Does International Corporate Diversification Improve Access to Capital?

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Abstract

If the location of a firm's operations is relevant for financing, multinationals would have easier access to different sources of funding than 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' ability to use multiple sources of capital 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 in contrast to domestic firms. This financial flexibility during the crisis period is driven by multinationals that were able to borrow from lead banks in countries where they have foreign subsidiaries. Partly as a result, multinationals reduced their investment less than did domestic firms. In addition, better access to capital markets is associated with lower funding costs when multinationals issue bank loans from foreign lead lenders.

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1. Introduction

The international business activities of U.S. corporations have grown dramatically over the last ten years. In 2000, 35% of U.S. public firms in the *Compustat* universe had foreign operations. By 2010, the percentage had increased to 55%. On average, for the firms that have foreign operations, these activities represent 35% of their net income. Managers often argue that in addition to gaining operating synergies and seeking out new markets for products, expanding operations overseas can improve access to capital and lower the cost of capital.[1]

In this paper, using a sample of U.S. multinational and domestic firms, I evaluate the way in which international activities affect the debt financing policies of firms. 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 foreign sources of funding on better terms than domestic firms. As a result of their greater funding flexibility, multinational firms should be able to cope better with capital market disruptions in the U.S. and should have lower funding costs than if they used only the funding sources of domestic firms. I find that both predictions are borne out by the data.

I first examine the hypothesis that because they are internationally diversified,[2] multinationals have easier access to financing from foreign countries than purely domestic firms, potentially leading to more diversification in multinationals' funding sources. To test this hypothesis, I compare capital raising activities of multinationals and domestic firms in the bank loan and corporate bond markets. I find that multinationals rely more on global funding sources than domestic firms. Using a sample of bank loans issued by 1,435 multinational and 1,556 domestic U.S. public corporations from 2000 to 2010 taken from the *DealScan* database, I estimate whether a loan is originated by domestic or foreign lenders. The results

[1] International business textbooks often justify 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).

[2] Throughout the paper, I use the terms "global diversification," "international corporate diversification," and "being multinational" interchangeably.

show that the probability that a multinational firm has at least one foreign lender in its bank loan syndicate is 12.8 percentage points higher than for a domestic firm, which is a 31.7% increase relative to domestic firms. In addition, the percentage of the loan amount retained by foreign lenders in the bank loan syndicates to multinationals is 3.9 percentage points higher than that of domestic firms. This effect is substantial if compared to the domestic firms' average foreign lender share of 12.1%.

Multinationals also are more likely than domestic firms to issue corporate bonds abroad. Using a sample of public and privately-placed corporate bonds issued by 814 multinationals and 625 domestic firms between 2000 and 2010 from the *SDC* database, I estimate whether a firm's multinational status influences its decision of where to issue bonds. The estimates imply that multinationals are 5.4 percentage points more likely than domestic firms to issue a corporate bond in international capital markets, a 38.6% increase in the likelihood evaluated for domestic firms.

If multinational firms are able to access foreign funding in ways that purely domestic firms cannot, then multinationals should have greater financial flexibility. 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 many foreign markets, I compare the differences in financing and investment policies between U.S. multinationals and domestic firms before and after the crisis.

I find evidence that multinationals coped better with financial dislocations during the financial crisis. The results show 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. In particular, the increased likelihood of borrowing from foreign lead lenders is mostly driven by the cases where lead lenders are from the countries where multinationals have foreign subsidiaries. Further, the propensity to issue an international bond sharply increased by 14.4 percentage points for multinationals in the two quarters following September 2008 relative to the non-crisis period, whereas the propensity to issue an international bond did not change significantly for domestic firms during these two quarters. The

difference in the changes in probability of international bond issuance between multinationals and domestic firms at the peak of the crisis is economically large.

In addition, the multinational status is positively associated with firms' investment policies during the crisis period. I find that the ratio of quarterly capital expenditures to total assets of domestic firms is 0.33 percentage points lower for the two quarters after Lehman collapsed. In contrast, multinationals did not experience a significant change in capital expenditures during that period. The evidence of different responses in financing and investment to the capital supply shock is consistent with the prediction that multinationals are better able to shift to alternative funding sources outside the U.S. when firms 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 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 some 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 22 basis-point lower spread than domestic firms, representing a 9.4% 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.

A potential alternative interpretation for my results is that multinational firms have better access to capital, in general, because they have characteristics that make them less risky. Multinationals are different from domestic firms in multiple ways. On average, multinationals are larger in terms of sales and assets and have lower volatility of cash flows than domestic firms, which reduces multinationals' risk and cost of funding. These underlying differences, not the location of their assets, could explain differences in capital market access. Further, multinationals could have performed better than domestic firms during the crisis because not all countries were affected by the crisis equally, so that revenue from less affected countries would have reduced the impact of the crisis.

To address these alternative explanations, I employ two strategies. First, I use the geographic heterogeneity in multinationals' operations to identify the mechanism through which multinationals can achieve better access to capital. If the results are merely driven by multinationals being less risky firms, I do not expect that the location of lenders should matter. I find that retaining assets in a specific country leads to access to lenders from the same region, particularly from the country where foreign subsidiaries are located. Second, I employ propensity score matching methods using observable characteristics to match loans and bonds issued by multinationals to comparable loans and bonds issued in the same quarter by domestic firms with similar characteristics. The results still hold in the matching estimation.

My study contributes to the large literature that studies how the organizational structure of firms affects firm value. While theoretical models have been developed to explain the financial benefits 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 valuation (e.g., Denis, Denis, and Yost (2002), Bodnar, Tang, and Weintrop (2003)) and investigate the capital structure and the internal capital markets of multinationals (e.g., Desai, Foley, and Hines (2004), Desai, Foley, and Forbes (2008)). In addition to this literature, I show that international corporate diversification brings about an additional financial benefit – diversification of sources of capital. In particular, by closely looking at capital raising activities of multinationals and domestic firms, I provide direct evidence of a specific channel through which international corporate diversification creates value in alleviating financial constraints. This evidence also is 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)).

The literature in international finance has focused more on the accessibility of international capital markets and cost of capital, in general, than on the effect of geographical business structure on

international debt financing.[3] For example, recent papers have explored how firms use international and domestic bond markets differently. Gozzi, Levine, Peria, and Schmukler (2012) show that firms use international bond markets to achieve different bond maturity, amount, and currency characteristics that are available in domestic markets. Massa and Zaldokas (2011) document that if a firm's previous bond issues are heavily held by international investors, the firm is more likely to issue international bonds in the future. The relevant question following these studies is which firms can take advantage of exploiting domestic and international debt markets. My paper provides some evidence to answer this question; having foreign assets allows firms to exploit broader sets of global investors, mitigating financial frictions in international capital markets.

The evidence of 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 works (e.g., Faulkender and Petersen (2006)), the available supply of capital is an important determinant of the amount that firms can borrow, and consequently, this limited access to capital can adversely affect the investment policies of firms without sufficient financial slack. In particular, the extent to which supply of capital affects firms' financial and investment policies varies, depending on the financial constraints of borrowers and the tightness of credit conditions (see Leary (2009), Lemmon and Roberts (2010), and Erel et al. (2011)). The implication of my paper is that the geographical business structure affects a firm's access to capital 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. In Section 2, I develop the main hypotheses. Section 3 describes the sample and presents the summary statistics. In Section 4, I investigate the difference between multinationals and domestic firms in accessing bank loan and corporate bond markets,

[3] 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.

and test the effect of diversification on financial flexibility and the cost of debt. Section 5 performs some robustness checks. Section 6 concludes the paper.

2. International Corporate Diversification and Access to Capital

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, the empirical evidence in international finance studies indicates that financial markets are still segmented across countries in that countries remain important in explaining investors' portfolio allocation and returns on financial assets.[4] The relevance of countries in financial markets implies that, from the perspective of firms needing external financing, obtaining funding from international capital markets could be limited and costly. To the extent that foreign operations reduce the impact of friction in international debt markets, firms' geographical business structures can affect their financing policies. In this section, I explain possible reasons why internationally diversified firms could have better access to foreign capital markets than purely domestic firms. I also discuss empirical implications of having multiple funding sources abroad on financial policies.

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

2.1.1. Geographical proximity and information asymmetry

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

[4] The limited financial globalization has been extensively studied, especially for international equity markets. See Karolyi and Stulz (2003) and Lewis (2011) for reviews. More recent studies still find consistent evidence (e.g., Bekaert, Harvey, Lundblad, and Siegel (2011)).

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)).

2.1.2. Existence of Tangible Assets in Foreign Countries and Enforcement

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.

2.1.3. Legal and Cultural Factors

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

Cultural factors can pose an impediment on lending across countries. Giannetti and Yafeh (2009) 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.

2.2. International Corporate Diversification and Access to Foreign Capital

Given the improved access to international capital markets resulting from various channels explained above, I would expect multinational firms' financial management policies to differ from those of domestic firms.

H1. (Access to bank loans) Bank loans to multinationals are more likely to have a foreign lender in the loan syndicate than loans to domestic firms.
H2. (Access to corporate bonds) Corporate bonds issued by multinationals are more likely to be placed in markets outside the U.S. than bonds issued by domestic firms.

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, multinational firms will, holding other factors constant, have lower cash flow volatility than domestic firms.[5] Moreover, cash flows generated from different foreign markets are an internal source of capital that can be invested in domestic markets, or vice versa.[6] 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

[5] 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).
[6] 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)).

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.

H3. (Location of foreign operations) Multinationals are more likely to have foreign lenders, particularly from countries in which they have foreign subsidiaries in their bank loan syndicates than domestic firms, after controlling for the volatility of cash flows.

The following case provides an example of how the financing sources of multinationals can differ from those of domestic firms. Fuel System Solutions, Inc., which manufactures fuel components, is a U.S. multinational company in my sample with total assets of $200 million as of December 2006. The firm's operations are internationally diversified through multiple foreign subsidiaries, mainly in Italy, the Netherlands, Brazil, and Argentina. As of 2006, while sales from Europe comprise 54% of its total sales, sales from the U.S comprise 23% of total sales.

The loan financing sources of Fuel System Solutions, Inc. are diversified across countries as well, as documented in Appendix A1. The firm receives bank loans from multiple lenders in the U.S., Brazil, and Italy through its foreign subsidiaries. For example, in December 2004 its Italian subsidiary, MTM, entered in a five-year unsecured term loan of $13.6 million from an Italian bank, Unicredit Banca medio Credito S.pA., and proceeds were contributed to finance its U.S. operations.

2.3. Financial Flexibility

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 in which 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.[7] 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.[8] If lenders across countries were affected to different degrees, 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.

H3. (Financial flexibility) The dependence on foreign funding relative to domestic funding in bank loans and corporate bond issues increased for multinational corporations in the 2007-2009 financial crisis from the pre-crisis period. However, this is not the case for domestic firms.
H4. (Financial flexibility) Because of their greater financing flexibility, multinationals cut their investment less than domestic firms during the financial crisis.

In the case of Fuel Systems Solutions mentioned in the previous section, maintaining foreign funding sources was beneficial especially during the recent 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. On the other hand, in June 2007, the firm expanded its business by purchasing the Italian firm Zavoli, S.r.L, and acquisition costs were funded through a 5.5 year unsecured term loan of $6.7 million from Italian

[7] 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 (2010) 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).

[8] 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 (2012)).

bank, Intesa San Paolo, S.p.A. While the firm experienced credit constraints, especially in the U.S. lending markets during the financial crisis, it was still able to obtain funding from local lenders in Europe and Latin America, which were relatively less affected by the financial crisis.

2.4. Cost of Debt

The fact that multinationals have multiple capital sources across countries implies that they can take advantage of different market conditions in various capital markets. 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.[9] 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.

H5. (Cost of debt) Spreads of loans and corporate bonds issued by multinationals are lower than those issued by domestic firms.

[9] They also explain that Eurobond borrowing is cheaper because of its tax treatment.

3. Data and Summary Statistics

3.1. 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).[10] 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 5,394 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. 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.[11] 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. In particular, 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. This

[10] 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.

[11] 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.

database contains subsidiary level data, such as names, locations, businesses, and stakes corresponding to the direct and indirect subsidiaries.[12] 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 included and subsidiaries in tax-haven countries are not counted.[13] 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). About 64% of multinationals have foreign operations in developed countries, defined as countries with the ratio of private credit to GDP ratio above the 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 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

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

[13] 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." I use the most recent version updated in 2006.

than domestic firms. Multinationals are less leveraged than domestic firms on average, but they have a higher median leverage.[14] Multinationals are less risky firms than domestic firms, as they have lower cash flow 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.[15]

3.2. Bank Loan Issuance 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).[16] 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*.[17] 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 has the advantage of allowing me to control for the demand side of banks loans from foreign lenders in terms of denominating currencies.[18] Finally, the bank loans dataset is merged with the quarterly accounting data from *Compustat* for the quarter prior to the issue dates. I use the loan

[14] 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 the difference of absolute level of leverage between multinationals and domestic firms, but the funding sources and changes in use of foreign funding over the crisis period.

[15] 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 4 and the main results are largely similar.

[16] 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.

[17] 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's Italian facility loans described in Section 2 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.

[18] For more discussion regarding foreign currency debt, see Section 5.3.

facility as the unit of analysis, as the borrower-lender relationship is facility-specific.[19] The final *DealScan* data consist of 13,216 loan facilities, out of which 7,284 loans are made to 1,435 multinationals and 5,932 loans are made to 1,556 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. Since lead arrangers usually make loan contract decisions and monitor, I also consider lead lender participation separately.[20] *DealScan* provides information on the nationality of each lender and the percentage of loan amount from each lender.[21] Based on this information, a lender incorporated outside of the U.S. is defined as a foreign lender, and I do not classify a foreign branch of U.S. banks or a U.S. branch of foreign banks as a foreign lender. 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. For the analysis using spread as a dependent variable, I restrict the sample to the loans that have floating interest rates and where the spread variable is not missing. As a proxy for loan pricing, I use the "All-in-Spread-Drawn" from *DealScan*, calculated as the margin in basis points paid over the base rate on the drawn amount plus the annual fees.[22]

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 40.4% of the loans issued by domestic firms have more than one foreign lender, 64.4% of the loans issued by multinationals do. In addition, foreign lenders retain 22.4% of the

[19] Each loan reported in *DealScan* contains one or multiple facilities. The final sample includes 13,216 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. Specifically, a 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.

[20] 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.

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

[22] I use LIBOR as a base rate when it is available. Since my sample is restricted to the U.S. dollar-denominated loans, I could find the information on spread over LIBOR for 93% of the loans in my sample. For the rest of the cases, I use other base rates such as prime rates (5.2%). Using a sample of loans that only use LIBOR as a base rate does not change the results.

total facility amount for loans to multinational borrowers, in contrast to 12.1% 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 17.7% for multinationals, as opposed to 10.9% 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 shorter maturities. In addition, loans to multinationals 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 4.

3.3. Corporate Bond Issuance 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 all their subsidiaries except those issued by the financial subsidiaries.[23] 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 and yield spreads 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 5,384 bond issuances in total, 3,425 of which are issued by 814 multinationals and 1,959 of which by 625 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.[24] To estimate the cost of bond, I use the

[23] 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).
[24] 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.

bond yield spread, which is estimated as the difference between the yield-to-maturity on a corporate bond and the yield-to-maturity on a Treasury bond with comparable maturity at the time of issue.

Table 3 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 13.9% of bonds issued by domestic firms are international bonds, 24.1% 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 4.

Taken together, the univariate tests in Table 2 and Table 3 provide some evidence that multinationals use more foreign funding sources than domestic firms when they issue bank loans and corporate bonds. In the following section, I test the effect of international corporate diversification on debt financing from foreign capital markets in regression analysis.

4. Results

4.1. International Corporate Diversification and Access to Capital

4.1.1. Bank Loan Markets

Using *DealScan* data, I test the effect of firms' multinational status on the probability of foreign lenders' participation and the fraction of loan amount from foreign lenders. I estimate a probit model, where the dependent variable is an indicator variable equal to one, if the syndicate of loan facility *l* made to firm *i* includes at least one foreign lender. The specification of the probit model is as follows:

$$Pr(Y_{ilt} = 1) = \alpha + \beta\, GlobalDiv_i + \delta_F Firm\ Controls_i + \delta_L Loan\ Controls_l + Quarter_t + \varepsilon_{ilt}, \qquad (1)$$

where *GlobalDiv* is an indicator variable that takes the value of one if firm *i* is a multinational and zero otherwise, and control variables include firm-specific characteristics and loan facility features. The firm characteristics that I include are *Log(Sales), Leverage, Sales Growth, Cash Flows, Cash, Market to book,*

Not Rated, and *STD(Cash Flows)* as well as S&P credit rating fixed effects, and industry fixed effects at the one-digit SIC industry level.[25] The loan characteristics that I include are *Log(Facility Amount), Log(Number of Lenders), Log(Maturity), Secured,* and *Missing_Secured,* and loan purpose and loan facility type fixed effects. Since lender participations are potentially determined simultaneously with the loan features, I run the regressions with and without the loan characteristics. Due to the limited availability of loan characteristic information, including loan characteristics slightly reduces the number of observations in the sample. All regressions include indicator variables of the last three quarters in each year to control for seasonality and quarter fixed effects. Following Petersen (2009), I adjust standard errors by two-way clustering at the firm level and quarter 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 as follows:

$$Y_{ilt} = \alpha + \beta\ GlobalDiv_i + \delta_F Firm\ Controls_i + \delta_L Loan\ Controls_l + Quarter_t + \varepsilon_{ilt}, \quad (2)$$

where the dependent variables are foreign lender shares and foreign lead lender shares.

Table 4, Panel A, reports the marginal effects from the probit regressions in Columns (1) to (4) and the coefficients from OLS regressions in Columns (5) to (8). 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 from by 12.8 percentage points, which is about a 32% increase, given that 40.4% of loans to domestic firms have at least one foreign lender in the loan facility syndicate. When I focus on the lead lenders in Columns (3) 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 37% of increase compared to the proportion of loans to domestic firms from foreign lead lenders. The results in

[25] 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, and CCC+ and below.

Columns (5) to (8) show a significantly positive relation between the foreign lender shares and being a multinational firm. The estimates imply that being multinational is associated with four percentage points increase in foreign lender share, which accounts for about a 33% increase, given that the mean of foreign lender share of loans to domestic firms is 12.1%.[26]

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.[27] To construct a matched sample, I implement the propensity score matching proposed by Dehejia and Wahba (2002).

First, as I compare loans to multinationals with those of domestic firms at the firm level, I aggregate the bank loan issuance data to firm-quarter observations. When a firm issues multiple loan facilities in the same quarter, I estimate whether at least one foreign lender is involved in any of those loan facilities issued in the same quarter. For continuous variables such as foreign lender shares, I take the average of variables weighted by facility loan amounts. Second, using the bank loan sample aggregated to firm-quarter data, I calculate each loan's propensity score from a probit regression determining whether a firm is multinational. The probit regression includes *Log(Sales), Leverage, Sales Growth, Cash Flows, Cash, Market to Book, STD(Cash Flows),* S&P credit rating fixed effects, industry fixed effects at the one-digit SIC industry level, indicator variables of the last three quarters and quarter fixed effects as control variables. 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) within the same S&P credit rating categories

[26] In untabulated results, I split the sample into investment grade, speculative grade, and unrated borrowers, based on firms' S&P public bond ratings to see whether the effect of being multinational is different for borrowers of different credit quality. The effect of being multinational on the likelihood of receiving loans from foreign lenders is both statistically robust and economically meaningful for all types of borrowers. The estimates from subsamples by credit ratings imply that the results are not driven by the specific rating category.

[27] Compared to using the full sample, however, using a matched sample has some disadvantages. Since more than half of the sample firms are multinationals, a large number of firms are dropped from a matching process, substantially reducing the sample size. In addition, it is difficult to control for loan and bond attributes that possibly affect a firm's access to foreign funding, because the data should be aggregated to firm-quarter observations and observations are matched at the firm level. For those reasons, I focus on the baseline regressions presented above using the full sample, and conduct a propensity score matching estimation as an alternative.

(investment, speculated, or unrated) in the same quarter without replacement.[28] 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 4. There are 1,829 paired observations. The mean comparisons of matching variables that are used in estimating the propensity scores imply that the matching procedure successfully finds comparable domestic firms that are similar to the multinational firms.[29] However, there is a significant difference in foreign lender participation variables for the loans to multinationals compared to their propensity score matched-domestic firms. On average, 53.8% of multinationals have bank loans from foreign lenders, and 12.8% of multinationals have foreign lenders as a lead bank. In contrast, 44.6% and 9.3% 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 3.9% and 1.0% higher, respectively, than those of domestic firms. The magnitude of the effect of the multinational status on foreign lender participation from the propensity score estimation is largely similar to that from the baseline regressions in Panel A of Table 4.

The overall evidence documented in Table 4 supports the view that multinationals have easier access to lenders from outside the U.S. than domestic firms. Conditional on bank loan issuance decisions, multinationals have a higher probability to have foreign lenders and higher foreign lender shares than domestic firms.

[28] 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 imposing the restriction of no replacement reduces the number of paired observations in a matched sample, matching without replacement can improve the precision of estimates. See Dehejia and Wahba (2002) for a detailed discussion of the costs and benefits of matching with and without replacement.

[29] The univariate t-tests of the mean differences in market to book, sales growth, cash, cash flows, the volatility of cash flows, and leverage variables between multinationals and domestic firms in the propensity score matched sample imply that the differences are not statistically significant. There is a significant difference in log of sales at the 10% level, but multinational firms are smaller than the matched domestic firms. Thus, if I still find a higher foreign lender share for multinationals than domestic firms in the matched sample, it is hard to believe that the effect is driven by multinationals being larger.

4.1.2. Corporate Bond Markets

In addition to bank loans, corporations also receive debt financing from the corporate bond market. As Massa and Zaldokas (2011) argue, for some firms it is either impossible or costly to issue corporate bonds in international markets. This 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 specified as in Equation (1), where the dependent variable Y_{ilt} is an indicator variable equal to one if a bond issued by firm *i* 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 also include bond-specific controls such as *Log(Proceed Amount)*, *Log(Maturity)*, *Secured*, *Private Placement*, and *Callable*. The number of observations drops, when bond characteristics are controlled, because of availability of maturity information.

The marginal effects from the probit regressions are reported in Panel A of Table 5. In Columns (1) and (2), the coefficients of *GlobalDiv* are 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 5.4 percentage points. The increase is substantial; it is equivalent to a 39% increase in the predicted probability of issuing a bond in international markets by a domestic firm.

To address the issue that *GlobalDiv* can capture other firm characteristics rather than representing the diversification in capital sources, I construct a matched sample using the propensity score matching method as described in Section 4.1.1. Using a sample of corporate bond issuances aggregated to firm-quarter data, 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 and the S&P credit rating category (investment and speculative grade).

Panel B of Table 5 shows the results of propensity score matching estimation. The matched sample includes 474 paired observations. In the univariate tests, firm characteristics between multinationals and domestic firms are not significantly different after matching. I find that conditional on issuing corporate bonds, the probability of issuing international bonds is 7.6 percentage points higher for multinationals than for comparable domestic firms.

Taken together, the results in Table 5 suggest that given the corporate bond issuance decision, multinationals access global capital markets more than domestic firms.

4.1.3. Location of Foreign Subsidiaries and Intensity of Foreign Operations

If the geographical structure of firms' operations is a main determinant of access to international capital markets, then I would expect that multinationals would be more likely to receive loans from lenders in countries where they have foreign subsidiaries. In this section, I examine the direct channel through which multinationals access international debt markets by looking at 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 two regions (Europe and Asia) and ten countries (Canada, France, Japan, U.K., Germany, Netherlands, Switzerland, Hong Kong, and Italy), because foreign lenders from those countries more actively invest in bank loans to U.S. firms. Since more than 60% of multinational firms have a subsidiary in U.K., I exclude the U.K. when identifying European subsidiaries

and lenders. As in Equation (1), 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 Europe, Asia, Canada, Latin America, and Middle East, respectively. I use the similar specification to estimate the probability of lender participation at the country level.

Table 6 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 10.4 percentage points, but has little impact on the probability of having lenders from Asia. Similarly, having operations in Asia leads to a 6.4 percentage points higher probability of having lenders from Asian countries, but has negligible effect on borrowing from European lenders.[30] 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, and Italy. 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 mainly consider four 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, the proportion of developed countries out of the total number of countries in which multinationals have subsidiaries, and one minus the concentration of foreign sales. Based on those four measures, I construct the variable, *MoreGlobalDiv*, which indicates the multinationals that are more internationally diversified. *MoreGlobalDiv* is equal to

[30] The coefficients of *Sub in NORTH AMERICA* in Column (1) and *Sub in LATIN AMERICA* in Column (2) 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.

one if each proxy for the intensity of foreign operations is above the median for the sample of multinationals and zero, otherwise. I estimate the probit and OLS models of foreign lender participation in bank loans and international bond issuances as in Table 4 and Table 5, but I include *MoreGlobalDiv* additionally as a main explanatory variable.

The results are reported in Panels C and D of Table 6. For bank loan issuance, the coefficients of *MoreGlobalDiv* are positive and statistically significant except for the cases where *MoreGlobalDiv* denotes multinationals that have subsidiaries mostly in developed countries. 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 13.3 percentage points if a multinational firm generates more than 30% of income abroad and by 6.3 percentage points if the firm has foreign operations in more than three foreign countries. The probability of having a foreign lender is 8.7 percentage points higher if a multinational's sales diversification measure, *HHI(Sales)*, is above the median. 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.

4.2. Financial Flexibility during the 2007-2009 Financial Crisis

4.2.1. The Effect of Global diversification on Bank Loan and Corporate Bond Issues

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 (2011)), 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. Hence, having two crisis period indicators allows me to capture the different effect of international corporate diversification based on the timing of the crisis.

First, using bank loans as in Section 4.1.1, I examine whether during the financial crisis the multinationals were more likely to access global markets more than before than were domestic firms. To test this hypothesis, I additionally include crisis indicator variables as well as interaction terms between the crisis indicator variables and *GlobalDiv* as follows:

$$\begin{aligned}\Pr\,(Y_{ilt} = 1) = {} & \alpha + \beta_0 GlobalDiv_i + \beta_1\, Crisis\_PreLehman_t + \gamma_1\, Crisis\_PreLehman_t \times GlobalDiv_i \\ & + \beta_2\, Crisis\_PostLehman_t + \gamma_2\, Crisis\_PostLehman_t \times GlobaDiv_i \\ & + \delta_F Firm\ Controls_i + \delta_L Loan\ Controls_l + \varepsilon_{ilt} \end{aligned} \quad (3)$$

I control for firm and loan characteristics as in Section 4.1.1 except that I do not include quarter fixed effects. 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. On the other hand, Kolasinski and Siegel (2010) argue that the interaction effects in probit models do not have to be corrected when the interest of the analysis is on changes in probability near the boundaries. In this paper, I mainly draw the inferences based on the interaction effects and the standard errors from the probit regressions. I also report the mean interaction effects across a range of predicted probabilities and the associated z-statistics in the tables following the methodology developed by Norton, Wang, and Ai (2004). The distributions of marginal effects and the z-statistics are also displayed in Figure 2.

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 7. In the probit regressions in Columns (1) through (2), the coefficients of the interaction term between *GlobalDiv* and *Crisis_PostLehman* are positive and significant. During the non-crisis period loans to multinationals are 12.7 percentage points more likely to have a foreign lender than domestic firms. This difference in foreign lender participation between multinationals and domestic firms sharply increased during the two quarters after Lehman's collapse. While domestic firms experienced an 8.1 percentage points decrease in the probability of having a foreign lender, multinationals firms were 12.4 percentage points more likely to receive loans from a foreign lender than domestic firms during that period.[31] Similarly, the positive effect of being multinationals on foreign lead lender participation is significantly stronger in the crisis period after Lehman's bankruptcy in terms of volume. In the OLS regressions in Column (4), I find that the foreign lead lender share for domestic firms dropped by 2.8% in the last two quarters of crisis, compared to the non-crisis period. However, the foreign lead lender share for multinationals is 7.1 percentage points higher than that for domestic firms in the later crisis period.

I further examine whether the location of foreign operations is related to the increase in bank loan issuances by multinationals from foreign lenders during the financial crisis. I take a sample of 7,071 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 Column (6), I find that the probability of borrowing from lead lenders from countries where multinationals have foreign subsidiaries increased by 10 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

[31] The average interaction effects of those estimates are reported 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 3.01. As presented in Figure 2-d, the corrected interaction terms are largely positive at any point of predicted probabilities and these coefficients are significant for most probabilities.

have foreign subsidiaries significantly increased, by 5.5 percentage points, in the crisis period before Lehman.

To see which types of firms drive this result, in untabulated results, I separate the loans based on the borrower's S&P credit ratings. The interaction terms are significantly positive only for the unrated borrowers, suggesting a stronger effect of being multinational for 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.

In Panel B of Table 7, I estimate similar regressions using the sample of corporate bonds. In Columns (1) and (2), *Crisis_PreLehman* has positive coefficients and the coefficients of the interaction term, *Crisis_PreLehman* x *GlobalDiv*, are insignificant, implying that both multinationals and domestic firms actively used international bond markets in the early crisis period. 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.[32]

In Panel C of Table 7, I estimate changes in the effect of being multinational during the crisis period using a propensity score matched sample as described in Section 4.1. 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 20.5 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 3.4% during the pre-crisis period. This comparison in the matched samples confirms the finding, using the full sample of bank loan and bond

[32] When I look at the mean interaction effect, the magnitude the interaction effect decreased, but as I can observe in Figure 3-f, the interaction effect is mostly positive and significant in the range of higher predicted probabilities.

issuances, that multinationals were more able to raise debt capital abroad than domestic firms, particularly when the supply of capital in the U.S. was impaired.

4.2.2. 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 4. All regressions include firm fixed effects.

The results are reported in Table 8. 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) through (5), I find a significant increase in the positive relation between the multinational status and investment during the peak of the crisis for the investment grade and 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 predict that firms increase lending abroad relative to lending at home markets. Nevertheless, I address this issue in two ways.

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).[33] The estimates are reported in Columns (6). Whereas domestic firms with more debt maturing in 2007 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 of capital expenditures between multinationals and domestic firms is statistically significant for the subgroup of firms with more debt maturing in 2008.

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.[34] 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 on the domestic sales growth can alleviate this concern. In Columns (7) and (8), 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 show that the investment policies of the U.S. incorporated firms were affected during the crisis (see, for example, Duchin, Ozbas,

[33] 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.

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

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.

4.3. International Corporate Diversification and the Cost of Debt Financing

4.3.1. Loan Pricing

I examine whether the international corporate diversification is correlated with loan spreads, using the All-in-drawn Spread information provided by *DealScan*. I restrict the sample to the floating-rate loans that have non-missing All-in-drawn Spread information. This screening process decreases the number of loan facilities from 12,750 to 11,743.

If having access to multiple sources of capital enables multinationals to take advantage of variation in different market conditions across capital markets outside the U.S., the cost of debt of multinationals should be lower than that of domestic firms. To examine this hypothesis, I estimate OLS regressions specified as in Equation (2) 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 loan 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 9. 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.[35] 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.

[35] 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.

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.[36]

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 19 basis-point lower spreads, which is about an 8.1% 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 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.[37]

[36] In Section 5, using Heckman selection model I do not find evidence that loan spreads are associated with the firms being multinational after correcting the selection bias.

[37] Basically, the switching regression model is an extension of Heckman self-selection model. 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

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 as in Equation (1) reported in Panel A of Table 4 for the selection equation, and 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 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 a 22.6 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 Rho implies that unobserved factors that lead firms to choose a foreign lead lender are associated with lower spreads.[38]

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

4.3.2. Bond Yield Spreads

I now examine the relation between global diversification and bond yield spreads, using a sample of corporate bonds as in Section 4.1.2 and examine the hypothesis that international corporate diversification lowers bond yield spreads. I restrict the sample to the fixed-rate unsecured public bonds for which the bond yield information is available.[39] This filter reduces the number of bond issues from 5,384 to 1,806. I

switching regression to test the effect of syndicate structure decision on debt issue spreads. Li and Prabhala (2005) provide a review of self-selection models in corporate finance.

[38] 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.

[39] *SDC* also provides the offering yield spreads for floating rate issues, which is defined as the difference between the coupon rate and the rate of the index off which the coupon is reset. The floating rate issues comprise 7.7% of my bond issuance sample. When I include the floating issues in the regressions, the results are largely similar.

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. Following the specification in Equation (2), the bond yield spread is regressed on *GlobalDiv* indicator and various control variables including firm and bond characteristics.[40] To control for the quality of the issuers and changes in market conditions over time, all regressions include the S&P credit rating fixed effects, credit spread, and term spread.

The estimates are displayed in Panel B of Table 9. As shown in Column (1), *GlobalDiv* has a positive coefficient of 6.927, but it is not statistically significant, which implies that after controlling for issuer and 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 higher spreads when they issue bonds in the international bond markets than in the U.S. bond market.

As described in the previous section, I employ the switching regression model. As a selection equation, I run a probit regression estimating the probability of issuing an international bond. The estimates from the outcome equations are reported in Columns (4) and (5) of Table 9, Panel B. In Columns (4) and (5), the coefficients of *GlobalDiv* are negative, 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.

After correcting for the potential selection bias from the decision of where to issue bond, I do not find evidence that multinationals issue bonds at a lower rate in international 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 (2012) that a large proportion of firms continue to issue domestic bonds actively after the first-time access to international bond markets.

[40] Since the sample in bond yield spread regressions only includes the unsecured private bonds, *Not Rated* and *Secured* variables are not included as control variables.

5. Robustness Checks

5.1. Selection Bias on Bank Loan and Corporate Bond Issuance 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 indicator 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 disproportionally 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 Section 4.1. 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[41] 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, especially for the foreign lender participation as a lead arranger and for loan spreads. After correcting for the sample selection, the global diversification

[41] I use STATA command, *heckprob*, which fits maximum-likelihood of probit models with sample selection. Basically, the procedure is similar to the Heckman selection model, except that probit models are estimated as an outcome equation.

indicator variable still remains statistically significant in explaining the foreign lender participation in Columns (2) through (5).

I next turn to selection models for corporate bond issuance. 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. Though the selection bias is corrected with the weak instrument, I find the positive effects of the global diversification on the probability of issuing bonds in international markets.

5.2. Treatment Effect Model for Endogenous Choice of Being Multinational

One might still be concerned that the propensity score estimation in Section 4.1 and 4.2 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, more 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. 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.[42] In addition, 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

[42] For example, 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.

easily transferred and transported to subsidiaries compared to tangible assets (see, for example, Desai, Foley, and Hines (2009)). For this reason, I use the mean of R&D to total assets for firms in the same industry as a second instrument variable.

Though I do not tabulate the results, 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. The fraction of multinational firms and the R&D intensity at the industry level 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.

5.3. Discussions & Further Robustness Tests

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 possible for them to access at lower cost foreign currency borrowing. 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. In that 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.

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 important 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 purely exporters in foreign lender participation in banks loans and international bond issuance.

To further document the financing channel through which multinationals rely more on foreign funding during the crisis period than domestic firms, I consider the existence of a lending relationship with foreign lenders prior to the crisis period as a proxy for accessibility. I identify firms that have received loans more than once from foreign lenders from 2000 to 2006 and reestimate regressions in Table 7 with triple interaction terms included – *GlobalDiv*, *Crisis_PreLehman* and *Crisis_PostLehman*, and the indicator variable for firms that have previous lending relationship with foreign lenders. In untabulated results, I find that multinationals who increased borrowing from foreign lenders during the crisis are the ones that had received loans from foreign lenders before the crisis period. This result suggests that multinationals have an advantage in maintaining relationship with foreign lenders because of their presence in foreign countries.

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. It is also supported by the finding in Section 4.1.3 that the fraction of developed countries where multinationals have foreign subsidiaries does not explain the higher foreign lender participation. Nevertheless, I examine this concern more directly as follows.

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 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.

6. 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.

This access to funding in foreign countries leads to greater financial flexibility in that multinationals can exploit foreign funding sources more easily than purely domestic firms when there is a capital market disruption in their home country. 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 after the Lehman 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. 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.

In addition, the effect of international diversification on access to capital in foreign markets is correlated with the cost of debt. I find that multinational firms pay lower loan spreads than domestic firms

when they receive loans from foreign lead lenders. The evidence regarding multinationals' lower cost of debt implies that access to multiple funding sources allows multinationals to take advantage of variation in interest rates across countries more than 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. Assuming that obtaining alternative sources of funding in international capital markets is more valuable for firms in countries where capital markets are not well developed, I expect that the multinational effect on access to capital would be stronger for multinationals headquartered in developing countries. Such an analysis is left for future research.

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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 from 2000Q1-2010Q4 of all publicly-traded U.S. firms from the *Compustat* database, excluding financial or utilities (SIC code 4900-4949 and 6000-6999). I delete a firm-quarter observation with annual sales less than $20 million, negative total assets, negative cash and marketable securities, and cash and marketable securities greater than total assets. 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. Data on foreign operation structure are in annual basis. Both direct subsidiaries and indirect subsidiaries owned by direct subsidiaries are included and subsidiaries in tax-haven countries are not counted. Panel B presents the summary statistics of firm characteristics of multinationals and domestic firms. 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

Variable	Obs.	Mean	Median	Std Dev
Foreign Operation Involvement				
Foreign Income/Total Income	12036	0.348	0.279	0.284
Foreign Sales/Total Sales	14410	0.327	0.294	0.242
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
% of developed countries	15340	0.644	0.667	0.178
Location of Subsidiaries by Region				
EUROPE	15520	0.817		
ASIA	15520	0.660		
LATIN AMERICA	15520	0.409		
MIDDLE EAST	15520	0.160		
AFRICA	15520	0.157		
Location of Subsidiaries by Country (Top 10)				
UNITED KINGDOM	15520	0.632		
CANADA	15520	0.577		
GERMANY	15520	0.455		
FRANCE	15520	0.398		
NETHERLANDS	15520	0.368		
AUSTRALIA	15520	0.349		
CHINA	15520	0.330		
JAPAN	15520	0.321		
SINGAPORE	15520	0.301		
MEXICO	15520	0.299		

Panel B. Firm Characteristics

	All Firms			Mean			Median		
Variables	Mean	Median	Std. Dev	Multinational (1)	Domestic (2)	Difference (1)-(2)	Multinational (3)	Domestic (4)	Difference (3)-(4)
Total Assets ($ Billion)	3.0933	0.3715	17.8969	5.0998	1.2383	3.8615***	0.7496	0.1936	0.5560***
Market Cap ($ Billion)	3.4072	0.3808	16.5859	5.8920	1.1099	4.7821***	0.7822	0.1888	0.5933***
Log(Sales)	4.6043	4.4724	1.8116	5.2478	4.0095	1.2383***	5.1701	3.8198	1.3503***
Leverage	0.2191	0.1762	0.2171	0.2077	0.2296	-0.0219***	0.1795	0.1719	0.0076***
Sales Growth	0.1395	0.0737	0.4133	0.1096	0.1681	-0.0585***	0.0707	0.0772	-0.0065***
Cash Flows	0.0255	0.0287	0.0390	0.0297	0.0216	0.0081***	0.0303	0.0269	0.0034***
Cash	0.1823	0.0986	0.2027	0.1791	0.1854	-0.0063	0.1083	0.0882	0.0201***
Market to Book	1.9242	1.4811	1.3629	1.9276	1.9212	0.0064	1.5383	1.4204	0.1179***
STD(Cash Flows)	0.0222	0.0156	0.0209	0.0182	0.0263	-0.0080***	0.0134	0.0184	-0.0050***
Capex	0.0136	0.0078	0.0172	0.0114	0.0157	-0.0043***	0.0074	0.0084	-0.0010***
R&D	0.0106	0.0000	0.0188	0.0114	0.0099	0.0015***	0.0040	0.0000	0.0040***
Dividend Dummy	0.2850	0.0000	0.4514	0.3522	0.2228	0.1294***	0.0000	0.0000	0.0000
Investment Grade	0.1230	0.0000	0.3284	0.2007	0.0512	0.1495***	0.0000	0.0000	0.0000
Speculative Grade	0.1666	0.0000	0.3726	0.1867	0.1480	0.0386***	0.0000	0.0000	0.0000
Not rated	0.7104	1.0000	0.4536	0.6127	0.8008	-0.1881***	1.0000	1.0000	0.0000
Observations		130902		62885	68017		62885	68017	
No of Firms		5394		2353	3850		2353	3850	

Table 2. Summary Statistics of Bank Loan Issuance

This table reports summary statistics of bank loan issuances by multinationals and domestic firms. Data include all 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. I use loan facility as the unit of analysis. 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*. *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. 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.

	All Firms			Mean of Multinational	Mean of Domestic	Difference
Variables	Mean	Median	Std. Dev	(1)	(2)	(1)-(2)
Total number of lenders	7.823	5.000	8.356	9.068	6.295	2.774***
Have foreign lenders	0.536	1.000	0.499	0.644	0.404	0.240***
% of lenders from outside the U.S.						
By number	0.194	0.111	0.234	0.247	0.129	0.119***
By volume	0.178	0.006	0.231	0.224	0.121	0.103***
Lender shares by lenders' region						
US	0.773	0.875	0.285	0.718	0.839	-0.121***
EUROPE	0.112	0.000	0.177	0.140	0.078	0.062***
ASIA	0.037	0.000	0.091	0.050	0.021	0.030***
CANADA	0.003	0.000	0.051	0.004	0.002	0.001
Lender shares from countries in which a multinational has foreign subsiidiaries	0.079	0.000	0.164	0.134		
Total number of lead lenders	1.490	1.000	1.031	1.626	1.323	0.303***
Lead lender shares	0.420	0.286	0.344	0.370	0.482	-0.111***
Have foreign lead lenders	0.146	0.000	0.354	0.177	0.109	0.068***
% of lead lenders from outside the U.S.						
By number	0.098	0.000	0.257	0.116	0.076	0.039***
By volume	0.040	0.000	0.142	0.047	0.031	0.015***
Lead lender shares by lenders' region						
US	0.379	0.250	0.345	0.322	0.449	-0.127***
EUROPE	0.028	0.000	0.120	0.034	0.021	0.012***
ASIA	0.004	0.000	0.054	0.006	0.002	0.004**
CANADA	0.005	0.000	0.053	0.005	0.005	0.000
Lead lender shares from countries in which a multinational has foreign subsidiaries	0.015	0.000	0.087	0.026		

Table 2. - *Continued*

Variables	All Firms Mean	All Firms Median	All Firms Std. Dev	Mean of Multinational (1)	Mean of Domestic (2)	Difference (1)-(2)
Loan Characteristics						
Facility amount ($MM)	391.576	146.325	920.136	516.041	238.743	277.298***
Spread (basis point)	210.113	200.000	146.451	189.608	235.395	-45.787***
Maturity (month)	44.851	48.000	31.527	44.039	45.864	-1.825**
Secured missing	0.298	0.000	0.457	0.340	0.246	0.094***
Secured indicator	0.529	1.000	0.499	0.449	0.627	-0.177***
Revolver	0.672	1.000	0.470	0.692	0.648	0.044***
Term loan	0.274	0.000	0.446	0.250	0.303	-0.054***
Observations		13216		7284	5932	
No of firms		2804		1435	1556	

Table 3. Summary Statistics of Corporate Bond Issuance

This table reports summary statistics of corporate bond issuances by multinationals and domestic firms. Data include all 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 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*. 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.

	All Firms			Mean of Multinational	Mean of Domestic	Difference
Variables	Mean	Median	Std. Dev	(1)	(2)	(1)-(2)
International bond	0.204	0.000	0.403	0.241	0.139	0.1023***
Bond type						
Global bond	0.133	0.000	0.340	0.172	0.066	0.1058***
Euro bond	0.069	0.000	0.253	0.066	0.074	-0.0075
Bond Characteristics						
Proceed amount ($MM)	582.393	296.721	1068.018	671.849	426.177	245.6725***
Spread (basis point)	283.347	221.150	217.217	251.796	343.359	-91.5629***
Maturity (month)	113.506	103.000	73.971	111.579	117.065	-5.4860
Secured	0.064	0.000	0.246	0.058	0.076	-0.0174**
Private debt	0.240	0.000	0.427	0.202	0.306	-0.1037***
Callable	0.190	0.000	0.392	0.159	0.243	-0.0836***
Floating coupon	0.075	0.000	0.263	0.084	0.058	0.0263**
Observations		5384		3425	1959	
No of firms		1367		814	625	

Table 4. The Effect of International Corporate Diversification on Foreign Lender Participation: Bank Loan Issuance

This table presents the probit and OLS estimates of the effect of international corporate diversification on foreign lender participation using the sample of bank loan issuance from *DealScan*. *GlobalDiv* is defined as an indicator variable, which takes the value of 1 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. In Panel A, I use the full sample of bank loan issuances at the facility level. Columns (1) through (4) 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 (5) to (8), estimates of OLS regressions, where the dependent variable is foreign lender shares, are presented. As dependent variables, I consider whether a lead bank is a foreign lender in Columns (3) and (4), and the share of foreign lead lenders in Columns (7) and (8). In Columns (1), (3), (5), and (7), the firm characteristics are included as controls, and in Columns (2), (4), (6), and (8), loan characteristics with loan type and loan purpose fixed effects are additionally included. All regressions include indicator variables for the quarters of each year to control for seasonality, rating fixed effects, industry fixed effects at the one-digit SIC industry level, and quarter fixed effects. In Panel B, I use the matched sample using the propensity score matching method. Panel B reports the univariate t-tests of differences in firm characteristics after matching and the average difference of foreign lenders' participation between bank loans to multinationals and those to matched domestic firms. To match the loan issues at the firm level, the issuance data are aggregated to firm-quarter observations. Propensity scores are obtained from the probit model predicting whether the firm is multinational. Control variables in the probit model include firm characteristics as in Column (1) of Panel A, indicators of the quarters of each year, rating fixed effects, industry fixed effects at the one-digit SIC industry level, and quarter fixed effects. Each loan of a multinational (treated group) is matched to the loan of a domestic firm (control group) within the same S&P credit rating category (investment, speculative, or unrated) in the same quarter, using propensity score estimation, without 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 1,000 replications. All variables are defined in Appendix A2. The *z*-statistics and *t*-statistics with two-way clustering at the firm level and the quarter level are in parenthesis. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Baseline Regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Probit				OLS			
Dependent Variable:	Have foreign lender		Have foreign lead lender		Foreign lender shares		Foreign lead lender shares	
GlobalDiv	0.1172***	0.1288***	0.0402***	0.0399***	0.0431***	0.0396***	0.0135***	0.0163***
	(6.53)	(6.71)	(3.40)	(3.49)	(6.71)	(5.90)	(2.77)	(3.55)
Log(Sales)	0.1281***	0.0336***	0.0209***	0.0130**	0.0353***	0.0192***	0.0022	0.0068**
	(15.30)	(3.55)	(4.08)	(2.32)	(11.59)	(4.80)	(1.17)	(2.54)
Leverage	0.1533***	0.2136***	0.0970***	0.0992***	0.0795***	0.0737***	0.0489***	0.0475***
	(3.72)	(4.54)	(4.56)	(4.78)	(4.66)	(4.52)	(3.86)	(3.74)
Sales Growth	0.0013	0.0046*	0.0013	0.0017	0.0010	0.0013	0.0004	0.0004
	(0.49)	(1.75)	(0.94)	(1.29)	(0.68)	(0.95)	(0.52)	(0.59)
Cash Flows	0.4771*	-0.2909	-0.1237	-0.2281	-0.1121	-0.1832**	-0.0772	-0.0779
	(1.76)	(-1.08)	(-0.88)	(-1.60)	(-1.40)	(-2.51)	(-1.43)	(-1.41)

Table 4. Panel A - *Continued*

Cash	-0.1494*	0.1849*	0.1251***	0.1082**	0.0373	0.0548*	0.0724***	0.0380
	(-1.70)	(1.91)	(2.58)	(2.27)	(1.29)	(1.90)	(3.13)	(1.64)
Market to Book	0.0222***	0.0079	0.0051	0.0035	0.0056**	0.0027	0.0011	0.0008
	(2.64)	(0.90)	(1.44)	(0.99)	(2.29)	(1.32)	(0.73)	(0.60)
STD(Cash Flows)	-1.4265**	-0.1567	-0.0587	0.1272	-0.1361	0.1126	0.0196	0.0421
	(-2.53)	(-0.28)	(-0.17)	(0.39)	(-0.83)	(0.71)	(0.19)	(0.40)
Not Rated	-0.2238	-0.2643**	0.0968**	0.0629*	-0.1315***	-0.1147***	0.0242	0.0181
	(-1.54)	(-2.32)	(2.34)	(1.84)	(-4.51)	(-4.53)	(1.56)	(1.09)
Log(Facility Amount)		0.0500***		0.0016		0.0100**		0.0052*
		(6.08)		(0.37)		(2.53)		(1.81)
Log(Number of lenders)		0.3993***		0.0249***		0.0315***		-0.0330***
		(29.91)		(4.57)		(6.60)		(-9.42)
Log(Maturity)		0.0330**		0.0276***		0.0104*		0.0124**
		(2.10)		(2.73)		(1.84)		(2.57)
Secured		-0.0069		0.0039		0.0128		-0.0138**
		(-0.26)		(0.26)		(1.38)		(-2.15)
Missing_Secured		0.0590**		0.0332**		0.0496***		0.0072
		(2.25)		(2.50)		(4.91)		(1.24)
Constant					0.0054	-0.1740**	-0.0461**	-0.1431***
					(0.13)	(-2.47)	(-2.16)	(-3.08)
Rating & Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Loan purpose & Loan type FE	No	Yes	No	Yes	No	Yes	No	Yes
Observations	13216	12750	13216	12750	13216	12750	13216	12750
Psuedo/Adj R-squared	0.278	0.470	0.103	0.142	0.241	0.280	0.0379	0.109
No of Firms	2804	2744	2804	2744	2804	2744	2804	2744

Panel B. Propensity Score Matching

	Matching Characteristics			
Variables	Mean of Multinational (1)	Mean of Domestic (2)	Difference (1)-(2)	(t-value)
Total Assets ($ Million)	3219.559	4064.103	-844.544**	(-2.43)
Market Cap ($ Million)	2823.186	3173.943	-350.757	(-1.26)
Log(Sales)	5.391	5.481	-0.090*	(-1.72)
Leverage	0.302	0.293	0.009	(1.34)
Sales Growth	0.139	0.138	0.002	(0.14)
Cash Flows	0.033	0.033	0.000	(0.12)
Cash	0.076	0.080	-0.003	(-0.99)
Market to Book	1.656	1.675	-0.019	(-0.61)
STD(Cash Flows)	0.019	0.018	0.001	(1.41)
Investment Grade	0.197	0.197	0.000	(0.00)
Speculative Grade	0.287	0.287	0.000	(0.00)
Not rated	0.516	0.516	0.000	(0.00)

	Average Treatment Effect			
	Multinational (Treated)	Domestic (Control)	Difference	(t-value)
Have Foreign Lender	0.5380	0.4456	0.0924***	(6.22)
Have Foreign Lead Lender	0.1279	0.0929	0.0350***	(3.24)
Foreign Lender Shares	0.1590	0.1199	0.0391***	(6.25)
Foreign Lead Lender Shares	0.0348	0.0244	0.0104**	(2.48)
Paired Observations	1829			

Table 5. The Effect of International Corporate Diversification on International Bond: Corporate Bond Issuance

This table presents the probit estimates of the effect of international corporate diversification on international bond using the sample of corporate bond issuance from *SDC*. *GlobalDiv* is defined as an indicator variable, which takes the value of 1 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 reports the marginal effects from probit regressions, where the dependent variable is an indicator of issuing international bond using the full sample of corporate bond issuances. In Column (1), the firm characteristics are included as controls, and in Column (2), bond characteristics are additionally included. All regressions include the indicators of quarter in each year to control for seasonality, rating fixed effects, industry fixed effects at the one-digit SIC industry level, and quarter fixed effects. Panel B shows the results from propensity score matching estimations. The table reports the univariate t-tests of differences in firm characteristics after matching and the average difference of international bond issuances and foreign currency-denominated bond issuances between bonds issued by multinationals and those to matched domestic firms. To match the bond issues at the firm level, the issuance data are aggregated to firm-quarter observations. Propensity scores are obtained from the probit model predicting whether the firm is multinational. Control variables in the probit model include firm characteristics as in Column (1) in Panel A, indicator variables for the quarters in each year, rating fixed effects, industry fixed effects at the one-digit SIC industry level, and quarter fixed effects. Each bond issued by a multinational (treated group) is matched to the bond issued by a domestic firm (control group) within the same S&P credit rating category (investment or speculative grade) in the same quarter, using propensity score estimation, without 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 1,000 replications. All variables are defined in Appendix A2. The *z*-statistics with two-way clustering at the firm level and the quarter level are in parenthesis. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Baseline Regressions

	(1)	(2)
Dependent Variable:	International Bond	
GlobalDiv	0.0336**	0.0537**
	(2.04)	(1.97)
Log(Sales)	0.0485***	0.0113
	(9.76)	(0.98)
Leverage	0.0958***	0.0310
	(2.98)	(0.53)
Sales Growth	-0.0004	0.0298
	(-0.15)	(1.58)
Cash Flows	0.1774	-0.2229
	(0.88)	(-0.49)
Cash	-0.0763	0.0079
	(-1.32)	(0.06)
Market to Book	-0.0060	-0.0136
	(-0.66)	(-0.78)
STD(Cash Flows)	-0.0263	-0.4614
	(-0.07)	(-0.69)

Table 5. Panel A - *Continued*

Not Rated	-0.1038***	-0.0163
	(-2.67)	(-0.15)
Log(Proceed Amount)		0.1418***
		(8.78)
Log(Maturity)		0.0137
		(0.71)
Secured		-0.0510
		(-1.26)
Private Placement		-0.2980***
		(-7.22)
Callable		0.1148***
		(3.91)
Rating & Quarter FE	Yes	Yes
Industry FE	Yes	Yes
Observations	5384	3397
Psuedo R-squared	0.259	0.479
No of Firms	1367	922

Panel B. Propensity Score Matching

	Matching Characteristics			
Variables	Mean of Multinational (1)	Mean of Domestic (2)	Difference (1)-(2)	(t-value)
Total Assets ($ Million)	17464.877	16176.532	1288.344	(0.55)
Market Cap ($ Million)	12803.336	12017.012	786.324	(0.46)
Log(Sales)	6.915	6.998	-0.083	(-0.86)
Leverage	0.406	0.415	-0.010	(-0.83)
Sales Growth	0.113	0.120	-0.006	(-0.31)
Cash Flows	0.034	0.035	-0.001	(-0.70)
Cash	0.059	0.059	0.000	(0.09)
Market to Book	1.508	1.519	-0.011	(-0.27)
STD(Cash Flows)	0.015	0.014	0.000	(0.44)
Investment Grade	0.466	0.466	0.000	(0.00)
Speculative Grade	0.502	0.502	0.000	(0.00)
Not rated	0.032	0.032	0.000	(0.00)

	Average Treatment Effect			
	Multinational (Treated)	Domestic (Control)	Difference	(t-value)
International Bond	0.3650	0.2890	0.0759***	(2.77)
Paired Observations	474			

Table 6. The Effect of International Corporate Diversification on Access to Foreign Capital Market Depending on the 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 multinational's foreign subsidiaries and the degree of foreign operation involvement. Panel A investigates the effect of location of subsidiaries on the nationality of foreign lenders in bank loans. The sample used in Panel A is restricted to the loans to multinationals. In Columns (1) to (3), I report marginal effects from probit model estimating the probability of having lenders from each region (Europe except U.K, Asia, Canada, Latin America, and Middle East). In Columns (4) to (6), the dependent variables are lender shares from those regions. The main explanatory variables are indicators of having a subsidiary in each region. 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 Panel A, Table 4. In Panel B, the probability of having lenders from top I report marginal effects from probit model estimating the probability of having lender from each country. 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. 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 total number of countries where multinationals have foreign subsidiaries are used as a measure of the intensity of multinationals' foreign operations. *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 Panel A, 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 B. The regressions include firm and bond characteristics with rating, industry and quarter fixed effects as in Column (2) of Panel A, Table 5. The coefficients of control variables are not reported to save space. All variables are defined in the Appendix A2. The *z*-statistics and *t*-statistics with two-way clustering at the firm level and the quarter 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)
	PROBIT		OLS	
	Have lender from :		Shares of lenders from:	
	EUROPE (except UK)	ASIA	EUROPE (except UK)	ASIA
Sub in EUROPE (except UK)	0.1043***	0.0303	0.0084	-0.0042*
	(2.91)	(1.17)	(0.55)	(-1.84)
Sub in ASIA	0.0449	0.0638**	0.0118	0.0010
	(1.27)	(2.49)	(0.76)	(0.47)
Sub in NORTH AMERICA (except US)	-0.0556*	0.0181	-0.0109	-0.0016
	(-1.82)	(0.76)	(-0.72)	(-1.02)
Sub in LATIN AMERICA	0.0224	-0.0428*	-0.0057	-0.0009
	(0.75)	(-1.77)	(-0.46)	(-0.63)
Sub in MIDDLE EAST	0.0393	0.0292	0.0063	0.0005
	(1.41)	(1.02)	(0.45)	(0.22)
Controls	Yes	Yes	Yes	Yes
Observations	7076	7076	7071	5587
Psuedo/Adj R-squared	0.414	0.439	0.171	0.271
No of Firms	1416	1416	1415	1314

Panel B. Location of Subsidiaries by Country

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	PROBIT								
Dependent Variable:	Have lender from :								
	CANADA	FRANCE	JAPAN	U.K.	GERMANY	NETHERLANDS	SWITZERLAND	HONG KONG	ITALY
Sub in CANADA	0.0460*	-0.0249	0.0236	-0.0127	-0.0097	-0.0187	0.0071	0.0035	0.0005
	(1.85)	(-1.05)	(1.35)	(-0.61)	(-0.60)	(-1.11)	(0.58)	(0.48)	(1.40)
Sub in FRANCE	0.0521*	0.0404	-0.0166	-0.0516**	-0.0012	-0.0042	-0.0101	-0.0044	-0.0000
	(1.78)	(1.48)	(-0.74)	(-2.32)	(-0.06)	(-0.21)	(-0.67)	(-0.57)	(-0.05)
Sub in JAPAN	-0.0240	0.0315	0.0664***	-0.0331	-0.0160	0.0033	0.0074	-0.0108*	0.0005
	(-0.94)	(1.28)	(3.01)	(-1.56)	(-0.96)	(0.19)	(0.59)	(-1.91)	(1.17)
Sub in U.K.	-0.0921***	-0.0201	0.0174	0.0070	-0.0226	0.0097	0.0109	0.0196***	0.0002
	(-3.31)	(-0.80)	(0.85)	(0.28)	(-1.26)	(0.53)	(0.79)	(3.29)	(0.48)
Sub in GERMANY	-0.0069	-0.0025	-0.0016	0.0551**	0.0349*	0.0090	0.0071	-0.0078	-0.0000
	(-0.25)	(-0.09)	(-0.08)	(2.02)	(1.85)	(0.46)	(0.46)	(-0.93)	(-0.07)
Sub in NETHERLANDS	-0.0062	0.0083	0.0072	0.0060	0.0016	0.0481***	-0.0015	0.0057	-0.0004
	(-0.26)	(0.36)	(0.37)	(0.37)	(0.10)	(2.64)	(-0.12)	(0.99)	(-0.82)
Sub in SWITZERLAND	-0.0287	0.0270	0.0032	-0.0497**	0.0128	0.0251	0.0133	-0.0089	0.0006
	(-1.14)	(1.03)	(0.15)	(-1.97)	(0.78)	(1.32)	(0.94)	(-1.40)	(1.39)
Sub in HONG KONG	-0.0156	-0.0454**	0.0019	0.0873***	-0.0299*	-0.0019	-0.0122	-0.0018	0.0002
	(-0.63)	(-1.99)	(0.09)	(4.31)	(-1.96)	(-0.12)	(-1.00)	(-0.26)	(0.52)
Sub in ITALY	-0.0013	0.0005	0.0214	0.0413*	0.0345*	-0.0153	0.0011	0.0327***	0.0018***
	(-0.04)	(0.02)	(0.88)	(1.81)	(1.89)	(-0.76)	(0.08)	(3.57)	(2.66)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7076	7076	7076	7076	7076	7076	6976	6931	6518
Psuedo/Adj R-squared	0.318	0.364	0.455	0.358	0.333	0.288	0.196	0.294	0.529
No of Firms	1416	1416	1416	1416	1416	1416	1410	1405	1376

Panel C. Intensity of Foreign Operations – Bank Loan Issuance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	PROBIT (Dependent Variable : Have Foreign Lender)				OLS (Dependent Variable : Foreign Lender Shares)			
MoreGlobalDiv based on :	% Foreign Income	No of Countries where MNC have Foreign Subs	HHI(Sales)	% of Developed Countries	% Foreign Income	No of Countries where MNC have Foreign Subs	HHI(Sales)	% of Developed Countries
GlobalDiv	0.0849***	0.1098***	0.0975***	0.1237***	0.0521***	0.0574***	0.0554***	0.0679***
	(3.36)	(5.21)	(4.38)	(6.15)	(3.75)	(4.73)	(4.45)	(5.65)
MoreGlobalDiv	0.1330***	0.0633**	0.0876***	0.0100	0.0659***	0.0473***	0.0459***	0.0105
	(5.77)	(2.18)	(3.43)	(0.41)	(4.96)	(2.87)	(3.32)	(0.74)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11075	12750	12183	12590	11075	12750	12183	12590
Psuedo R-squared	0.481	0.471	0.474	0.470	0.499	0.492	0.495	0.491
No of Firms	2539	2744	2669	2713	2539	2744	2669	2713

Panel D. Intensity of Foreign Operations – Corporate Bond Issuance

	(1)	(2)	(3)	(4)
	PROBIT (Dependent Variable: International Bond)			
MoreGlobalDiv based on :	% Foreign Income	No of Countries where MNC have Foreign Subs	HHI(Sales)	% of Developed Countries
GlobalDiv	0.0322	0.0561**	0.0562*	0.0557*
	(1.04)	(2.10)	(1.85)	(1.95)
MoreGlobalDiv	0.0035	-0.0094	-0.0054	0.0088
	(0.12)	(-0.37)	(-0.28)	(0.35)
Controls	Yes	Yes	Yes	Yes
Observations	3011	3397	3275	3351
Psuedo R-squared	0.502	0.479	0.481	0.480
No of Firms	841	922	900	916

Table 7. 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 bond markets in corporate bonds 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. The regressions include firm and loan characteristics as control variables as in Column (2) of Panel A, Table 4. In Columns (4) to (8), the sample only includes loans to multinationals firms, and the dependent variables are indicators of having a lender (lead lender) and shares of lenders from a country where the multinational has foreign subsidiaries. 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), and I display the plots of interaction effects and corresponding *z*-statistics on Figure 2. Panel B reports estimates of probit regressions, where the indicator variable denoting an international bond is a dependent variable. Control variables include firm and bond characteristics as in Columns (1) and (2) of Panel A, Table 5. Panel C 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 is matched to the loan (bond) of a domestic firm 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 *z*-statistics and *t*-statistics with two-way clustering at the firm level and the quarter level are in parenthesis. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Bank Loan Issuance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	All Firms				Within Multinationals			
	PROBIT		OLS		PROBIT		OLS	
					From countries where multinaitonals have foreign subsidiaries:			
Dependent Variable:	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	0.1275***	0.0415***	0.0406***	0.0159***				
	(6.30)	(3.46)	(5.88)	(3.43)				
Crisis_PreLehman	-0.0460	-0.0109	-0.0129	-0.0101	-0.0435	-0.0000	-0.0029	0.0055***
	(-0.92)	(-0.55)	(-0.88)	(-1.39)	(-1.05)	(-0.00)	(-0.51)	(3.07)
Crisis_PreLehman x GlobalDiv	0.0039	0.0001	-0.0061	0.0098				
	(0.09)	(0.00)	(-0.53)	(1.32)				
Crisis_PostLehman	-0.0811***	-0.0436	-0.0093	-0.0280***	-0.0066	0.1032***	-0.0197**	-0.0003
	(-3.25)	(-0.73)	(-0.86)	(-2.67)	(-0.39)	(4.53)	(-2.01)	(-0.08)
Crisis_PostLehman x GlobalDiv	0.1242***	0.2610***	0.0118	0.0706***				
	(2.47)	(2.91)	(0.81)	(5.54)				
Controls	Firm+Loan	Firm+Loan	Firm+Loan	Firm+Loan	Firm+Loan	Firm+Loan	Firm+Loan	Firm+Loan
Observations	12750	12750	12750	12750	7071	7071	7071	7071
Psuedo/Adj R-squared	0.466	0.118	0.275	0.0976	0.396	0.119	0.250	0.0961
No of Firms	2744	2744	2744	2744	1415	1415	1415	1415
Mean interaction effect for								
Crisis_PreLehman x GlobalDiv	0.0019	-0.0048						
	[0.023]	[-0.193]						
Crisis_PostLehman x GlobalDiv	0.0695	0.2121						
	[0.940]	[3.011]						

Panel B. Corporate Bond Issuance

	(1)	(2)
Dependent Variable:	International Bond	
GlobalDiv	0.0560***	0.0751***
	(3.16)	(2.84)
Crisis_PreLehman	0.1672***	0.1553*
	(2.85)	(1.95)
Crisis_PreLehman x GlobalDiv	-0.0166	0.0074
	(-0.29)	(0.09)
Crisis_PostLehman	-0.0113	0.1950***
	(-0.18)	(3.98)
Crisis_PostLehman x GlobalDiv	0.1552***	0.1968***
	(4.07)	(5.77)
Controls	Firm	Firm+Bond
Observations	5384	3397
Psuedo R-squared	0.103	0.385
No of Firms	1367	922
Mean interaction effect for		
Crisis_PreLehman x GlobalDiv	-0.0021	0.0113
	[0.015]	[0.359]
Crisis_PostLehman x GlobalDiv	0.1514	0.1416
	[2.713]	[1.574]

Panel C. Propensity Score Matching

	Have Foreign Lender					Foreign Lender Share			
	Paired Obs.	Multinational	Domestic	Difference (S.E.)		Multinational	Domestic	Difference (S.E.)	
(1) PreCrisis (2000Q1-2007Q2)	1524	0.5413	0.4521	0.0892	(0.017)***	0.1609	0.1193	0.0416	(0.007)***
(2) Crisis_PreLehman (2007Q3-2008Q3)	141	0.4823	0.4255	0.0567	(0.055)	0.1277	0.1058	0.0219	(0.023)
(3) Crisis_PostLehman (2008Q4-2009Q1)	34	0.3824	0.0882	0.2941	(0.106)***	0.1351	0.0262	0.1088	(0.055)**
Diff-in-Diff: (2) PreLehman - (1) PreCrisis				-0.0325	(0.063)			-0.0197	(0.022)
Diff-in-Diff: (3) PostLehman - (1) PreCrisis				0.2049	(0.098)**			0.0672	(0.067)
	Have Foreign Lead Lender					Foreign Lead Lender Share			
	Paired Obs.	Multinational	Domestic	Difference (S.E.)		Multinational	Domestic	Difference (S.E.)	
(1) PreCrisis (2000Q1-2007Q2)	1524	0.1155	0.0814	0.0341	(0.011)***	0.0319	0.0224	0.0095	(0.005)**
(2) Crisis_PreLehman (2007Q3-2008Q3)	141	0.1206	0.0851	0.0355	(0.038)	0.0386	0.0125	0.0261	(0.015)*
(3) Crisis_PostLehman (2008Q4-2009Q1)	34	0.2059	0.0294	0.1765	(0.084)**	0.0834	0.0033	0.0801	(0.049)*
Diff-in-Diff: (2) PreLehman - (1) PreCrisis				0.0014	(0.040)			0.0166	(0.014)
Diff-in-Diff: (3) PostLehman - (1) PreCrisis				0.1424	(0.077)*			0.0706	(0.042)*
	International Bond								
	Paired Obs.	Multinational	Domestic	Difference (S.E.)					
(1) PreCrisis (2000Q1-2007Q2)	337	0.2018	0.1246	0.0772	(0.031)**				
(2) Crisis_PreLehman (2007Q3-2008Q3)	34	0.5294	0.5588	-0.0294	(0.128)				
(3) Crisis_PostLehman (2008Q4-2009Q1)	11	1.0000	0.9091	0.0909	(0.292)				
Diff-in-Diff: (2) PreLehman - (1) PreCrisis				-0.1066	(0.133)				
Diff-in-Diff: (3) PostLehman - (1) PreCrisis				0.0137	(0.246)				

Table 8. 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, rating fixed effects, industry fixed effects at the one-digit SIC industry level, and firm fixed effects are included as controls. In Column (1), all firms are included in the regressions. From Columns (2) to (4), I divide firms into those with investment grade, speculative grade, or no rating using the S&P long-term rating available on *Compustat*. High leverage firms are defined as the firms that are in the top tercile leverage ratio in Column (5). In Column (6), 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. High (Low) domestic sales growth group are the firms with the above (below) median of domestic sales growth from 2007 to 2008 in Columns (7) and (8). 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 *t*-statistics using 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)	(7)	(8)
	Dependent Variable: Capex/Total Assets							
Subgroup:	Full Sample	Investment Grade	Speculative Grade	Not Rated	High Leverage	High LT Debt Due in 2008	High Domestic Sales Growth	Low Domestic Sales Growth
GlobalDiv	-0.0010	-0.0036	0.0007	-0.0009	-0.0009	-0.0008	-0.0015	-0.0003
	(-1.14)	(-1.53)	(0.38)	(-0.86)	(-0.86)	(-0.43)	(-1.32)	(-0.24)
Crisis_PreLehman	-0.0005	-0.0003	0.0003	-0.0008*	-0.0000	-0.0028	-0.0011*	-0.0002
	(-1.45)	(-0.31)	(0.34)	(-1.88)	(-0.03)	(-1.35)	(-1.77)	(-0.37)
Crisis_PreLehman x GlobalDiv	0.0004	0.0005	-0.0009	0.0007	0.0001	0.0041*	0.0007	0.0003
	(0.86)	(0.50)	(-0.76)	(1.39)	(0.15)	(1.80)	(1.02)	(0.55)
Crisis_PostLehman	-0.0033***	-0.0027**	-0.0029**	-0.0034***	-0.0027***	-0.0062**	-0.0045***	-0.0023***
	(-6.60)	(-2.52)	(-2.40)	(-5.80)	(-3.82)	(-2.54)	(-5.65)	(-3.60)
Crisis_PostLehman x GlobalDiv	0.0023***	0.0026**	0.0013	0.0026***	0.0021***	0.0082***	0.0037***	0.0013*
	(3.96)	(2.26)	(0.94)	(3.72)	(2.73)	(2.98)	(4.01)	(1.81)
PostCrisis	-0.0065***	-0.0045***	-0.0069***	-0.0064***	-0.0061***	-0.0098***	-0.0077***	-0.0051***
	(-11.77)	(-3.56)	(-4.69)	(-9.97)	(-8.05)	(-3.34)	(-8.95)	(-7.15)
PostCrisis x GlobalDiv	0.0034***	0.0020	0.0025	0.0037***	0.0031***	0.0094***	0.0042***	0.0026***
	(5.37)	(1.46)	(1.39)	(4.94)	(3.61)	(2.90)	(4.20)	(3.23)
Constant	0.0200***	0.0238***	0.0172*	0.0154***	0.0202***	0.0110	0.0193***	0.0192***
	(7.48)	(2.60)	(1.66)	(7.56)	(4.84)	(1.36)	(4.64)	(4.54)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rating, Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	34,501	4,756	5,943	22,553	18,153	1,855	15,746	16,368
Adj R-squared	0.658	0.816	0.717	0.626	0.681	0.662	0.689	0.609

Table 9. The Effect of International Corporate Diversification on Cost of Debt Financing

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 regression 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 Panel A of Table 4. In the decision 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 unsecured 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 Panel B of Table 5. All variables are defined in Appendix A2. The *z*-statistics and *t*-statistics with two-way clustering at the firm level and the quarter level are in parenthesis. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Loan Pricing

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS		OLS	Endogeneous Switching Regressions	
Dependent Variable: All-in-drawn Spread	Full Sample	Subsample: Loans issued by Multinationals		Subsample: Loans issued by Domestic Firms	Subsample: Loans exclusively from Domestic Lead Lender	Subsample: Loans from Foreign Lead Lender
GlobalDiv	6.777**				2.516	-22.618***
	(1.96)				(0.66)	(-2.59)
Have foreign lead lender		-2.334		19.095***		
		(-0.52)		(2.76)		
Have Foreign Lead from Countries where Sub exist			-0.032			
			(-0.01)			
Log(Sales)	0.933	-0.959	-1.015	2.982	-1.718	0.216
	(0.58)	(-0.42)	(-0.44)	(1.27)	(-0.88)	(0.06)
Leverage	101.331***	96.203***	95.883***	105.162***	84.741***	65.286***
	(13.17)	(7.74)	(7.70)	(9.03)	(8.63)	(3.39)
Sales Growth	-0.389*	-9.613	-9.704	-0.243	-0.582*	2.772
	(-1.66)	(-1.53)	(-1.55)	(-0.92)	(-1.65)	(0.45)

Table 9. Panel A – *Continued*

Cash Flows	-439.443***	-633.251***	-632.368***	-326.825***	-413.691***	-266.740**
	(-7.42)	(-7.87)	(-7.86)	(-4.64)	(-6.53)	(-2.22)
Cash	24.886	2.490	1.993	52.282**	-13.822	75.035*
	(1.34)	(0.14)	(0.11)	(1.98)	(-0.69)	(1.80)
Market to Book	-9.113***	-7.054***	-7.056***	-9.330***	-8.757***	-11.972***
	(-4.01)	(-3.40)	(-3.40)	(-2.78)	(-3.78)	(-4.01)
STD(Cash Flows)	511.810***	684.798***	686.253***	434.624***	428.011***	504.338**
	(4.96)	(3.26)	(3.28)	(3.72)	(3.80)	(2.04)
Not Rated	43.243***	39.399***	39.179***	49.764***	22.343	78.097
	(3.02)	(2.74)	(2.71)	(4.32)	(1.46)	(1.42)
Log(Facility Amount)	-17.152***	-14.007***	-14.001***	-20.549***	-18.282***	-16.788***
	(-10.49)	(-5.59)	(-5.59)	(-10.02)	(-9.86)	(-4.46)
Log(Number of lenders)	-5.533**	-6.764**	-6.816**	-4.214	-9.116***	-13.915***
	(-1.99)	(-2.11)	(-2.13)	(-1.20)	(-3.97)	(-2.69)
Log(Maturity)	-11.263***	-14.383***	-14.430***	-7.679	-17.304***	-10.354
	(-2.68)	(-2.69)	(-2.70)	(-1.31)	(-4.21)	(-1.04)
Secured	55.893***	53.688***	53.741***	56.900***	52.603***	71.047***
	(17.56)	(11.59)	(11.55)	(11.28)	(14.26)	(6.35)
Missing_Secured	18.126***	15.286***	15.216***	21.628***	11.719***	19.819**
	(6.42)	(4.36)	(4.38)	(3.84)	(3.57)	(2.11)
Credit Spread	0.430***	0.435***	0.433***	0.421***	0.271***	0.420***
	(6.79)	(5.47)	(5.45)	(6.52)	(5.28)	(4.43)
Term Spread	0.151***	0.177***	0.177***	0.119***	0.137***	0.213***
	(4.65)	(4.70)	(4.70)	(4.26)	(11.33)	(7.85)
Constant	401.502***	372.889***	373.492***	429.467***	492.002***	516.757***
	(11.30)	(7.36)	(7.36)	(10.33)	(13.25)	(5.34)
Rating & Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Loan Purpose & Loan Type FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11743	6500	6500	5243	10069	1674
Adj R-squared	0.557	0.608	0.608	0.469		
LR test of indep. Eqns						
Rho					-2.0221***	-0.6249***
Chi-squared					945.9	
p-value					0.000	

Panel B. Bond Yield Spread

	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	Switching Regressions	
Dependent Variable: Yield Spread	Full Sample	Subsample: Bonds issued by Multinational	Subsample: Bonds issued by Domestic Firms	Subsample: Domestic Bonds	Subsample: International Bonds
GlobalDiv	6.927			5.241	-13.810
	(0.65)			(0.47)	(-1.09)
International Bond		24.425***	42.257***		
		(3.04)	(2.68)		
Log(Sales)	-12.271***	-11.151***	-12.642	-14.883***	-1.993
	(-3.63)	(-3.31)	(-1.41)	(-3.72)	(-0.34)
Leverage	57.760*	69.715**	71.564*	86.435**	87.759***
	(1.84)	(2.38)	(1.69)	(2.07)	(2.89)
Sales Growth	-6.658	-15.372	-4.219	7.215	-21.608*
	(-0.63)	(-0.64)	(-0.34)	(0.68)	(-1.77)
Cash Flows	-378.595**	-395.791	-319.025**	-344.128***	-434.946
	(-2.48)	(-1.29)	(-2.06)	(-3.07)	(-1.35)
Cash	32.407	8.210	142.296	48.955	32.592
	(0.45)	(0.13)	(1.40)	(0.45)	(0.54)
Market to Book	-22.173***	-20.544***	-24.487**	-23.661***	-26.316***
	(-3.54)	(-2.93)	(-2.14)	(-3.28)	(-3.18)
STD(Cash Flows)	754.260**	-39.412	1,101.361***	1,208.225***	484.739
	(2.40)	(-0.07)	(3.88)	(2.74)	(1.53)
Log(Proceed Amount)	10.855***	3.452	19.830	6.542	-32.326***
	(3.14)	(0.92)	(1.36)	(0.90)	(-3.10)
Log(Maturity)	-15.144*	-17.571**	-10.678	-2.429	-39.528***
	(-1.75)	(-2.50)	(-0.50)	(-0.29)	(-3.63)
Callable	101.765***	86.842***	105.118***	65.318***	98.024***
	(5.96)	(5.52)	(3.99)	(3.66)	(5.03)
Credit Spread	1.353***	1.253***	1.502***	1.238***	1.200***
	(15.97)	(13.86)	(8.85)	(4.82)	(13.65)
Term Spread	-0.056	-0.099*	-0.045	-0.117**	-0.111**
	(-0.97)	(-1.67)	(-0.46)	(-2.53)	(-2.04)
Constant	129.575*	188.376***	75.604	183.980***	700.502***
	(1.76)	(3.02)	(0.49)	(2.67)	(7.02)
Rating & Industry FE	Yes	Yes	Yes	Yes	Yes
Observations	1806	1293	513	1293	513
Adj R-squared	0.661	0.665	0.653		
LR test of indep. Eqns					
Rho				-0.329	-0.507***
Chi-squared				11.75	
p-value				0.0028	

Table 10. Heckman Selection Model

This table presents estimates of the international corporate diversification on foreign lender participation in bank loans and international bond issuance in corporate bonds 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 second stage, I regress the dependent variables on *GlobalDiv*, firm characteristics, rating fixed effects, industry fixed effects, and quarter fixed effects as in Table 4 and Table 5. 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, the average All-in-Drawn spread weighted by facility amount, and the maximum spread if there are multiple facilities each quarter. The estimations in Columns (2) and (3) use a bivariate probit model that adjusts for selection bias and the coefficients in Columns (4) through (7) are estimated from Heckman selection model. In Panel B, the dependent variables are indicator of international bond issuance, the average bond spread weighted by the proceed amount, and the maximum spread if there are multiple bonds issued each quarter. Panel B displays the results from a bivariate probit model in Column (2) and from Heckman selection model in Columns (3) and (4). The *z*-statistics and *t*-statistics adjusted for heteroskedasticity and firm-level clustering are in parenthesis. ***, **, and * indicate *p*-values of 1%, 5%, and 10%, respectively.

Panel A. Bank Loan Issuance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Selection	Outcome (Bivariate Probit)		Outcome (Heckman)			
	Issue Loan	Have Foreign Lender	Have Foreign Lead	Foreign Lender Share	Foreign Lead Lender Share	Average Spread	Max Spread
LT Debt Maturing 1 yr	0.1846***						
	(6.43)						
GlobalDiv	0.0348**	0.2900***	0.0957*	0.0440***	0.0156***	2.8593	4.3431
	(2.17)	(5.32)	(1.72)	(5.73)	(2.94)	(0.80)	(1.06)
Log(Sales)	0.1251***	0.3741***	-0.0295	0.0362***	0.0002	-17.3190***	-17.2229***
	(19.48)	(17.19)	(-0.88)	(11.00)	(0.10)	(-12.64)	(-11.00)
Leverage	0.3489***	0.8085***	0.2138	0.1211***	0.0531***	131.3139***	160.3255***
	(8.85)	(6.79)	(1.20)	(6.10)	(3.41)	(11.68)	(12.40)
Sales Growth	0.0701***	0.1913***	0.0794	0.0229***	0.0103*	15.9520***	23.1426***
	(3.79)	(3.46)	(1.38)	(2.93)	(1.75)	(3.67)	(4.61)
Cash Flows	-0.4364*	-0.4503	-0.6138	-0.3660***	-0.0723	-512.1654***	-607.3118***
	(-1.79)	(-0.59)	(-0.91)	(-3.63)	(-1.13)	(-8.62)	(-8.13)
Cash	-1.3483***	-0.9224**	1.3098***	0.0344	0.0808***	62.1135***	61.4057***
	(-18.00)	(-2.10)	(7.39)	(0.92)	(2.91)	(3.52)	(3.05)
Market to Book	0.0105	0.0486**	0.0009	0.0030	-0.0011	-12.3970***	-13.0640***
	(1.32)	(2.02)	(0.04)	(0.84)	(-0.48)	(-7.89)	(-6.90)
STD(Cash Flows)	-0.0754	-3.8327**	-1.1408	-0.1572	-0.0684	614.5816***	789.1304***
	(-0.18)	(-2.57)	(-0.98)	(-0.87)	(-0.61)	(4.97)	(5.19)
Not Rated	-0.2341	-0.7305**	0.3986*	-0.1548***	0.0219*	55.8768***	56.7084***
	(-1.42)	(-1.99)	(1.83)	(-6.26)	(1.84)	(3.00)	(2.95)
Constant	-1.8478***	-2.6167***	0.1230	0.1448*	0.0214	187.1199***	179.5657***
	(-9.47)	(-3.44)	(0.16)	(1.67)	(0.38)	(6.57)	(5.62)
Rating & Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	86506	86506	86506	86506	86506	85923	85923
Censored Observations		78930	78930	78930	78930	78930	78930
Rho		0.373	-0.867	-0.0774	-0.0417	-0.157	-0.148
Wald Chi		0.827	11.62	1.289	7.274	35.90	39.18
p -value		0.3630	0.0007	0.2560	0.0070	0.0000	0.0000

Panel B. Corporate Bond Issuance

	(1)	(2)	(3)	(4)
	Selection	Outcome (Bivariate Probit)	Outcome (Heckman)	
	Issue Bond	International Bond	Average Spread	Max Spread
LT Debt Maturing 1 yr	0.0667			
	(1.34)			
GlobalDiv	-0.0156	0.1555**	8.9251	8.9362
	(-0.50)	(2.50)	(1.12)	(1.06)
Log(Sales)	0.1953***	0.0141	-20.3467***	-18.9758***
	(16.28)	(0.36)	(-5.88)	(-5.23)
Leverage	0.9034***	-0.0581	90.3122***	92.5573***
	(14.38)	(-0.30)	(3.31)	(3.33)
Sales Growth	0.1727***	0.0690	-4.3411	-6.6718
	(6.93)	(0.92)	(-0.43)	(-0.65)
Cash Flows	-3.4041***	1.9215**	-413.0706**	-407.4311**
	(-8.62)	(2.11)	(-2.11)	(-2.02)
Cash	-0.2195**	0.1871	81.1335*	78.9426*
	(-2.17)	(0.87)	(1.84)	(1.76)
Market to Book	0.0532***	-0.0748**	-37.8028***	-38.6720***
	(3.97)	(-2.43)	(-6.83)	(-6.83)
STD(Cash Flows)	0.4540	-0.2906	725.7180***	795.6734***
	(0.64)	(-0.24)	(2.78)	(2.94)
Not Rated	-0.2904	-0.6124**	66.9019	71.8403
	(-1.34)	(-2.36)	(1.49)	(1.62)
Constant	-3.4935***	0.5694	408.5035***	411.3425***
	(-14.03)	(0.80)	(6.53)	(6.33)
Rating & Quarter FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	86506	86506	84949	84949
Censored Observations		82380	82380	82380
Rho		-0.867	-0.168	-0.174
Wald Chi		26.82	11.14	11.69
p -value		0.0000	0.0008	0.0006

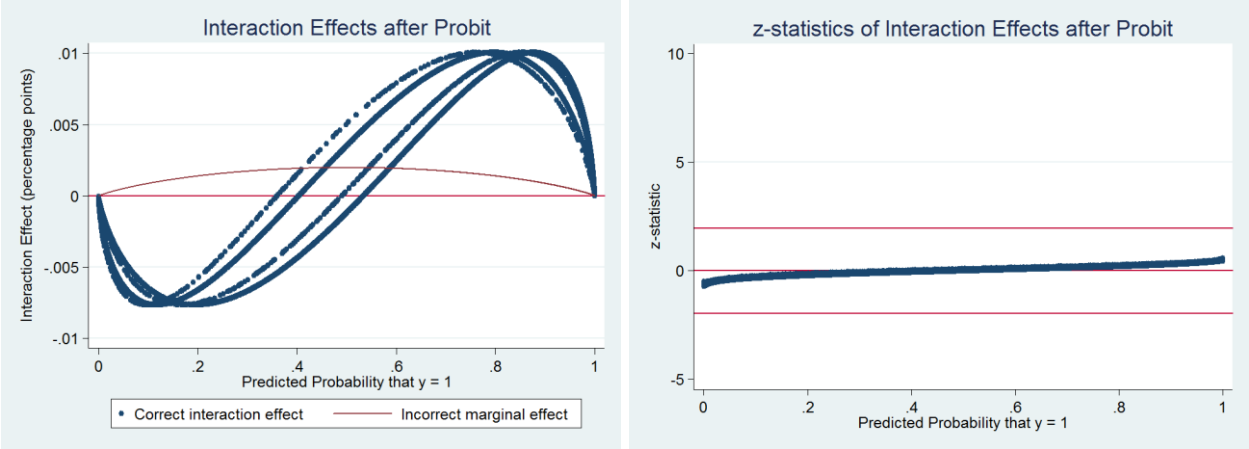
Figure 1. The Proportion of Multinationals and Foreign Income

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 abs(foreign income)/[abs(domestic income) + abs(foreign income)].

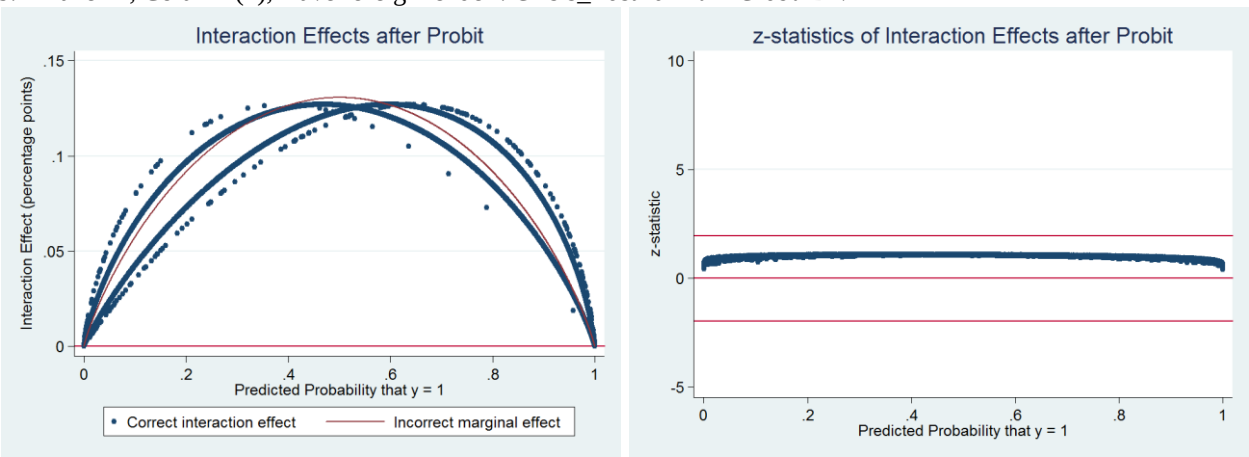
Figure 2. The Economic Significance of the Impact of Global Diversification during the Crisis

The graphs below display the interaction effects and corresponding z-statistics of interaction variable between *GlobalDiv* and crisis indicators reported in Table 7, using the methodology of Norton, Wang and Ai (2004). On the graphs in the right side, the lines on the graphs for z-statistics around 0 represent the level of significance at 5% (±1.96).

a. Panel A, Column (1), Have foreign lender : *Crisis_PreLehman* GlobalDiv*

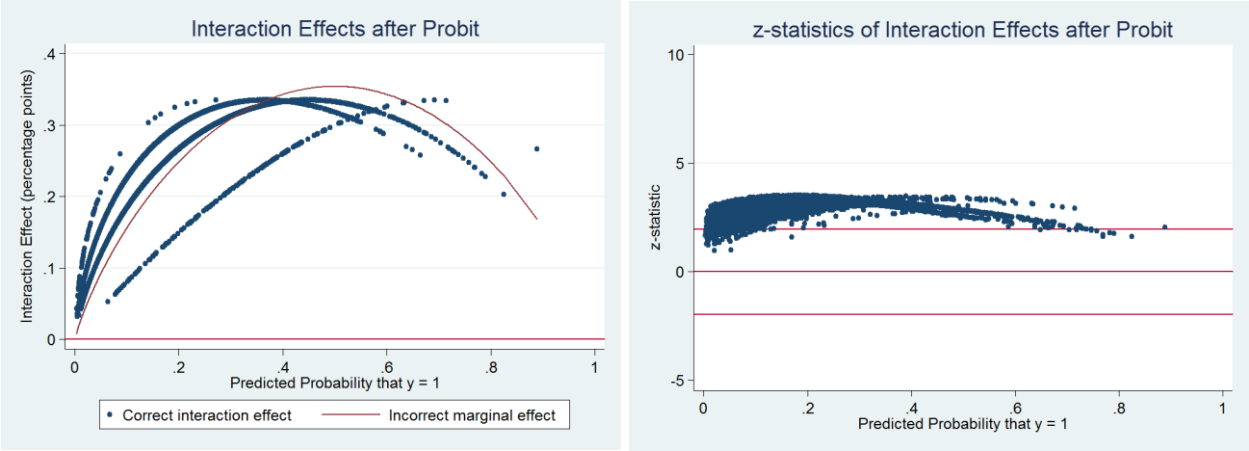


b. Panel A, Column (1), Have foreign lender : *Crisis_PostLehman*GlobalDiv*

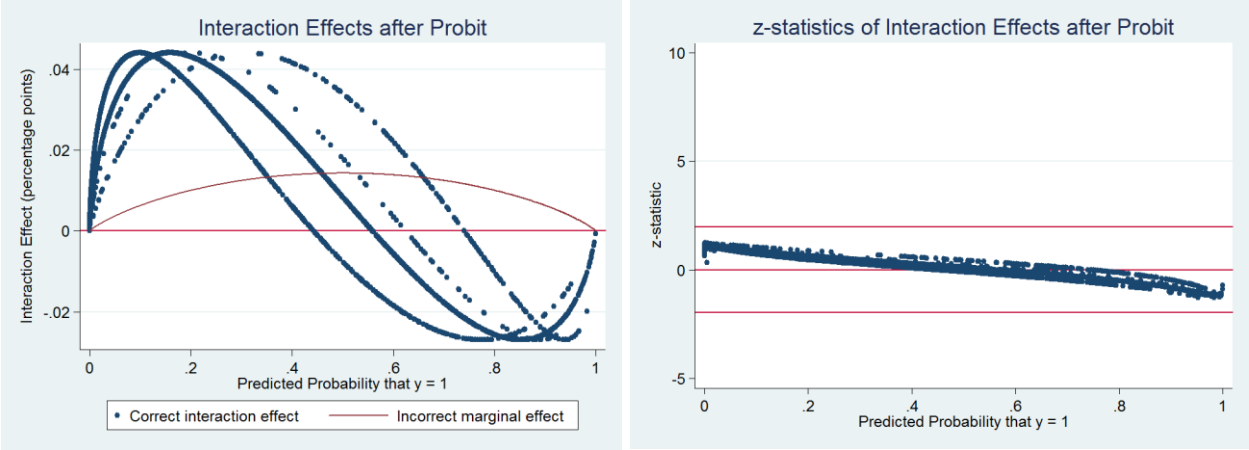


c. Panel A, Column (2), Have foreign lead lender : *Crisis_PreLehman* GlobalDiv*

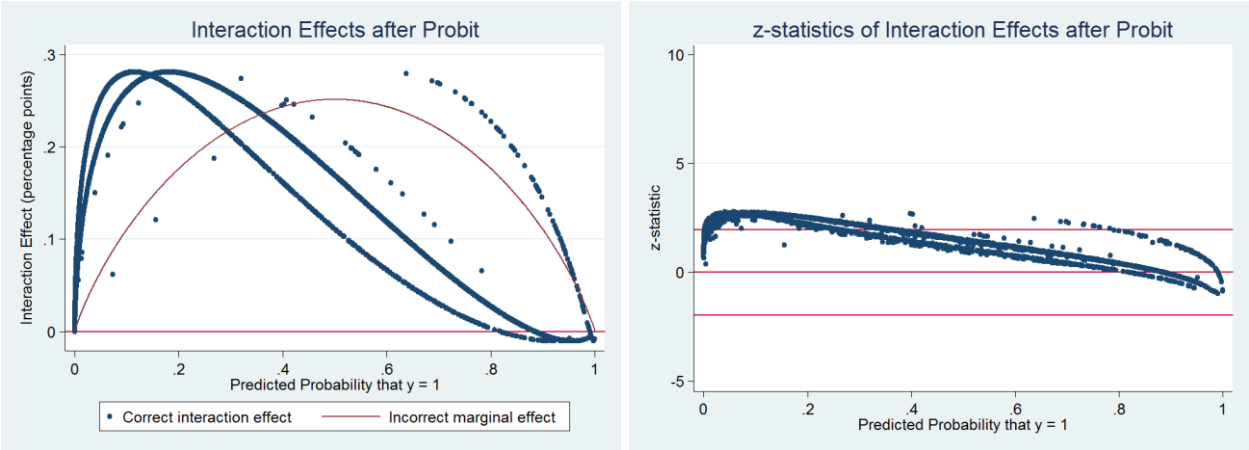
d. Panel A, Column (2), Have foreign lead lender : *Crisis_PostLehman*GlobalDiv*



e. Panel B, Column (2), International bond: *Crisis_PreLehman* GlobalDiv*



f. Panel B, Column (2), International bond: *Crisis_PostLehman*GlobalDiv*



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	—	1,405	—	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 (*pifo*) or foreign income tax (*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. 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: *Compustat Annual, CapitalIQ*)
Foreign Income/Total Income	The proportion of absolute value of foreign pretax income (*pifo*) to the sum of absolute value of foreign pretax income (*pifo*) and absolute value of domestic pretax income income (*pidom*) (Source: *Compustat Annual*)
Foreign Sales/Total Sales	The proportion of foreign sales to total sales. (Source: *Compustat Segment*)
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 total number of geographic segments. (Source: *Compustat Segment*)
Number of foreign subsidiaries	The number of foreign subsidiaires, where a foreign subsidiary is defined as a subsidiary outside the U.S. excluding tax haven countries. (Source: *CaptialIQ*)
Number of countries where MNC have foreign subsidiaries	The number of countries where a firm has foreign subsidiaries. (Source: *CapitalIQ*)
% of developed countries	The proportion of the number of developed countries to the total number of countries where a firm has foreign subsidiaries. A country is defined as a developed country, if the private credit to GDP ratio of the country is above the median. (Source: *CapitalIQ, IMF*)
	Firm Characteristics (Source: *Compustat Quarterly and Annual*)
Total assets	Total assets (*atq*) in 2005 US dollars.
Market cap	The market value of common equity (*cshoq*prccq*) in 2005 US dollars.
Log(Sales)	Natural log of annual sales (*saleq*) in 2005 US dollars
Market to book	The ratio of market value of assets to book value of assets (*atq*), where market value of assets is calcuated as book value of assets (*atq*) minus book value of common equity (*ceqq*) plus the market value of common equity (*cshoq*prccq*)
Sales growth	Change in sales (*saleq*) divided by the 1-year lagged sales. To adjust seasonality, the change in sales is calculated by substracting the sales at the same quarter of previous fiscal year.
Cash	Cash and marketable securities (*cheq*) divided by total assets (*atq*).
Cash flows	Operating income before depreciation (*oibdq*) divded by total assets (*atq*).
STD(Cash Flows)	Standard deviation of cash flows to total assets in previous 20 quarters

Leverage	The sum of long-term debt (*dlttq*) and debt in current liabilities (*dlcq*) divided by total assets (*atq*).
Capex	Capital expenditures (*capxy*) divided by lagged total assets (*atq*). As *capxy* 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 (*xrdq*) divided by total assets (*atq*). 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 (*dvy*) minus preferred dividends (*dvpq*) is positive.
S&P public bond rating	S&P long-term public bond rating (*splticrm*) 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 (*splticrm*) is equal or greater than BBB-.
Speculative grade	An indicator variable equal to one if S&P long-term public bond rating (*splticrm*) is below BBB-.
Not rated	An indicator variable equal to one if S&P long-term public bond rating (*splticrm*) 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 *DealScan* , 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.
Loans issued by foreign subsidiary	An indicator variable equal to one if the borrower is a foreign subsidiary.
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 *DealScan* .
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 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 *SDC*.
Foreign currency denominated-bond	An indicator variable equal to one if a bond is denominated in a currenciy other than the U.S. dollar.
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.

Macroeconomic Variables	
Credit Spread	The difference between the yield on Moody's seasoned corporate bonds with Baa rating and the yield on Moody's seasoned corporate bonds with Aaa rating. (Source: *Federal Reserve Board of Governors*)
Term Spread	The difference between the 10-year Treasury yield and the 2-year Treasury yield (Source: *Federal Reserve Board of Governors*)
PreCrisis	An indicator variable of quarters from January 2000 to June 2007.
Crisis_PreLehman	An indicator variable of quarters from July 2007 to August 2008.
Crisis_PostLehman	An indicator variable of quarters from September 2008 to March 2009.
PostCrisis	An indicator variable of quarters from April 2009 to March 2010.