

International Corporate Diversification and Financial Flexibility

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Abstract

If the location of a firm's operations is relevant for financing, multinationals should have easier access to different sources of funding relative to purely domestic firms because their operations are located in multiple countries. Consistent with this hypothesis, I find that conditional on receiving bank loans, U.S. multinationals are more likely to borrow from a foreign bank than domestic firms, particularly from a lender in a country where they have foreign subsidiaries. Being multinational also has a significantly positive effect on a firm's probability of placing a corporate bond in international markets. One implication of multinationals' greater funding flexibility is that they are less affected by capital market dislocations in their home country than domestic firms. Using the 2007-2009 financial crisis as a capital supply shock, I find that U.S. multinationals relied more on foreign funding sources in bank loans after the failure of Lehman Brothers in contrast to domestic firms. This partially explains why multinationals reduced their investment less than domestic firms. Multinationals' financial flexibility has also a pricing impact. Multinationals pay a lower spread than domestic firms when receiving bank loans from foreign lenders.

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1. Introduction

The operations of U.S. firms are largely internationally diversified: about 54% of the publicly traded U.S. firms have operations in foreign countries and these activities represent 35% of their net income as of 2010.¹ One of the benefits of international corporate diversification, often cited by managers and textbooks, is that expanding operations overseas can improve access to capital markets and lower the cost of capital.² In this paper, I evaluate the way in which international activities affect the debt financing policies of firms using a sample of U.S. multinational and domestic firms.

In global capital markets that are not perfectly integrated across countries, obtaining foreign funding could be more limited and costly than domestic funding. Of particular interest, therefore, is to find out which factor determines access to financial markets for the firms that need external financing and how these firms overcome financial frictions in an international setting. If the location of a firm's activities is relevant for its financing and having an operation presence in foreign countries reduces frictions in international debt markets, then multinational firms will have easier access to different foreign sources of funding on better terms than domestic firms. As a result of their greater funding flexibility, U.S. multinational firms should be able to better cope with capital market disruptions in the U.S. and should have lower funding costs than if they only used domestic sources of funds.

The following case provides an example of how the financing sources of multinationals can differ from those of domestic firms. Fuel System Solutions, Inc. is a U.S. multinational company in my sample with total assets of \$200 million as of December 2006, and has multiple foreign subsidiaries. Its loan financing sources are also diversified across countries as the firm receives bank loans from multiple lenders in the U.S., Brazil, and Italy through its foreign subsidiaries.³ For example, in December 2004 its Italian subsidiary entered in a five-year unsecured term loan of \$13.6 million from an Italian bank,

¹ Throughout the paper, I use the terms “global diversification,” “international corporate diversification,” and “being multinational” interchangeably.

² International business textbooks often rationalize international corporate diversification because it improves access to capital markets (Hill (2005) and Shapiro (2008)). For example, Chinese banks are recently increasing their lending in U.S. syndicated loan markets as U.S. companies diversify their funding sources. Dell Inc., one of the large U.S. multinational firms, said that it had developed relationships with Chinese banks, which made it easier to conduct business in China (“US blue-chips take advantage of Chinese syndicated loans,” *Financial Times*, August 29, 2012).

³ Appendix A1. shows the outstanding debt structure of Fuel System Solutions.

Unicredit Banca Medio Credito S.p.A. Maintaining foreign funding sources was beneficial especially during the 2007-2009 financial crisis. Fuel Systems Solutions was not able to renew the existing U.S. credit facility from LaSalle Business Credit, which matured in January 2008. However, in December 2008, the firm expanded its business through an acquisition and the costs were funded through a 1.5 year term loan of \$6.7 million from Italian banks, Banca IMI S.p.A and Intesa San Paolo, S.p.A. This anecdotal evidence illustrates the financial benefit of international corporate diversification. While the firm experienced credit constraints in the U.S. lending markets during the financial crisis, it was still able to obtain funding through its foreign subsidiaries from local lenders in Europe and Latin America, which were relatively less affected by the crisis.

In this paper, I empirically test the prediction that multinational firms are more financially flexible than purely domestic firms by maintaining multiple sources of capital across countries. To do so I compare capital raising activities of U.S. multinationals and domestic firms, using a sample of bank loans and public and privately-placed corporate bonds issued between 2000 and 2010. However, establishing a causal relation is empirically challenging because multinationals may be systematically different from domestic firms. On average, multinationals are larger and have a lower volatility of cash flows than domestic firms, which reduces multinationals' risk and cost of funding. These underlying differences, as opposed to the location of their assets, could possibly explain differences in access to capital.

To isolate the effect of being multinational given these differences, I use three identification strategies. First, I employ propensity score matching methods to match loans and bonds issued by multinationals to comparable loans and bonds issued in the same quarter by domestic firms with similar observable characteristics. Second, I exploit the geographic heterogeneity in multinationals' operations at a country level to identify the mechanism through which multinationals can achieve better access to capital. The comprehensive data on U.S. firms' subsidiary structure provided by *Capital IQ* allows me to test the location effect on the cross-sectional variation in the use of foreign funding even within multinational firms. If the results are merely driven by multinationals being larger and less risky firms, I do not expect that the location of lenders should matter. Lastly, I use the 2007-2009 financial crisis as a capital supply

shock, a time where having multiple sources of funding is more valuable than during the non-crisis periods as it aids in securing financing. These three approaches suggest that it is the multinational status of the firms, not other attributes that potentially leads to multinationals' improved access to capital.

I first document that because they are internationally diversified, multinationals have easier access to financing from foreign countries than purely domestic firms, leading to more diversification in funding sources. Using a sample of 6,455 bank loans issued by multinationals and 5,184 loans by domestic firms, I estimate whether a loan is originated by domestic or foreign lenders. The results indicate that the probability that a multinational firm has at least one foreign lender in its bank loan syndicate is 13.3 percentage points higher than for a domestic firm, which is a 32% increase relative to domestic firms. Multinationals are also more likely than domestic firms to issue corporate bonds abroad. Using a sample of 2,209 corporate bonds issued by multinationals and 1,197 bonds by domestic firms, I find that multinationals are 5.2 percentage points more likely than domestic firms to issue a corporate bond in international capital markets, a 23% increase in the likelihood evaluated for domestic firms.

Next, I estimate the effect of the location of multinationals' subsidiaries on the source of funding at the region and country level within bank loans issued by multinationals only. I show that the result of multinationals' easier access to foreign loans is driven by the fact that multinationals borrow from foreign lenders in the regions and countries where they have subsidiaries. For example, having a subsidiary in Japan increases the probability of multinationals borrowing from a Japanese lender by 8.1%.

If multinational firms are able to access foreign funding in ways that purely domestic firms cannot, multinationals should have greater financial flexibility when faced with credit supply shocks in their home countries. In particular, I expect multinationals to be less financially constrained than domestic firms if there are credit supply shocks in their home countries. Using the 2007-2009 financial crisis as a supply shock to capital, which hit the U.S. credit market more severely than other foreign markets, I compare the differences in financing and investment policies between U.S. multinationals and domestic firms before and after the crisis. The results suggest that the probability of receiving bank loans from foreign lead lenders significantly increased for multinationals at the peak of the crisis (the two quarters

after the Lehman bankruptcy) relative to the period outside the financial crisis, but it did not change for domestic firms. Further, the propensity to issue an international bond sharply increased by 23.7 percentage points more for multinationals than for domestic firms in the two quarters following September 2008 relative to the non-crisis period.

The increased likelihood of borrowing from foreign lead lenders is more pronounced for bank-dependent firms that do not have public bond ratings and is mostly driven by the cases where lead lenders are from the countries where multinationals have foreign subsidiaries and from the countries where private lending was not severely affected. These cross-sectional analyses using the multinationals' subsidiary structure strengthen the argument that having operations in a specific country enables a firm to tap the capital market abroad when domestic credit is scarce.

I next explore whether having an access to foreign capital markets has an economic consequence in terms of investment. I find that multinational status is positively associated with firms' investment policies during the crisis period. The ratio of quarterly capital expenditures to total assets of domestic firms is (was) 0.33 percentage points lower for the two quarters after Lehman collapsed, while multinationals did not experience a significant change in capital expenditures during that period. The different responses in financing and investment to the capital supply shock are consistent with the prediction that multinationals are better able to shift to alternative funding sources outside the U.S. when they are credit constrained in the U.S. Partly because of their greater financial flexibility, multinational firms' investments were not as adversely affected as those of domestic firms during the crisis.

Another implication of having access to foreign funding is that multinationals potentially have a lower cost of debt because they can take advantage of the variation in funding costs in capital markets across countries. I expect that, after controlling for other sources of risk, the cost of debt for multinational firms should be lower than that of domestic firms. I find weak evidence in support of this argument in bank loan issuances. When firms receive bank loans from at least one foreign lead lender, a multinational pays a 18 basis-point lower spread than domestic firms, representing a 8% decrease in the average spreads

on loans to domestic firms. On the other hand, multinationals issue domestic and international bonds at rates similar to those of domestic firms.

My study contributes to the large literature on how the organizational structure of firms affects firm value. Focusing on the external capital markets, this paper emphasizes an additional financial benefit of diversifying operations abroad – diversification of sources of funding across countries. While theoretical models have been developed to explain the financial benefit of corporate diversification (Stein (1997), Scharfstein and Stein (2000), and Rajan, Servaes, and Zingales (2000)), the empirical evidence, which mainly focuses on industrial diversification, is still the subject of debate. Applying the same argument to geographic diversification, several papers compare the impact of both industrial and international diversification on overall valuation (e.g., Denis, Denis, and Yost (2002), Bodnar, Tang, and Weintrop (2003), and Creal et al. (2014)). However, it is difficult to interpret how international corporate diversification affects overall firm value without analyzing the costs and benefits in various aspects. By closely examining capital raising activities of multinationals and domestic firms, I provide evidence of one specific channel through which international corporate diversification creates value in alleviating financial constraints.⁴ This result supports the recent finding that the value of globally diversified firms increased during the financial crisis (Chang, Kogut, and Yang (2014)). In addition, it adds new evidence to the previous studies that investigate the capital structure and the internal capital markets of multinationals (e.g., Desai, Foley, and Hines (2004), Desai, Foley, and Forbes (2008)) by showing how multinational firms use the external capital markets.

The literature in international finance has generally focused more on the accessibility of international capital markets, rather than on the effect of the geographical business structure on international debt financing.⁵ For example, recent papers have explored how firms use international and domestic bond

⁴ This evidence is also supportive of the finding of early studies in international finance that investors positively value multinationality (see Errunza and Senbet (1981, 1984) and Morck and Yeung (1991)).

⁵ Those studies mainly focus on equity markets. For example, they look at determinants and effects of ADR listings (see Miller (1999), Foerster and Karolyi (1999), Errunza and Miller (2000), Doidge, Karolyi, and Stulz (2004), and Lins et al. (2005)). They show that foreign companies that list their shares on the U.S. stock market are worth more, especially those from countries with poor governance. Given that global bond markets are as active as equity markets, it is also interesting to examine who can access global debt markets and what determines the ability to access it.

markets differently (e.g. Gozzi, Levine, Peria, and Schmukler (2013), Massa and Zaldokas (2014)). The relevant question following these studies is which firms can take advantage of exploiting both domestic and international debt markets. My paper provides some evidence to answer this question; having foreign assets allows firms to exploit a broader set of global investors, mitigating financial frictions in international capital markets.

The evidence of the financial flexibility of multinationals documented in this paper is also related to the debate about the effect of capital supply on firms' financial and investment policies. As supported in previous empirical studies, the extent to which the supply of capital affects firms' financial and investment policies varies, depending on the financial constraints of borrowers and the tightness of credit conditions (see Faulkender and Petersen (2006), Leary (2009), Lemmon and Roberts (2010), and Erel et al. (2012)). The implication of my paper is that the geographical business structure affects a firm's financial flexibility in addition to factors recognized in the literature such as the firm's size, its leverage, and whether it has a bond rating.

The remainder of this paper is organized as follows. Section 2 describes the sample and presents the summary statistics. I investigate the difference between multinationals and domestic firms in accessing bank loan and corporate bond markets in Section 3, and the effect of diversification on financial flexibility during the 2007-2009 financial crisis in Section 4. In Section 5, I look at differences in cost of debt financing between multinational firms and domestic firms. In Section 6, the possible underlying reasons of multinationals' better access to capital markets are discussed. Section 7 performs some robustness checks. Section 8 concludes the paper.

2. Data and Descriptive Statistics

2.1. Multinationals and Domestic Firms in the Sample

I start by identifying all publicly-traded firms incorporated in the U.S. from the *Compustat* Fundamentals Quarterly database for 2000-2010 that are not financial firms or utilities (SIC code 4900-

4949 and 6000-6999).⁶ I exclude firms whose headquarters are not located in the U.S. I restrict the sample to firms with firm-quarter observations with annual sales greater than \$20 million, positive total assets, positive cash and marketable securities, and cash and marketable securities less than total assets. The panel consists of 130,902 firm-quarter observations and 6,203 firms.

A firm is defined as a multinational if any of its foreign pretax income (*Compustat* item: PIFO) or foreign income tax (*Compustat* item: TXFO) is not missing in at least one year over the previous three years and it has at least one subsidiary outside the U.S. First, to identify firms that have foreign operations, I utilize information on income tax expenses reported in the annual financial statements. The SEC (SEC Regulation §210.4-08(h)) requires firms to disclose pre-tax income and deferred taxes for U.S. and non-U.S. operations separately, if any of those measures for non-U.S. operations exceed 5% of the consolidated total. Next, using the information on the existence of foreign subsidiaries, I confirm that those multinationals actually have physical assets outside the U.S.⁷ To determine the existence and locations of foreign subsidiaries, I use the *Capital IQ* CFT database for subsidiary structures, which is mainly sourced from regulatory filings.⁸ This database contains subsidiary level data, such as names, locations, businesses, and stakes corresponding to the direct and indirect subsidiaries.⁹ The subsidiary information is also supplemented by the *Capital IQ* transaction database (e.g. spinoffs, mergers, and acquisitions) so that any changes in the subsidiary-parent relationship caused by those transactions are taken into account. Both direct subsidiaries and indirect subsidiaries owned by direct subsidiaries are

⁶ Because cross-border transaction data in *Capital IQ* that I use for the subsidiary structure are available from 1998, the sample ranges from 2000 to 2010.

⁷ Some papers use information on foreign sales from the *Compustat* Geographic Segment database to define internationally diversified firms (see, for example, Denis, Denis, and Yost (2002)). According to this definition, however, a firm that exports goods to other countries would be defined as a multinational firm even if it does not have any assets outside the U.S. Using foreign pretax income is a better way to define a multinational for the purpose of this paper, because this approach excludes firms that do not have foreign operations, hence any income source from other countries. Moreover, according to SFAS No. 14, a firm is required to disclose segment-level data on sales, income, or assets from operations outside the U.S. if they account for more than 10% of its consolidated value. As the threshold of 5% for foreign pre-tax income report regulation is lower than that of 10% for the geographical segment data, the measure based on the foreign pre-tax income allows me to identify a broader set of firms with foreign operations.

⁸ Regulation S-K §229.601 requires firms to “List all subsidiaries of the registrant, the state or other jurisdiction of incorporation or organization of each, and the names under which such subsidiaries do business” in Exhibit 21 of the annual 10-K filings.

⁹ Unfortunately any size-related information such as sales and assets at the subsidiary level is not complete in *Capital IQ*. Thus, I only use information on the presence of subsidiaries across countries from *Capital IQ*.

included, but subsidiaries in tax-haven countries are not counted.¹⁰ Based on the definition of multinational and domestic firms, I construct the main variable, *GlobalDiv*, which takes a value of one if the firm is multinational and zero otherwise. The final sample includes 2,353 multinationals and 3,850 domestic firms.

Figure 1 shows the evolution of the fraction of multinationals and changes in foreign profits over time. At the fourth quarter of 2000, 35.5% of firms are defined as multinationals. The proportion of multinationals is constantly increasing through the sample period to 55% in 2010. Table 1 provides descriptive statistics for the firms in my sample. In Panel A, I look at the distribution of multinationals based on the intensity of their foreign operations. On average, multinationals generate more than 32% of their total income and sales overseas and have subsidiaries in ten countries on average (six countries in median). More than half of the multinationals have subsidiaries in the U.K. or Canada and 66% of multinationals have operations in Asian countries such as China, Japan, and Singapore. These statistics imply that even within multinationals, there is substantial heterogeneity in the intensity of foreign operations and the location of foreign subsidiaries.

In Panel B, I report the summary statistics of firm characteristics of multinationals and domestic firms. There is a considerable difference between the two groups. Multinationals are significantly larger in terms of both market values and total assets. The mean (median) total asset size of multinationals is \$5.10 billion (\$0.75 billion), while that of domestic firms is \$1.24 billion (\$0.19 billion). Multinationals are also more profitable than domestic firms in terms of cash flows, but have relatively lower sales growth than domestic firms. Multinationals are less leveraged than domestic firms on average, but they have a higher median leverage.¹¹ Multinationals are less risky firms than domestic firms, as they have lower cash flow

¹⁰ A lot of multinational companies own subsidiaries in tax-haven countries for the purpose of avoiding (lowering) taxations (Desai, Foley, and Hines (2006)). Therefore, I exclude those tax-haven subsidiaries because it is likely that they do not have material operations beyond tax purposes. The list of tax-haven countries is obtained from “OECD 2004. The OECD’s Project on Harmful Tax Practices: The 2004 Progress Report. Paris: Organization for Economic Cooperation and Development.” The most recent version updated in 2006 is used.

¹¹ The fact that multinationals have lower leverage is consistent with the finding of previous studies of international diversification (e.g., Lee and Kwok (1988) and Doukas and Pantzalis (2003)). On the other hand, some papers (see, e.g., Berger and Ofek (1995)) document higher leverage ratios of industrially diversified firms relative to focused firms as an evidence of higher debt capacity of diversified firms. However, the main focus in this paper is not on the difference of absolute level of

volatility, are more likely to be rated, and are more likely to have an investment grade rating than domestic firms. The capital expenditures of multinationals are lower than those of domestic firms, but multinationals spend more on R&D investment than do domestic firms. These substantial differences between multinationals and domestic firms emphasize the importance of considering the possibility that other sources of heterogeneity could affect access to capital. Thus, I employ a propensity score matching method in Section 3 and the main results are largely similar.

2.2. Bank Loan Sample

To examine the extent to which firms can access bank loan markets, I construct syndicated and sole lender bank loans data from *DealScan* from 2000 to 2010, which are matched to the list of the firms identified above, using a link file provided by Chava and Roberts (2008).¹² Because subsidiary debt is one of the channels through which firms raise capital, I also include loans to any subsidiaries of the sample firms in *Compustat*.¹³ I exclude non-US dollar-denominated loans from the sample. Multinationals have an incentive to receive loans denominated in a foreign currency to hedge the foreign currency risk of their revenues from foreign operations, but domestic firms do not. Therefore, restricting the sample to U.S. dollar-denominated loans allows me to control for the demand side of banks loans from foreign lenders in terms of denominating currencies.¹⁴ Finally, the bank loan dataset is merged with the quarterly accounting data from *Compustat* for the quarter prior to the issue dates. Then, I restrict the sample to the floating-rate loans that have all relevant financial information and that have non-missing all-in-drawn spread information provided by *DealScan*. I use the loan facility as the unit of analysis, as the borrower-lender

leverage between multinationals and domestic firms, but on funding sources and changes in use of foreign funding over the crisis period.

¹² Although the *DealScan* database is dated from 1981, the coverage of loans outside the U.S. market is poor before 1997 (Carey and Nini (2007)). By collecting deal information from 2000, I avoid including more loans in the U.S. market selectively.

¹³ However, not all subsidiary debt is covered by *DealScan* or *SDC*, particularly if the amount of bank loans is not substantial or if they are not syndicated. For example, Fuel System Solutions's Italian facility loans described in Introduction are covered neither by *DealScan* or *SDC*. In this sense, the debt issuance data in my analysis potentially underestimate the actual magnitude of multinational's access to foreign capital markets.

¹⁴ For more discussion regarding foreign currency debt, see Section 7.3.

relationship is facility-specific.¹⁵ The final *DealScan* data consist of 11,369 loan facilities, out of which 6,455 loans are made to 1,379 multinationals and 5,184 loans are made to 1,459 domestic firms.

The dependent variables in the bank loan analysis are the probability of foreign lender participation and the share of the loan retained by foreign lenders.¹⁶ Since lead arrangers usually make loan contract decisions and monitor, I also consider lead lender participation separately.¹⁷ Based on the information on the nationality of each lender provided by *DealScan*, a lender incorporated outside of the U.S. is defined as a foreign lender. I do not classify a foreign branch of U.S. banks or a U.S. branch of foreign banks as a foreign lender.¹⁸

Panel A of Table 2 displays summary statistics for the sample of the bank loan facilities. Conditional on having bank loans, multinationals rely more heavily on foreign lenders than domestic firms both in terms of number and volume. While 42.2% of the loans issued by domestic firms have more than one foreign lender, 65.7% of the loans issued by multinationals do. In addition, foreign lenders retain 22.1% of the total facility amount for loans to multinational borrowers, in contrast to 12.2% for loans to domestic borrowers. When I consider whether a lead arranger of the loan facility is a foreign bank, the difference is more noticeable. The percentage of loans from foreign lead lenders is 17% for multinationals, as opposed to 10.8% for domestic firms. The differences are statistically significant in univariate tests. In particular, it is interesting that a large portion of foreign lender shares of multinational firms is retained by lenders from countries where they have foreign subsidiaries. Loans to multinationals and loans to domestic firms have different features; I find that loans to multinationals are larger and have slightly

¹⁵ Each loan reported in *DealScan* contains one or multiple facilities. The final sample includes 11,639 loan facilities associated with 9,482 deals. Within the same loan deal, each loan facility can have different levels of lender participation depending on the types of facilities. Revolving credit facility and a term loan A are typically held by banks, whereas a term loan B is funded by institutional investors. See, for instance, Ivashina and Sun (2011) and “A Guide to the Loan Market, S&P, September 2011.” Analysis with the data aggregated at deal level does not influence the main results of this paper. Henceforth, I use the term “bank loan” to refer to a syndicate of bank loan facility.

¹⁶ For loans with missing share variable, I assume each lender in the facility deal takes an equal share.

¹⁷ Following Bharath, Dahiya, and Saunders (2011), I define a lead lender based on the field called “Lead Arranger Credit” which is “Yes” if a lender plays a role of lead arranger. In addition to this information, I also identify lead arrangers if a lender is identified as “Agent,” “Administrative Agent,” “Arranger,” and “Lead Bank.” Lastly, lenders in sole-lender loans are included as lead lenders.

¹⁸ Such an approach is extremely conservative as it treats U.S. branches of foreign banks as U.S. banks. It would not be unreasonable to think that multinationals would have easier access to such branches because of their activities located in the home countries of such banks.

shorter maturities. In addition, they are less likely to be secured than loans to domestic firms. I take into account these differences in loan features in the regression setting in Section 3.

2.3. Corporate Bond Sample

For corporate bond issuance, I include all public and privately-placed corporate bonds issued by the sample firms in the 2000 to 2010 period from *SDC*, including bonds issued by their subsidiaries except those issued by the financial subsidiaries.¹⁹ The sample is restricted to the U.S. dollar-denominated bonds. Unlike bank loans, multiple tranches of one bond issue are placed in the same market. Therefore, I aggregate observations with multiple tranches at a bond level by taking the sum of proceeds, and the weighted average of maturity by the proceed amount. Finally, the corporate bond dataset is merged with the quarterly accounting data from *Compustat* for the quarter prior to the issue dates. The final *SDC* data has 3,406 bond issuances in total, 2,209 of which are issued by 602 multinationals and 1,197 of which by 367 domestic firms.

As a primary variable of interest in corporate bond analysis, I consider whether the bond is issued in international markets. A bond is defined as an international bond if the bond is placed in exchanges outside the U.S. or if it is either a Euro bond or a global bond.²⁰

Panel B of Table 2 presents summary statistics of the corporate bond issuance sample. In univariate tests, I find that multinationals access international bond markets more frequently than domestic firms. While only 22.9% of bonds issued by domestic firms are international bonds, 36.8% of bonds issued by multinationals are issued in international markets. Multinational and domestic firms issue bonds with different features. Bonds issued by multinationals are larger, less secured, and less callable than bonds issued by domestic firms. Domestic firms issue more private debt than multinationals. These differences in bond features are controlled in the regression analysis in Section 3.

¹⁹ If the SIC code of a subsidiary issuer is between 6000-6999 or its first two digits of NAICS is equal to 52, then the subsidiary issuer is defined as a financial arm of subsidiary (e.g., GE Capital Australia).

²⁰ The types of bonds defined as Euro bonds and global bonds in *SDC* are as follows: Global Notes, Global Bonds, Global MTNs, Global FRNs, Global Debts, Global MTN Program, Euro CP Program, and Euro MTN Program.

3. International Corporate Diversification and Access to Capital

In this section, I examine the data more formally using multivariate regressions and propensity score estimation to estimate the relation between firms' geographic structure and the use of foreign funding in bank loans and corporate bonds.

3.1. Baseline Regressions

To test the effect of firms' multinational status on the probability of foreign lenders' participation and the fraction of loan amount from foreign lenders in bank loan markets, I estimate a probit model. The dependent variable is an indicator variable equal to one if a syndicate of loan facility made to a firm includes at least one foreign lender. I also consider whether a lead lender is a foreign bank or not separately. The main independent variable is *GlobalDiv*, and control variables include firm-specific characteristics and loan facility features. The firm-level controls include *Log(Sales)*, *Leverage*, *Sales Growth*, *Cash Flows*, *Cash*, *Market to book*, and *STD(Cash Flows)* as well as S&P credit rating fixed effects, and industry fixed effects at the one-digit SIC industry level.²¹ The loan characteristics included are *Log(Facility Amount)*, *Log(Number of Lenders)*, *Log(Maturity)*, *Secured*, and *Missing_Secured*, and deal purpose and loan facility type fixed effects. I adjust standard errors by clustering at the firm level.

A probit model of foreign lenders' participation does not consider the importance of foreign lenders' role in terms of volume. To examine the magnitude of foreign lender participation, I also estimate an OLS regression model, where the dependent variables are foreign lender shares and foreign lead lender shares. Panel A of Table 3 reports the marginal effects from probit regressions in columns (1) to (2) and the coefficients from OLS regressions in columns (3) to (4). The results indicate that there is a significantly positive relation between the likelihood of foreign lender participation and the borrower's multinational status. Being multinational increases the probability of having a foreign lender in the loan facility syndicate by 13.3 percentage points, which is about a 32% increase, given that 42.2% of loans to

²¹ This is not a loan-specific rating, but a S&P long-term public bond rating available in *Compustat*. I code credit rating categories as AAA, AA, A, BBB, BB, B, CCC+ and below, and no rating.

domestic firms have at least one foreign lender in the loan facility syndicate. When I focus on the lead lenders in columns (2) and (4), the effect is also statistically significant; being multinational increases the probability of borrowing from a non-U.S. lead bank by 4%, which is equivalent to a 38% increase compared to the proportion of loans to domestic firms from foreign lead lenders. The results in columns (3) to (4) show a significantly positive relation between the foreign lender shares and being a multinational firm.

In addition to bank loans, corporations also receive debt financing from the corporate bond market. As Massa and Zaldokas (2014) argue, for some firms it is either impossible or costly to issue corporate bonds in international markets. The preference of investors could result from differences in taxation – for instance, the absence of withholding taxes on offshore bonds – as well as home bias considerations. In addition, global investors in corporate bond markets have different information about bond issuers depending on their locations. Therefore, having foreign subsidiaries can improve the ability to issue corporate bonds in international markets even if most corporate bonds are unsecured or if foreign assets are not used as collateral. To the extent that geographical distance between multinationals and international investors reduces the information asymmetry, international corporate diversification can improve access to international bond markets as well.

Using the sample of corporate bonds from *SDC*, I test the hypothesis that multinationals have broader access to global investors in corporate bond markets than domestic firms. I estimate the probit model, where the dependent variable is an indicator variable equal to one if a bond is an international bond and zero otherwise. In this specification, a firm's decision to place the bond in international markets is a function of *GlobalDiv* and a set of control variables. I include the same firm-specific control variables as in the bank loan regressions. I additionally include bond-specific controls such as *Log(Proceed Amount)*, *Log(Maturity)*, *Secured*, *Private_Debt*, and *Callable*.

The marginal effects from the probit regressions are reported in column (5). The coefficient of *GlobalDiv* is significantly positive, which implies that the likelihood of an international bond issuance is positively associated with the issuer being multinational. Being multinational increases the probability of

issuing a bond in international markets by 5.2 percentage points. The increase is substantial; it is equivalent to a 23% increase in the predicted probability of issuing a bond in international markets by a domestic firm.

3.2. Propensity Score Matching Estimation

Given the differences between multinationals and domestic firms, I need to address the potential concern that multinationals' better access to foreign lending markets can be driven by the differences in characteristics of the two groups. One way to address this self-selection issue is to construct a matched sample based on observable factors affecting the likelihood of being a multinational. To construct a matched sample, I implement the propensity score matching proposed by Dehejia and Wahba (2002). First, using the bank loan sample, I calculate each loan's propensity score from a probit regression determining whether a firm is multinational. The probit regression includes all firm-specific and loan-specific controls as in the regressions on Panel A of Table 3. Once the propensity scores are estimated, for each loan of a multinational (treated group), I find one matching loan of a domestic firm (control group) with the closest propensity score within the same S&P credit rating categories in the same quarter with replacement.²² Then, I measure the difference between the foreign lender participation of multinationals and that of matched domestic firms, which is computed as the average treatment effects.

I report the results associated with these matched estimators in Panel B of Table 3. There are 5,790 paired observations for bank loans. The comparisons of matching variables that are used in estimating the propensity scores in Appendix A3 imply that the matching procedure successfully finds comparable domestic firms that are similar to the multinational firms.²³ However, there is a significant difference in

²² Since the number of loans in a treated group (loans to multinational) is larger than that of control group (loans to domestic firms), matching with replacement can draw the same observations repeatedly from the control group as a match. Although matching without replacement can improve the precision of estimates, imposing the restriction of no replacement dramatically reduces the number of paired observations in a matched sample and the order of observations can affect the sample of loans or bonds that are finally matched. See Dehejia and Wahba (2002) for a detailed discussion of the costs and benefits of matching with and without replacement.

²³ The probit models estimating the propensity scores with pre-match and post-match samples are reported in Appendix A3. The coefficients on the firm-specific variables and loan-specific (bond-specific) variables are not statistically significant in the probit models predicting an issuance by multinational firms when I use the post-match sample.

foreign lender participation variables for the loans to multinationals compared to their propensity score matched-domestic firms. On average, 64% of multinationals have bank loans from foreign lenders, and 16% of multinationals have foreign lenders as a lead bank. In contrast, 53% and 11% of domestic firms have bank loans from foreign lenders and foreign lead lenders, respectively. The differences are statistically significant. The foreign lender share and foreign lead lender share of multinationals are 7% and 1% higher, respectively, than those of domestic firms.

The matched sample for corporate bonds is also constructed in a similar way. For each bond issued by multinationals I find a matching bond issued by domestic firms that are closest to the multinational firm in the same quarter within the same S&P credit rating category. The matched corporate bond sample includes 1,473 paired observations. I find that conditional on issuing corporate bonds, the probability of issuing international bonds is 4.7 percentage points higher for multinationals than for comparable domestic firms. The magnitude of the effect of the multinational status on foreign lender participation and international bond issuance from the propensity score estimation is largely similar to that from the baseline regressions in Panel A of Table 3.

3.3. Location of Foreign Subsidiaries and Intensity of Foreign Operations

The overall evidence documented so far supports the view that multinationals use more funding from lenders from outside the U.S. than domestic firms. However, the financial advantage of international corporate diversification could potentially occur through an alternative channel, which is not mutually exclusive from the diversification effects of sources of capital. If cash flows from different operating markets are not perfectly correlated, for example, multinational firms will, holding other factors constant, have lower cash flow volatility than domestic firms.²⁴ Moreover, cash flows generated from different foreign markets are an internal source of capital that can be invested in domestic markets, or vice versa.²⁵

²⁴ The same logic in the large literature on industrial diversifications can be applied to international diversifications. It is called the debt coinsurance effect, which was first noted by Lewellen (1971). For empirical evidence, see Berger and Ofek (1995).

²⁵ For a theoretical argument about the benefits and costs of internal capital markets, refer to Stein (1997), Scharfstein and Stein (2000), and Rajan, Servaes, and Zingales (2000). The efficiency of internal capital markets has been empirically tested (see, for example, Lamont (1997), Shin and Stulz (1998)).

Taken together, multinational firms have lower credit risks than domestic firms, leading to superior overall debt capacity.

However, if multinationals have better access to both domestic and foreign lenders because of their low risk, there is no reason to expect that they have greater access to foreign lenders from the countries where foreign subsidiaries are located. If enhanced access to foreign capital markets is mainly driven by the location of multinationals' foreign businesses and not by their lower cash flow volatility, I would expect that variations in the location of foreign subsidiaries can explain the availability and its sources of foreign funding within multinationals. In this section, I examine the impact of the location of foreign subsidiaries and the intensity of foreign operations on multinationals' sources of capital.

First, I construct a subsample of bank loans only to multinationals and identify the locations of both foreign subsidiaries and lenders by region and by country. Then, I test whether the existence of foreign operations in each region and each country increases the probability of a multinational having lenders from the same region and country. I consider three regions (North America, Europe and Asia) and ten countries (Canada, France, Japan, Germany, Netherlands, Switzerland, Hong Kong, Italy, Belgium, and Australia) because foreign lenders from those countries are the most active investors in bank loan markets to U.S. firms. Since more than 60% of multinational firms have a subsidiary in U.K., I exclude the U.K. in this analysis when identifying European subsidiaries and lenders. I estimate a probit model, where the dependent variable is an indicator variable which is equal to one if the loan has at least one lender from each region. Instead of *GlobalDiv*, the regressions include dummy variables indicating whether the multinational has a subsidiary in Canada, Europe, Asia, Latin America, and Middle East, respectively. I use the similar specification to estimate the probability of lender participation at the country level.

Table 4 shows the results using the measure of locations by region in Panel A and by country in Panel B. In Panel A, I find that having operations in Europe increases the probability of having lenders from the same region by 12.1 percentage points, but has little impact on the probability of having lenders from Asia. Similarly, having operations in Asia leads to a 6.8 percentage points higher probability of having

lenders from Asian countries, but has negligible effect on borrowing from European lenders.²⁶ I also perform a joint test whether the coefficients on (A) *Sub in Canada* in column (1), (B) *Sub in Europe* in column (2), and *Sub in Asia* in column (3) are jointly significant. The chi-square statistic is significant at the 1% level, implying that having a subsidiary in a specific region increases the probability of having a foreign lender from the same region.

I next turn to the foreign lender participation at the country level in Panel B. The estimates show that having subsidiaries in each country has a significantly positive impact on the participation of lenders from the same country, especially for Canada, Japan, Germany, Netherlands, Belgium, and Australia. What is interesting is that the results are not driven by the lenders from Switzerland and Hong Kong, which have globally open financial markets. This result implies that having a physical presence can reduce the financial frictions especially in the countries whose financial markets are less integrated internationally. Taken together, the results imply that even within multinationals, the location of foreign operations strongly predicts the nationality of lenders from which firms raise funding. This finding supports the view that it is the existence of assets in foreign countries that leads to multinationals' access to foreign lenders.

Second, I examine whether the intensity of foreign operations strengthens multinationals' access to international capital markets. I specifically consider three variables as a proxy for the degree of which multinationals are involved in foreign operations – the proportion of foreign income to total income, the number of countries where multinationals have foreign subsidiaries, and one minus the concentration of foreign sales. Based on those three measures, I construct the variable, *MoreGlobalDiv*, which indicates the multinationals that are more internationally diversified. *MoreGlobalDiv* is equal to one if each proxy for the intensity of foreign operations is above the median for the sample of multinationals and zero, otherwise. Using a sample of bank loans and bonds issued by multinationals only, I estimate the probit

²⁶ The coefficients of *Sub in Canada* in column (2) and *Sub in LATIN AMERICA* in column (3) are significantly negative. Given that the syndicate loan amount is contributed by the limited number of lenders, these results are consistent with the substitution effects across lenders from different regions. For example, having a subsidiary in Europe increases the likelihood of borrowing from European lenders, while it consequently decreases the probability of including lenders from other regions.

models of foreign lender participation in bank loans and international bond issuances as in Table 3, but I include *MoreGlobalDiv* as a main explanatory variable.

The results are reported in Panel C of Table 4. For bank loan issuance, the coefficients of *MoreGlobalDiv* are positive and statistically significant. These results suggest that multinationals rely more on foreign banks as they generate more income abroad, have more foreign subsidiaries outside the U.S., and have sales that are more diversified across different countries. Specifically, the probability of having a foreign lender increases by 9.8 percentage points if a multinational firm generates more than 30% of income abroad and by 4 percentage points if the firm has foreign operations in more than three foreign countries. However, I do not find evidence that multinationals that are more intensively involved in foreign operations are more likely to issue international bonds. It is possible that the relation between being multinational and the propensity to issue international bond is not linear; the variation in the intensity of foreign operations within multinationals does not matter.

4. Financial Flexibility during the 2007-2009 Financial Crisis

4.1. Multinational Effect on Financial Policy during the Financial Crisis

In previous section, I document that by having operations in other countries multinational firms can diversify their sources of funding across countries. Diversification in capital sources may help multinationals hedge against disruptions in a particular capital market. If there is a credit supply shock in their home country, multinationals can shift to alternative funding channels in other countries that are less affected. Consequently, when one of the financing channels in a specific country is impaired, the investment decisions of internationally diversified firms are less adversely affected than those of domestic firms.

The recent 2007-2009 financial crisis provides a useful setting to test these predictions. A number of papers argue that during the financial crisis banks sharply cut their lending and increased loan interest

rates to corporate sectors.²⁷ Therefore, firms that could not receive enough funding to finance their investment were forced to utilize alternative capital markets. Otherwise, they had to forgo valuable NPV projects and cut their investment.²⁸ If lenders across countries were less affected, multinationals could cope better by raising capital abroad. On the other hand, domestic firms that had extensively relied on domestic capital markets might experience difficulties in finding alternative funding sources outside the U.S. Accordingly, the difference in foreign debt issues between multinationals and domestic firms would increase, especially during the financial crisis.

Regarding the use of 2007-2009 financial crisis as a capital supply shock, one might criticize that the financial crisis is not a domestic shock, but a global shock that also affected non-U.S. financial markets. In this paper, I do not claim that the 2007-2009 Financial Crisis is a U.S. specific shock. The point here is that as long as lenders in foreign countries were affected to the different degree, obtaining multiple sources of funding is still beneficial.

I examine whether easier access to foreign funding sources allows multinationals to be more financially flexible. Using the 2007-2009 financial crisis as an exogenous variation in the supply side of capital, I compare capital raising activities of multinationals and domestic firms before and after the financial crisis. Following recent studies on the 2007-2009 financial crisis (e.g. Kahle and Stulz (2013)), I divide the financial crisis period into *Crisis_PreLehman*, which is defined as calendar quarters between 2007Q3-2008Q3, and *Crisis_PostLehman* as 2008Q4-2009Q1, after Lehman collapsed. It was not until the fourth quarter of 2008 that the credit spreads in corporate lending markets increased substantially.

²⁷ For example, Ivashina and Scharfstein (2010) argue that there is evidence of a contraction in bank credit availability during the peak of the crisis, using data from the syndicated loan market. In addition, Santos (2011) shows that borrowers took smaller loans and paid higher loan spreads during the crisis period, using data of bank loans from *DealScan*, which indirectly supports the claims on reduced credit availability. However, the evidence on the causal effect of the recent crisis on the reduction in bank lending to firms is not yet conclusive. Using a different set of data, Chari, Christiano, and Kohoe (2008) and Boyson, Helwege, and Jindra (2014) conclude that bank lending was not reduced as expected during the crisis. On the other hand, recent papers document that there is a substantial cross-lender and cross-country variation of banks' performance during the financial crisis based on their financing structure or county-level regulations. See Beltratti and Stulz (2012) and Erkens, Hung, and Matos (2012).

²⁸ Several empirical studies provide evidence of the real effect of the 2007-2008 financial crisis on corporate sectors. Campello, Graham, and Harvey (2010) conduct a survey of 574 CFOs of U.S. firms. The CFOs who think their firms are financially constrained state that the firms had difficulties in extending their credit, hence, cut their investment during the financial crisis. Duchin, Ozbas, and Sensoy (2010) document that firms without enough cash reserves before the crisis experienced a sharp reduction in capital expenditures. However, not all empirical evidence reaches the same conclusion regarding the causal effect of the credit contraction in 2007-2008 on firm's financing and investment policies (see Kahle and Stulz (2013)).

Hence, having two crisis period indicators allows me to capture the different effect of international corporate diversification based on the timing of the crisis.

Using a sample of bank loan and corporate bond issuances, I examine whether during the financial crisis multinationals were more likely to access global markets more than before than were domestic firms. To test this hypothesis, I use the same specification as in Panel A of Table 3, but additionally include crisis indicator variables as well as interaction terms between the crisis indicator variables and *GlobalDiv*. I control for firm and loan characteristics as in Section 3.1 except that I do not include quarter fixed effects to capture the effect of the crisis period.

If multinationals rely more on funds from global capital sources than domestic firms, especially during the crisis, then the coefficient of the interaction terms should be significantly positive. After the bankruptcy of Lehman, the funds to corporate sectors became less available and the lending costs to the corporate sector increased sharply, negatively affecting financing and operations of U.S. firms. If foreign lenders were less affected by the financial crisis and only the firms with access to foreign lenders were able to take advantage of receiving necessary funding, the difference in foreign lender participation between multinationals and domestic firms would increase during the financial crisis.

The results for bank loans are reported in Panel A of Table 5. The positive effect of being multinationals on foreign lender participation is not significantly stronger in the crisis period if I look at foreign lenders only in columns (1) and (3). However, in the probit regressions in columns (2) and (4), the coefficients of the interaction term between *GlobalDiv* and *Crisis_PostLehman* are positive and significant for foreign lead lender participations. During the non-crisis period, loans to multinationals are 3.7 percentage points more likely to have a foreign lead lender than domestic firms. This difference in foreign lead lender participation between multinationals and domestic firms sharply increased during the two quarters after Lehman's collapse. While domestic firms experienced a 5.2 percentage points decrease in the probability of having a foreign lead lender, multinationals firms were 23.1 percentage points more

likely to receive loans from a foreign lead lender than domestic firms during that period.²⁹ In the OLS regression in column (4), I find that the foreign lead lender share for domestic firms did not change in the last two quarters of crisis, compared to the non-crisis period. However, the foreign lead lender share for multinationals is 7.9 percentage points higher in the later crisis period than in the non-crisis period.

In column (5), I estimate similar regressions using the sample of corporate bonds. The coefficient on *Crisis_PreLehman* is significant and positive, but the coefficient of the interaction term, *Crisis_PreLehman* x *GlobalDiv*, is insignificant, suggesting that both multinationals and domestic firms actively used international bond markets in the early crisis period. Given that firms that are able to issue corporate bonds are relatively large firms, the result using the corporate bond issuance sample implies that corporate bond markets are relatively more integrated with less friction. However, I find evidence that the difference between multinational and domestic firms in the probability of international bond issuance sharply increased in the two quarters after September 2008.

In Panel B of Table 5, I estimate changes in the effect of being multinational during the crisis period using a propensity score matched sample. I report the average difference of foreign lender participations and international bond issuance between multinationals and comparable domestic firms separately for sub-periods. The difference in foreign lender participation between multinationals and domestic firms became 18 percentage points larger in the crisis period after Lehman's collapse, which is nearly three times the difference in the pre-crisis period. The difference in foreign lead lender participation across the two groups is five times larger in the two quarters after the fourth quarter of 2008 compared to the average difference of 4.8% during the pre-crisis period. This comparison in the matched samples confirms the finding, using the full sample of bank loan and bond issuances, that multinationals were more able to

²⁹ The interpretation on the interaction terms in probit models is econometrically challenging. Ai and Norton (2003) emphasize that it is difficult to interpret the interaction effects in non-linear models such as the probit model used here, because the interaction effects can be different for each observation point of independent variables. I report the average interaction effects of the estimates on the interaction terms in the bottom of the table. For the regression in column (2), the mean interaction effect of *GlobalDiv***Crisis_PostLehman* has the average z-statistics of 1.995. When I look at the mean interaction effect, the magnitude the interaction effect decreased, but the interaction effect is mostly positive and significant in the range of higher predicted probabilities.

raise debt capital abroad than domestic firms, particularly when the supply of capital in the U.S. was impaired.

4.2. The Sources of Bank Loans to Multinational Firms during the Crisis

I further examine whether the location of foreign operations can explain the source of the increase in bank loan issuances by multinationals from foreign lenders during the financial crisis. I take a sample of 6,455 loans issued only by multinationals and I examine how multinationals' access to lenders, particularly from countries where they have foreign subsidiaries, changes over the crisis period. In columns (1) to (4) in Table 6, I find that the probability of borrowing from lead lenders from countries where multinationals have foreign subsidiaries increased by 27 percentage points in the two quarters after Lehman's collapse. In addition, the proportion of loan amounts retained by foreign lenders from the same countries where multinationals have foreign subsidiaries significantly increased, by 3 percentage points, in the crisis period before Lehman.

In addition, I expect that if multinationals shift to alternative funding sources during the financial crisis because of tight U.S. credit markets, then these firms should find financing from the countries where its financial market is less impaired during the 2007-2009 financial crisis. I evaluate this hypothesis in columns (5) to (8) in Table 6. The effect of the financial crisis at the country level is measured by the changes in the private credit to GDP ratio over 2007 to 2009, and *Less_Affected_Sub* indicator is equal to one if a multinational company has a subsidiary in a country that experienced the top 33% positive (or non-negative) changes in its private bank lending.³⁰ In the regressions, in addition to the crisis indicators, I additionally include *Less_Affected_Sub* indicator and the interaction term of this variable with the crisis dummy variables. The interaction terms, *Crisis_PostLehman* \times *Less_Affected_Sub*, are statistically significant and positive except in column (6). These results suggest that multinational firms were able to

³⁰ As an alternative measure for the extent to which financial markets were affected at the country level during the financial crisis, I use changes in stock market returns of financial firms between 2007 and 2009 at the country level. This alternative definition for *Less_Affected_Sub* does not change the statistical significance of the results.

receive bank loans only if they have subsidiaries in countries where bank lending was not severely diminished during the crisis.

To see which types of firms drive this result, in Appendix A4, I separate the loans based on the borrower's S&P credit ratings. I find a stronger result of being multinational to use loans from foreign lenders during the financial crisis especially for the borrowers without a public bond rating. This result is consistent with the prediction that diversification in capital sources is particularly beneficial for financially constrained and bank-dependent firms. Those firms are potentially affected more by the recent financial crisis so that they have to seek funding from alternative channels, possibly outside the U.S.

4.3. Multinational Effect on Investment Policy during the Financial Crisis

The difference in access to foreign funding between multinationals and domestic firms matters only if it has economic consequences on firm's investment activities. I examine the difference in investment activities between multinationals and domestic firms before and after the financial crisis. If alternative sources of funding outside the U.S. mitigate the adverse effect of contraction in credit supply in U.S., multinationals' investment policies would be less hampered than those of domestic firms. Using the consolidated quarterly financial data for the period of the third quarter of 2006 to the first quarter of 2010 from *Compustat*, I estimate panel regressions, where the dependent variable is the ratio of capital expenditures to total assets and the control variables include firm characteristics as in the baseline regressions in Table 3. All regressions include firm fixed effects and standard errors are clustered at the firm level.

The results are reported in Table 7. In column (1), using the full sample, I find no evidence that capital expenditures of both multinationals and domestic firms significantly change during the early crisis relative to the pre-crisis period. In contrast, domestic firms reduced investment by 0.33 percentage points for the two quarters after Lehman collapsed relative to pre-crisis periods. On the other hand, multinationals reduced capital expenditures 0.23 percentage points less during the same period than domestic firms. The difference is statistically significant. To further investigate whether the effect is

stronger for the subset of firms that are potentially more financially constrained, I divide the sample using credit rating categories and leverage, estimated at the end of June 2006. In columns (2) and (3), I find a significant increase in the positive relation between the multinational status and investment during the peak of the crisis for the unrated groups and highly leveraged subgroups.

One of the concerns in the investment analysis is that the higher capital expenditures of multinationals are driven by a demand effect, not through the financing channel. It could be the case that domestic firms experience a sharp reduction in revenues in U.S., hence less of a demand for debt than multinationals during the crisis. However, a decrease in demand could explain the reduction in lending overall market, but does not explain the previous result that firms increase lending abroad relative to lending at home markets. Nevertheless, I address this issue in two ways.³¹

First, I construct a subsample of firms that have more than 20% of long term debt maturing in 2008, which are potentially affected more by the supply shock of capital during the crisis, following Almeida et al. (2011).³² The estimates are reported in column (4). Whereas domestic firms with more debt maturing in 2008 decreased the capital expenditures by 0.62 percentage points in two quarters after September 2008, multinationals' investment policy was not affected by the financial supply shock. The difference in capital expenditures between multinationals and domestic firms is statistically significant.

Second, I measure domestic sales growth from 2007 to 2008 for all firms in my sample and split the sample into two groups, those below and those above the median of domestic sales growth.³³ The main issue is that different changes in investment between multinationals and domestic firms can be driven by the demand shock on sales in U.S. To the extent that the growth of sales in the U.S. market captures changes in domestic growth opportunities during the crisis period, the approach of splitting firms based

³¹ An ideal solution might be to measure domestic and foreign capital expenditure separately. The segment database in *Compustat* includes the capital expenditure variable, but companies are not required to report capital expenditure at the segment level so that it is not reliable to use.

³² More specifically, those firms have more than 20% of their long-term debt maturing in a year as of their fiscal year end between the third and fourth quarters of 2007. I also require having total long-term debt greater than 5% of their total assets to be included in the subsample. This experiment is not exactly the same with that of Almeida et al. (2011). While they focus on the changes in capital expenditures over first three quarters in 2008, the indicator variable, *Crisis_PreLehman*, used in this paper, denotes longer periods including the quarters from the third quarter of 2007 to the third quarter of 2008.

³³ The domestic sales growth variables are calculated based on the sales by geographic segments from *Compustat* Segment database.

on the domestic sales growth can alleviate this concern. In columns (5) and (6), I find that the difference in capital expenditures between multinationals and domestic firms sharply increased during the crisis period after Lehman for the firms with high domestic sales growth, but the change in difference is marginal for the firms with low domestic sales growth. This result implies that the access to multiple capital markets was specifically beneficial for the firms that have high growth opportunities in U.S., especially when the U.S. capital market is disrupted.

Recent studies examining the effect of the 2007-2009 financial crisis on corporations show that the investment policies of the U.S. incorporated firms were affected during the crisis (see, for example, Duchin, Ozbas, Sensoy (2010)). Adding to this evidence, I document that the financing channel of internationally diversified firms was less impaired by the financial shock, and partly as a result, the investment policy of multinationals was less affected than that of domestic firms.

5. International Corporate Diversification and the Cost of Debt

Another implication of having access to foreign funding is that multinationals potentially have a lower cost of debt because they can take advantage of variation in funding costs in capital markets across countries. I expect that, after controlling for other sources of risk, the cost of debt for multinational firms should be lower than that of domestic firms.

Prior work documents that the borrowing cost in foreign markets relative to home markets is one of the determinants of international debt issues. For example, Kidwell, Marr, and Thompson (1985) and Kim and Stulz (1988) analyze differences in yields between issues in the Eurobond and U.S. markets by U.S. firms. Henderson, Jegadeesh, and Weisbach (2006) study whether foreign debt issues are related to the difference between domestic and foreign interest rates using country-level bond issue data. Carey and Nini (2007) and Houston, Itzkowitz, and Naranjo (2007) compare the spreads on syndicated bank loans across countries. A common finding of these studies is that firms cross borders to issue debt in foreign markets when the cost of funding in foreign markets is sufficiently lower than that in domestic markets. If limited access to foreign capital markets forces a purely domestic firm to rely on domestic financial

markets during periods of relatively high interest rates, multinationals' cost of debt would be lower on average than that of domestic firms. Even if both multinationals and domestic firms equally have access to foreign lenders, the lower information asymmetry and monitoring costs could reduce multinationals' cost of capital.

5.1. Loan Pricing

I examine whether the international corporate diversification is correlated with lower loan spreads. I estimate OLS regressions, where dependent variable is the loan facility's spread, and I include firm and loan characteristics as control variables. To control for the risk factors of firms that mostly determine the borrowing cost, all regressions include the S&P credit rating fixed effects and deal purpose and loan type fixed effects. In addition, to control for the changes in interest rates in overall loan markets over time, the credit spread and term spread are included.

The results are reported in Panel A of Table 8. First, I use the full sample of loans in column (1). The coefficient of *GlobalDiv* is significantly positive, which is inconsistent with the prediction that multinationals issue loans at a lower cost than domestic firms.³⁴ One possible explanation for this result is the existence of selection bias since the loan spreads of firms that do not receive loans are not observable. Suppose that multinationals that have access to multiple funding sources can issue loans even at the higher cost, but domestic firms cannot. Then, the sample selection problem can introduce a bias towards a positive relation between being multinational and loan spreads. In Section 7, using Heckman selection model I find evidence that loan spreads are significantly lower for multinationals than for domestic firms after correcting the selection bias.

³⁴ The signs of other control variables are as predicted. The only exception is the secured indicator, which is positively associated with the loan spread. Secured loans are safer loans than unsecured loans, holding other things equal. However, loans that are secured tend to be loans issued by riskier firms. Therefore, the positive coefficient of the secured indicator probably reflects the borrower's additional risk that is not fully captured by firm characteristics. One interesting estimate to note is that the positive relation of volatility of cash flows with spreads is statistically strong and robust. To the extent that the volatility of cash flows in regressions captures the effect of diversification in cash flows, the coefficient of the main explanatory variables related to international diversification indicates the incremental effect of diversification in capital sources on the loan spread.

Since it is difficult to draw inferences from the spread regressions using the full sample of loans, I separate the sample into loans to multinationals in columns (2) and (3) and loans to domestic firms in column (4). I examine whether having a foreign lead lender is associated with lower loan spreads. For multinationals, the coefficient of the indicator variable for borrowing from at least one foreign lead lender is negative but not significant. This finding suggests that multinationals pay similar spreads whether they receive loans from foreign lead lenders or domestic ones. In contrast, for domestic firms, receiving loans from foreign lead lenders is associated with 16 basis-point higher spreads, which is an 7% increase at the average spread of loans to domestic firms of 235 basis points. These results imply that multinationals face less frictions in receiving bank loans from foreign lead banks in terms of price than domestic firms.

In columns (5) and (6), I employ an endogenous switching framework in which the probability of receiving loans from a foreign lead lender is jointly estimated with the loan spread regressions. The purpose of separating domestic and foreign lending markets is to test whether multinationals and domestic firms exploit the two markets in a different way and how their financial flexibility affects terms of the loans they receive. As documented in the previous sections, whether a firm borrows from foreign lenders is not exogenously determined. In addition, whether to borrow from a foreign or domestic lead lender is endogenously determined by the loan spreads that each type of lenders is willing to offer. Thus, not taking into account the endogeneity of foreign lender participation in loan contracts can create a bias. I therefore use a switching regression model to mitigate any possible selection bias induced by differences between loans from foreign lead lenders and loans exclusively from domestic lead lenders.³⁵

The selection equation consists of a probit model, which estimates the propensity of each loan facility to have at least one foreign lead lender. I use the same specification reported in Panel A of Table 3 for the selection equation (the coefficients are not reported). As outcome equations, I regress loan spreads on *GlobalDiv* and a set of control variables, estimated separately for the loans with at least one foreign lead

³⁵ An advantage of switching regression framework is that it allows flexibility on regression coefficients across different regimes. Several papers which deal with potential endogeneity issues from selections have employed the similar approach. For example, Song (2004) uses a switching regression to test the effect of syndicate structure decision on debt issue spreads.

lender involved and for the loans exclusively from domestic lead lenders. Those three equations are simultaneously estimated through maximum likelihood estimations.

The estimates from outcome equations are displayed in columns (5) and (6). I find that the multinational status is associated with an 18.3 basis-point lower spread for the loans with at least one foreign lead lender, but is not related with spreads for the loans exclusively from domestic lead lenders. This effect is sizable if compared to the average spread of 207 basis points in the sample of loans that have at least one foreign lead lender. Based on the Chi-squared statistic of a likelihood ratio test, I reject the null hypothesis that selection and outcome equations are independent. The negative sign of ρ implies that unobserved factors that lead firms to choose a foreign lead lender are associated with lower spreads.³⁶

In sum, I find weak evidence that multinationals are better able to exploit lower funding costs than domestic firms when they receive bank loans particularly from foreign lead lenders.

5.2. Bond Yield Spreads

I now examine the relation between global diversification and bond yield spreads, using a sample of corporate bond issuances and examine the hypothesis that international corporate diversification lowers bond yield spreads. I use the yield spread information from *SDC*, which is defined as the difference between the yield-to-maturity on a corporate bond and the yield-to-maturity on the comparable maturity Treasury bond at the time of the offering in basis points. The bond yield spread is regressed on *GlobalDiv* indicator and various control variables including firm and bond characteristics, the S&P credit rating fixed effects, credit spread, and term spread.

The estimates are displayed in Panel B of Table 8. As shown in column (1), *GlobalDiv* has a positive coefficient of 8.26, but it is not statistically significant, which implies that after controlling for issuer and

³⁶ I run similar switching regressions, where the selection equation estimates the likelihood of having at least one foreign lender instead of a foreign lead lender (the results are not reported). However, I do not find any difference in loan spreads between multinationals and domestic firms. One possible explanation is that the advantage of being globally diversified in terms of loan spreads comes through lead banks that usually do monitoring.

loan characteristics, there is no difference in the bond yield spreads between multinationals and domestic firms. When I split the sample into bonds issued by multinationals and those issued by domestic firms, I find that both multinationals and domestic firms pay similar spreads when they issue bonds in the international bond markets than in the U.S. bond market. When I employ the switching regression model in columns (4) and (5), the coefficients of *GlobalDiv* are positive, but neither is significant, implying that multinational and domestic firms pay similar bond yield spreads when they issue bonds both in domestic and international corporate bond markets.

The finding of similar cost of debt of multinationals to that of domestic firms can be explained by the possibility that multinationals use multiple accesses not as substitutes, but as complements. This is consistent with the finding of Gozzi, Levine, Peria, and Schmukler (2013) that a large proportion of firms continue to issue domestic bonds actively after the first-time access to international bond markets. Another possibility is that international bond markets are more globally integrated with less friction than bank loan markets. Therefore, domestic firms with public bond rating, which are usually large with less risk, do not have difficulties in issuing international bonds.

6. Why Do Multinationals Have an Advantage in Accessing Foreign Capital Markets?

If global capital markets were perfectly integrated and financial markets were frictionless, the location of firms' assets would not affect their access to or the cost of capital. However, as documented in previous sections, the location of firms' operation is relevant explaining the sources of capital they use. Therefore, having operations in different countries can improve financial flexibility. In this section, I explain possible underlying mechanisms through which internationally diversified firms could have better access to foreign capital markets than purely domestic firms.

First, existence of tangible assets in foreign countries can lower the information asymmetry between banks and borrowers. One of the key elements of lending decisions is the existence of collateral, which can be seized by the lender in the event of default. Many studies have shown that in bank loan contracts, lenders often require a firm to pledge collateral to overcome information asymmetry (e.g., Berger and

Udell (1990), John, Lynch, and Puri (2003), and Sufi (2007)). As a result, the use of collateral reduces funding costs and motivates lenders to monitor. Multinationals' tangible assets in countries where foreign lenders are incorporated are more valuable to these lenders as collateral because they can be closely monitored. In addition, enforcement of debt contracts is more difficult across international borders than within a country. Foreign lenders need to acquire the expertise to go through the legal liquidation procedures, such as auditing, in other countries. Sometimes, the liquidation process could be limited by the legal restrictions of the borrower's country of origin as well. For these reasons, a U.S. firm's domestic assets can be difficult for foreign lenders to seize and liquidate should the firm default. A U.S. multinational firm can borrow from both U.S. and foreign banks using local collateral, which puts it at an advantage relative to domestic U.S. firms that can only provide U.S. collateral when borrowing from foreign banks.

Second, a large banking literature has documented that the physical proximity of a firm with its lender is correlated with the existence of lending relationships (see, for example, Petersen and Rajan (2002), Degryse and Ongena (2005), and Agarwal and Hauswald (2010)). If direct contact is necessary to collect information about the quality of the borrowers, and in particular, if this information is soft and private, lenders are better able to build lending relationships with borrowers who are closer to them than with more geographically distant ones. In addition, foreign banks typically have better knowledge about economic conditions in their own markets where U.S. multinationals have business than in U.S. markets. More information about multinationals' foreign operations can be utilized by foreign lenders for the subsequent lending decisions, mitigating adverse selection and moral hazard problems (Stiglitz and Weiss (1983), Diamond (1984), and Rajan (1992)).

Lastly, limited access to foreign capital markets can arise from legal barriers such as different tax treatment and restrictions on foreign investments or from cultural barriers. Banks' international lending is particularly regulated in some countries, and many institutional investors are required by law to invest

domestically.³⁷ Cultural factors can pose an impediment on lending across countries. Giannetti and Yafeh (2012) empirically document that lead banks provide smaller loans, at a higher spread, to borrowers that are culturally more distant using a sample of syndicated bank loans around the world. Sharing a common language and understanding local economic and political risks can facilitate the lending decision process between borrowers and lenders.

I empirically examine those potential explanations by exploiting the characteristics of the countries where foreign subsidiaries of multinational firms are located. Although each argument is not mutually exclusive, the empirical test possibly allows me to distinguish which mechanism is more consistent with the actual data. Using a sample of bank loans, I estimate a probit model, where the dependent variable is whether a bank loan is from a foreign lead lender as in the baseline regressions in Table 3. Additionally, I include dummy variables indicating whether a multinational firm has a subsidiary in countries that have high or low private credit to GDP ratio, that have strong or weak creditor rights, that are geographically close or distant, that speak same or different language, that have same or different religion, or that have high or low trade flows.

I report the results in Table 9. In columns (1) through (4) I find that the existence of subsidiaries in countries with more bank credit and with stronger protection on creditor rights significantly increases the likelihood of receiving loans from foreign lender. This finding confirms the financial channel through which the physical presence improves access to foreign bank lending. In other words, multinationals exploit foreign funding especially when they have assets in financially developed countries with strong debt enforcement.

The results in columns (5) and (6) indicate that the difference in the likelihood of receiving bank loans from foreign lenders between multinational and domestic firms substantially increases if multinationals have operations in countries that are distant from the U.S. This result is consistent with the view that geographic proximity is an important factor determining bank lending and the operation

³⁷ For example, Argentina puts a ten percent cap on pension funds' foreign investments outside the Mercosur trade members including Brazil, Paraguay, and Uruguay. In this example, capital acquired by a South American subsidiary from these pension funds does not count against the ten percent cap but capital acquired by a domestic U.S. firm does.

presence can reduce any financial frictions in the countries that are geographically distant so that monitoring and information acquisition might be costly.

In columns (6) through (12), I find that having subsidiaries in countries that have same language and same religion and in countries that are familiar, measured by trade openness, has a significant impact on multinationals' use of foreign funding. These results using various proxies for cultural variance suggest that cultural barriers potentially generate financial frictions in international debt market, but multinationals can access to foreign capital more only in the countries that are culturally similar and open to the U.S.

7. Robustness Tests

7.1. Selection Bias on Bank Loan and Corporate Bond Samples

The sample of bank loan and corporate bonds I use does not include firms that have not received bank loans or that have not issued corporate bonds. One might be concerned that the results could be driven by unobservable firm characteristics that influence the firm's ability to raise capital, and that are highly correlated with the variable denoting multinationality. For example, in bad times only better firms could receive the loans. If those firms tend to be multinationals and if they borrow from foreign lenders, the sample of loan issuances would be disproportionately more composed of loans issued by multinationals from foreign lenders.

To take into account this selection bias, I estimate the sample selection models considered by Heckman (1979) for the baseline regressions in Table 3. I collapse the bank loan and corporate bond issuance data into firm-quarter observations, and merge this dataset with the universe of *Compustat* firms on a quarterly basis to include all firms that do not issue loans or bonds. A selection equation estimates the probability of issuing bank loans or the probability of issuing bonds each quarter using a probit model. I need to find an instrument variable in the selection equation that is correlated with debt issue decisions, but has no effect on foreign lender participation and international bond issuance. Motivated by Almeida et al. (2011), I use the ratio of long-term debt maturing within one year to total long-term debt as an

instrument variable. In outcome equations, I use a bivariate probit model adjusted for selection bias for a binary dependent variable and I use Heckman selection model for a continuous dependent variable.

The results are displayed in Table 10. In the selection regression reported in column (1) of Panel A, the instrument variable, the proportion of long-term debt maturing within a year, strongly predicts the firm's decision to issue a bank loan. Based on the Wald Chi-squared statistics, I reject the null hypothesis that selection and outcome equations are independent. After correcting for the sample selection, the global diversification indicator variable still remains statistically significant in explaining the foreign lender participation in columns (2) through (5) and the average spread is significantly lower for the multinational firms than for domestic firms.

I next turn to selection models for corporate bond issuance in Panel A of Table 10. In columns (2) to (4), I reject the hypothesis that the selection and outcome equations are independent. In the selection equation, however, the proportion of long-term debt maturing within a year does not have predictive power. I find the positive effects of the global diversification on the probability of issuing bonds in international markets, but the selection bias is not perfectly corrected because the instrument variable in selection equation is weak.

7.2. Treatment Effect Model for Endogenous Choice of Being Multinational

One might still be concerned that the propensity score estimation does not sufficiently take into account the endogenous choice of firms to be internationally diversified. Propensity score matching models assume that all possible predictors of global diversification are included in the selection equation. However, unobservable factors may drive firms to diversify internationally. Perhaps, for example, transparent firms are more likely to be internationally diversified, but the firm characteristics used in matching procedures cannot fully capture the quality of the firm. To address this issue, I estimate the treatment effect model as an alternative approach.

Treatment effect models require including valid instrument variables in the selection equation that are correlated with the firms' decision to be multinational, but have no effect on access to foreign capital

markets. I adopt three instrument variables. First, following Campa and Kedia (2002), I use the fraction of multinationals in the firm's industry, as defined by two-digit SIC code, as an instrument. The idea is that benefits of being diversified are industry-specific and the proportion of diversified firms in the same industry is a proxy for industry attractiveness.³⁸ Second, several papers document that firms in technology-intensive industries are more likely to invest in foreign operations because intangible assets developed by R&D spending can be easily transferred to subsidiaries compared to tangible assets (see, for example, Desai, Foley, and Hines (2009)). For this reason, I use the mean of the ratio of R&D to total assets for firms in the same industry as a second instrument variable. The last instrument variable is the minority interest on the balance sheet, which proxies for previous acquisitions that are possibly internationally diversifying, used by Dimitrov and Tice (2006).

In the results tabulated on Appendix A5, I find that the positive effect of being multinational on foreign lender participation in bank loans and international bond issuance still remain significant in the treatment effect estimation except the foreign lead lender shares. The fraction of multinational firms and the R&D intensity at the industry level and the minority interests significantly predict the firm's multinational status in the selection equation, and the results are robust to the weak instrument and instrument exogeneity tests. These treatment effect estimators suggest that after considering endogenous choice of being multinational, international corporate diversification help firms achieve easier access to foreign capital markets.

7.3. Foreign Currency Risk

Debt financing from international markets may be more available in the form of foreign currency debt. To the extent that multinationals have a natural demand for foreign currency-denominated debt, it makes

³⁸ Industries that have higher fraction of multinationals include commercial machinery and computer, electronic and electrical equipment, petroleum refining, and chemicals and allied products. On the other hand, firms are domestically focused in industries such as building construction, automotive dealers and gasoline service, transportation, hotels, and food and kindred products.

possible for them to access at lower cost foreign currency borrowing.³⁹ In this sense, the results from the sample of bank loans and corporate bonds restricted to the U.S. dollar-denominated debt may underestimate the actual magnitude of the financial benefit of international diversification. In untabulated results, using a sample including non-U.S. dollar-denominated loans and bonds, I find that multinationals are more likely to issue bank loans and bonds denominated in foreign currencies than domestic firms. Furthermore, those foreign currency debts are more likely to be issued in international debt markets.

A related issue is that excluding foreign currency-denominated debt may not completely control for firms' demand for capital from international markets. To address this concern, I identify pure exporters that have foreign sales but do not have physical presence in foreign countries. As opposed to purely domestic firms, those pure exporters might have demand for debt from foreign countries to hedge against their international business risks as do multinationals. However, if retaining assets in foreign countries is vital to receive foreign funding, pure exporters do not have any advantage in international debt markets, compared to purely domestic firms. Consistent with this prediction, I do not find any difference between purely domestic firms and pure exporters in foreign lender participation in banks loans and international bond issuance.

7.4. Reverse Causality

One may make the following argument of reverse causality: firms expand operations to the specific countries where they already attain access to capital. However, given that the U.S. has one of the most developed corporate debt markets in the world, this is not a major concern for the U.S. corporations.

To examine this concern, nevertheless, I use a subsample of firms that become multinational during the sample period and issue at least one bank loan before and after the diversification decision. I look at whether the foreign lender participation and the propensity to issue international bond increase after the firms become multinational. Though not reported in the tables, the propensity to have a foreign lender

³⁹ For example, if it is cheaper to borrow in Yen in Japan, then domestic firms with no exposure to the Yen have to borrow in Yen, swap into dollars, and hedge. In contrast, the loan denominated in Yen itself may be a natural hedge for multinationals that have subsidiaries in Japan. They do not need to hedge the currency risk but use the proceeds for Japanese operations.

significantly increases after the firms become internationally diversified. I find the similar result using corporate bond issuance. This test confirms the finding that foreign lender participation is due to multinationality.

8. Conclusion

This paper studies how international corporate diversification affects firm financing policies and especially their access to foreign funding sources in bank loans and corporate bonds. Using a sample of U.S. multinationals and domestic firms from 2000 to 2010, I show that firms that have foreign operations make more use of funding in foreign countries than firms that have purely domestic operations when firms issue bank loans. In particular, I provide evidence that the location of multinationals' operations strongly predicts the nationality of foreign lenders. The higher foreign lender participation in bank loans to multinationals is mostly attributable to foreign lead lenders from the same region and from countries where multinationals have foreign subsidiaries. In addition, I find that conditional on corporate bond issuance, bonds issued by multinationals are more likely to be placed in countries outside the U.S.

The access to funding in foreign countries by multinationals leads to greater financial flexibility when there is a capital market disruption in their home country since they can exploit foreign funding sources more easily than purely domestic firms. Using the 2007-2009 financial crisis as a capital supply shock, I show that multinationals were better able to borrow more from foreign lead lenders than domestic firms at the peak of the financial crisis (the two quarters following the Lehman Brothers bankruptcy) relative to the period outside the financial crisis. Interestingly, this effect is mostly driven by the increase in participation of lenders from countries where multinationals have foreign subsidiaries and where bank lending were less affected. Moreover, multinationals used international bond markets more actively than purely domestic firms in the two quarters after September 2008. Partially as a consequence, the investments of multinationals were less adversely affected during the crisis than those of domestic firms.

Overall, the empirical evidence in this paper is consistent with the hypothesis that expanding operations in other countries brings a financing advantage to firms.

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Table 1. Descriptive Statistics of Multinational’s Foreign Operations and Difference in Firm Characteristics between Multinationals and Domestic Firms

This table provides descriptive information on the U.S. multinationals and domestic firms in the sample. The sample includes firm-quarter observations of all publicly-traded U.S. firms from 2000Q1-2010Q4 from the *Compustat* database, excluding financial or utilities (SIC code 4900-4949 and 6000-6999). Firm-quarter observations with annual sales less than \$20 million, negative total assets, negative cash and marketable securities, and cash and marketable securities greater than total assets are deleted. A firm is defined as *Multinational* if its foreign pre-tax income is not missing in at least one year over the previous three years and there is at least one subsidiary in a country outside the U.S. Otherwise, a firm is defined as *Domestic*. Panel A describes the structure of foreign operations of 2,353 multinationals. Both direct subsidiaries and indirect subsidiaries owned by direct subsidiaries are included and subsidiaries in tax-haven countries are not counted. Data on foreign operation structure are in annual basis. Panel B presents the summary statistics of firm characteristics of multinationals and domestic firms using firm-quarter observations from 2000Q1-2010Q4. The tests of differences in means (medians) between multinationals and domestic firms are based on univariate OLS (median) regressions, where each variable is regressed on the indicator of multinational. All variables are defined in Appendix A2. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Intensity of Foreign Operations and Location of Foreign Subsidiaries of Multinationals

Foreign Operation Involvement	Obs.	Mean	Median	Std. Dev.
% Foreign Income	12036	34.8%	27.9%	28.4%
% Foreign Sales	14410	32.7%	29.4%	24.2%
HHI(Sales)	14398	0.473	0.490	0.268
Total number of subsidiaries	15520	41.475	20.000	63.677
Number of foreign subsidiaries	15520	20.638	7.000	39.784
Number of countries where MNCs have foreign subsidiaries	15520	10.783	6.000	12.286

Location of Subsidiaries			
By Region		By Country (Top 10)	
EUROPE	81.7%	UNITED KINGDOM	63.2%
ASIA	66.0%	CANADA	57.7%
LATIN AMERICA	40.9%	GERMANY	45.5%
MIDDLE EAST	16.0%	FRANCE	39.8%
AFRICA	15.7%	NETHERLANDS	36.8%
		AUSTRALIA	34.9%
		CHINA	33.0%
		JAPAN	32.1%
		SINGAPORE	30.1%
		MEXICO	29.9%
Observations	15520		

Panel B. Firm Characteristics

Variables	Mean			Median		
	Multinational (1)	Domestic (2)	Difference (1)-(2)	Multinational (3)	Domestic (4)	Difference (3)-(4)
Total Assets (\$ Billion)	5.100	1.238	3.862***	0.750	0.194	0.556***
Market Cap (\$ Billion)	5.892	1.110	4.782***	0.782	0.189	0.593***
Log(Sales)	5.248	4.010	1.238***	5.170	3.820	1.350***
Leverage	0.208	0.230	-0.022***	0.180	0.172	0.008***
Sales Growth	0.110	0.168	-0.059***	0.071	0.077	-0.007***
Cash Flows	0.030	0.022	0.008***	0.030	0.027	0.003***
Cash	0.179	0.185	-0.006	0.108	0.088	0.020***
Market to Book	1.928	1.921	0.006	1.538	1.420	0.118***
STD(Cash Flows)	0.018	0.026	-0.008***	0.013	0.018	-0.005***
Capex	0.011	0.016	-0.004***	0.007	0.008	-0.001***
Investment Grade	0.201	0.051	0.150***	0.000	0.000	0.000
Speculative Grade	0.187	0.148	0.039***	0.000	0.000	0.000
Not rated	0.613	0.801	-0.188***	1.000	1.000	0.000
Observations	62885	68017		62885	68017	
No of Firms	2353	3850		2353	3850	

Table 2. Summary Statistics of Bank Loan and Corporate Bond Issuance

This table reports summary statistics of bank loan issuances and corporate bond by multinationals and domestic firms. In Panel A, data include all U.S. dollar denominated syndicated loans or sole-lender bank loans issued by publicly-traded U.S. firms during the 2000 to 2010 period from *DealScan*. The sample also includes loans issued by subsidiaries whose parent firms are publicly-traded U.S. firms. Loan facility is used as the unit of analysis. A *foreign lender* is defined as a lender incorporated outside of the U.S., excluding a foreign branch of the U.S. banks or a U.S. branch of foreign banks. A lender is defined as a *lead lender* if “Lead Arranger Credit” is equal to “Yes” in *DealScan*, if a lender is identified as “Agent”, “Administrative Agent”, “Arranger”, and “Lead Bank”, or if the loan is a sole-lender loan. For loans without share data, I assume each lender in the loan facility has an equal share. In Panel B, data include all U.S. dollar denominated public or private bonds issued by U.S. publicly-traded firms during the 2000 to 2010 period from *SDC*. The sample also includes bonds issued by subsidiaries whose parent firms are publicly-traded U.S. firms. A bond is defined as an *international bond* if the bond is placed in an exchange market outside the U.S. or if it is a Euro bond or a global bond. The tests of differences in means between multinationals and domestic firms are based on univariate OLS regressions where each variable is regressed on the indicator of multinational. All variables are defined in Appendix A2. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Bank Loans

Variables	Lenders			Lead Lenders		
	Mean of Multinational (1)	Mean of Domestic (2)	Difference (1)-(2)	Mean of Multinational (3)	Mean of Domestic (4)	Difference (3)-(4)
<u>Lender Participation</u>						
Total number of lenders	9.412	6.652	2.759***	6.652	1.336	0.297***
Lead lender shares				0.353	0.457	-0.104***
Have foreign lenders	0.657	0.422	0.235***	0.170	0.108	0.063***
Foreign lender participation						
By number	0.246	0.130	0.116***	0.109	0.074	0.035***
By volume	0.221	0.122	0.099***	0.043	0.029	0.013***
Lender shares by lenders' region						
US	0.716	0.834	-0.117***	0.309	0.427	-0.118***
EUROPE	0.136	0.078	0.059***	0.030	0.020	0.010***
ASIA	0.051	0.021	0.030***	0.006	0.002	0.004***
CANADA	0.034	0.025	0.010***	0.008	0.008	-0.000
Lender shares from countries in which a multinational has foreign subsidiaries	0.131			0.024		
<u>Loan Characteristics</u>						
Facility amount (\$MM)	508.331	244.660	263.672***			
Maturity (month)	44.431	46.347	-1.916***			
Secured	0.469	0.652	-0.183***			
Missing_Secured	0.307	0.213	0.094***			
Revolver	0.568	0.615	-0.047***			
Term loan	0.256	0.301	-0.046***			
All-in-drawn Spread	188.130	234.935	-46.805***			
Observations	6455	5184	11639			
No of firms	1379	1459				

Panel B. Corporate Bonds

Variables	Mean of Multinational (1)	Mean of Domestic (2)	Difference (1)-(2)
<u>Bond type</u>			
International bond	0.368	0.229	0.1396***
Global bond	0.265	0.107	0.1579***
Euro bond	0.007	0.004	0.0026
<u>Bond Characteristics</u>			
Proceed amount (\$MM)	639.272	422.531	216.7408***
Maturity (month)	111.588	117.166	-5.5778
Secured	0.034	0.075	-0.0412***
Private placement	0.312	0.497	-0.1847***
Callable	0.248	0.398	-0.1509***
Bond yield spread	252.357	347.212	-94.8551***
Observations	2209	1197	
No of firms	602	367	

Table 3. The Effect of International Corporate Diversification on International Debt Financing

This table presents the estimates of the effect of international corporate diversification on foreign lender participation using the sample of bank loan issuance from *DealScan* and on international bond issuances using the sample of corporate bond issuance from *SDC*. *GlobalDiv* is defined as an indicator variable, which takes the value of one if a firm's foreign pre-tax income is not missing in at least one year over the previous three years and there is at least one subsidiary in a country outside the U.S. Panel A presents the probit and OLS estimates, using the full sample of bank loan issuances at the facility level and corporate bond issuances. columns (1) and (2) report the marginal effects at means of variables from probit regressions, where the dependent variable is an indicator denoting at least one foreign lender. In columns (3) to (4), estimates of OLS regressions, where the dependent variables are foreign lender shares, are presented. As dependent variables, I consider whether a lead bank is a foreign lender in column (3), and the share of foreign lead lenders in column (4). In column (5), the marginal effects from a probit regression, where the dependent variable is the international bond issuance, are reported. In all columns, firm characteristics and loan (or bond) characteristics are included as controls and loan type and loan purpose fixed effects, S&P credit rating fixed effects, industry fixed effects at the one-digit SIC industry level, and quarter fixed effects are included. Panel B presents propensity score matching estimation. The table reports the average difference of foreign lenders' participation between bank loans to multinationals and those to matched domestic firms and the average difference of international bond issuances between bonds issued by multinationals and those to matched domestic firms. Propensity scores are obtained from the probit model predicting whether the firm is multinational. Control variables in the probit model include firm-specific and loan-specific (bond) characteristics as in columns (1) and (5) of Panel A. Each loan (bond) of a multinational (treated group) is matched to the loan (bond) of a domestic firm (control group) within the same S&P credit rating category in the same quarter, using propensity score estimation, with replacement. I apply the nearest neighbor matching estimator as in Becker and Ichino (2002) of 0.1 caliper, imposing the common support condition and bootstrapped errors with 500 replications. All variables are defined in Appendix A2. The standard errors with clustering at the firm level are in parenthesis. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Baseline Regression

Dependent Variable:	(1)		(2)		(3)		(4)		(5)	
	Probit		Probit		OLS		OLS		Probit	
	Have Foreign Lender	Have Foreign Lead Lender	Foreign Lender Share	Foreign Lead Lender Share	Foreign Lender Share	Foreign Lead Lender Share	International Bond	International Bond	International Bond	International Bond
GlobalDiv	0.133*** (0.021)	0.041*** (0.013)	0.040*** (0.007)	0.014*** (0.005)	0.052** (0.026)					
Log(Sales)	0.030*** (0.010)	0.012** (0.006)	0.019*** (0.004)	0.006** (0.003)	0.012 (0.011)					
Leverage	0.179*** (0.044)	0.084*** (0.024)	0.058*** (0.015)	0.037*** (0.011)	0.031 (0.066)					
Sales Growth	0.004 (0.002)	0.001 (0.001)	0.001 (0.001)	0.000 (0.001)	0.031 (0.019)					
Cash Flows	-0.192 (0.308)	-0.203 (0.157)	-0.160** (0.079)	-0.055 (0.059)	-0.270 (0.366)					
Cash	0.171* (0.102)	0.107** (0.051)	0.052* (0.030)	0.037 (0.024)	-0.006 (0.140)					
Market to Book	0.009 (0.008)	0.003 (0.005)	0.002 (0.002)	0.000 (0.002)	-0.013 (0.014)					
STD(Cash Flows)	0.082 (0.583)	0.363 (0.325)	0.236 (0.155)	0.136 (0.113)	-0.438 (0.662)					
Log(Facility/Proceed Amount)	0.046*** (0.008)	0.003 (0.005)	0.008** (0.003)	0.006** (0.003)	0.141*** (0.012)					
Log(Maturity)	0.035** (0.015)	0.039*** (0.008)	0.012*** (0.005)	0.011*** (0.004)	0.015 (0.017)					
Secured	-0.001 (0.026)	0.003 (0.014)	0.010 (0.009)	-0.014** (0.006)	-0.049 (0.038)					
Missing_Secured	0.093*** (0.022)	0.026* (0.013)	0.055*** (0.008)	0.007 (0.005)						
Log(Number of Lenders)	0.404*** (0.015)	0.020*** (0.006)	0.034*** (0.005)	-0.033*** (0.004)						
Private_Debt										-0.299*** (0.021)
Callable										0.114*** (0.028)
Constant			-0.012 (0.099)	-0.073 (0.072)						
Rating, Industry, Quarter FE	Yes	Yes	Yes	Yes	Yes					
Loan Purpose, Loan Type FE	Yes	Yes	Yes	Yes	No					
Observations	11,639	11,639	11,639	11,639	3406					
Pseudo/Adj R-squared	0.460	0.122	0.272	0.0938	0.476					

Panel B. Propensity Score Matching Estimation

	Average Treatment Effect		
	Multinational (Treated)	Domestic (Control)	Difference (S.E.)
Have Foreign Lender	0.6390	0.5354	0.1036 (0.015)***
Have Foreign Lead Lender	0.1629	0.1100	0.0528 (0.010)***
Foreign Lender Shares	0.2118	0.1422	0.0696 (0.006)***
Foreign Lead Lender Shares	0.0406	0.0271	0.0135 (0.004)***
Paired Observations	5790		
International Bond	0.3557	0.3089	0.0468 (0.016)***
Paired Observations	1473		

Table 4. The Effect of International Corporate Diversification on Access to Foreign Capital Market: Multinational's Foreign Operation Structure

This table presents results from regressions estimating the effect of international corporate diversification on access to foreign capital markets depending on the location of multinationals' foreign subsidiaries and the degree of foreign operation involvement. Panels A and B investigate the effect of location of subsidiaries on the nationality of foreign lenders in bank loans. The sample used in Panels A and B is restricted to the loans to multinationals. In Panel A, I report marginal effects from probit models estimating the probability of having lenders from Europe in column (1) and from Asia in column (2). In columns (3) and (4), I report estimates of OLS regressions, where the dependent variables are lender shares from those regions. The main explanatory variables are indicators of having a subsidiary in each region (Europe except U.K, Asia, Canada, Latin America, and Middle East). Since more than 60% of multinationals have a subsidiary in U.K, having a subsidiary in U.K is not considered in European lender participation. Control variables include firm and loan characteristics as in column (2) in Table 4. In Panel B, I report marginal effects from probit models estimating the probability of having a lender from each country. I consider the top ten countries (Canada, France, Japan, U.K., Germany, Netherlands, Switzerland, Hong Kong, Italy, and Belgium), from which foreign lenders are the most active in U.S. bank loan markets. Panel C reports probit and OLS estimates of the effect of the intensity of foreign operation on foreign lender participation using the sample of bank loans. As a measure of the intensity of multinationals' foreign operations, I use the percentage of foreign income, the number of countries where multinationals have foreign subsidiaries, one minus the concentration of foreign sales, and the percentage of developed countries out of the total number of countries where multinationals have foreign subsidiaries. *MoreGlobalDiv* is equal to 1 if each measure of the intensity of foreign operation is above median which is estimated using the sample of loans to multinationals. The regressions include firm and loan characteristics with rating, industry and quarter fixed effects as in column (2) of Table 4. Panel D reports probit estimates of the effect of the intensity of foreign operation on international bond issuances using the sample of corporate bond issuances. *MoreGlobalDiv* is defined similarly as in Panel C. The regressions include firm and bond characteristics with rating, industry and quarter fixed effects as in column (2) of Table 5. The coefficients of control variables are not reported to save space. All variables are defined in the Appendix A2. The standard errors with clustering at the firm level are in parenthesis. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Location of Subsidiaries by Region

Dependent Variable:	(1)	(2)	(3)	(4)	(5)	(6)
	Probit			OLS		
	Have lender from:			Shares of lenders from:		
	CANADA	EUROPE	ASIA	CANADA	EUROPE	ASIA
(A) Sub in CANADA	0.042* (0.024)	-0.056* (0.031)	0.021 (0.025)	-0.000 (0.003)	-0.011 (0.007)	0.001 (0.004)
(B) Sub in EUROPE	-0.028 (0.027)	0.121*** (0.036)	0.037 (0.029)	-0.005* (0.003)	0.022*** (0.008)	-0.001 (0.005)
(C) Sub in ASIA	-0.042 (0.027)	0.048 (0.034)	0.068** (0.028)	-0.002 (0.002)	0.011 (0.007)	0.008* (0.005)
Sub in LATIN AMERICA	0.000 (0.025)	0.025 (0.030)	-0.043* (0.025)	-0.001 (0.002)	0.006 (0.007)	-0.007* (0.004)
Sub in MIDDLE EAST	0.021 (0.026)	0.025 (0.034)	0.026 (0.028)	0.001 (0.002)	0.002 (0.008)	0.006 (0.005)
Observations	6455	6455	6455	6455	6455	6455
Pseudo/Adj R-squared	0.296	0.414	0.429	0.0167	0.189	0.150
Joint Test	(A) Sub in CANADA = 0 and (B) Sub in EUROPE = 0 and (C) Sub in ASIA = 0			(A) Sub in CANADA = 0 and (B) Sub in EUROPE = 0 and (C) Sub in ASIA = 0		
Chi ² (p-value)	22.08 (0.0001)			31.97 (0.0000)		

Panel B. Location of Subsidiaries by Country

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Have lender from:									
Dependent Variable:	CANADA	FRANCE	JAPAN	GERMANY	NETHER- LANDS	SWITZER- LAND	HONG KONG	ITALY	BELGIUM	AUSTRA- LIA
Sub in CANADA	0.045* (0.023)	-0.027 (0.023)	0.028 (0.019)	-0.011 (0.017)	-0.023 (0.019)	0.007 (0.012)	0.001 (0.007)	0.001 (0.001)	0.002 (0.003)	-0.002 (0.003)
Sub in FRANCE	0.038 (0.031)	0.046 (0.029)	-0.019 (0.025)	0.006 (0.019)	-0.011 (0.020)	0.001 (0.015)	0.002 (0.008)	0.000 (0.001)	-0.005 (0.004)	0.001 (0.003)
Sub in JAPAN	-0.025 (0.026)	0.033 (0.027)	0.081*** (0.025)	-0.024 (0.016)	0.001 (0.018)	0.009 (0.012)	-0.008 (0.006)	0.001 (0.001)	-0.004 (0.004)	-0.000 (0.002)
Sub in GERMANY	-0.025 (0.028)	-0.008 (0.027)	0.007 (0.024)	0.033* (0.018)	0.005 (0.021)	0.012 (0.014)	-0.007 (0.008)	0.000 (0.001)	0.004 (0.005)	0.003 (0.002)
Sub in NETHERLANDS	-0.014 (0.025)	0.010 (0.025)	0.017 (0.020)	-0.001 (0.017)	0.049*** (0.018)	0.001 (0.013)	0.005 (0.007)	-0.000 (0.001)	-0.003 (0.004)	0.003 (0.002)
Sub in SWITZERLAND	-0.033 (0.027)	0.029 (0.029)	0.019 (0.026)	-0.028* (0.015)	0.030 (0.021)	0.014 (0.015)	-0.011* (0.006)	0.001 (0.001)	-0.001 (0.004)	0.001 (0.003)
Sub in HONG KONG	-0.020 (0.025)	-0.050** (0.024)	0.006 (0.023)	0.018 (0.018)	0.004 (0.019)	-0.012 (0.012)	0.000 (0.006)	0.001 (0.001)	-0.006* (0.003)	0.004 (0.003)
Sub in ITALY	-0.003 (0.029)	-0.002 (0.028)	0.024 (0.026)	0.051** (0.020)	-0.022 (0.020)	0.001 (0.014)	0.022** (0.010)	0.003 (0.002)	0.001 (0.004)	-0.006** (0.003)
Sub in BELGIUM	0.008 (0.028)	-0.018 (0.029)	-0.019 (0.023)	-0.029* (0.017)	0.019 (0.021)	-0.008 (0.014)	0.001 (0.008)	-0.001* (0.001)	0.031*** (0.012)	-0.005** (0.002)
Sub in AUSTRALIA	0.019 (0.023)	0.012 (0.024)	-0.009 (0.021)	-0.001 (0.016)	0.012 (0.019)	-0.004 (0.012)	0.012* (0.006)	-0.001 (0.000)	0.003 (0.004)	0.010** (0.005)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6455	6455	6455	6455	6455	6434	6455	6012	6175	6220
Pseudo R-squared	0.297	0.354	0.445	0.329	0.288	0.188	0.279	0.518	0.301	0.344
% MNCs that have lender from each country	30.74%	28.92%	30.69%	22.56%	19.58%	8.30%	11.88%	8.43%	6.07%	4.55%

Panel C. Intensity of Foreign Operations

	(1)	(2)	(3)	(4)	(5)	(6)
	Dependent Variable : Have Foreign Lender			Dependent Variable : International Bond Issuance		
MoreGlobalDiv based on :	% Foreign Income	Log(No of Countries where MNC have Foreign Subs)	HHI(Sales)	% Foreign Income	Log(No of Countries where MNC have Foreign Subs)	HHI(Sales)
MoreGlobalDiv	0.098*** (0.020)	0.040* (0.023)	0.066*** (0.021)	-0.002 (0.031)	-0.005 (0.029)	-0.004 (0.027)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4919	6455	5918	1818	2209	2087
Pseudo R-squared	0.475	0.461	0.467	0.508	0.470	0.473

Table 5. The Effect of International Corporate Diversification on Financial Policy during the 2007-2009 Financial Crisis

This table presents the changes in the effect of international corporate diversification on access to foreign lenders in bank loans and international corporate bond markets over the 2007-2009 financial crisis periods. Panel A reports estimates of probit and OLS regressions, where foreign lender participation variables are regressed on an indicator variable of multinational firms as well as interactions between the multinational indicator variable and two crisis period indicator variables. *Crisis_PreLehman* is defined as calendar quarters between 2007Q3-2008Q3, and *Crisis_PostLehman* as 2008Q4-2009Q1. In columns (1) to (4), the estimates of probit and OLS regressions using the bank loan sample are reported, and the regressions include firm and loan characteristics as control variables as in column (1) of Table 3. column (5) reports estimates of probit regressions, where a dependent variable is an indicator variable denoting an international bond. Control variables include firm and bond characteristics as in column (5) of Table 3. On the bottom of the table, I report the mean interaction effects and z-statistics corrected by the methodology of Norton, Wang, and Ai (2004). Panel B reports the average differences in foreign lender participation and international bond issuance between the multinationals and the matched domestic firms by subperiod – pre-crisis (2000Q1-2007Q2), crisis before the collapse of Lehman (2007Q3-2008Q3), and crisis after the collapse of Lehman (2008Q4-2009Q1) using the propensity score matching sample. Each loan (bond) of a multinational (treated group) is matched to the loan (bond) of a domestic firm (control group) using propensity score matching procedure. The coefficients of control variables are not reported to save space. All variables are defined in the Appendix A2. The standard errors with clustering at the firm level are in parenthesis. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Baseline Regression

Dependent Variable:	(1)	(2)	(3)	(4)	(5)
	Bank Loans				Corporate Bonds
	PROBIT		OLS		PROBIT
	Have foreign lender	Have foreign lead lender	Foreign lender shares	Foreign lead lender shares	International bond
GlobalDiv	0.129*** (0.022)	0.037*** (0.013)	0.040*** (0.007)	0.011** (0.005)	0.044 (0.028)
Crisis_PreLehman	-0.079 (0.093)	0.019 (0.054)	0.009 (0.025)	0.006 (0.017)	0.484*** (0.134)
Crisis_PreLehman x GlobalDiv	0.024 (0.058)	0.019 (0.035)	-0.001 (0.015)	0.021* (0.011)	0.018 (0.058)
Crisis_PostLehman	-0.177 (0.137)	-0.052 (0.043)	0.015 (0.028)	0.020 (0.024)	0.431*** (0.138)
Crisis_PostLehman x GlobalDiv	0.138 (0.112)	0.231** (0.114)	0.013 (0.033)	0.079** (0.031)	0.237* (0.124)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	11639	11639	11639	11639	3406
Pseudo/Adj R-squared	0.460	0.123	0.271	0.0954	0.477
Mean interaction effect for					
<i>Crisis_PreLehman x GlobalDiv</i>	0.015 [0.129]	0.008 [0.207]			0.015 [0.115]
<i>Crisis_PostLehman x GlobalDiv</i>	0.081 [0.888]	0.171 [1.995]			0.150 [1.263]

Panel B. Propensity Score Matching Estimation

	Have Foreign Lender				Foreign Lender Share			
	Paired Obs.	Multinational	Domestic	Difference (S.E.)	Multinational	Domestic	Difference (S.E.)	
(1) PreCrisis (2000Q1-2007Q2)	4633	0.6518	0.5444	0.1075 (0.017)***	0.2180	0.1434	0.0746 (0.007)***	
(2) Crisis_PreLehman (2007Q3-2008Q3)	578	0.5779	0.5138	0.0640 (0.049)	0.1787	0.1227	0.0560 (0.017)***	
(3) Crisis_PostLehman (2008Q4-2009Q1)	115	0.4609	0.1739	0.2870 (0.097)***	0.1449	0.0614	0.0835 (0.038)**	
(2) PreLehman - (1) PreCrisis				-0.042 (0.027)			-0.018 (0.012)	
(3) PostLehman - (1) PreCrisis				0.179 (0.056)**			0.009 (0.027)	
<hr/>								
	Have Foreign Lead Lender				Foreign Lead Lender Share			
	Paired Obs.	Multinational	Domestic	Difference (S.E.)	Multinational	Domestic	Difference (S.E.)	
(1) PreCrisis (2000Q1-2007Q2)	4633	0.1489	0.1012	0.0477 (0.011)***	0.0343	0.0253	0.0090 (0.004)**	
(2) Crisis_PreLehman (2007Q3-2008Q3)	578	0.1747	0.0761	0.0986 (0.025)***	0.0540	0.0212	0.0328 (0.013)**	
(3) Crisis_PostLehman (2008Q4-2009Q1)	115	0.2870	0.1130	0.1739 (0.088)*	0.0781	0.0174	0.0607 (0.022)***	
(2) PreLehman - (1) PreCrisis				0.051 (0.021)*			0.024 (0.009)**	
(3) PostLehman - (1) PreCrisis				0.126 (0.049)*			0.052 (0.021)*	
<hr/>								
	International Bond							
	Paired Obs.	Multinational	Domestic	Difference (S.E.)				
(1) PreCrisis (2000Q1-2007Q2)	1025	0.1707	0.1366	0.0341 (0.015)**				
(2) Crisis_PreLehman (2007Q3-2008Q3)	119	0.6807	0.5042	0.1765 (0.066)***				
(3) Crisis_PostLehman (2008Q4-2009Q1)	56	0.8750	0.8393	0.0357 (0.069)				
(2) PreLehman - (1) PreCrisis				0.142 (0.062)*				
(3) PostLehman - (1) PreCrisis				0.002 (0.073)				

Table 6. The Effect of the 2007-2009 Financial Crisis on Foreign Lender Participation of Loans Issued by Multinational Firms: Location of Foreign Subsidiaries

This table presents the effect of the 2007-2009 financial crisis on foreign lender participation of loans issued by multinational firms depending on their foreign subsidiary locations. The sample is restricted to the bank loans issued by multinationals. The table reports estimates of probit and OLS regressions, where the dependent variables are the indicator variable of receiving a bank loan from at least one foreign lender from countries where a multinational firm has subsidiaries in columns (1) and (2) and the shares retained by lenders from countries where the firm has subsidiaries in columns (3) and (4). columns (4) to (8) report the estimates of probit and OLS regressions, where the dependent variables are foreign lender participation variables. All regressions include firm and loan characteristics as control variables as in column (1) of Table 3, but the coefficients of control variables are not reported to save space. The *Crisis_PreLehman* is defined as calendar quarters between 2007Q3-2008Q3, and *Crisis_PostLehman* as 2008Q4-2009Q1. *Less_Affected_Sub* is defined as one if a multinational firm has at least one subsidiary in the countries where the financing markets are less affected during the financial crisis, and zero otherwise. The extent to which each country was affected during the crisis is measured by the change in each country's private credit to GDP ratio between 2007 and 2009. The country is defined as less affected if the change in private credit to GDP is lower than the median. On the bottom of the table, I report the mean interaction effects and *z*-statistics corrected by the methodology of Norton, Wang, and Ai (2004). All variables are defined in the Appendix A2. The standard errors with clustering at the firm level are in parenthesis. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variable:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	PROBIT		OLS		PROBIT		OLS	
	Have foreign lender	Have foreign lead lender	Foreign lender shares	Foreign lead lender shares	Have foreign lender	Have foreign lead lender	Foreign lender shares	Foreign lead lender shares
	From countries where multinaitonals have foreign subsidiaries:							
Crisis_PreLehman	-0.026 (0.102)	0.077 (0.066)	0.025 (0.025)	0.022 (0.015)	-0.006 (0.127)	0.045 (0.105)	0.027 (0.044)	0.041 (0.035)
Crisis_PostLehman	-0.002 (0.108)	0.276** (0.116)	-0.004 (0.024)	0.030* (0.016)	-0.346** (0.174)	-0.046 (0.097)	-0.085* (0.045)	-0.045 (0.037)
Less_Affected_Sub					0.069** (0.035)	0.019 (0.024)	0.015 (0.012)	0.006 (0.008)
Crisis_PreLehman x Less_Affected_Sub					-0.160 (0.108)	-0.029 (0.056)	-0.050 (0.034)	-0.036 (0.030)
Crisis_PostLehman x Less_Affected_Sub					0.206*** (0.048)	0.309 (0.200)	0.094** (0.046)	0.093** (0.042)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,455	6,455	6,455	6,455	6,455	6,455	6,455	6,455
Psuedo/Adj R-squared	0.389	0.126	0.239	0.0805	0.462	0.121	0.265	0.123
Mean interaction effect for								
<i>Crisis_PreLehman x Less_Affected_Sub</i>					-0.117 [-1.591]	-0.098 [-1.119]		
<i>Crisis_PostLehman x Less_Affected_Sub</i>					0.301 [2.039]	0.400 [2.711]		

Table 7. The Effect of International Corporate Diversification on Investment during the 2007-2009 Financial Crisis

This table reports estimates of panel regressions explaining the changes in the effect of international corporate diversification over the financial crisis period on the capital expenditure. The sample is firm-quarter observations from 2006Q3 to 2010Q1 of all publicly-traded U.S. firms from the *Compustat* database. *Crisis_PreLehman* is defined as calendar quarters between 2007Q3-2008Q3, *Crisis_PostLehman* as 2008Q4-2009Q1, and *PostCrisis* as 2009Q2-2010Q1. The table reports estimates of OLS regressions, where the dependent variable is capital expenditures to total assets. Firm characteristics, S&P credit rating fixed effects, and firm fixed effects are included as controls. In column (1), all firms are included in the regressions. From column (2), I construct a subsample of the firms with no rating using the S&P long-term rating available on *Compustat*. In column (3), high leverage firms are defined as the firms that are in the top tercile leverage ratio. In column (4), high LT debt maturity group is defined as the firms with more than 20% of their long-term debt as of their fiscal year end between 2007Q3 and 2007Q4 maturing in one year. In columns (5) and (7), high (low) domestic sales growth group are the firms with the above (below) median of domestic sales growth from 2007 to 2008. The subgroups are split based on each variable estimated at the second quarter of 2006, and they are formed at the end of June 2006 (at the end of 2008 for domestic sales growth). The coefficients of control variables are not reported to save space. All variables are defined in Appendix A2. The standard errors clustered at the firm level are reported in parenthesis. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Dependent Variable: Capex/Total Assets					
Subgroup:	Full Sample	Not Rated	High Leverage	High LT Debt Due in 2008	High Domestic Sales Growth	Low Domestic Sales Growth
GlobalDiv	-0.0010 (-1.14)	-0.0009 (-0.86)	-0.0009 (-0.86)	-0.0008 (-0.43)	-0.0015 (-1.32)	-0.0003 (-0.24)
Crisis_PreLehman	-0.0005 (-1.45)	-0.0008* (-1.88)	-0.0000 (-0.03)	-0.0028 (-1.35)	-0.0011* (-1.77)	-0.0002 (-0.37)
Crisis_PreLehman x GlobalDiv	0.0004 (0.86)	0.0007 (1.39)	0.0001 (0.15)	0.0041* (1.80)	0.0007 (1.02)	0.0003 (0.55)
Crisis_PostLehman	-0.0033*** (-6.60)	-0.0034*** (-5.80)	-0.0027*** (-3.82)	-0.0062** (-2.54)	-0.0045*** (-5.65)	-0.0023*** (-3.60)
Crisis_PostLehman x GlobalDiv	0.0023*** (3.96)	0.0026*** (3.72)	0.0021*** (2.73)	0.0082*** (2.98)	0.0037*** (4.01)	0.0013* (1.81)
PostCrisis	-0.0065*** (-11.77)	-0.0064*** (-9.97)	-0.0061*** (-8.05)	-0.0098*** (-3.34)	-0.0077*** (-8.95)	-0.0051*** (-7.15)
PostCrisis x GlobalDiv	0.0034*** (5.37)	0.0037*** (4.94)	0.0031*** (3.61)	0.0094*** (2.90)	0.0042*** (4.20)	0.0026*** (3.23)
Constant	0.0200*** (7.48)	0.0154*** (7.56)	0.0202*** (4.84)	0.0110 (1.36)	0.0193*** (4.64)	0.0192*** (4.54)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Rating & Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	34,501	22,553	18,153	1,855	15,746	16,368
Adj R-squared	0.658	0.626	0.681	0.662	0.689	0.609

Table 8. The Effect of International Corporate Diversification on Cost of Debt

This table presents estimates from OLS regressions of international corporate diversification on cost of debt. In Panel A, I use the sample of bank loans with non-missing All-in-drawn spread information. The sample is restricted to loans to multinationals in columns (2) and (3), and to loans to domestic firms in column (4). The dependent variable in OLS regressions is all-in-drawn spread (basis point) and all regressions include firm and loan characteristics as in baseline regressions in Table 4, rating fixed effects, industry fixed effects at the one-digit SIC industry level, loan purpose and loan type fixed effects. Credit spread and term spread, measured at one month before the loan becomes active, are additionally included to control for the macroeconomic conditions. columns (5) and (6) report the estimates from endogenous switching regressions that simultaneously estimate the lead lender selection and the determinants of loan spreads through maximum likelihood estimation. The selection equation measures the propensity of each loan facility to have at least one foreign lead lender. The selection probit regression (unreported) use the same specification as in column (2) reported in Table 4. In the outcome equations, I regress spreads on *GlobalDiv*, firm and loan characteristics, estimated separately for the loans exclusively from domestic lead lenders and for the loans from at least one foreign lead lender. In Panel B, I use the sample of public corporate bonds with non-missing bond yield spread information. The sample is restricted to bonds issued by multinationals in column (2), and to bonds issued by domestic firms in columns (3). The dependent variable is the yield spread, which is defined as the difference between the yield to maturity on a given bond at the time of issuance and the yield to maturity of risk free bond with the similar maturity. The yield to maturity of risk-free bond is measured as yield to maturity of constant maturity Treasury security published by the Federal Reserve. All regressions include firm and bond characteristics, rating fixed effects, industry fixed effects, credit spread and term spread. The estimates of switching regressions are reported in columns (4) and (5). The selection regression specification is the same from column (2) in Table 5. All variables are defined in Appendix A2. The standard errors with clustering at the firm level are in parenthesis. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Bank Loans

Dependent Variable: All-in-drawn Spread	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS		OLS	Endogeneous Switching Regressions	
	Full Sample	Loans issued by Multinationals		Loans issued by Domestic Firms	Loans exclusively from Domestic Lead Lender	Loans from Foreign Lead Lender
GlobalDiv	7.039** (3.405)				2.955 (4.031)	-18.274** (8.484)
Have foreign lead lender		-4.651 (4.622)		16.773*** (6.328)		
Have Foreign Lead from Countries where Sub exist			-3.200 (5.761)			
Log(Sales)	-0.465 (1.621)	-2.970 (1.996)	-2.976 (2.017)	1.665 (2.733)	-2.618 (2.057)	1.400 (3.236)
Leverage	100.745*** (8.510)	95.247*** (12.766)	94.791*** (12.779)	106.142*** (11.157)	88.819*** (10.086)	59.092*** (17.654)
Sales Growth	-0.189 (0.207)	-7.712 (5.071)	-7.869 (5.093)	-0.088 (0.318)	-0.415 (0.309)	-1.373 (7.292)
Cash Flows	-402.869*** (56.021)	-650.145*** (87.210)	-648.471*** (87.490)	-287.823*** (67.511)	-381.991*** (65.078)	-45.555 (92.846)
Cash	25.069 (16.727)	6.229 (20.226)	5.719 (20.224)	46.480* (26.109)	-10.092 (20.557)	82.936* (42.651)
Market to Book	-8.679*** (1.852)	-6.040*** (1.886)	-6.049*** (1.890)	-9.373*** (3.339)	-8.274*** (2.274)	-11.112*** (2.762)
STD(Cash Flows)	530.716*** (101.795)	679.578*** (185.124)	679.109*** (185.027)	452.865*** (122.171)	428.148*** (116.969)	305.512 (198.815)
Log(Facility Amount)	-15.197*** (1.488)	-11.232*** (2.071)	-11.245*** (2.067)	-18.978*** (2.006)	-15.736*** (1.838)	-11.492*** (3.512)
Log(Number of lenders)	-8.115*** (2.012)	-9.025*** (2.532)	-9.063*** (2.522)	-6.572** (3.072)	-11.355*** (2.375)	-10.116** (4.848)
Log(Maturity)	-8.139*** (2.996)	-6.505* (3.811)	-6.622* (3.809)	-9.171** (4.659)	-14.588*** (3.515)	-7.203 (6.947)
Secured	58.766*** (3.211)	60.065*** (4.518)	60.108*** (4.524)	57.919*** (5.163)	54.960*** (3.788)	61.991*** (9.751)
Missing_Secured	17.316*** (2.722)	14.785*** (3.186)	14.704*** (3.185)	23.221*** (5.245)	10.732*** (3.352)	18.748** (8.205)
Credit Spread	15.065 (14.175)	0.412 (19.411)	0.470 (19.463)	33.358* (19.269)	-2.130 (17.739)	51.743* (28.348)
Term Spread	7.486 (4.754)	13.446** (6.589)	13.406** (6.585)	-0.115 (6.382)	8.774 (5.862)	8.314 (10.054)
Constant	418.030*** (36.316)	379.867*** (51.233)	379.809*** (51.097)	439.550*** (45.224)	416.752*** (45.651)	397.573*** (87.525)
Rating & Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Loan Purpose & Loan Type FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11639	6455	6455	5184		11639
Adj R-squared	0.559	0.617	0.617	0.460		
LR test of indep. Eqns						
Rho					0.051	-1.863***
Chi-squared						679.13
p-value						0.000

B. Corporate Bonds

Dependent Variable: Yield Spread	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	Switching Regressions	
	Full Sample	Bonds issued by Multinational	Bonds issued by Domestic Firms	Domestic Bonds	International Bonds
GlobalDiv	8.259 (7.744)			1.018 (13.424)	7.721 (8.423)
International Bond		10.776 (7.803)	14.466 (12.974)		
Log(Sales)	-15.290*** (3.256)	-8.959** (3.558)	-25.581*** (5.974)	-9.921** (5.041)	-15.351*** (3.569)
Leverage	68.272*** (24.775)	76.244*** (26.687)	76.394* (39.753)	71.679*** (26.467)	73.797** (30.820)
Sales Growth	2.754 (8.438)	-32.183 (24.819)	8.496 (6.090)	-20.123 (13.658)	7.968 (7.846)
Cash Flows	-337.550*** (125.809)	-396.748** (165.253)	-121.019 (185.985)	-275.472 (255.850)	-230.111 (143.402)
Cash	71.497 (48.833)	65.492 (48.359)	200.233** (98.997)	80.090 (56.190)	129.540** (63.058)
Market to Book	-29.454*** (4.487)	-27.767*** (4.627)	-38.311*** (8.684)	-30.048*** (7.729)	-33.407*** (4.769)
STD(Cash Flows)	649.223** (293.347)	861.283* (460.874)	255.802 (341.578)	591.543* (305.848)	528.299 (354.480)
Log(Proceed Amount)	7.236** (3.311)	3.774 (3.396)	14.334* (7.761)	-18.450** (9.345)	16.551*** (4.344)
Log(Maturity)	13.116** (5.886)	18.995*** (5.785)	-2.510 (12.134)	-3.895 (9.260)	22.341*** (6.959)
Secured	154.432*** (22.189)	193.080*** (28.901)	100.107*** (31.085)	173.011*** (36.240)	137.554*** (25.658)
Private_Debt	19.308** (7.737)	18.639** (9.343)	37.509*** (11.462)	37.080 (32.406)	25.348** (10.744)
Callable	107.847*** (10.606)	103.572*** (12.181)	109.028*** (17.187)	93.907*** (20.218)	103.084*** (11.137)
Credit Spread	100.718*** (24.362)	76.620*** (28.298)	129.802*** (48.028)	106.961*** (28.032)	65.591 (46.545)
Term Spread	-1.660 (11.157)	18.831 (13.680)	-33.402* (19.792)	-28.944 (17.981)	14.092 (14.475)
Constant	143.708* (83.107)	95.399 (89.468)	469.360*** (109.614)	563.565*** (166.784)	41.409 (103.055)
Rating & Industry FE	Yes	Yes	Yes	Yes	Yes
Observations	3059	2005	1054	3059	
Adj R-squared	0.663	0.665	0.659		
LR test of indep. Eqns					
Rho				0.346**	-0.303
Chi-squared				195.77	
p-value				0.000	

Table 9. Sources of Improvement in Access to Foreign Lenders: Which Subsidiary Matters?

This table presents results from regressions estimating the effect of the existence of foreign subsidiaries in specific countries on access to foreign lenders in their bank loans. The table reports estimates of probit regressions, where foreign lender participation variable is regressed on an indicator variable of multinational firms as well as an indicator variable of the existence of subsidiaries in countries that have high or low private credit to GDP ratio in columns (1) and (2), that have strong or weak credit right in columns (3) and (4), that are geographically close or distant to the U.S. in columns (5) and (6), that use English as an official language in column (7) or other language in column (8), that have Christian as a main religion in column (9) or other religions in column (10), or that have high or low trade openness in columns (11) and (12), respectively. All regressions include firm and loan characteristics as control variables as in column (1) of Table 3, but the coefficients of control variables are not reported to save space. The marginal effects from probit models are reported. All variables are defined in the Appendix A2. The standard errors with clustering at the firm level are in parenthesis. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variable:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Have Foreign Lead											
GlobalDiv	0.0359** (0.016)	0.0517*** (0.015)	0.0330** (0.016)	0.0516*** (0.014)	0.0527*** (0.015)	0.0357** (0.018)	0.0416*** (0.016)	0.0454*** (0.018)	0.0387** (0.017)	0.0461*** (0.017)	0.0387** (0.018)	0.0569*** (0.014)
Sub High Private Credit	0.0427** (0.017)											
Sub Low Private Credit		0.0111 (0.017)										
Sub Strong Creditor Right			0.0439** (0.018)									
Sub Weak Creditor Right				0.0138 (0.017)								
Sub Close					0.0128 (0.017)							
Sub Distant						0.0393** (0.018)						
Sub Same Language							0.0347** (0.017)					
Sub Different Language								0.0227 (0.019)				
Sub Same Religion									0.0369** (0.017)			
Sub Different Religion										0.0232 (0.018)		
Sub Familiar											0.0321* (0.018)	
Sub Unfamiliar												0.000313 (0.017)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	13042	13042	13042	13042	13042	13042	13042	13042	13042	13042	13042	13042
Pseudo R-squared	0.147	0.145	0.147	0.145	0.145	0.146	0.146	0.145	0.146	0.145	0.146	0.145

Table 10. Heckman Selection Model: Sample Selections on Bank Loan and Corporate Bond Issuances

This table presents estimates of the international corporate diversification on foreign lender participation in bank loans in Panel A and international bond issuance in corporate bonds in Panel B using Heckman selection models. The bank loan and corporate bond issue data are collapsed into firm-quarter data and I merge this dataset to the universe of *Compustat* firms at quarterly basis to include all firms that do not issue loans or bonds. Then, as a selection equation, I estimate probit models estimating the probability of issuing bank loans or the probability of issuing bonds each quarter. The dependent variable is equal to one if a firm issues a loan (or a bond) in a given quarter. As an instrument variable predicting debt issues, I used the proportion of long-term debt maturing within a year in the previous quarter. The estimates of selection equations are reported in column (1). In the outcome equations, I regress the dependent variables on *GlobalDiv*, firm characteristics, rating fixed effects, industry fixed effects, and quarter fixed effects as in Panel A of Table 4. In Panel A, the dependent variables are indicators of having a foreign lender, having a foreign lead lender, foreign lender shares, foreign lead lender shares, and the average All-in-Drawn spread weighted by facility amount. The estimations in columns (2) and (3) use a probit model that adjusts for selection bias and the coefficients in columns (4) through (6) are estimated the OLS model using Heckman's sample selection correction techniques. In Panel B, the dependent variables are indicator of international bond issuance, the average bond spread weighted by the proceed amount. Panel B displays the results from a bivariate probit model in column (2) and from Heckman selection model in columns (3) and (4). The standard errors adjusted for heteroskedasticity and firm-level clustering are in parenthesis. ***, **, and * indicate *p*-values of 1%, 5%, and 10%, respectively.

Panel A. Bank Loans

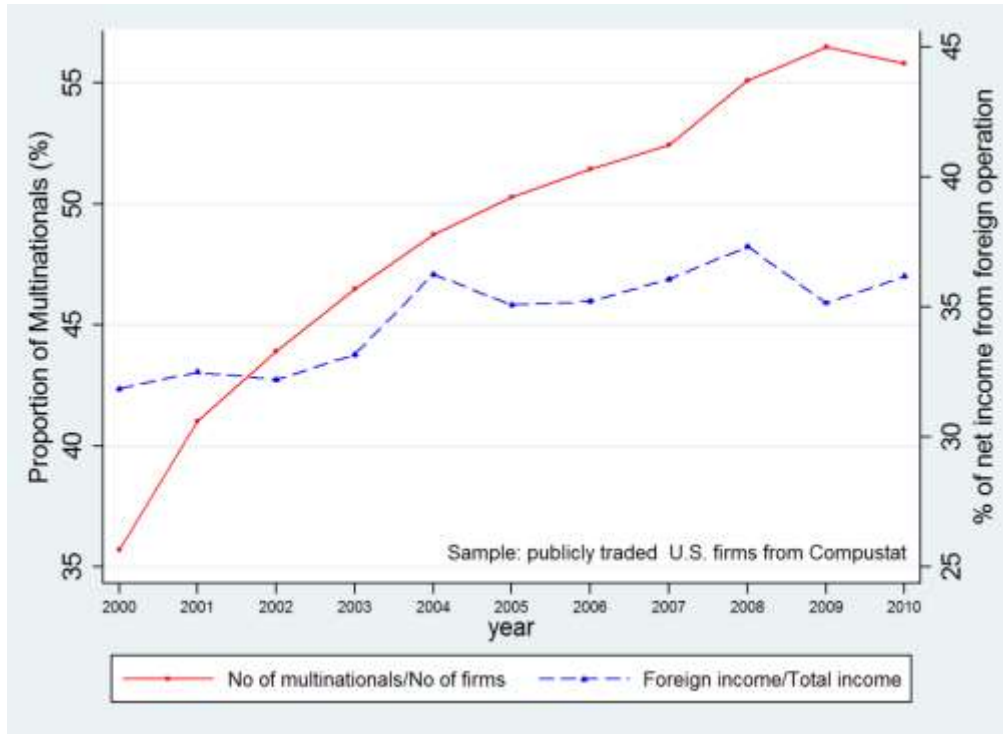
	(1)	(2)	(3)	(4)	(5)	(6)
	Selection	Outcome (Probit)		Outcome (OLS)		
	Issue Loan	Have Foreign Lender	Have Foreign Lead	Foreign Lender Share	Foreign Lead Lender Share	Average Spread
LT Debt Maturing 1 yr	0.185*** (0.030)					
GlobalDiv	0.035** (0.015)	0.117*** (0.021)	0.030** (0.013)	0.044*** (0.008)	0.013** (0.006)	-6.328* (3.824)
Log(Sales)	0.125*** (0.006)	0.144*** (0.023)	-0.017 (0.015)	0.036*** (0.008)	-0.008* (0.005)	-46.718*** (4.656)
Leverage	0.350*** (0.037)	0.306*** (0.072)	0.052 (0.047)	0.120*** (0.027)	0.030 (0.021)	55.059*** (16.132)
Sales Growth	0.070*** (0.019)	0.072*** (0.026)	0.022 (0.015)	0.023** (0.009)	0.005 (0.007)	-0.643 (5.149)
Cash Flows	-0.443* (0.240)	-0.143 (0.324)	-0.178 (0.199)	-0.367*** (0.105)	-0.039 (0.068)	-393.687*** (61.073)
Cash	-1.348*** (0.066)	-0.266 (0.264)	0.519*** (0.171)	0.034 (0.090)	0.178*** (0.061)	392.027*** (51.525)
Market to Book	0.011 (0.008)	0.019* (0.010)	-0.000 (0.007)	0.003 (0.004)	-0.002 (0.002)	-15.322*** (1.662)
STD(Cash Flows)	-0.076 (0.414)	-1.585*** (0.565)	-0.397 (0.371)	-0.160 (0.182)	-0.075 (0.112)	594.956*** (120.748)
Heckman's Lambda		0.051 (0.218)	-0.385*** (0.142)	-0.016 (0.072)	-0.092* (0.048)	-308.309*** (44.754)
Constant				0.148 (0.182)	0.215* (0.122)	836.269*** (101.445)
Rating & Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	86506	7576	7576	7576	7576	6993
Censored Observations	78930					
Pseudo/Adj R-squared		0.300	0.116	0.249	0.0320	0.539

B. Corporate Bonds

	(1)	(2)	(3)
	Selection	Outcome (Probit)	Outcome (OLS)
	Issue Bond	International Bond	Average Spread
LT Debt Maturing 1 yr	0.066 (0.047)		
GlobalDiv	-0.015 (0.020)	0.051*** (0.018)	17.981** (8.506)
Log(Sales)	0.195*** (0.007)	0.098 (0.076)	-145.783*** (38.832)
Leverage	0.906*** (0.048)	0.423 (0.360)	-495.108*** (182.721)
Sales Growth	0.172*** (0.024)	0.106 (0.067)	-113.236*** (34.796)
Cash Flows	-3.407*** (0.310)	-0.965 (1.282)	1,779.418** (700.170)
Cash	-0.218*** (0.080)	-0.037 (0.103)	205.286*** (64.578)
Market to Book	0.053*** (0.010)	0.000 (0.022)	-73.855*** (12.452)
STD(Cash Flows)	0.476 (0.546)	0.108 (0.457)	451.390* (259.630)
Constant	-4.116*** (0.391)		3,236.563*** (879.014)
Heckman's Lambda		0.264 (0.480)	-830.923*** (251.794)
Rating & Quarter FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	86506	4126	2569
Censored Observations	82380		
Pseudo/Adj R-squared		0.333	0.669

Figure 1. The Proportion of Multinationals and Foreign Income

This figure plots the proportion of multinationals and the foreign income of U.S. firms from 2000 to 2010. *Multinational* is defined as a firm whose foreign pre-tax income is not missing in at least one year over the previous three years and there is at least one subsidiary in countries outside the U.S. Otherwise, a firm is defined as *Domestic*. The percentage of foreign net income is defined as $\text{abs}(\text{foreign income}) / [\text{abs}(\text{domestic income}) + \text{abs}(\text{foreign income})]$.



Appendix A1. Outstanding Debt in Credit Agreement of Fuel Systems Solutions, Inc.

(in thousands)

	Dec-06	Mar-07	Jun-07	Sep-07	Dec-07	Mar-08	Jun-08	Sep-08	Dec-08	Mar-09 (avail)	Jun-09 (avail)	Sep-09 (avail)	Dec-09 (avail)				
(a) Revolving promissory note - LaSalle Business Credit, LLC	5,191	6,421	5,237	3,092	3,307	2,785	—	—	—	—	—	—	—				
(b) Revolving lines of credit - various Italian banks	3,912	2,171	—	—	—	—	—	—	—	—	—	—	—				
(c) Revolving lines of credit - Fortis Bank N.V.								980	1,413	—	1,321	—	1,460				
(d) Revolving lines of credit - various banks									8,227	17,576	5,012	22,215	3,177	25,188			
(e) Revolving line of credit - USA														—	13,000		
(f) Revolving lines of credit - Italy and Argentina														2,869	45,674		
(g) Revolving line of credit - Intesa SanPaolo S.p.A.									1,000	5,000	8,000	7,200	5,800	—	13,000		
(h) Term loan - Unicredit Banca Medio Credito S.p.A.	7,922	7,335	7,411	6,422	5,892	5,530	4,740	3,612	2,819	1,981	—	1,405	—	730	—		
(i) Term loan - Intesa San Paolo SpA			6,738	7,136	7,364	7,900	7,190	6,576	5,767	5,403	—	5,085	—	5,282	—	4,498	—
(j) Term loan - Banca IMI S.p.A. & Intesa SanPaolo S.p.A.										13,208	6,604	21,072	—	21,888	—	10,750	—
(k) Term loan - Italian Ministry of Industry	717	724	654	692	628	674	581	531	434	407	—	348	—	361	—	—	—
(l) Other loans	155	27	589	417	356	155	619	371	139	2,543	—	1,434	—	1,771	1,211	—	—
(m) Capital leases	1,038	956	1,030	940	859	768	647	567	430	520	—	447	—	418	—	1,290	—
Total	18,935	17,634	21,659	18,699	18,406	17,812	13,777	12,637	12,002	37,289	33,501	42,003	—	33,627	40,859	19,407	58,674
Less: current portion	12,418	11,803	9,095	7,601	8,526	8,158	5,784	6,025	7,075	20,255	—	20,521	—	11,310	—	7,240	—
Non-current portion	6,517	5,831	12,564	11,098	9,880	9,654	7,993	6,612	4,927	17,034	—	21,482	—	22,317	—	12,167	—

Appendix A2. Description of Variables

Variable	Description
Foreign Operation Involvement	
GlobalDiv	An indicator variable equal to one if a firm's foreign pretax income (<i>pifo</i>) or foreign income tax (<i>txfo</i>) is not missing in at least one year over the previous three years and it has at least one subsidiary outside the U.S. Subsidiaries in tax-haven countries are not counted. The list of tax-haven countries is obtained from "OECD 2004. The OECD's Project on Harmful Tax Practices: The 2004 Progress Report. Paris: Organization for Economic Cooperation and Development". (Source: <i>Compustat Annual</i> , <i>CapitalIQ</i>)
Foreign Income/Total Income	The proportion of absolute value of foreign pretax income (<i>pifo</i>) to the sum of absolute value of foreign pretax income (<i>pifo</i>) and absolute value of domestic pretax income (<i>pidom</i>) (Source: <i>Compustat Annual</i>)
Foreign Sales/Total Sales	The proportion of foreign sales to total sales. (Source: <i>Compustat Segment</i>)
HHI(Sales)	One minus Herfindahl index of sales concentration. $1 - \sum_{i=1}^N (Sales_i / TotalSales)^2$, where $Sales_i$ is sales of geographic segment i and N is the total number of geographic segments. (Source: <i>Compustat Segment</i>)
Number of foreign subsidiaries	The number of foreign subsidiaries, where a foreign subsidiary is defined as a subsidiary outside the U.S. excluding tax haven countries. (Source: <i>CapitalIQ</i>)
Number of countries where MNC have foreign subsidiaries	The number of countries where a firm has foreign subsidiaries. (Source: <i>CapitalIQ</i>)
Firm Characteristics (Source: <i>Compustat Quarterly and Annual</i>)	
Total Assets	Total assets (<i>atq</i>) in 2005 US dollars.
Market Cap	The market value of common equity (<i>cshoq*prccq</i>) in 2005 US dollars.
Log(Sales)	Natural log of annual sales (<i>saleq</i>) in 2005 US dollars
Leverage	The sum of long-term debt (<i>dlttq</i>) and debt in current liabilities (<i>dlcq</i>) divided by total assets (<i>atq</i>).
Sales Growth	Change in sales (<i>saleq</i>) divided by the 1-year lagged sales. To adjust seasonality, the change in sales is calculated by subtracting the sales at the same quarter of previous fiscal year.
Cash Flows	Operating income before depreciation (<i>oibdq</i>) divided by total assets (<i>atq</i>).
Cash	Cash and marketable securities (<i>cheq</i>) divided by total assets (<i>atq</i>).
Market to Book	The ratio of market value of assets to book value of assets (<i>atq</i>), where market value of assets is calculated as book value of assets (<i>atq</i>) minus book value of common equity (<i>ceqq</i>) plus the market value of common equity (<i>cshoq*prccq</i>)
STD(Cash Flows)	Standard deviation of cash flows to total assets in previous 20 quarters
Capex	Capital expenditures (<i>capxy</i>) divided by lagged total assets (<i>atq</i>). As <i>capxy</i> is a year-to-date basis variable, the quarterly value is calculated by subtracting the lagged variable from current one except the first quarter of a fiscal year.
R&D	R&D (<i>xrdq</i>) divided by total assets (<i>atq</i>). If R&D is reported annually, quarterly R&D is equal to the annual R&D divided by four. If it is missing, it is equal to zero.
Dividend Dummy	An indicator variable equal to one if the total cash dividends (<i>dvy</i>) minus preferred dividends (<i>dvpq</i>) is positive.

S&P Credit Rating	S&P long-term public bond rating (<i>splterm</i>) are coded into eight categories as AAA, AA, A, BBB, BB, B, CCC+ and below, and unrated.
Investment Grade	An indicator variable equal to one if S&P long-term public bond rating (<i>splterm</i>) is equal or greater than BBB-.
Speculative Grade	An indicator variable equal to one if S&P long-term public bond rating (<i>splterm</i>) is below BBB-.
Not rated	An indicator variable equal to one if S&P long-term public bond rating (<i>splterm</i>) is missing.

Loan Characteristics (Source: *DealScan*)

Have foreign lenders	An indicator variable equal to one if the loan syndicate includes at least one foreign lender. A foreign lender is defined as a lender incorporated outside of the U.S., excluding a foreign branch of the U.S. banks or a U.S. branch of foreign banks.
Foreign lender share	The proportion of loan amount originated by foreign lenders to the total facility amount.
Have foreign lead lenders	An indicator variable equal to one if any lead lender in the loan syndicate is a foreign lender. A foreign lender is defined as a lender incorporated outside of the U.S., excluding a foreign branch of the U.S. banks or a U.S. branch of foreign banks. A lender is defined as a lead lender if “Lead Arranger Credit” is equal to “Yes” in <i>DealScan</i> , if a lender is identified as “Agent”, “Administrative Agent”, “Arranger”, and “Lead Bank”, or if the loan is a sole-lender loan.
Foreign lead lender share	The proportion of loan amount originated by foreign lead lenders to the total facility amount.
Log(Facility Amount)	Natural log of the loan facility size
Log(Number of lenders)	Natural log of the number of lenders in the loan facility syndicate.
Log(Maturity)	Natural log of the maturity of the loan facility in months.
Secured	An indicator variable equal to one if the loan facility is secured, and zero otherwise. If the variable is missing, it is set to zero.
Missing_Secured	An indicator variable equal to one if the information on whether the loan is secured or not is not available from <i>DealScan</i> .
All-in-drawn spread	Spread paid over the base rate on the drawn amount plus the annual fees and the upfront fee, if there is any, in basis points.
Revolver	An indicator variable equal to one if the loan facility is a revolving line of credit, and zero otherwise.
Term loan	An indicator variable equal to one if the loan facility is a term loan, and zero otherwise.

Bond Characteristics (Source: *SDC*)

International bond	An indicator variable equal to one if a bond is placed in an exchange outside the U.S., or if it is a Euro bond or a global bond. International bonds include the following types of bonds: Global Notes, Global Bonds, Global MTNs, Global FRNs, Global Debts, Global MTN Program, Euro CP Program, and Euro MTN Program, as defined in <i>SDC</i> .
Log(Proceed Amount)	Natural log of proceed amount in US dollars.
Log(Maturity)	Natural log of bond maturity in months.
Secured	An indicator variable equal to one if the bond is secured.
Private Placement	An indicator variable equal to one if the bond is privately placed.
Callable	An indicator variable equal to one if the bond is callable.
Bond yield spread	The difference between the yield-to-maturity on a corporate bond and the yield-to-maturity on Treasury bond with comparable maturity at the time of issue.

Appendix A3. Propensity Score Matching Estimation Results

The table presents the results of a probit regression with the indicator of multinational as the dependent variable using the bank loan sample in columns (1) and (2) and using the corporate bond sample in columns (3) and (4). In *Pre-Match* model, the entire sample of firms is used and in *Post-Match* model, only the banks loans or corporate bonds that can be matched using the propensity score from the pre-match model are used. The standard errors with firm-level clustering are in parenthesis. ***, **, and * indicate *p*-values of 1%, 5%, and 10%, respectively.

VARIABLES	(1)	(2)	(3)	(4)
	Bank Loans		Corporate Bonds	
	Pre-Match	Post-Match	Pre-Match	Post-Match
Log(Sales)	0.1113*** (0.013)	0.0243 (0.017)	-0.003 (0.020)	0.037 (0.035)
Leverage	-0.1557*** (0.055)	0.0329 (0.072)	-0.337*** (0.110)	0.099 (0.197)
Sales Growth	-0.0751*** (0.024)	-0.0084 (0.033)	-0.146*** (0.041)	-0.037 (0.093)
Cash Flows	-0.4614 (0.281)	-0.4773 (0.434)	-1.293** (0.504)	-0.778 (0.864)
Cash	0.4133*** (0.103)	-0.1810 (0.126)	0.987*** (0.286)	0.273 (0.449)
Market to Book	0.0246** (0.010)	0.0185 (0.012)	0.034 (0.024)	0.021 (0.047)
STD(Cash Flows)	-2.4660*** (0.652)	-0.6071 (0.925)	-4.588*** (1.330)	-1.005 (2.194)
Log(Facility/Proceed Amount)	0.0084 (0.009)	-0.0102 (0.013)	0.013 (0.018)	-0.055* (0.029)
Log(Maturity)	0.0199 (0.012)	-0.0056 (0.016)	-0.057* (0.031)	-0.128*** (0.045)
Secured	-0.0302** (0.013)	-0.0047 (0.019)	-0.048 (0.053)	0.004 (0.089)
Missing_Secured	0.0078 (0.024)	-0.0020 (0.034)		
Log(Number of Lenders)	0.0249 (0.022)	-0.0265 (0.032)		
Private_Debt			-0.057 (0.036)	0.012 (0.055)
Callable			0.059* (0.032)	-0.067 (0.056)
Loan purpose & Loan type FE	Yes	Yes	No	No
Rating & Industry FE	Yes	Yes	Yes	Yes
Domestic firms	5,184	5,736	1,197	1,473
Domestic firms (Unique obs)	5,184	2,386	1,197	519
Multinational firms	6,455	5,736	2,209	1,473
Observations	11,639	11,472	3,406	2,946
Psuedo R-squared	0.212	0.00783	0.170	0.0345

Appendix A4. The Effect of the 2007-2009 Financial Crisis on Foreign Lender Participation: by Credit Rating

The table presents estimates of regressions from Table 5 for subsamples based on the existence of S&P long-term public bond rating. columns (1) to (4) examine a subsample of firms that have S&P long-term public bond rating when receiving bank loans, while columns (5) to (8) examine a subsample of firms that do not have rating. The regression specifications follow columns (1) to (4) in Panel A of Table 5. The coefficients on control variables are not reported to save space. The standard errors with firm-level clustering are in parenthesis. ***, **, and * indicate p -values of 1%, 5%, and 10%, respectively.

Dependent Variable:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Rated				Unrated			
	Have foreign lender	Have foreign lead lender	Foreign lender shares	Foreign lead lender shares	Have foreign lender	Have foreign lead lender	Foreign lender shares	Foreign lead lender shares
GlobalDiv	0.087*** (0.021)	0.063*** (0.022)	0.053*** (0.011)	0.012* (0.006)	0.101*** (0.023)	0.010 (0.008)	0.028*** (0.008)	0.009 (0.006)
Crisis_PreLehman	-0.051 (0.113)	0.027 (0.094)	-0.121*** (0.043)	-0.040* (0.023)	-0.091 (0.064)	0.993*** (0.003)	-0.008 (0.029)	0.032 (0.021)
Crisis_PreLehman x GlobalDiv	-0.011 (0.055)	0.034 (0.061)	-0.019 (0.025)	0.015 (0.014)	0.052 (0.061)	0.013 (0.023)	0.027 (0.020)	0.033** (0.016)
Crisis_PostLehman	0.088 (0.065)	0.146 (0.172)	0.050 (0.064)	0.021 (0.044)	-0.098 (0.092)	0.189 (0.321)	-0.022 (0.027)	0.027* (0.016)
Crisis_PostLehman x GlobalDiv	-0.137 (0.140)	0.036 (0.121)	-0.088 (0.063)	0.067 (0.054)	0.361 (0.225)	0.971*** (0.004)	0.059 (0.048)	0.081* (0.042)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,337	6,337	6,337	6,337	5,302	5,302	5,302	5,302
Pseudo/Adj R-squared	0.363	0.0958	0.190	0.147	0.410	0.187	0.186	0.0819
Mean interaction effect for								
<i>Crisis_PreLehman x GlobalDiv</i>	-0.002 [0.053]	0.036 [0.058]			0.013 [0.042]	-0.002 [0.023]		
<i>Crisis_PostLehman x GlobalDiv</i>	-0.093 [-0.077]	0.073 [0.517]			0.163 [0.118]	0.123 [1.022]		

Appendix A5. Treatment Effect Model Results

This table presents the IV estimation results of the effect of international corporate diversification on foreign lender participation and all-in-drawn spread in bank loans. In column (1), I report probit estimates from the first stage, where the dependent variable is *GlobalDiv*. I use the median of R&D expense to sales in the industry (2-digit SIC code), the percentage of multinational firms in the industry, and the minority interests as instrument variables. columns (2) and (3) present estimation results of IV probit models to analyze the effect of being multinational on having a foreign lender and a foreign lead lender. columns (4) to (6) present estimation results of linear IV models to analyze the effect of being multinational on the foreign lender share, foreign lead lender share, and all-in-drawn spread. Appendix A2 provides the definitions of the instrument variables. The first-stage F-statistics and p-value for overidentification tests are also reported. The standard errors with firm-level clustering are in parenthesis. ***, **, and * indicate *p*-values of 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	First Stage	IV probit	IV probit	Linear IV	Linear IV	Linear IV
Dependent Variable:	GlobalDiv	Have foreign lender	Have foreign lead lender	Foreign lender shares	Foreign lead lender shares	All-in-drawn Spread
GlobalDiv		0.686*** (0.178)	0.439** (0.204)	0.091*** (0.022)	0.019 (0.013)	-13.584 (9.260)
Industry R&D	5.110*** (1.250)					
Industry Percent MNC	1.073*** (0.074)					
Minority Interest	0.068*** (0.021)					
Log(Sales)	0.079*** (0.009)	0.051* (0.030)	0.051 (0.035)	0.015*** (0.004)	0.005* (0.003)	1.180 (1.838)
Leverage	-0.031 (0.043)	0.476*** (0.117)	0.446*** (0.130)	0.063*** (0.015)	0.036*** (0.011)	99.059*** (8.909)
Sales Growth	-0.007** (0.003)	0.012* (0.007)	0.009 (0.007)	0.001 (0.001)	0.000 (0.001)	-0.288 (0.208)
Cash Flows	-0.257 (0.212)	-0.358 (0.801)	-0.981 (0.843)	-0.175** (0.077)	-0.065 (0.058)	-418.004*** (57.582)
Cash	0.151* (0.083)	0.253 (0.275)	0.372 (0.285)	0.019 (0.031)	0.021 (0.024)	30.505* (16.752)
Market to Book	0.020*** (0.007)	0.021 (0.019)	0.016 (0.025)	0.002 (0.002)	0.001 (0.002)	-8.323*** (1.820)
STD(Cash Flows)	-1.276*** (0.419)	0.706 (1.554)	2.041 (1.798)	0.274* (0.159)	0.133 (0.112)	515.347*** (105.339)
Log(Facility Amount)	0.007 (0.007)	0.111*** (0.022)	0.015 (0.026)	0.007** (0.003)	0.006** (0.003)	-15.029*** (1.524)
Log(Number of lenders)	0.016* (0.009)	1.018*** (0.040)	0.109*** (0.034)	0.034*** (0.005)	-0.032*** (0.004)	-8.157*** (2.041)
Log(Maturity)	-0.024** (0.010)	0.091** (0.039)	0.206*** (0.047)	0.013*** (0.005)	0.011*** (0.004)	-8.972*** (3.077)
Secured	-0.014 (0.018)	-0.005 (0.066)	0.011 (0.073)	0.008 (0.009)	-0.015** (0.006)	57.535*** (3.259)
Missing_Secured	0.009 (0.016)	0.242*** (0.060)	0.132** (0.067)	0.055*** (0.008)	0.007 (0.005)	17.495*** (2.772)
Constant	-0.413** (0.165)	-3.782*** (0.593)	-3.142*** (0.538)	0.013 (0.069)	-0.075 (0.048)	465.436*** (33.439)
Rating & Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Deal purpose & Loan type FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11291	11291	11291	11291	11291	11291
First-stage F-stat	28.64					
Overidentification Hansen (p-value)				0.0499	0.1346	0.2001