country i (the fraction of borrowing b_{ij} as defined before) in the previous year.

The results are reported in Table III, Panel A. In columns (1)-(3), we use as a dependent variable the percentage of holdings (h_{ji}), and we control for the weight of country i's stocks in the global market as well as the total market value of the investment of j in country i. In columns (4)-(6), we use as a dependent variable the percentage of holdings in excess of country i's market weight (excess percentage of holdings). We include country-, ultimate parent- (UP), and year-fixed effects in the different specifications. In column (6), we add UP × year-fixed effects and the country × year fixed effects. In columns (2)-(6), the standard errors are clustered at the country level.

The results show that bank-affiliated funds tend to invest more in countries in which the borrowers have a close borrowing relationship with their affiliated bank. A one standard deviation increase in the fraction of borrowing from the affiliated bank raises the (excess percentage) percentage of stock holdings by the bank-affiliated funds by 9% (25%). This result survives after the inclusion of

the UP × year fixed effects and the country × year fixed effects, showing that it is not driven by any unobserved (even time-varying) ultimate parent or country characteristics.

Next, we look at performance. The goal is to determine whether the bank-affiliated investors achieve higher performance by investing in the stocks located in countries with which the affiliated bank has close lending relationship, than in other stocks located in countries with which the affiliated bank does not have close relationship. Following the methodology of Cohen et al. (2008), we examine whether the risk-adjusted return they obtain from their holdings in stocks with close lending relationship ("high-lending relationship stocks") is higher than that derived from stocks without close lending relationship ("low-lending relationship stocks"). This test has the advantage of directly focusing on the stocks within the fund's portfolio and of controlling for any other fund-specific characteristics such as managerial ability.[11] We proceed as follows.

First, we define high/low lending relationships at the country-ultimate parent level in the same way as we described before. Next, for each bank-affiliated institutional investor, we examine its quarter-end portfolio holdings. We create two value-weighted portfolios: a high-lending relationship portfolio and a low-lending relationship portfolio. A high-lending portfolio consists of the stocks from high-lending relationship countries, whereas a low-lending portfolio consists of stocks from low-lending relationship countries. For each portfolio, we define its buy-and-hold returns over the following quarter and, for each institutional investor, we calculate the difference in returns between the high-lending relationship portfolio return and the low-lending relationship portfolio return. The portfolios are rebalanced at the beginning of every quarter.

Finally, we run a pooled regression of the difference in returns – i.e., the high-lending portfolio return minus the low-lending portfolio return – on risk factors. The data on domestic and international risk factors from 2002 to 2009 are obtained from Eun et al. (2010).[12] We use an 8-factor model with 4

[11] Moreover, this approach does not require us to consider the performance of the entire fund. Indeed, given that the behavior of a few high-lending relationship stocks need not have a sizable impact on the performance of the entire fund, a test based on the overall performance of the fund might lack power.

[12] We thank Sandy Lai for sharing the factors data on her website.

domestic factors (the domestic market factor, HML, SMB and momentum factor) and 4 international factors (the international market factor, HML, SMB and momentum factor).

We report the results in Table III, Panel B. Columns (1)-(3) are based on the full sample, and columns (4)-(6) are based on the subsample of bank-affiliated institutions with portfolio data available for at least 25 quarters. We cluster the standard errors at the asset manager level. The results show that the high-lending portfolios outperform the low-lending portfolios. This result holds across all the specifications and both in the overall sample and in the sample based on the subsample with a higher number of quarters per institution.[13] The outperformance is also economically relevant, ranging between 30 bps and 60 bps per quarter.

B. Information and CDS/Stock Relation

The second test exploits the fact that banks may use information derived from lending relationships in the CDS market (Acharya and Johnson, 2007). If information flows between the lending division and the asset management division, the bank-affiliated equity ownership should be related to how the CDS changes may help to explain stock returns. We can therefore use the relationship between the increased explanatory power from the CDS changes and the level of bank-affiliated ownership as evidence of superior information. We proceed as follows.

First, we obtain from Markit the daily CDS spreads for international bond issuers. We only use 5-year maturity contracts as they are the most liquid. We calculate the daily percentage change in the CDS spread for each contract and then calculate the average change for each firm across different currencies and restructuring clauses. Next, we match the names of bond issuers from Markit with the stock names from Factset.[14] We are able to identify 1678 matches out of 5494 bond issuers' names from Markit. Then, we calculate the daily change in the CDS spread for each contract and calculate the average change for each firm across different currencies and restructuring clauses. We perform the following two regressions:

[13] The result does not change if we include the asset manager fixed effects in the regression.
[14] We manually verify the matching outcomes to ensure the validity of the matches.

$$ret_{it} = \alpha_0 + \alpha_1 MKT_t + \alpha_2 US_t + \alpha_3 ret_{it-1} + \alpha_4 ret_{it-2} + \varepsilon_{it},$$

$$ret_{it} = \alpha_0 + \alpha_1 MKT_t + \alpha_2 US_t + \alpha_3 ret_{it-1} + \alpha_4 ret_{it-2} + \alpha_5 \Delta CDS_{it} + \varepsilon_{it},$$

where ret_{it} is the daily return of the stock, and MKT_t is the value-weighted market return of the home country, US_t is the value-weighted market return of US stocks, ret_{it-1}, ret_{it-2} are the lagged stock returns, and ΔCDS_{it} represents the daily change in the CDS spreads. Then, we calculate the increase (percentage increase) in the R-squared (adjusted R-squared) between the two regressions and we regress it on bank-affiliated ownership as well as a set of control variables.[15] We also break down foreign bank ownership into two parts: high/low lending relationship ownership – representing the holdings by foreign investors affiliated with banks with/without close-lending relationships as described earlier.

We report the results in Table IV. In columns (1)-(3), the dependent variable is the increase in the R-squared, and in columns (4)-(6), it is the increase in the adjusted R-squared. Columns (1)-(2) and columns (4)-(5) use the direct increase, whereas columns (3) and (6) use the percentage increase. In columns (1) and (4), the variable of interest is foreign bank-affiliated ownership. In columns (2)-(3) and columns (5)-(6), we divide foreign bank-affiliated ownership into high-lending relationship ownership and low-lending relationship ownership. We include industry fixed-effects at the two-digit SIC level and country-year fixed effects in all of the specifications. The standard errors are clustered at the firm level.

The results show a strong positive relationship between bank-affiliated fund ownership and the increase in R-squared. This result holds across all of the specifications and is economically significant. A one standard deviation increase in bank-affiliated foreign ownership is related to a 13% higher R-squared (Adjusted R-squared) increase relative to the unconditional mean. Reassuringly, this effect is entirely concentrated in the funds affiliated with banks with close lending relationships. No similar relationship exists for the other types of foreign ownerships. This result is consistent with Acharya and

[15] These control variables are: *Log(market value), Market-to-book, Book leverage, firm Profitability,* an *ADR dummy, Return volatility, Share turnover, Log(number of analyst)* and *Stock return.* We also include a dummy *Missing domestic ownership dummy* that is equals to 1 if the domestic institutional ownership is missing and 0 otherwise. We define them in the Appendix.

Johnson (2007) and provides additional evidence that bank-affiliated investors have superior information.

C. Information and Trades/Stock Returns Correlation

We now look at bank-affiliated trades and their relationship with both contemporaneous price changes and future price reversals. As we argued, we expect the bank-affiliated trades – the ones more based on information – to be less correlated with contemporaneous price movements during the crisis when there is a significant amount of non-informationally motivated fire-sales and more correlated before the crisis. Moreover, we expect the bank-affiliated trades not to be related to price reversal, while the non-bank-affiliated trades – the ones more liquidity motivated – to be related to future price reversal (Campbell et al., 1993, Llorente, et al., 2002).

We therefore relate the changes in bank-affiliated ownership with stock returns. Given that many institutional investors report their holdings semi-annually, we use semi-annual frequency in this analysis. For each stock-half year, we calculate the changes (drop) in bank-affiliated (non-bank-affiliated) foreign ownership from the beginning of the half year to the end of the half year, and relate it to the abnormal stock returns over the period. To calculate the abnormal stock returns, we use both the Fama-French 3-factor model and the Fama-French 4-factor model (the domestic market factor, HML, SMB and momentum factor) as used in Eun et al. (2010)[16]. We use monthly stock returns from 2001 to 2005 as the training period to estimate the factor loadings.

Then, we regress the abnormal return on the drop of ownership as well as a set of control variables. All the firm-level accounting variables are derived at the beginning of the year. The pre-crisis period is from 2006 to 2007. The crisis period includes the year 2008 and the first half year of 2009. Industry fixed-effects at the two-digit SIC level and country-year fixed effects are included in all specifications. We cluster the standard errors at the firm level.

We report the results in Table V. In Panel A, we link the drop in foreign ownership to the contemporaneous cumulative average abnormal returns (CAARs) over the half year. Columns (1) and

[16] Following Griffin (2002), we use the domestic factors as they are more accurate representatives of risk. The results are similar if we include the international Fama-French factors to estimate the abnormal returns of the stock.

(3) are for the pre-crisis period. Columns (2) and (5) are for the crisis period. Columns (3) and (6) are for the period of the year 2008. In Panel B, we focus on the CAARs in the next half year as the dependent variable. The results show that before the crisis there is a strong correlation between changes in ownership by foreign bank-affiliated funds and stock returns. The effect is three times stronger than for the case of non-bank affiliated foreign funds.

Next, we examine the relationship with future returns. The results (Panel B) show no evidence of price reversals in the presence of bank-affiliated trades. In contrast, during the crisis period, non-bank-affiliated trades are related to price reversals in the following six months. These results are consistent with our expectations, suggesting that during the crisis the non-bank-affiliated funds are more likely to trade on the basis of fire-sale motivations and therefore, the effect of their trades is not information-related. In contrast, the trades of bank-affiliated funds are more informative.

These findings display a stark difference in the behavior between bank-affiliated funds and the remaining foreign investors. They can also be interpreted as a third piece of evidence in favor of the informationally-driven nature of bank-affiliated asset allocation. Overall, the results of this section suggest that the bank-affiliated funds exploit the information and knowledge arising from the lending activity of the affiliated banks to invest in international stocks. We now test our main hypothesis, by examining the impact of those investors on foreign stock characteristics around the 2008-2009 crisis period.

IV. Foreign Bank-affiliated Ownership and Stock Characteristics Around the 2008-2009 Crisis

In this section, we examine the implications of bank affiliation for the international stock markets around the 2008-2009 financial crisis. As we have argued above, we expect that during the crisis, the presence of bank-affiliated funds increases stock liquidity, reduces the risk of stock price crashes and provides price support. We test this hypothesis in two steps. We first focus on the changes in liquidity-related stock characteristics, and then we focus on the price support.

A. Changes in Illiquidity and Negative Return Skewness

We start by investigating the relationship between the changes in stock characteristics around the crisis and the level of foreign bank-affiliated ownership before the crisis. We report the results in Tables VI for the change in the Amihud illiquidity, and in Table VII for the change in the risk of stock price crashes as measured by the negative stock return skeweness (Chen et al., 2001). In both tables, we consider the same set of control variables as in the previous sections and include industry fixed effects and country-year fixed effects. We also decompose foreign bank-affiliated ownership into high-lending relationship ownership and low-lending relationship ownership. We also perform a placebo test, re-estimating the same specifications for the pre-crisis period of year 2006-2007.

In Table VI, we find a strong and negative relationship between bank-affiliated foreign ownership before the crisis and changes in illiquidity in the crisis period. The results hold across the different specifications and is economically relevant. A one standard deviation increase in bank-affiliated foreign ownership before the crisis reduces the illiquidity increase in the crisis by 14%. As expected, the effect is mostly concentrated among bank-affiliated funds with a close lending relationship. No effect is present for other types of foreign ownership.

In Table VII, we document a strong and negative relationship between bank-affiliated foreign ownership before the crisis and changes in the negative stock return skewness in the crisis period. A one standard deviation increase in pre-crisis bank-affiliated foreign ownership reduces the increase in negative skewness in the crisis by 17%. Consistently, the effect is mostly concentrated among funds affiliated with banks with close lending relationships. Also, no effect is present for other types of foreign ownership. In both cases, reassuringly, the placebo tests show no significant effect of bank-affiliated ownership before the crisis.

Next, we investigate whether the role of bank-affiliated ownership is stronger in the case of the stocks are more affected by fire-sales. We use the same definition of fire-sales pressure as we used in Figure I. We now describe it in detail. We follow the literature (Coval and Stafford, 2007) and define fire-sales on the basis of the outflows experienced by the funds holding the stocks. We obtain

information on monthly fund total net assets (TNA) and fund returns of international open-end equity mutual funds from Morningstar.[17] We proceed as follows.

First, we calculate the monthly fund flows[18] as $Flow_{i,t} = (TNA_{i,t} - TNA_{i,t-1}(1+\text{Ret}_{i,t}))/TNA_{i,t-1}$. For each fund-year (j,t), we define a fund pressure indicator $\text{Pressure}_{j,t}$ that equals 1 if there is at least one month in the year in which the fund experiences an *outflow* that places it in the bottom 5%-quantile of the flow distribution and 0 otherwise. Next, at the stock level, for each stock-year (i,t), we calculate the stock fire-sale pressure as:

$$\text{Firesale-Pressure}_{i,t} = (\sum_{j \in J} H_{i,j,t-1}\text{Pressure}_{j,t}) / \sum_{j \in J} H_{i,j,t-1},$$

where $H_{i,j,t-1}$ is the holdings of fund j on stock i at the end of year t-1, and J is the set of international mutual funds that invest in stock i.

We therefore re-estimate the previous specifications in Table VI and Table VII by interacting foreign bank-affiliated ownership with the measure of stock fire-sale pressure. We report the results in Table VIII. In Panel A, the dependent variable is the change in stock illiquidity relative to the previous year, while in Panel B, the dependent variable is the change in negative return skewness relative to the previous year. Columns (1)-(3) report the results during the crisis period of year 2008 and year 2009. Columns (4)-(6) focus on the pre-crisis period of year 2006 and year 2007. The control variables are the same as in Table VI. Country × year and industry fixed effects are always included. In the interest of brevity, we only report the variables of interest.

The results (Panel A, Table VIII) show that the fire-sale pressure by itself significantly increases the illiquidity of foreign stocks. One standard deviation higher fire-sale pressure leads to 9% higher increase in stock illiquidity. Bank-affiliated foreign ownership significantly reduces such impact of fire-sales. More importantly, this effect is consistently concentrated among investors affiliated with banks with close lending relationships. We find similar patterns on the negative skewness of foreign

[17] We match the Morningstar fundid with the Factset fundid by fund names and fund domiciles. We manually verify the matching outcomes to ensure the validity of the matches.
[18] We winsorize the fund flows at the top and bottom 1% level. The bottom 5%-quantile in the distribution of monthly fund flows is -6.7%.

stocks during the crisis period (Panel B, Table VIII), i.e., the fire-sale pressure by itself increases the negative stock return skewness, while bank-affiliated ownership in the presence of a lending relationship significantly reduces the impact of it. These results confirm the previous ones and suggest that the bank-affiliated fund ownership reduces the effects of fire-sales at the very time in which these effects reach their peak during the crisis.

B. Changes in Price Synchronicity and Short-selling Demand

In addition to the two variables we considered before – i.e., illiquidity and risk of stock price crashes – we also focus on changes in stock price informativeness and shift in short-selling demand during the crisis period. As we argued, if bank-affiliated funds have superior information, they should increase the informativeness of the stock price. This effect should be particularly relevant during the crisis when the stock is subject to significant increases in fire-sales pressure (as shown in Figure I). We therefore expect a negative relationship between bank-affiliated ownership and the change in the degree of stock price informativeness. Also, the fact that bank-affiliated funds do effectively provide price support should discourage short-sellers. This implies that the stocks characterized by a higher presence of asset managers affiliated with banks with close lending relationships should experience a downward shift in short-selling demand.

We use as proxy for stock price informativeness the R-squared of the regression of stock returns on market returns ("price synchronicity"). A lower price synchronicity indicates a higher the stock-specific informational content (Morck et al., 2000, Piotrovsky and Roulstone, 2004). For a given stock year, we regress the daily returns of the stock on the contemporaneous value-weighted local market returns and on the CRSP value-weighted US market returns. Then, we calculate the adjusted R-squared of the regression. Stock price synchronicity is defined as a transformation of the adjusted R-squared, i.e., $\log (R^2/(1- R^2))$.

We follow Cohen et al. (2007) to estimate the probability of downward shifts in short-selling demand. It is constructed as follows. We first calculate the average fraction of stocks that are sold short (short-selling quantity divided by shares outstanding) and the average short-selling fees in each

year[19]. Then, for a given stock-year, we identify a downward shift in the short-selling demand if we see both the short-selling fee and the short-sold fraction drop simultaneously. The probability of a downward shift is a dummy equal to 1 if the short-selling demand shifts downward and 0 otherwise.

We report the results in Table IX. In Panel A, the stock characteristic is the change in stock price synchronicity, while in Panel B, the stock characteristic is a downward shift in short-selling demand. Columns (1) and (3) are for the crisis period from 2008 to 2009. Columns (2) and (4) are only for the year 2008. We report the placebo tests in columns (5) and (6) for the pre-crisis period.

The results are consistent with expectations. We find a negative relation between changes in stock price synchronicity and bank-affiliated foreign ownership. A one standard deviation increase in bank-affiliated foreign ownership before the crisis reduces the rise in price synchronicity in the crisis by 11%. Again, the effect is mostly concentrated among funds affiliated with banks with close lending relationships. No effect is present for other types of foreign ownership.

In the case of short-selling, we find that, during the crisis period, especially for the case of high-lending relationship bank-affiliated ownership, it significantly reduces short-selling demand. The impact is stronger in the year 2008. A one standard deviation increase in high-lending bank-affiliated ownership is related to a 4% (8%) higher probability of downward shift in the short-selling demand curve during the crisis (year 2008). In contrast, other types of foreign ownership are significantly negatively related to the downward shift in short-selling demand during the crisis. This is consistent with Chen et al. (2008) that at the individual stock level short interest rises in advance of mutual fund fire-sales.

C. Evidence of Price Support During the Crisis

If foreign bank-affiliated funds help to maintain liquidity during the crisis and reduce the exposure of stocks to fire-sales induced liquidations, these investors should effectively provide price stabilization. This implies that the stocks held by them should have a better performance during the crisis. To

[19] We draw the data on short-selling quantities and short-selling fees for international stocks from Data Explorer from 2003 to 2009. DataExplorers is a research company that collects equity and bond lending data directly from the security lending desks at the world's leading banks. The data is available at a daily frequency for the period from July 2006 to December 2008. Data Explorers provides information on lending volumes, lending fees, and the number of securities available for lending.

investigate this point, we directly regress the stocks' cumulative average abnormal returns (CAAR) during the crisis from 2008 to 2009 on our ownership measures as well as a set of control variables. All the independent variables are estimated based on the end of the year 2007. We include industry fixed effects at the two-digit SIC level and country fixed effects.

We consider three alternative ways of defining the CAARs. The first definition is based on the excess returns over the domestic risk-free rate. The second definition is based on the Fama-French 3-factor (the domestic market, SMB and HML factors) adjusted abnormal returns. The third definition is based on the Fama-French 4-factor (the domestic market, SMB, HML and momentum factors) adjusted abnormal returns. We calculate the factor loadings on these factors over the period 2003-2007.

We report the results in Table X. In column (1), we use the simple excess returns over the risk free rate, whereas in columns (2) and (3), we use the 3 factor- and 4 factor-adjusted returns, respectively. In columns (1) and (4), the variable of interest is the foreign bank-affiliated ownership. In columns (2)-(3) and columns (5)-(6), we decompose foreign bank-affiliated ownership into high-lending relationship ownership and low-lending relationship ownership.

The results display a strong positive relationship between the pre-crisis bank-affiliated fund ownership and the abnormal stock returns during the crisis. This result holds across different specifications. A one standard deviation increase in bank-affiliated foreign ownership is related to a 1.9% (2.3%) higher abnormal return defined as excess returns with respect to the Fama-French 3-factor model (4 factor model) over the crisis period. As expected, the result is concentrated among the bank-affiliated funds with close lending relationships. In contrast, the effect is the opposite for the other types of foreign ownership. This confirms our previous results and shows that bank-affiliated foreign ownership does indeed provide price stabilizations during the global financial crisis.

Conclusion

We study the role of international institutional investors in propagating financial market instability and the mediating role of the banking sector. We argue that the affiliation of international asset managers

with banking conglomerates affects the way they react to the financial crisis. We hypothesize that affiliated fund managers derive superior information from the lending activities of affiliated banks. During a crisis, the information advantage allows these funds to deviate from engaging in fire-sales for the stocks in which they have superior information. This effectively makes them price supporters of the stocks they hold, increasing stock liquidity and reducing extreme negative return realizations.

We study this issue using a comprehensive sample of international firms with detailed information on foreign institutional investor holdings over the period 2001-2009. We show that bank-affiliated funds tilt stock allocation toward stocks with close borrowing relationships with the affiliated banks, and deliver higher performance on those stocks than on other stocks in the portfolio. Additionally, we show that CDS spread changes help to explain stock returns, and the increased explanatory power is positively related to the level of foreign bank-affiliated ownership. These findings suggest that bank affiliation provides an informational advantage that more than offsets the disadvantages of foreign investors due to geography.

Next, we show that during the 2008-2008 global financial crisis, the bank-affiliated investors increase stock liquidity, reduce extreme negative return realizations, increase price informativeness and lower short-selling demand. This effectively provides price support to foreign stocks.

Overall, these results provide novel and valuable knowledge of the anatomy of the recent financial crisis in the international markets. We believe that our findings contribute significantly to our understanding of the relative importance of various causes of the crisis and the factors amplifying its magnitude, such as incentives, fire-sales, and information channels within banking conglomerates.

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Appendix: Variable Definitions

Foreign ownership: for a given stock-year, foreign ownership is calculated as foreign investor holdings divided by the year-end market capitalization. We include all the fund holdings based on the last reporting dates. The data on global institutional holdings are drawn from the Factset/LionShares database.

Foreign bank-affiliated ownership: for a given stock-year, foreign bank-affiliated ownership is calculated as foreign investor holdings managed by banks divided by the year-end market capitalization. Factset/Lionshares has its own classification of investor types, among which investment companies managed by banks is called "Bank Management Division". Factset defines this investor type as "a general buyside firm whose ultimate parent is a bank". However, as acknowledged by Factset, there are serious misclassifications of investor types in the original data. For instance, "BNP Paribas asset management (Singapore) ltd." is classified as a bank-affiliated division, while "BNP Paribas asset management Asia ltd." is classified as an investment advisor; "BNP Paribas investment partners (Germany)" is classified as an investment advisor, while "BNP Paribas investment partners Belgium sa" is classified as a bank-affiliated division.

To address this issue, we strictly follow the Factset's definition of bank management division by manually checking the ultimate parents of each asset manager. In particular, we identify an asset manager as bank-affiliated if its ultimate parent is a bank or if there is a bank in the group (i.e., with the same ultimate parent). In either case, the affiliated bank must an average amount of loans exceeding 10 billion USD on the asset side of its balance sheet during the sample period. We obtain the names of the ultimate parents of institutional investors from Factset. Then, we match the names of ultimate parents/affiliated bank with the names of banks in Bankscope to find the amount of loans. The rest of institutions are defined as non-bank affiliated.

Foreign bank-affiliated ownership—high/low lending relation: We decompose foreign bank-affiliated ownership into two parts, i.e., foreign bank-affiliated ownership with high lending relationship and foreign bank-affiliated ownership with low lending relationship. Our approach is detailed as follows.

First, we perform name matching and manually match the names of ultimate parents of asset managers from Factset, as identified as banks from the procedure above, and the names of ultimate parents of lenders from LPC Dealscan. We pick all loan contracts over the period. These data not only provide information about provide information about the loan (e.g., the date when the contract is effective, the tenor of the loan, and the location of the borrowing firm at the time of the loan contract), but also the identification of the lender. Next, we construct international conglomerates by identifying the affiliation between commercial lenders from LPC and institutional investors from Factset Lionshare. The name-matching is first done using an algorithm designed for this purpose and then further enhanced by manually searching for the LPC-banks.

We define lending relationship at bank-country level. For a given bank-country pair, we calculate the total borrowing amount of all the stocks located in the country from the bank. In particular, for country i in year t, it borrows from a set of banks J. For each bank $j \in J$, we calculate the fraction of borrowings from this bank by country i as $b_{ij} = B_{ij} / \sum_{k \in J} B_{ik}$. Country i is defined as high lending relationship country to bank j if l_{ij} is above the median fraction among all the countries that borrow from bank j. Country i is defined as low lending relationship country to bank j if l_{ij} is below the median fraction among all the countries borrowing from bank j.

We provide the following example for HSBC holdings plc. In 2007, HSBC holdings has lending

relationship with 50 countries, among which the median fraction of borrowing from HSBC is 4.1%. It means that on average, countries borrow 4.1% of their bank debt from HSBC. For illustration purpose, we report the identification of high/low lending relationships for 10 countries. We can see that Chinese companies borrow 10.1% of their bank loans from HSBC, French companies borrow 6.5% of their banks loans from HSBC, while Australian companies borrow 3.5% of their bank loans from HSBC, and Italian companies borrow 2.5% of their bank loans from HSBC. Therefore, China and France are seen as high lending relationship country to HSBC, while Australia and Italy are seen as low lending relationship country to HSBC.

Country/Region	Fraction of borrowing from HSBC among all the country's lenders	Lending relationship
China	10.1%	High
France	6.5%	High
Hong Kong	16.0%	High
Japan	6.1%	High
Netherlands	5.6%	High
Australia	3.5%	Low
Germany	3.7%	Low
Indonesia	2.9%	Low
Italy	2.5%	Low
Spain	2.7%	Low

Then, for a given stock in country i, *Foreign bank-affiliated ownership—high lending* is defined as the sum of foreign bank-affiliated institutional holdings with high lending relationship with country i divided by the year-end market capitalization of the stock. Similarly, *Foreign bank-affiliated ownership—low lending* is defined as the sum of foreign bank-affiliated institutional holdings with low lending relationship with country i divided by the year-end market capitalization of the stock.

Foreign other institutional ownership: for a given stock-year, foreign other institutional ownership is calculated as foreign institutional holdings not managed by banks divided by the year-end market capitalization.

Domestic institutional ownership: for a given stock-year, domestic institutional ownership is calculated as the total domestic institutional holdings divided by the year-end market capitalization.

Missing domestic ownership dummy: it is defined as a dummy variable which equals 1 if the domestic institutional ownership is missing and 0 otherwise.

Log(market value): for a given stock-year, is calculated as the log of year-end market capitalization of the stock.

Market-to-book: for a given stock-year, it is defined as the market value of the ordinary equity divided by the balance sheet value of the ordinary equity in the company.

***Book leverage*:** for a given stock-year, is the ratio of the book value of total debt to the book value of total assets.

***Profitability*:** for a given stock-year, it is defined as the ratio of earnings before interest, taxes, depreciation and amortization (EBITDA) to the book value of total assets.

ADR dummy: for a given stock-year, it is a dummy variable which equals 1 if the firm is cross-listed on a US exchange and 0 otherwise.

Return volatility: for a given stock-year, is the standard deviation of daily returns of the stock over the year.

Share turnover: for a given stock-year, it is the sum of trading volume over the year divided by the year-end market capitalization.

Log(number of analyst): for a given stock-year, it is the log value of the number of analysts covering the stock.

If there is no analyst coverage, it is equal to 0.

Stock return: for a given stock-year, it is the cumulative return of the stock over the year.

Amihud illiquidity: for a given stock-year, it is defined as the average of daily Amihud's (2002) measure of price impact of trading over the year. It is calculated as:

$$Illiquidity_{i,t} = \frac{1}{D_t} \sum_{Days \in t} (1000 * \sqrt{\frac{|\text{daily return}|}{|\text{daily dollar volume}|}}),$$

where D_t is the number of days in year t. We require the number of non-zero daily returns for each stock-year to be more than 60.

Negative stock return skewness: for any stock-year, it is calculated by taking the negative of the third moment of daily returns and dividing it by the standard deviation of daily returns raised to the third power (Chen et al, 2000). It is defined as

$$NCSKEW_{it} = -(n(n-1)^{3/2} \sum R_{it}^{3}) / ((n-1)(n-2)(\sum R_{it}^{2})^{3/2}).$$

Downward shift in short-selling demand: The data on short-selling quantity and short-selling fee for international stocks are obtained from Data Explorer from 2003 to 2009. We first calculate the average fraction of stocks that are short-sold (short-selling quantity divided by shares outstanding) and average short-selling fee in each year. Then we follow the same methodology as in Cohen et al. (2009) to estimate the probability of downward shifts in short-selling demand. For a given stock-year, we say that there is a downward shift in the short-selling demand, if we see both the short-selling fee and short-sold fraction drop at the same time. We then create a dummy variable which takes a value of 1 if the short-selling demand shifts downward and 0 otherwise.

Stock price synchronicity: For a given stock-year, we regress the daily returns of the stock on the contemporaneous value-weighted local market returns and the CRSP value-weighted US market returns: $ret_{it} = \alpha_0 + \alpha_1 MKT_t + \alpha_2 US_t + \varepsilon_{it}$, then we calculate the adjusted R-squared of the regression. Stock price synchronicity is defined as a transformation of the adjusted R-squared as $\log(\frac{R2}{1-R2})$. We require the number of non-zero daily returns for each stock-year to be more than 60.

Fire-sale pressure by international mutual funds: This measure intends to quantify the extent to which a stock faces fire-sale pressure induced by significant fund outflows from international mutual funds. We obtain information on monthly fund TNA and fund returns from Morningstar. We only focus on relatively large open-end mutual funds with fund TNA more than 50 million USD. We proceed as follows. First, we calculate monthly fund flow as: $Flow_{i,t} = (TNA_{i,t} - TNA_{i,t-1}(1+\text{Ret}_{i,t})) / TNA_{i,t-1}$. We winsorize the fund flows at the top and bottom 1% level. The bottom 5%-quantile in the distribution of monthly fund flows is -6.7%. For each fund-year (j,t), we define a fund pressure indicator $\text{Pressure}_{j,t}$ that equals 1 if there is at least one month in the year in which the fund experiences an *outflow* of more than 6.7% of its TNA and 0 otherwise. Then, at the stock level, for each stock-year (i,t), we calculate the stock fire-sale pressure as:

$$\text{F-Pressure}_{i,t} = (\sum_{j \in J} H_{i,j,t-1} \text{Pressure}_{j,t}) / \sum_{j \in J} H_{i,j,t-1},$$

where $H_{i,j,t-1}$ is the holdings value of fund j on stock i at the end of year t-1, and J is the set of international mutual funds that invest in stock i.

Figure I
Average Amihud Illiquidity and Average Fire-sale Pressure during the Sample Period

In this graph, we plot the evolvement of the average Amihud stock illiquidity and the average stock fire-sale pressure for our sample of international firms during the period of 2001 to 2009. The Amihud illiquidity is defined as the average of daily Amihud's (2002) measure of price impact of trading over the entire year. We quantify the stock fire-sale pressure as the ownership-weighted selling pressure of open-end international mutual funds due to significant fund outflows. The detailed definitions can be found in the Appendix. The blue bar represents the average Amihud illiquidity (the left vertical axis), and the red line represents the average stock fire-sale pressure (the right vertical axis).

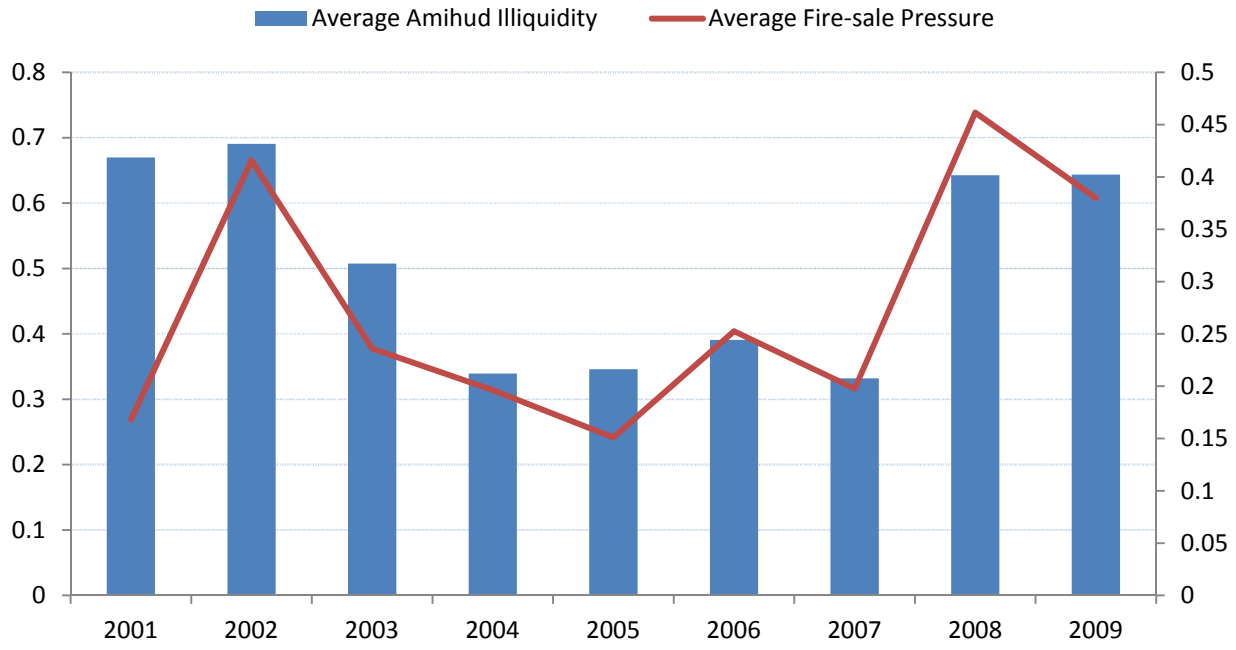

Table I: Summary Statistics of Foreign Ownership

Panel A: Foreign Ownership by Country

We report the mean and standard deviation of foreign ownership by country, at the end of December 2007. The data on global institutional holdings are drawn from the Factset/LionShares database. Foreign ownership is calculated as foreign investor holdings divided by the year-end market capitalization of a stock. We include all the fund holdings based on the last reporting dates. For each country, we report both the equal-weighted average foreign ownership and the value-weighted foreign ownership weighed by stock market capitalization. We also report the floating adjusted value-weighted foreign ownership, by rescaling market capitalization to adjust for the percentage of not closely held shares, as reported in Table 1 of Dahlquist, Pinkowitz, Stulz and Williamson (2003). For few countries where the float-adjustment is not available.

Country	Mean (equal-weighted)	Standard Deviation	N	Value-weighted	Floating adjusted
ARGENTINA	0.013	0.041	40	0.011	0.024
AUSTRALIA	0.048	0.065	798	0.086	0.115
AUSTRIA	0.105	0.112	81	0.151	0.334
BELGIUM	0.073	0.080	126	0.136	0.257
BERMUDA	0.217	0.171	73	0.244	
BRAZIL	0.072	0.086	194	0.058	0.177
CANADA	0.059	0.077	1404	0.124	0.243
CHILE	0.014	0.022	70	0.014	0.040
CHINA	0.067	0.116	605	0.092	0.296
CROATIA	0.022	0.030	61	0.010	
DENMARK	0.053	0.078	138	0.128	0.171
EGYPT	0.030	0.038	47	0.058	0.097
FINLAND	0.108	0.107	128	0.240	0.313
FRANCE	0.069	0.084	522	0.156	0.252
GERMANY	0.085	0.103	568	0.189	0.342
GREECE	0.062	0.097	210	0.147	0.593
HONG KONG	0.050	0.066	804	0.090	0.157
INDIA	0.044	0.053	666	0.070	0.118
INDONESIA	0.048	0.055	149	0.102	0.328
IRELAND	0.139	0.118	83	0.197	0.227
ISRAEL	0.046	0.075	208	0.077	0.184
ITALY	0.062	0.069	291	0.137	0.219
JAPAN	0.039	0.048	2525	0.094	0.153
SOUTH KOREA	0.049	0.068	743	0.126	0.207
LITHUANIA	0.094	0.099	32	0.049	
MALAYSIA	0.035	0.056	424	0.082	0.172
MEXICO	0.062	0.097	89	0.071	0.097
NETHERLANDS	0.144	0.137	163	0.186	0.280
NEW ZEALAND	0.035	0.050	78	0.070	0.309
NIGERIA	0.003	0.008	35	0.005	
NORWAY	0.078	0.088	196	0.149	0.253
PAKISTAN	0.023	0.045	44	0.029	0.129
PERU	0.022	0.039	31	0.055	0.174
PHILIPPINES	0.054	0.062	96	0.102	0.209
POLAND	0.040	0.049	174	0.076	0.212
PORTUGAL	0.054	0.049	40	0.084	0.129
ROMANIA	0.094	0.135	43	0.035	
RUSSIAN FEDERATION	0.036	0.054	225	0.022	
SINGAPORE	0.053	0.075	361	0.116	0.271
SOUTH AFRICA	0.056	0.074	186	0.110	0.234
SPAIN	0.054	0.064	143	0.116	0.200
SWEDEN	0.070	0.078	271	0.126	0.160
SWITZERLAND	0.101	0.109	243	0.190	0.256
TAIWAN	0.042	0.061	653	0.123	0.158
THAILAND	0.040	0.046	199	0.061	0.145
TURKEY	0.067	0.075	178	0.115	0.394
UNITED KINGDOM	0.057	0.070	1198	0.123	0.136
Average	0.056	0.077		0.103	0.214

Table I (Cont'd)

Panel B: Largest Asset Managers Holding Non-US Stocks

We report the top 10 largest asset managers holding non-US stocks at the end of December 2007. We classify asset managers into bank-affiliated and non-bank affiliated institutions. We identify an asset manager as bank-affiliated if its ultimate parent is a bank or in the group (referring to the same ultimate parent) there is an affiliated bank. In either case, the bank must have an amount of loans exceeding 10 billion USD on the asset side of its balance sheet. We obtain the information on the ultimate parents of institutional investors from Factset. Then, we manually match the names of ultimate parents/affiliated bank with the names of banks in Bankscope to determine the amount of loans in assets. We report the name of the ultimate parent, the amount of holdings in billions of dollars and the country where the ultimate parent is headquartered.

	Non-bank affiliated Institutions			Bank-affiliated Institutions		
	Name	Holdings (Billions)	Country	Name	Holdings (Billions)	Country
1	The Capital Group Co.	385	United States	JPMorgan Chase & Co.	130	United States
2	FMR LLC (Fidelity Investments)	361	United States	Deutsche Bank AG	109	Germany
3	BlackRock Inc.	298	United States	SAS Rue La Boétie	94	France
4	AXA S.A.	197	France	BPCE S.A.	91	France
5	Franklin Resources Inc.	178	United States	BNP Paribas S.A.	88	France
6	Government of Norway (Norges Bank)	150	Norway	UBS AG	69	Switzerland
7	Allianz SE	124	Germany	UniCredit SpA	65	Italy
8	Invesco Ltd.	114	United States	HSBC Holdings plc	65	United Kindom
9	Schroders plc	91	United Kindom	ING Groep N.V.	56	Netherlands
10	Stichting Pensioenfonds ABP	83	Netherlands	Lloyds Banking Group plc	53	United Kindom

Table I (Cont'd)

Panel C: Percentage of Foreign Holdings Managed by Banks

We report country by country the percentage of foreign stock holdings that are managed by banks. We use the same methodology to classify asset managers as in Panel B. For each stock, bank-affiliated fraction is defined as the ratio of bank-affiliated foreign holdings divided by the total amount of foreign holdings. For each country, we report the mean and standard deviation of bank-affiliated fraction. The fraction is set to 0 if there are no foreign bank-affiliated holdings. We also report separately for a subset of firms with foreign bank-affiliated holdings above 0.

Country	Bank-affiliated fraction (mean)	Bank-affiliated fraction (sta. dev.)	N	Bank-affiliated fraction (mean) (Bank-affiliated ownership > 0)	Bank-affiliated fraction (sta. dev.) (Bank-affiliated ownership > 0)
ARGENTINA	0.165	0.286	40	0.299	0.331
AUSTRALIA	0.146	0.253	798	0.286	0.291
AUSTRIA	0.226	0.232	81	0.286	0.225
BELGIUM	0.258	0.289	126	0.331	0.288
BERMUDA	0.101	0.102	73	0.127	0.099
BRAZIL	0.131	0.180	194	0.169	0.188
CANADA	0.105	0.238	1404	0.277	0.319
CHILE	0.064	0.147	70	0.124	0.188
CHINA	0.380	0.410	605	0.563	0.382
CROATIA	0.138	0.259	61	0.234	0.303
DENMARK	0.183	0.246	138	0.342	0.243
EGYPT	0.192	0.288	47	0.257	0.308
FINLAND	0.247	0.253	128	0.344	0.236
FRANCE	0.165	0.244	522	0.265	0.263
GERMANY	0.193	0.262	568	0.344	0.265
GREECE	0.164	0.252	210	0.302	0.276
HONG KONG	0.138	0.237	804	0.271	0.273
INDIA	0.183	0.294	666	0.359	0.327
INDONESIA	0.144	0.237	149	0.268	0.267
IRELAND	0.220	0.228	83	0.304	0.216
ISRAEL	0.099	0.220	208	0.228	0.287
ITALY	0.230	0.241	291	0.272	0.239
JAPAN	0.104	0.186	2525	0.177	0.214
KOREA, REPUBLIC OF	0.129	0.258	743	0.303	0.322
LITHUANIA	0.416	0.336	32	0.512	0.298
MALAYSIA	0.119	0.228	424	0.295	0.279
MEXICO	0.130	0.213	89	0.190	0.235
NETHERLANDS	0.208	0.190	163	0.257	0.178
NEW ZEALAND	0.126	0.234	78	0.258	0.280
NIGERIA	0.113	0.285	35	0.263	0.394
NORWAY	0.173	0.236	196	0.277	0.246
PAKISTAN	0.050	0.136	44	0.137	0.201
PERU	0.174	0.261	31	0.257	0.282
PHILIPPINES	0.196	0.298	96	0.324	0.325
POLAND	0.413	0.376	174	0.532	0.344
PORTUGAL	0.279	0.237	40	0.328	0.223
ROMANIA	0.174	0.266	43	0.234	0.286
RUSSIAN FEDERATION	0.282	0.325	225	0.410	0.318
SINGAPORE	0.131	0.225	361	0.246	0.259
SOUTH AFRICA	0.103	0.186	186	0.184	0.216
SPAIN	0.251	0.250	143	0.299	0.245
SWEDEN	0.185	0.253	271	0.266	0.266
SWITZERLAND	0.152	0.180	243	0.206	0.181
TAIWAN	0.092	0.195	653	0.214	0.249
THAILAND	0.127	0.226	199	0.243	0.264
TURKEY	0.234	0.264	178	0.359	0.248
UNITED KINGDOM	0.181	0.262	1198	0.270	0.280
Average	0.159	0.256		0.279	0.286

Table II: Summary Statistics of Main Variables

This table provides summary statistics of firm-level variables used in this study. The sample period is from 2001 to 2009. For each variable we report the data source, mean, 1%-percentile, 99%-percentile, standard deviation and number of observations. Panel A reports the summary statistics for the ownership variables, and Panel B is for the subsample of firms with non-zero bank-affiliated foreign ownership. Panel C presents the summary statistics for other major variables. Detailed definitions of the variables are in the Appendix.

Panel A: Ownership Variables

Variable	Mean	1%-percentile	99%-percentile	Std. Dev.	N	Floating adjusted
Foreign ownership	0.045	0	0.307	0.065	64564	0.077
Foreign bank-affiliated ownership	0.009	0	0.087	0.019	64564	0.015
Foreign bank-affiliated ownership: high lending relation	0.005	0	0.062	0.013	64564	0.009
Foreign bank-affiliated ownership: low lending relation	0.004	0	0.049	0.010	64564	0.007
Foreign non-bank affiliated ownership	0.036	0	0.249	0.053	64564	0.062
Domestic ownership	0.035	0	0.342	0.071	64564	0.054
Missing domestic ownership dummy	0.310	0	1	0.462	64564	0.310

Panel B: Ownership Variables (Foreign Bank-affiliated Ownership>0)

Variable	Mean	1%-percentile	99%-percentile	Std. Dev.	N	Floating adjusted
Foreign ownership	0.066	0	0.345	0.075	38085	0.115
Foreign bank-affiliated ownership	0.015	0	0.101	0.022	38085	0.026
Foreign bank-affiliated ownership: high lending relation	0.008	0	0.076	0.015	38085	0.015
Foreign bank-affiliated ownership: low lending relation	0.007	0	0.059	0.013	38085	0.012
Foreign non-bank affiliated ownership	0.052	0	0.284	0.062	38085	0.089
Domestic ownership	0.041	0	0.350	0.075	38085	0.063
Missing domestic ownership dummy	0.172	0	1	0.377	38085	0.172

Panel C: Other Variables

Variable	Data Source	Mean	1%-percentile	99%-percentile	Std. Dev.	N
Amihud illiquidity	Compustat Global	0.556	0.012	4.245	0.844	63664
Negative stock return skewness	Compustat Global	-0.356	-1.803	0.731	0.465	60959
Shift in Short-selling demand	Data Explorer	0.171	0	1	0.376	24588
Stock Return Synchronicity	Compustat Global	-1.586	-5.778	0.822	1.378	54950
Log(market value)	Compustat Global	5.657	2.229	10.390	1.751	64564
Market-to-book	DataStream	1.890	0.200	11.710	2.246	64564
Book leverage	DataStream	0.248	0	1	0.225	64564
Profitability	DataStream	0.055	-0.444	0.352	0.121	64564
ADR dummy	BNY Mellon	0.084	0	1	0.277	64564
Return volatility (yearly)	Compustat Global	0.028	0.008	0.077	0.014	64564
Share turnover (yearly)	Compustat Global	0.246	0.003	1.824	0.351	64564
Log(1+number of analyst)	IBES	1.348	0	3.663	1.074	64564
Stock return (yearly)	Compustat Global	0.132	-0.723	2.105	0.514	64564

Table III: Identify Information Flow Inside Banking Conglomerates

This table presents the tests on the information advantage of foreign bank-affiliated funds. We identify an asset manager as bank-affiliated if its ultimate parent has the amount of loans exceeding 10 billion USD on the asset side of its balance sheet, i.e., the ultimate parent is a bank. We provide two tests.

Panel A: Test I

In Panel A, we link the investment allocation decision of foreign bank-affiliated funds with the lending activities of the ultimate parent. The analysis is done at the ultimate parent-country level. We perform name matching to match the names of ultimate parents of asset managers from Factset and the names of ultimate parents of lenders from LPC Dealscan. For each ultimate parent j in year t, suppose that the funds managed by j invest in a set of countries I, then for each country i, we calculate the percentage of holdings as: $h_{ji} = H_{ji} / \sum_{s \in I} H_{js}$, where H_{ji} is the amount holdings that the ultimate parent j managed funds invest in stocks headquartered in country i. In column (1)-(3), we use h_{ji} as the dependent variable, and control for the country weight of country i's stocks in the global market by total market value. In column (4)-(6), we use h_{ji} in excess of country i's market weight (excess percentage of holdings) as the dependent variable.

Our interested explanatory variable is the borrowing/lending relationship in the previous year, defined at the country-ultimate parent level. For country i in year t-1, suppose that firms in country i borrow from a set of ultimate parents of foreign lenders J, then we calculate the fraction of borrowings by country i from the ultimate parent j as: $b_{ij} = B_{ij} / \sum_{k \in J} B_{ik}$, where B_{ij} is the total amount of borrowings that country i's stocks borrow from the ultimate parent j. We use b_{ij} as our main independent variable.

Country, ultimate parent (UP), and year fixed effects are included in different specifications. In column (6), we add UP (ultimate parent) × year fixed effects and country × year fixed effects. In column (2)-(6) the standard errors are always clustered at the country level. ***, ** and * represent significance levels at 1%, 5% and 10% respectively using robust standard errors with t-statistics given in parentheses.

Investor portfolio allocation	Percentage of holdings			Excess percentage of holdings		
	(1)	(2)	(3)	(4)	(5)	(6)
Fraction of borrowing	0.171***	0.171***	0.183***	0.169***	0.185***	0.184***
	(9.49)	(4.51)	(4.34)	(4.43)	(4.37)	(4.31)
Country weight by market value	0.485***	0.485***	0.494***			
	(8.04)	(2.97)	(3.51)			
Fixed effects	UP FE Country FE Year FE	UP FE Country FE Year FE	UP × Year FE Country FE	UP FE Country FE Year FE	UP × Year FE Country FE	UP × Year FE Country × Year FE
Clustering	-	Country	Country	Country	Country	Country
Adj R-squared	0.463	0.463	0.556	0.372	0.481	0.487
Number of obs.	31,695	31,695	31,695	31,695	31,695	31,695

Table III (Cont'd)

Panel B: Test II

Panel B provides a second test. As in Panel A, we define lending relationship at the country-ultimate parent level. We calculate the fraction of borrowings by country i from the ultimate parent j as: $b_{ij} = B_{ij} / \sum_{k \in J} B_{ik}$, where B_{ij} is the total amount of borrowings that country i's stocks borrow from the ultimate parent j. Then, country i is defined as a high lending relationship country to institution j if b_{ij} is above the median fraction among all the countries that borrow from institution j. Similarly, country i is defined as a low lending relationship country to institution j if b_{ij} is below the median fraction among all the countries that borrow from institution j.

Second, for each bank-affiliated institutional investor, we examine its quarter-end portfolio holdings. We create two value-weighted portfolios: high-lending relationship portfolio and low-lending relationship portfolio. High-lending portfolio consists of stocks from high lending relationship countries, while low-lending portfolio is formed out of stocks from low-lending relationship countries. Next, we construct the portfolio buy-and-hold returns over the next quarter and calculate the difference in returns between the high-lending relationship portfolio and the low-lending relationship portfolio. The portfolios are rebalanced at the beginning of every quarter. Then, we run a pooled regression of regressing difference in returns (high lending portfolio minus low lending portfolio) on risk factors. The data on domestic and international risk factors from 2002 to 2009 are obtained from Eun et. al. (2010). Column (1)-(3) are based on the full sample, and column (4)-(6) are based on a subsample of bank-affiliated institutions with the number of quarters per institution above 25. The standard errors are always clustered at the institutional investor level. ***, ** and * represent significance levels at 1%, 5% and 10% respectively using robust standard errors with t-statistics given in parentheses.

Difference in portfolio returns: *High lending portfolio-Low lending portfolio*	Full sample			Sub-sample (#quarter>=25)		
	(1)	(2)	(3)	(4)	(5)	(6)
International market factor	0.013	0.006	0.035	0.012	0.022	0.008
	(0.96)	(0.32)	(0.85)	(0.80)	(1.08)	(0.21)
International SMB factor		-0.122***	-0.112**		-0.059	-0.083
		(-2.80)	(-2.26)		(-1.10)	(-1.49)
International HML factor		-0.032	0.007		-0.036	0.015
		(-0.78)	(0.14)		(-0.72)	(0.25)
International momentum factor		-0.023	0.002		0.014	0.025
		(-0.92)	(0.06)		(0.61)	(0.78)
Domestic market factor			-0.026			0.022
			(-0.80)			(0.71)
Domestic SMB factor			0.013			0.076**
			(0.46)			(2.25)
Domestic HML factor			-0.050*			-0.071**
			(-1.93)			(-2.31)
Domestic momentum factor			-0.029			-0.018
			(-1.50)			(-0.89)
Alpha	0.0030**	0.0049***	0.0060***	0.0046***	0.0055***	0.0068***
	(2.22)	(3.12)	(3.67)	(2.69)	(3.08)	(3.75)
Clustering	Investor	Investor	Investor	Investor	Investor	Investor
Number of Obs.	4,906	4,906	4,906	2,779	2,779	2,779

Table IV: Identify Information Flow Inside Banking Conglomerates

This table provides an indirect test on the information advantage of foreign bank-affiliated funds. We begin with the findings of Acharya and Johnson (2007) that informed banks with lending relationships use non-public information in the credit default swap (CDS) market. If information flows between the lending division and the asset management division, the CDS changes would help to explain stock returns, and the increased explanatory power should be related to the level of foreign bank-affiliated ownership.

We proceed in the following steps. First, we obtain daily CDS spreads for international bond issuers from Markit from 2001 to 2009. We only use 5-year maturity contracts as they are the most liquid. We calculate the daily change in CDS spread for each contract and then calculate the average change for each firm across different currencies and restructuring clauses. Second, we perform name matching to match the names of bond issuers from Markit with the stock names from Factset. We are able to identify 1678 matches out of 5494 bond issuers. Next, for each stock-year, we perform the following two regressions:

$$ret_{it} = \alpha_0 + \alpha_1 MKT_t + \alpha_2 US_t + \alpha_3 ret_{it-1} + \alpha_4 ret_{it-2} + \varepsilon_{it},$$

$$ret_{it} = \alpha_0 + \alpha_1 MKT_t + \alpha_2 US_t + \alpha_3 ret_{it-1} + \alpha_4 ret_{it-2} + \alpha_5 \Delta CDS_{it} + \varepsilon_{it},$$

where ret_{it} is the daily return of the stock, MKT_t is the value-weighted market return of the home country, US_t is the value-weighted market return of US stocks, ret_{it-1}, ret_{it-2} are the lagged stock return, and ΔCDS_{it} represents the daily change in CDS spreads. Then we calculate the increase (percentage increase) in R-squared and adjusted R-squared and use them as the dependent variables.

In columns (1)-(3), we use the increase in R-squared as the dependent variable, and in columns (4)-(6) we use the increase in adjusted R-squared as the dependent variable. Columns (1)-(2) and columns (4)-(5) use the direct increase while columns (3) and (6) use the percentage increase. All of the variables on the right-hand side are taken at the beginning of the year. In columns (1) and (4), the interested variable is foreign bank-affiliated ownership. In columns (2)-(3) and columns (5)-(6), we decompose foreign bank-affiliated ownership into high lending relationship ownership and low lending relationship ownership. Detailed definitions of each independent variable is provided in the appendix. Industry fixed-effects at two-digit SIC level and country × year fixed effects are included in all specifications. The standard errors are always clustered at the firm level. ***, ** and * represent significance levels at 1%, 5% and 10% respectively using robust standard errors with t-statistics given in parentheses.

Increase in R-squared	Increase in R-squared			Increase in Adj. R-squared		
	Direct Increase		Percentage Increase	Direct Increase		Percentage Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign bank-affiliated ownership	0.035**			0.044**		
	(1.98)			(2.48)		
Foreign bank-affiliated ownership: high lending relation		0.081***	0.603***		0.086***	0.906***
		(2.73)	(2.77)		(2.91)	(3.72)
Foreign bank-affiliated ownership: low lending relation		-0.013	-0.172		0.000	-0.060
		(-0.51)	(-0.88)		(0.00)	(-0.31)
Controls						
Other foreign ownership	-0.001	-0.002	0.011	-0.003	-0.004	-0.033
	(-0.22)	(-0.27)	(0.31)	(-0.54)	(-0.59)	(-0.78)
Domestic ownership	0.000	-0.002	-0.104	0.001	-0.001	-0.092
	(-0.05)	(-0.25)	(-1.39)	(0.10)	(-0.07)	(-1.03)
Dummy: missing domestic ownership	-0.002	-0.002	-0.008	-0.002	-0.002	-0.004
	(-0.72)	(-0.72)	(-0.74)	(-0.84)	(-0.85)	(-0.26)
Log(market value)	0.000	0.000	-0.005***	0.000	0.000*	-0.001
	(-0.13)	(-0.06)	(-2.74)	(1.66)	(1.75)	(-0.41)
Market-to-book	0.000**	0.000**	-0.002**	0.000**	0.000**	-0.003***
	(-2.04)	(-1.99)	(-2.61)	(-2.10)	(-2.06)	(-2.71)
Book leverage	0.000	0.000	-0.003	0.000	0.000	-0.002
	(-0.02)	(-0.02)	(-0.42)	(0.33)	(0.33)	(-0.29)
Profitability	-0.005	-0.006	0.016	-0.006	-0.006	0.034
	(-1.39)	(-1.46)	(0.67)	(-1.51)	(-1.56)	(0.86)
ADR dummy	0.000	0.000	0.004	-0.001	-0.001	0.000
	(-1.05)	(-0.99)	(0.92)	(-1.39)	(-1.33)	(0.07)
Return volatility	0.044	0.040	0.325	0.050	0.046	0.826**
	(1.08)	(0.99)	(0.97)	(1.19)	(1.11)	(2.59)
Share turnover	0.000	0.000	-0.007	0.001	0.001	0.000
	(0.09)	(0.17)	(-0.90)	(0.54)	(0.62)	(-0.04)
Number of analyst	0.000	0.000	-0.001	0.000	0.000	0.001
	(-0.34)	(-0.41)	(-0.42)	(-0.14)	(-0.19)	(0.63)
Stock return	-0.003***	-0.003***	-0.012*	-0.003***	-0.003***	-0.023***
	(-3.62)	(-3.67)	(-1.87)	(-3.81)	(-3.85)	(-3.04)
Industry fixed effects	Y	Y	Y	Y	Y	Y
Country × year fixed effects	Y	Y	Y	Y	Y	Y
Clustering	Firm	Firm	Firm	Firm	Firm	Firm
R-squared	0.192	0.194	0.190	0.191	0.193	0.221
Number of obs	2,084	2,084	2,084	2,084	2,084	2,084

Table V: Changes in Foreign Ownership and Abnormal Stock Returns

This table examines the relationship between changes in foreign ownership and abnormal stock returns. Given that most of institutions report their holdings semi-annually, we use semi-annual frequency in this analysis. For each stock-half year, we calculate the drop in bank-affiliated (non-bank affiliated) foreign ownership from the beginning of the half year to the end of half year. To calculate abnormal stock returns, we use both Fama-French 3-factor model and Fama-French 4-factor model with domestic factors (the market factor, HML, SMB and the momentum factor) as used in Eun et .al. (2010). We use monthly stock returns from 2001 to 2005 (the training period) to estimate the factor loadings.

Panel A: Contemporaneous Returns

In Panel A, we link the drop in foreign ownership with the contemporaneous cumulative average abnormal returns (CAAR) over the half year. All firm-level accounting variables on the right-hand side are taken at the beginning of the year. The pre-crisis period is from 2006 to 2007. The crisis period includes year 2008 and the first half year of 2009. Column (1) and column (3) are for the pre-crisis period. Column (2) and (5) are for the crisis period. Column (3) and (6) are for the period of year 2008. Industry fixed-effects at two-digit SIC level and country × year fixed effects are included in all specifications. The standard errors are always clustered at the firm level. ***, ** and * represent significance levels at 1%, 5% and 10% respectively using robust standard errors with t-statistics given in parentheses.

Abnormal return	FF 3-domestic factor adjusted abnormal return			FF 4-domestic factor adjusted abnormal return		
	Pre-crisis (2006-2007)	Crisis (2008-2009)	Year 2008	Pre-crisis (2006-2007)	Crisis (2008-2009)	Year 2008
	(1)	(2)	(3)	(1)	(5)	(6)
Drop in foreign bank-affiliated ownership	-0.114***	-0.065	-0.060	-0.129***	-0.063	-0.039
	(-3.95)	(-1.41)	(-1.11)	(-4.45)	(-1.17)	(-0.65)
Drop in other foreign ownership	-0.050***	-0.092***	-0.088***	-0.042***	-0.086***	-0.074***
	(-4.31)	(-5.23)	(-4.09)	(-3.59)	(-4.41)	(-3.23)
Controls						
Drop in domestic ownership	0.008	-0.050***	-0.022	0.010	-0.044***	-0.004
	(1.02)	(-3.45)	(-1.26)	(1.22)	(-2.85)	(-0.18)
Dummy: missing domestic ownership	-0.001	-0.005***	-0.002**	-0.002**	0.000	0.001
	(-1.38)	(-5.03)	(-2.02)	(-2.40)	(-0.01)	(0.47)
Log(market value)	0.000	0.000	0.000	0.000	0.005***	0.005***
	(1.40)	(-1.38)	(0.91)	(0.53)	(15.01)	(12.88)
Market-to-book	0.000*	0.000	0.000	0.000***	0.000*	0.000*
	(-1.82)	(-0.41)	(0.08)	(-3.36)	(-1.89)	(-1.71)
Book leverage	0.000	-0.012***	-0.016***	0.000	-0.013***	-0.017***
	(0.42)	(-8.27)	(-8.95)	(-0.25)	(-8.13)	(-8.97)
Profitability	0.012***	0.008**	0.005	0.005*	0.004	-0.001
	(4.40)	(2.31)	(1.13)	(1.87)	(0.95)	(-0.20)
ADR dummy	0.001	0.000	0.002	0.001	-0.006***	-0.004***
	(0.61)	(0.30)	(1.19)	(0.80)	(-5.55)	(-2.85)
Return volatility	-0.103***	0.083**	-0.121**	-0.136***	0.160***	0.053
	(-2.85)	(2.16)	(-2.30)	(-3.80)	(3.61)	(0.95)
Share turnover	-0.008***	-0.001	0.000	-0.007***	-0.004***	-0.003**
	(-7.73)	(-0.76)	(0.14)	(-6.34)	(-2.71)	(-1.96)
Number of analyst	-0.001***	0.002***	0.001**	0.000	-0.002***	-0.002***
	(-3.18)	(5.17)	(2.38)	(-0.76)	(-3.47)	(-3.34)
Stock return	0.003***	-0.007***	-0.002	0.002**	-0.007***	-0.003**
	(4.35)	(-7.35)	(-1.44)	(2.27)	(-5.97)	(-2.33)
Industry fixed effects	Y	Y	Y	Y	Y	Y
Country × year fixed effects	Y	Y	Y	Y	Y	Y
Clustering	Firm	Firm	Firm	Firm	Firm	Firm
R-squared	0.053	0.105	0.094	0.056	0.100	0.115
Number of obs	32,151	23,663	15,955	32,151	23,663	15,955

Table V (Cont'd)

Panel B: Future Returns

In Panel B, instead of looking at contemporaneous returns, we use the cumulative average abnormal return in the next half year (CAAR) as the dependent variable. We use the same specifications as in Panel A. Industry fixed-effects at two-digit SIC level and country × year fixed effects are included in all specifications. The standard errors are clustered at the firm level. ***, ** and * represent significance levels at 1%, 5% and 10% respectively using robust standard errors with t-statistics given in parentheses.

Abnormal return	FF 3-domestic factor adjusted abnormal return			FF 4-domestic factor adjusted abnormal return		
	Pre-crisis	Crisis	Year 2008	Pre-crisis	Crisis	Year 2008
	(1)	(2)	(3)	(4)	(5)	(6)
Drop in foreign bank-affiliated ownership	-0.044*	0.032	0.035	-0.050*	0.037	0.032
	(-1.82)	(0.87)	(0.82)	(-1.95)	(0.95)	(0.72)
Drop in other foreign ownership	-0.010	0.048***	0.066***	-0.012	0.051***	0.070***
	(-0.89)	(2.89)	(3.15)	(-1.11)	(3.03)	(3.31)
Controls						
Drop in domestic ownership	-0.036***	0.064***	0.076***	-0.047***	0.063***	0.089***
	(-4.17)	(4.14)	(4.22)	(-5.34)	(3.75)	(4.49)
Dummy: missing domestic ownership	0.000	-0.003***	0.000	-0.001	-0.001	0.000
	(-0.53)	(-2.77)	(0.11)	(-1.41)	(-1.37)	(0.18)
Log(market value)	0.000*	0.000	0.001	0.000	0.000	0.000
	(1.79)	(-0.61)	(1.41)	(0.89)	(-1.42)	(-0.10)
Market-to-book	0.000*	0.000	0.000	0.000***	0.000	0.000
	(-1.78)	(-0.35)	(0.08)	(-3.34)	(-0.36)	(-0.30)
Book leverage	0.000	-0.012***	-0.016***	0.000	-0.013***	-0.018***
	(0.36)	(-8.34)	(-8.98)	(-0.28)	(-8.86)	(-9.70)
Profitability	0.012***	0.009**	0.006	0.005*	0.009**	0.001
	(4.37)	(2.38)	(1.25)	(1.85)	(2.42)	(0.15)
ADR dummy	0.000	0.001	0.003**	0.000	0.001	0.004**
	(0.27)	(0.90)	(2.26)	(0.45)	(1.11)	(2.20)
Return volatility	-0.107***	0.068*	-0.138**	-0.141***	-0.041	-0.227***
	(-2.96)	(1.76)	(-2.63)	(-3.92)	(-0.87)	(-4.15)
Share turnover	-0.008***	-0.001	0.000	-0.007***	-0.001	0.001
	(-7.63)	(-0.69)	(0.14)	(-6.24)	(-0.44)	(0.74)
Number of analyst	-0.001***	0.002***	0.001**	0.000	0.002***	0.002***
	(-2.85)	(4.77)	(2.11)	(-0.38)	(5.88)	(3.38)
Stock return	0.003***	-0.007***	-0.001	0.001**	-0.003***	0.001
	(4.32)	(-7.06)	(-1.20)	(2.24)	(-2.88)	(1.15)
Industry fixed effects	Y	Y	Y	Y	Y	Y
Country × year fixed effects	Y	Y	Y	Y	Y	Y
Clustering	Firm	Firm	Firm	Firm	Firm	Firm
R-squared	0.051	0.103	0.094	0.055	0.087	0.091
Number of obs	32,151	23,663	15,955	32,151	23,663	15,955

Table VI: Changes in Stock Illiquidity around the Crisis Period

This table links changes in stock illiquidity around the 2008-2009 financial crisis period to foreign-bank-affiliated ownership. We regress changes in stock illiquidity on foreign bank-affiliated ownership at the end of the previous year as well as a set of control variables. The dependent variable is the change in the Amihud illiquidity relative to the previous year. Columns (1) and (3) are for the crisis period from 2008 to 2009. Column (2) and (4) are only for year 2008. As a sort of placebo test, in column (5) and (6) we run the same regressions for the pre-crisis period of year 2006 and year 2007. Detailed definitions of each variable can be found in the Appendix. ***, ** and * represent significance levels at %, 5% and 10% respectively using robust standard errors with t-statistics given in parentheses.

Change in Amihud illiquidity	Crisis Period (2008-2009)				Pre-Crisis	
	Crisis	Year 2008	Crisis	Year 2008	(2006-2007)	
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign bank-affiliated ownership	-1.655***	-1.261***			-0.074	
	(-7.26)	(-3.81)			(-0.67)	
Foreign bank-affiliated ownership: high lending relation			-1.844***	-1.421***		-0.034
			(-6.45)	(-4.13)		(-0.21)
Foreign bank-affiliated ownership: low lending relation			-1.387***	-1.043		-0.137
			(-3.03)	(-1.36)		(-0.67)
Controls						
Other foreign ownership	-0.064	0.215**	-0.066	0.214**	0.084**	0.085**
	(-0.86)	(2.08)	(-0.89)	(2.06)	(1.98)	(2.00)
Domestic ownership	-0.051	-0.421***	-0.051	-0.419***	-0.126***	-0.126***
	(-0.75)	(-3.86)	(-0.74)	(-3.85)	(-2.64)	(-2.64)
Dummy: missing domestic ownership	0.140***	0.286***	0.140***	0.286***	-0.021**	-0.021**
	(9.16)	(12.72)	(9.15)	(12.71)	(-2.24)	(-2.23)
Log(market value)	-0.080***	-0.137***	-0.080***	-0.137***	-0.003	-0.003
	(-18.33)	(-21.67)	(-18.33)	(-21.61)	(-1.15)	(-1.14)
Market-to-book	0.004	-0.004	0.004	-0.004	0.009***	0.009***
	(1.47)	(-1.23)	(1.47)	(-1.23)	(6.30)	(6.30)
Book leverage	0.007	-0.021	0.007	-0.021	0.019	0.019
	(0.40)	(-0.88)	(0.40)	(-0.87)	(1.59)	(1.59)
Profitability	-0.028	0.022	-0.029	0.022	-0.069*	-0.069*
	(-0.47)	(0.30)	(-0.48)	(0.30)	(-1.82)	(-1.82)
ADR dummy	0.132***	0.169***	0.132***	0.169***	-0.018**	-0.018**
	(10.20)	(8.42)	(10.19)	(8.42)	(-2.00)	(-2.00)
Return volatility	6.324***	10.220***	6.326***	10.216***	-7.058***	-7.058***
	(7.56)	(6.50)	(7.56)	(6.50)	(-8.23)	(-8.23)
Share turnover	-0.253***	-0.312***	-0.253***	-0.312***	-0.039***	-0.039***
	(-17.33)	(-13.22)	(-17.32)	(-13.21)	(-3.73)	(-3.72)
Number of analyst	-0.008*	0.000	-0.009*	-0.000	0.015***	0.015***
	(-1.81)	(0.00)	(-1.83)	(-0.01)	(4.87)	(4.87)
Stock return	-0.102***	-0.120***	-0.102***	-0.120***	-0.049***	-0.049***
	(-7.19)	(-7.39)	(-7.20)	(-7.40)	(-6.71)	(-6.71)
Industry fixed effects	Y	Y	Y	Y	Y	Y
Country × year fixed effects	Y	Y	Y	Y	Y	Y
R-squared	0.329	0.461	0.330	0.461	0.189	0.189
Number of obs	15,875	8,150	15,875	8,150	16,131	16,131

Table VII: Changes in Negative Stock Return Skewness around the Crisis Period

This table links changes in negative stock return skewness around the 2008-2009 financial crisis period to foreign-bank-affiliated ownership. We regress changes in negative return skewness on foreign bank-affiliated ownership at the end of the previous year as well as a set of control variables. The dependent variable is the change in the negative return skewness (Chen et. al, 2001) relative to the previous year. Columns (1) and (3) are for the crisis period from 2008 to 2009. Column (2) and (4) are only for year 2008. As a sort of placebo test, in column (5) and (6) we run the same regressions for the pre-crisis period of year 2006 and year 2007. Detailed definitions of each variable can be found in the Appendix. ***, ** and * represent significance levels at %, 5% and 10% respectively using robust standard errors with t-statistics given in parentheses.

Change in Negative Return Skewness	Crisis Period (2008-2009)				Pre-Crisis	
	Crisis	Year 2008	Crisis	Year 2008	(2006-2007)	
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign bank-affiliated ownership	-0.774***	-0.893***			0.040	
	(-3.89)	(-2.75)			(0.16)	
Foreign bank-affiliated ownership: high lending relation			-0.940***	-1.289***		0.472
			(-3.35)	(-2.73)		(1.46)
Foreign bank-affiliated ownership: low lending relation			-0.545	-0.367		-0.669
			(-1.51)	(-0.73)		(-1.60)
Controls						
Other foreign ownership	0.030	0.101	0.029	0.099	-0.130	-0.121
	(0.44)	(0.86)	(0.42)	(0.85)	(-1.47)	(-1.38)
Domestic ownership	0.075	-0.152	0.075	-0.148	-0.061	-0.064
	(1.10)	(-1.03)	(1.10)	(-1.00)	(-0.66)	(-0.70)
Dummy: missing domestic ownership	0.032***	0.029	0.031***	0.029	-0.033**	-0.033**
	(2.74)	(1.45)	(2.73)	(1.42)	(-2.30)	(-2.28)
Log(market value)	0.012***	-0.034***	0.012***	-0.034***	-0.005	-0.005
	(3.63)	(-5.74)	(3.60)	(-5.77)	(-1.30)	(-1.21)
Market-to-book	0.001	0.007**	0.001	0.007**	-0.000	-0.000
	(0.71)	(2.37)	(0.70)	(2.36)	(-0.22)	(-0.19)
Book leverage	-0.002	-0.003	-0.002	-0.003	-0.007	-0.007
	(-0.14)	(-0.15)	(-0.14)	(-0.13)	(-0.41)	(-0.40)
Profitability	-0.023	0.015	-0.023	0.014	-0.041	-0.040
	(-0.74)	(0.30)	(-0.75)	(0.28)	(-1.10)	(-1.07)
ADR dummy	0.036***	-0.010	0.036***	-0.010	-0.017	-0.017
	(3.19)	(-0.46)	(3.18)	(-0.46)	(-1.28)	(-1.28)
Return volatility	3.523***	2.029***	3.526***	2.029***	0.064	0.068
	(8.84)	(2.74)	(8.85)	(2.74)	(0.13)	(0.13)
Share turnover	-0.009	-0.066***	-0.009	-0.067***	0.012	0.013
	(-0.88)	(-4.18)	(-0.89)	(-4.21)	(1.05)	(1.07)
Number of analyst	-0.006	0.007	-0.006	0.007	-0.005	-0.005
	(-1.43)	(0.90)	(-1.45)	(0.87)	(-0.81)	(-0.78)
Stock return	0.113***	0.130***	0.113***	0.130***	0.221***	0.221***
	(10.01)	(9.74)	(10.01)	(9.74)	(20.38)	(20.36)
Industry fixed effects	Y	Y	Y	Y	Y	Y
Country × year fixed effects	Y	Y	Y	Y	Y	Y
R-squared	0.103	0.075	0.103	0.075	0.104	0.105
Number of obs	14,972	7,444	14,972	7,444	14,747	14,747

Table VIII: Robustness Checks on the Interaction with Stock Fire-sale Pressure

In this table, we provide robustness checks to our previous results in Table VI and Table VII, by interacting foreign bank-affiliated ownership with the measure of stock fire-sale pressure as described in Figure I. It is constructed as the holdings-weighted selling pressure of open-end international mutual funds due to significant fund outflows. The detailed definitions can be found in the Appendix. In Panel A, the dependent variable is the change in stock illiquidity relative to the previous year. In Panel B, the dependent variable is the change in negative return skewness relative to the previous year. Columns (1)-(3) report the results during the crisis period of year 2008 and year 2009. Columns (4)-(6) focus on the pre-crisis period of year 2006 and year 2007. The control variables are the same as in Table VI. Country × year and industry fixed effects are always included. For brevity, we only report the variables of interest.

Panel A: Changes in Stock Illiquidity around the Crisis Period

Change in Amihud illiquidity	Crisis Period (2008-2009)			Pre-Crisis (2006-2007)		
	(1)	(2)	(3)	(4)	(5)	(6)
Fire-sale pressure	0.045***	0.059***	0.059***	0.028***	0.032***	0.032***
	(2.96)	(3.47)	(3.48)	(3.06)	(3.18)	(3.15)
Foreign bank-affiliated ownership × Fire-sale pressure		-2.355***			-0.485	
		(-2.71)			(-0.95)	
Foreign bank-affiliated ownership: high lending × Fire-sale pressure			-3.060***			-0.686
			(-2.67)			(-1.05)
Foreign bank-affiliated ownership: low lending × Fire-sale pressure			-1.617			-0.071
			(-0.81)			(-0.06)
Foreign bank-affiliated ownership	-1.311***	-0.425		-0.162	-0.013	
	(-5.71)	(-1.15)		(-1.52)	(-0.08)	
Foreign bank-affiliated ownership: high lending relation			-0.498			-0.060
			(-1.10)			(-0.29)
Foreign bank-affiliated ownership: low lending relation			-0.293			0.036
			(-0.32)			(0.10)
Other controls	Y	Y	Y	Y	Y	Y
Industry, Country × year FE	Y	Y	Y	Y	Y	Y
Number of obs	13,856	13,856	13,856	14,165	14,165	14,165

Panel B: Changes in Negative Stock Return Skewness around the Crisis Period

Change in Negative Return Skewness	Crisis Period (2008-2009)			Pre-Crisis (2006-2007)		
	(1)	(2)	(3)	(4)	(5)	(6)
Fire-sale pressure	0.032**	0.043***	0.043***	0.023	0.019	0.020
	(2.29)	(2.81)	(2.82)	(1.24)	(0.98)	(0.99)
Foreign bank-affiliated ownership × Fire-sale pressure		-1.749**			0.457	
		(-2.29)			(0.50)	
Foreign bank-affiliated ownership: high lending × Fire-sale pressure			-2.183**			0.460
			(-2.09)			(0.37)
Foreign bank-affiliated ownership: low lending × Fire-sale pressure			-1.423			0.211
			(-1.00)			(0.12)
Foreign bank-affiliated ownership	-0.693***	-0.038		0.084	-0.057	
	(-3.44)	(-0.12)		(0.33)	(-0.15)	
Foreign bank-affiliated ownership: high lending relation			-0.180			0.423
			(-0.40)			(0.76)
Foreign bank-affiliated ownership: low lending relation			0.225			-0.744
			(0.37)			(-1.14)
Other controls	Y	Y	Y	Y	Y	Y
Industry, Country × year FE	Y	Y	Y	Y	Y	Y
Number of obs	13,332	13,332	13,332	13,282	13,282	13,282

Table IX : Changes in Other Stock Behavior around the Crisis Period

This table relates changes in other stock behavior, i.e., the change in stock price synchronicity and the shift in short-selling demand, to foreign bank-affiliated ownership around the crisis period.

Panel A: Change in Stock Price Synchronicity around the Crisis Period

In Panel A, we focus on the change in stock price synchronicity. It is defined as follows. For a given stock-year, we regress the daily returns of the stock on the contemporaneous value-weighted local market returns and the CRSP value-weighted US market returns, then we calculate the adjusted R-squared of the regression. Stock price synchronicity is defined as a transformation of the adjusted R-squared as $\log(R^2/(1- R^2))$. The dependent variable is the change in stock price synchronicity compared to the previous year. We use the same specifications as in Table VI. For brevity, we mute the control variables and only report the variables of interest.

Change in Stock Price Synchronicity	Crisis Period (2008-2009)				Pre-Crisis	
	Crisis	Year 2008	Crisis	Year 2008	(2006-2007)	
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign bank-affiliated ownership	-1.422***	-2.200***			0.387	
	(-2.67)	(-2.83)			(0.61)	
Foreign bank-affiliated ownership: high lending relation			-1.969***	-2.547**		0.415
			(-2.65)	(-2.44)		(0.49)
Foreign bank-affiliated ownership: low lending relation			-0.673	-1.754		0.340
			(-0.77)	(-1.33)		(0.30)
Other foreign ownership	-0.241	-0.425	-0.245	-0.426	0.456**	0.456**
	(-1.18)	(-1.35)	(-1.20)	(-1.35)	(2.00)	(2.00)
Other controls	Y	Y	Y	Y	Y	Y
Industry, Country × year FE	Y	Y	Y	Y	Y	Y
R-squared	0.249	0.119	0.249	0.119	0.192	0.192
Number of obs	11,969	6,165	11,969	6,165	10,482	10,482

Panel B: Downward Shift in Short-selling Demand around the Crisis Period

In Panel B, we examine the downward shift in short-selling demand around the crisis period. The data on short-selling quantity and short-selling fee for international stocks are obtained from Data Explorer from 2003 to 2009. We first calculate the average fraction of stocks that are short-sold (short-selling quantity divided by shares outstanding) and average short-selling fee in each year. Then, we follow Cohen et al. (2009) to estimate the probability of downward shifts in short-selling demand relative to the previous year. For a given stock-year, we say that there is a downward shift in the short-selling demand, if both the short-selling fee and short-sold fraction drop at the same time. The dependent variable is defined as a dummy variable which equals 1 if the short-selling demand shifts downward and 0 otherwise. We estimate a probit regression of the downward shift dummy on foreign bank-affiliated ownership and a set of control variables. We use the same specifications as in Table VI. For brevity, we mute the control variables and only report the variables of interest.

Downward Shift in Short-selling Demand	Crisis Period (2008-2009)				Pre-crisis	
	Crisis	Year 2008	Crisis	Year 2008	(2006-2007)	
	(1)	(2)	(5)	(6)	(3)	(4)
Foreign bank-affiliated ownership	0.881	1.313			-1.622	
	(0.97)	(1.01)			(-1.40)	
Foreign bank-affiliated ownership: high lending relation			2.541*	3.796**		-2.576
			(1.88)	(2.04)		(-1.57)
Foreign bank-affiliated ownership: low lending relation			-1.123	-2.107		-0.416
			(-0.74)	(-0.92)		(-0.23)
Other foreign ownership	-0.633**	-1.087**	-0.632**	-1.081**	0.743**	0.740**
	(-1.99)	(-2.16)	(-1.99)	(-2.14)	(1.98)	(1.97)
Other controls	Y	Y	Y	Y	Y	Y
Industry, Country × year FE	Y	Y	Y	Y	Y	Y
Pseudo R-squared	0.145	0.068	0.145	0.048	0.038	0.038
Number of obs	9,117	15,201	9,117	4,761	4,564	4,564

Table X: Stock Performance (CAAR) during the Crisis Period

This table links foreign ownership to the cumulative average abnormal returns (CAAR) during the crisis period from 2008 to 2009. We measure CAAR in three different ways. In column (1), we use simple excess returns over the risk free rate. Column (2) uses the Fama-French 3-factor (the domestic market, SMB and HML factor) adjusted abnormal returns. Column (3) uses the Fama-French 4-factor (the domestic market, SMB, HML and momentum factors) adjusted abnormal returns. We use 2003-2007 as the training period to estimate factor loadings. All the independent variables are taken at the end of year 2007. In column (1) and (4), the variable of interest is the foreign bank-affiliated ownership. In column (2)-(3) and column (5)-(6), we decompose foreign bank-affiliated ownership into high lending relationship ownership and low lending relationship ownership. Industry fixed-effects at two-digit SIC level and country fixed effects are included in all specifications. The standard errors are always clustered at the firm level. ***, ** and * represent significance levels at 1%, 5% and 10% respectively using robust standard errors with t-statistics given in parentheses.

Stock Performance during the Crisis	Excess return over risk-free rate	Excess return from FF-3factor model	Excess return from FF-4factor model	Excess return over risk-free rate	Excess return from FF-3factor model	Excess return from FF-4factor model
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign bank-affiliated ownership	0.027*	0.037**	0.045**			
	(1.68)	(2.21)	(2.38)			
Foreign bank-affiliated ownership: high lending relation				0.057**	0.061**	0.070**
				(2.46)	(2.55)	(2.64)
Foreign bank-affiliated ownership: low lending relation				-0.012	0.006	0.013
				(-0.46)	(0.22)	(0.46)
Controls						
Other foreign ownership	-0.009	-0.012**	-0.012*	-0.009	-0.012**	-0.012*
	(-1.59)	(-2.03)	(-1.81)	(-1.57)	(-2.02)	(-1.80)
Domestic ownership	0.000	-0.001	-0.003	0.000	-0.002	-0.004
	(-0.02)	(-0.24)	(-0.57)	(-0.07)	(-0.27)	(-0.60)
Dummy: missing domestic ownership	0.000	0.000	0.001	0.000	0.000	0.001
	(-0.51)	(-0.34)	(0.75)	(-0.47)	(-0.32)	(0.78)
Log(market value)	0.000	0.000	0.000	0.000	0.000	0.000
	(1.34)	(0.52)	(1.08)	(1.38)	(0.56)	(1.11)
Market-to-book	0.000	0.000	0.000*	0.000	0.000	0.000*
	(-0.72)	(1.39)	(1.74)	(-0.73)	(1.38)	(1.74)
Book leverage	-0.007***	-0.008***	-0.007***	-0.007***	-0.008***	-0.007***
	(-5.86)	(-6.38)	(-5.38)	(-5.88)	(-6.41)	(-5.40)
Profitability	0.012***	0.013***	0.015***	0.012***	0.013***	0.015***
	(3.64)	(3.92)	(4.27)	(3.66)	(3.93)	(4.29)
ADR dummy	-0.002*	-0.002**	-0.002**	-0.002*	-0.002**	-0.002**
	(-1.77)	(-2.15)	(-2.02)	(-1.76)	(-2.14)	(-2.00)
Return volatility	-0.164***	-0.117***	-0.136***	-0.164***	-0.116***	-0.135***
	(-4.46)	(-3.15)	(-3.37)	(-4.44)	(-3.14)	(-3.36)
Share turnover	0.000	-0.001	-0.001	0.000	-0.001	-0.001
	(0.05)	(-1.08)	(-1.27)	(0.07)	(-1.05)	(-1.25)
Number of analyst	0.000	0.001***	0.002***	0.000	0.001***	0.002***
	(0.87)	(4.14)	(4.12)	(0.92)	(4.18)	(4.15)
Stock return	0.001	-0.001*	0.000	0.001	-0.001*	0.000
	(0.85)	(-1.79)	(-0.49)	(0.87)	(-1.78)	(-0.47)
Const	-0.002	-0.004	-0.011	-0.003	-0.004	-0.011
	(-0.25)	(-0.38)	(-0.77)	(-0.25)	(-0.38)	(-0.77)
Industry fixed effects	Y	Y	Y	Y	Y	Y
Country fixed effects	Y	Y	Y	Y	Y	Y
R-squared	0.147	0.105	0.113	0.147	0.105	0.113
Number of obs	7,965	7,965	7,965	7,965	7,965	7,965