Investor Base and Corporate Borrowing Policy

Evidence from International Bonds

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Massimo Massa* **Alminas Zaldokas***

Abstract

We use the international bond issues by US firms to study the benefits of investor diversification in cross-border security issuances. We claim that international bondholders are less sensitive to US specific shocks, but since they are also less able to provide effective monitoring, the benefits of international issues are only available for firms with good international recognition in international credit markets. We use the fraction of prior international bond holding in firm's domestic and international bonds as a proxy for firm's international credit recognition. We find that international investor demand is increasing with the firm's recognition. Moreover, the offering yield spreads on international bonds are lower than domestic offering yield spreads for these internationally recognized firms and they have higher probability of issuing internationally. The ability to finance internationally has real effects on the operations of the firm. The fraction of international bondownership is negatively related to the probability of default and the degree of financial constraints of the firm. These results highlight that the benefits of international capital markets also exist for the firms that are located in countries with the already highly developed financial markets and that do not need to bond to a better governance system.

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Keywords: international bond issues, international bondownership, investor recognition hypothesis.

* Finance department, INSEAD, Boulevard de Constance 77300 Fontainebleau, France, email: massimo.massa@insead.edu, alminas.zaldokas@insead.edu. We thank Denis Gromb, Harald Hau, Søren Hvidkjær, Michelle Lowry, Michael Schill, the participants in the audiences at INSEAD, Copenhagen Business School, 2009 AFFI International Paris Finance Meeting, 2010 Transatlantic Doctoral Conference, 2010 Financial Management Association Meetings, 2010 CRSP Forum and the Fifth Biennial McGill Global Asset Management Conference. Earlier versions of this paper circulated under different titles. Alminas Zaldokas acknowledges the support from Sasakawa Young Leaders Fellowship Fund.

Introduction

Following the introduction of the euro, the Financial Times noted: "One side-effect of the launch of the single currency is that it has deprived European investors of a rich source of currency diversity. Thus, the explosion of a euro-denominated bond market has paradoxically led to a surge in European demand for dollar-denominated products. As a result, there has also been a marked rise in the number of US companies visiting the international bond markets in their domestic currency" (Financial Times, September 10, 1999).[1]

This evidence is in line with the theoretical finance literature positing that international investors care about the international diversification of their portfolios and that US firms catering to this desire of diversification fetch better financing conditions. While international investors can also invest in the domestic assets (equity and bonds) of a US firm, they face institutional transaction costs (Chaplinsky and Ramchand, 2000). In such segmented capital markets a US firm can choose to cater to its investors and issue international securities if international investors see its securities as good assets for diversification and thus the firm observes a large international demand in its domestic issuances.

However, the tests of the benefits of international diversification are difficult as the focus on international firms listing equity in the US mixes the benefits of portfolio diversification together with the bonding to a better system of governance. Indeed, in addition to a large base of institutional investors that might seek exposure to the emerging market securities (Burger and Warnock, 2007), listing in the US provides access to a better governance - such as superior US shareholder protection and more governance-savvy institutional investors (Doidge et al, 2004).

In this paper, we consider an ideal case in which diversification and governance are not observationally equivalent and in fact provide opposite predictions. We focus on the international bond issuances by US firms. Indeed, catering to international investors exposes US firms to investors that, on the one hand, are less sensitive to US shocks, but, on the other hand, are less effective monitors than more proximate US investors. Lower exposure to US macroeconomic shocks is related to better benefits of diversification, while higher distance between lenders and borrowers reduces the ability of effective monitoring.

[1] Before the introduction of the euro, The Economist wrote: "European investors are also adjusting to another, possibly more permanent, change: a European single currency, due in 1999. The approach of the euro is hurting bond investors twice over. Government bonds across Europe are dropping into line with low-yielding bunds. At the same time, Europe's currencies have begun to fluctuate less wildly against the D-mark, robbing bond investors of another potential source of profits. A single currency would eliminate these profits entirely" (The Economist, April 24, 1997).

The focus on international bond offering by US firms has also the advantage of allowing us to investigate an important but largely unexplored phenomenon. Indeed, the international bond offering by US firms has been massive over the last decade. Figure 1 shows that the net corporate debt that US non-financial firms raised internationally has increased from \$1.8bn (6% of total changes in US corporate debt) in 1994 to \$173.3bn (54% of total changes in US corporate debt) in 2007, with a total outstanding amount raised going up from \$48bn to \$730.6bn.[2] The growth is even more evident for financial firms. During the same time, the fraction of international bondownership in US corporations has also grown, from 7.8% in 1994 to 24% in 2007. In contrast, in 2007, US firms raised only \$17.6bn of equity in the markets outside of the US. Despite their size, international bond issuances by US firms have been scarcely noticed in the literature. We bridge this gap by focusing on the relation between international bond issuances and cost of financing.

We argue that there is a trade-off between diversification and governance. International investors offer sizable diversification-related benefits to the US firms as they are less sensitive to US-related macroeconomic risk for at least two major reasons. First, international investors tend to have a smaller share of their overall portfolio invested in the assets of US firms and thus are naturally more diversified and less sensitive to the general US macroeconomic conditions. Thus, the bonds issued by US firms can act as a high-quality diversification asset to reduce the exposure of international investors to domestic firms. Such effect is amplified by the fact that most of the international issuances are denominated in US dollars and thus provide an additional potential source of diversification for the investors that mostly hold non-dollar assets.

Second, international institutional investors are exposed to a lower correlation between the cash flow risk of the US firms in which they invest and the timing of outflows of their own investors. Asset managers are sometimes forced to sell to meet redemption calls (e.g., Chen et al, 2009). Institutional asset managers located close to the source of the cash flows of a firm may be more subject to its cash flows shocks as they are correlated to the flows of end-retail investors that invest in the asset management firm. In contrast, investors located far away should have a lower correlation between their investor flows and the cash flows of the firms they invest in. For example, AXA World Funds US High Yield Bonds specializes in High Yield Bonds issued by US corporations but mostly caters to European investors. In contrast, Putnam High Yield Fund invests almost entirely in US assets and caters to US investors. Given that negative cash flows shocks in Europe are not perfectly correlated with negative cash flow shocks in the US market, AXA World Funds US High Yield Bonds

[2] Aggregate statistics come from the US Department of Treasury International Capital System (for international bondownership) and Bank of International Settlements (for international issues of securities).

investors are less likely to withdraw money at the time when US firms experience negative cash flow shocks. That is, they are less likely to be forced to sell bonds at worse conditions.

However, international investors provide worse governance. Indeed, international investors are more geographically dispersed, are located further away from the issuer's headquarters and come from countries with different rules of law and tradition to enforce creditor rights. They are therefore less able to monitor the firm, enforce the covenants and coordinate in the event of default. Lower ability to coordinate in case of renegotiation can also make it more difficult for the firm to emerge from bankruptcy.

Therefore, a trade-off exists between the benefits of diversification of international investors and the cost of their worse monitoring. The first would reduce the cost of borrowing, while the second would increase it. We argue that what affects the firm's position in this trade-off is the degree of *firm's recognition (a la Merton, 1987) in the international credit markets*. International recognition alleviates the fear of lower monitoring, allowing the firm to reap the benefits of diversification. In other words, firms with better international recognition can afford to issue internationally because for these firms the benefits of diversification for international investors outweigh the concerns for the deterioration in the firm's monitoring by distant bondholders.

This is consistent with the conjecture of Kim and Stulz (1988) that "firms for which restrictive covenants and/or certification by regulatory authorities have the least value are the most likely to issue" internationally. That is, firms with good international recognition experience a lower cost of debt when they issue an international bond as opposed to a domestic one. We argue that this is due to their ability to enjoy the benefits of higher diversification without paying too high a price in terms of worse monitoring from more distant international lenders.

While different proxies may exist for international recognition, we focus on the fraction of international investors in the firm's previously issued bonds.[3] This variable proxies for the potential benefits in terms of diversification that international investors may get from investing in the bonds of the firm. Indeed, more generally, if international investors are interested in similar types of securities more than domestic investors, prior investment by other international investors acts as a proxy for unobserved tastes for the bonds of a particular firm.[4] Overall, the international credit recognition is thus related to investor

[3] In a similar vein, Nikolov and Whited (2009) claim that fraction of institutional investor ownership in firm's equity is the best available proxy for the quality of firm's corporate governance.

[4] If international investors observe the holdings of their peer investors, these unobserved tastes could have a more direct interpretation. It could proxy for the "screening skills" of peer investors, better expected coordination in renegotiating the debt in the case of distress, the ability to roll over debt with the existing international investors, as well as any other unobserved reason inducing investors to derive "comfort" from the fact that similar investors made the same investment choice.

recognition as described by Merton (1987) and more recently by Amihud, Mendelson and Uno (1999).

Critically, this proxy is negatively related to the quality of monitoring as this decreases in the fraction of distant lenders. Therefore, a positive relation between this variable and bond demand would suggest that the benefits of diversification are perceived to be higher than the cost of lower monitoring.

Firms with higher recognition in international compared to domestic credit markets are able to reap a higher advantage from the international issues, as they get access to more diversified investors without being penalized for the worse monitoring. That is, once international recognition exists, firms will cater to their existing investors by issuing where these are located. In other words, a US firm can choose to cater to its investors and issue international securities if it sees a large international demand in its domestic securities. *Even a firm that has never issued any international security* can see an increase in investments by international institutions in its domestic bonds, and thus start issuing internationally.

Our argument is similar to the one provided by Amihud, Mendelson and Uno (1999). They show that Japanese companies face a similar trade-off. If individual investors show interest in the firm's equity but have wealth constraints, the firm can reduce its minimal trading units and thus attract more individual investors. Catering to this investor base comes at a cost of potential agency problems.

These considerations suggest our testable hypotheses. First, cross-sectionally international investors have higher demand for the bonds of internationally recognized firms. Second, the higher is the international recognition of the firm, the lower is its cost of issuing international bonds. Finally, the lower cost of financing helps to improve the financial conditions of the firm and reduce its financial constraints, lowering its investment sensitivity to cash flows as well as its probability of distress. Overall, the lower cost of financing translates into higher value for outstanding bonds and equity.

We test these hypotheses by focusing on the international issuance of bonds by US firms in the period from 1998 to 2006. We start by looking at whether international bond issues affect the value of the firm - i.e. the market value of the outstanding equity and domestic bonds. We indeed find that issuing bonds abroad is related to a more positive effect than issuing domestically. Such effect is amplified even more if the firm has good international recognition. One standard deviation higher international bondownership is related to 0.24% (0.1%) higher return on equity (bonds) over the two day window around the issuance of an international issue.

We next test our hypotheses more formally and show that international bond issuances command lower yield spreads than the domestic ones and the difference is related to international credit recognition. Figure 2 shows that the average yield spreads for international issues have been lower than domestic issues for almost all the period we study. Even more, if we compare, for each quarter, the international and domestic offering yield spreads for bonds with similar characteristics of the firms that issue *both* at home and abroad, we find that the difference between domestic and international yield spreads is on average negative. More importantly, this difference is more negative the more recognized the firm is by international investors – i.e., if it has a high fraction of prior international bondownership. These results suggest that for some firms issuing internationally is cheaper than issuing domestically and that this benefit is related to their international recognition.

We also test whether more globally recognized firms exploit this opportunity. We find that more internationally recognized firms are more likely to issue internationally. One standard deviation higher prior international bondownership is associated with a 2.1% higher probability of issuing internationally. This represents an 11.7% increase with respect to its unconditional mean probability of issuing international bonds.

Then, we look at investor demand. As a proxy of international recognition from the investor's perspective, we consider the "peer" bondownership in the firm – i.e. the fraction of bondownership by other institutional investors from the same country as the investor. We find that the average international investor demands more bonds if the issuing firm already has a significant bondownership by its peers – i.e. it has higher international recognition in the investor's country. One standard deviation higher peer ownership is related to a 1.5% larger purchase in terms of face value of the bond, where the average international investor owns 0.9% of the bonds of the firm – i.e. one standard deviation higher peer ownership is related to a 167% higher demand for an average international investor.

When looking at investor demand, we also examine the link between the international ownership of US corporate bonds and the potential benefits of diversification for international investors as proxied by the correlation of monthly changes in prices of firm's bond and international corporate bond indices. Our results show a negative link, thus, the more the price of the corporate bonds moves in the opposite direction to those of the non-US corporate bonds, the higher is the international investor bondholding in the firm.

Finally, once we have established the link between international recognition, investor demand and cost of borrowing, we show that the ability to borrow internationally has real effects on the operations of the firm. First, international bondownership is negatively related to the probability of default. One standard deviation higher non-US located international bondownership is related to a 9% lower probability of default when the analysis is done at

the bond-level and 5% lower probability when the analysis is done at the firm level. Second, firms with higher international bondownership display lower investment-cash flow sensitivity. One standard deviation higher non-US located international bondownership is related to a 22% lower investment-cash flow sensitivity.

We have argued that one of the major benefits of international borrowing is the ability to exploit investors that are more diversified vis-a-vis US shocks. We test this assumption distinguishing international bondownership into holdings by asset managers located outside of the US and holdings by asset managers that belong to international financial groups but are located in the US. Given that asset managers located outside of the US cater mostly to non-US investors their withdrawals are less correlated to US negative cash flow shocks. They should therefore be less exposed to US-specific risk and thus more attracted to invest in US bonds. And, indeed, we find that the results are driven by the bondownership of funds located outside of the US.

Also, in line with the trade-off between diversification and monitoring, the impact of foreign bondownership on the offering yields is non-linear. There is no additional effect of foreign bondownership on the offering yields when the international bondownership is beyond the 15% threshold. We conjecture that for these firms the lower monitoring provided by international investors more than offsets any positive diversification effect.

Our results are robust to the control for the potential endogeneity of bondownership and to the other competing explanations for international bond issues. International borrowing has been traditionally explained as an effort to hedge currency exchange risk by matching assets and liabilities in same currencies. Also, international bond issuances have been explained in terms of tax liability smoothing among subsidiaries located in countries with different tax regimes. To control for these alternative explanations, throughout our analysis, we explicitly control for the foreign assets of the firm and its international sales since both the hedging needs and the ability to utilize interest deductions largely depend on the location of income (Henderson, Jegadeesh and Weisbach, 2006).

Also, we find that our results are stronger if we only consider bond issues denominated in US dollars. In fact, 60% of the international bond issues of US firms in our sample are denominated in US dollars. The robustness of the results allows us to rule out the potential confounding effect of currency hedging or interest rate arbitrage motives of international bond issues.

We also show that international ownership does not simply proxy for previous international issuances by looking at the first international issuances of the firm. We find that international investment in the firm's domestic bonds predicts issuing a first

international bond. Moreover, we show that international bondownership matters in pricing the domestic bonds in the secondary market. An increase in the percentage of *international* investors among the owners of *domestic* bonds also reduces the yields on the *domestic* bonds of high quality firms. Since the positive price effect of international investors holds for domestic bonds, we argue that our results are not spurious relation to previous international issuances.

International investors might enjoy other benefits in addition to diversification such as lower taxes. Since eurobonds are not subject to a withholding tax in the US, marginal international investor with income taxed at a lower rate than in the US should ask lower yields. However, the overwhelming majority of international investors are institutions – e.g., mutual funds – not located in tax havens. These institutions tend to pass through the tax liability to the end-retail investors. The fact that the latter tend to be taxed at the income rates higher than in the US makes us believe – in line with most of the current literature (e.g., Peristiani and Santos, 2010) – that tax considerations are not the main drivers of the *time-varying* difference between domestic and international spreads for the same firm.

In unreported results we also control for the concentration of the bondholders of the firm. A potential objection is that international bondholders might be more concentrated and we might be simply capturing a general blockholding effect among the firm's bondholders. Adding such a variable never affects the statistical significance of our focus variable. In fact, the firm is able to issue at the lower international yield spreads the more dispersed its bondholders are.

Finally, it is worth mentioning that another potential explanation of our results can be related to market saturation – i.e., US firms issue internationally when domestic credit markets are saturated. Such saturation is in line with our diversification argument that international investors might be willing to bear more US macroeconomic risk than domestic investors who at the extreme stop purchasing domestic securities. In fact, a saturated domestic market implies that international investors have higher bargaining power and thus would charge higher borrowing costs compared to the case if domestic market was not saturated.

Our findings contribute to different literatures. First, they relate to the literature on international financing which mainly focuses on the cross-listings of equity (e.g., Karolyi, 1998, 2006). Some benefits of equity cross-listing have also been confirmed in the context of debt securities, e.g. bonding to a better system of governance (Miller and Puthenpurackal (2002), Ball, Hail and Vasvari (2009)), better information environment about the firm after the issue and higher liquidity of the firm's securities (Miller and Puthenpurackal (2005)). In addition, international corporate borrowing has been explained by the currency hedging

perspective (e.g., Froot, Scharfstein and Stein (1993), Kedia and Mozumdar (1998), Henderson, Jegadeesh and Weisbach (2006)) or apparent departures from interest rate parity (e.g., McBrady, Mortal and Schill (2011)). These arguments surely apply to some international issues and we reconfirm these findings. However, many international bond issues of US firms are denominated in US dollars, opening up the possibility that currency hedging or differences in general borrowing rates are not the sole reasons for international financing.

Our results also explain the difference between the findings of Graham and Harvey (2001) and Henderson, Jegadeesh and Weisbach (2006). The survey of managers of US firms, reported in Graham and Harvey (2001), suggests that one of the primary reasons why firms issue in the foreign markets is the difference in the interest rates. On the contrary, Henderson, Jegadeesh and Weisbach (2006) do not find evidence that corporate bond issuances in the US and UK by foreign firms can be explained by the differential in market interest rates. We show that not all firms are able to attract lower financing rates by issuing internationally but rather only the ones with the investor base that seeks diversification with the firm's corporate bonds.

Also, our results are indirectly related to the studies on the borrowing from foreign banks. We suggest that the "hard" information about borrowers which is crucial in international bank borrowing (Carey and Nini, 2007, Houston, Itzkowitz and Naranjo, 2007), in the public markets can be replaced by firm's international recognition in attracting other institutional investors. In all our regressions we control for international borrowing from banks.

Second, we relate to the literature on international ownership. It has mostly concentrated on the benefits of higher foreign (mostly US) ownership of non-US firms (e.g. Aggarwal, Klapper and Wysocki, 2005), although there is now a growing literature on the foreign equity ownership of US corporations as well. For instance, Kang and Kim (2008) find that foreign blockholders are less likely to engage into governance activities in US targets because of information asymmetries. In a related paper, Cai and Warnock (2006) look into the foreign equity ownership of US corporations and find that foreign investors can achieve international diversification by investing in internationally diversified US firms. Burger and Warnock (2007) discuss the participation in the foreign debt markets from the perspective of the US investor. We contribute to this literature by showing the corporate responses international ownership in the bond market and its impact on the decisions of US firms.

We also relate to the literature on "word of mouth". Hong, Kubik and Stein (2002) show how social interaction – defined as interaction between people that belong to the same geographical community – affects the decision of the investors to enter the stock market. In an international context Parwada and Yang (2009) find that international equityholders

mimic each other's investments into US firms and there is high within-country commonality in the portfolio holdings of US firms.

The remainder of the paper is articulated as follows. Section II describes the sample and the main variables we use. Section III introduces the effects of international financing and international bond ownership on outstanding bonds and equity. Section IV links the probability of issuing an international bond to the international credit recognition of the firm. Section V provides the evidence showing that international ownership reduces cost of financing. Section VI analyzes investor demand. Section VII relates international bondownership to financial constraints and probability of distress. Section VIII links changes in international bondownership to the contemporaneous yield spread changes of the domestic bonds. A brief conclusion follows.

II. Data and Empirical Testing Issues

II.A Data Sources

We combine multiple sources of data: CRSP/Compustat, IBES, Lipper's eMAXX, Mergent/FISD Corporate Bond Dataset, Reuter's LPC Loanconnector, SDC Global New Issues, Thomson Worldscope, TRACE, Bloomberg, BankruptcyData.com, LoPucki's bankruptcy research database and covenant violation sample of Nini, Smith and Sufi (2009).

Quarterly data on bond holdings come from Lipper's eMAXX fixed-income database. It contains details of fixed-income holdings for nearly 20,000 insurance-managed funds, mutual funds and public pension funds from around 30 countries. The database provides information on quarterly ownership of more than 40,000 fixed-income issuers with total par amount of fixed income securities of $5.4 trillion. Data for years 1998-2006 is used for analysis.

The holding data was aggregated at the managing firm family level using the Dun&Bradstreet identification number for ultimate owners of managing firms. The geographical origin for a fund family is assigned to be the country where the managing firm that manages the largest funds for the family is located. We only use the families that do not change the country of origin in the sample period.

The sample of public bond issues is drawn from the SDC Global New Issues and Mergent/FISD Corporate Bond Dataset for the years 1998-2006. We use the Mergent dataset when we need to match bonds across different datasets as it reports unique 9-digit CUSIPs for the bonds. When we do not need bond-level matching across different databases, we use SDC as it provides a wider sample. In the SDC sample, the issues with the market area indicated as Eurobond, Global or International are considered as international issues. In the Mergent sample, the issues indicated as Eurobond, Global or listed on international bond

exchanges are treated as international. Convertible bond, equity-related, unit issues and perpetual maturity issues are excluded from the analysis. We also exclude bonds with maturity shorter than one year (commercial paper). After matching with the firm specific data and data from Lipper, we are able to use 18,105 domestic and 4,348 international bond issues in the bond-level analysis.

Data on the bank borrowing are provided by the LPC Loanconnector database. Financial data on firms are taken from CRSP/Compustat database. Here, we exclude firms with negative market-to-book ratio[5]. The data for dispersion in analyst forecasts of earnings are drawn from IBES. Monthly data on yield spreads in the secondary market come from Bloomberg while daily data comes from TRACE. Information on the geographical breakdown of the assets (as well as turnover) is taken from Thomson Worldscope dataset that uses the self-reported data from the firms, such as annual reports. Data on the general interest rate levels in the market are accessed via Datastream while data of aggregate international investor ownership of corporate bonds in the US are collected from Treasury Bulletin, provided by US Department of Treasury International Capital System.

II.B Main Measures

A complete list of the variables we use is provided in the Appendix. Below, we discuss the construction of the main explanatory variables used in the analysis.

Ownership variables

Our main measure of interest is international credit recognition that we proxy by the prior international bondownership in the firm's domestic and international bonds. International bondownership for a specific issuer is calculated as the percentage of the face value of bonds in the Lipper database that are held by international asset managing firms. We further distinguish international bondownership into bonds that are held by managing firms located outside of the US and bonds that are held by managing firms that belong to international groups but are located in the US. We concentrate on the international bondownership by the funds located outside of the US as our main variable of interest and a measure of international credit recognition. We keep the international bondownership by the funds that are located in the US as a control variable.

When we perform investor-level analysis, for every institutional investor, we define all the other institutional investors that have the same country of origin as "peers". We construct the bond ownership by investor's peers in a specific issuer as the fraction of the

[5] Given that a large fraction of international issues are made by financial firms, we keep them in the sample. However, since their financial data might be incompatible with industrial firms, we do not elaborate on the financial variables that are used as controls in our estimations. Our main results are unaffected if we only focus on the non-financial firms.

face value of the bonds in the Lipper database that are held by institutional investors from the same country. We use the fraction owned by peer investors as the US firm's credit international recognition in international investor's country.

Issue specific variables

The 'Offering yield spread' is calculated as the number of basis points over the comparable maturity Treasury bond for fixed rate issues and as the number of "basis point spread between the coupon rate and the rate of the index off which the coupon is reset for floating rate issues".[6] Yield spreads are expressed in US dollar terms and winsorized at the 0.1% level. 'Option adjusted spread' proxies for the secondary market yield spread. It is defined as the spread over the Treasury yield curve that is required to discount bond payments to match its market price.

The 'Quality spread' in the market is calculated as the difference between Moody's Long term corporate yield averages for Aaa bonds and Baa bonds. The 'Credit spread' in the market is estimated as the Moody's Long term corporate yield spread for Aaa bonds over 30 year Treasury bond rate. We use the 30 year Treasury bond rate as a control.

We also use some issue-specific variables as controls. They are: 'Issue size', 'Maturity' (defined in days), 'Moody's Long term debt rating', 'Subordination' and 'Covenants'. Moody's rating is defined on an increasing scale from 0 to 21, where 21 refers to Aaa. 'Subordination' varies according to a scale from 0 to 7, where 7 refers to Senior security level. 'Covenants' measures the number of covenants for the specific issue. It is either defined as a dummy variable, equal to one if any bondholder protective covenant is in place in the bond issue and zero otherwise, or constructed as the number of bondholder protective covenants available, where the maximum is 15.

Finally, we estimate the abnormal returns on the bonds and equities in the secondary markets after a new bond is issued. We follow Bessembinder et al (2009) to estimate abnormal returns on the bonds. For each firm we use the abnormal returns on the most traded bond issue, where the daily returns over the event window are adjusted for the average daily return, estimated over the half of year before the event window. We use the market model to estimate the abnormal returns on equity. We winsorize abnormal returns at 1% level.

Issuer specific variables

Firm specific financial variables are 'Tangibility', 'ROA', 'Asset size', 'Leverage', 'Market-to-book ratio'. 'Tangibility' is the percentage of tangible assets of the total assets of the firm. 'Market-to-book ratio' is the market-to-book equity ratio, while 'ROA' is the operating profit

[6] As defined in SDC Global New Issues database.

over the beginning period assets. 'Leverage' is the ratio of book value of debt to book value of assets. 'Asset size' is the logarithm of the firm's total assets.

'Analyst dispersion' is the standard deviation of the earnings forecasts of the analysts tracking the firm as reported in the IBES database. All our results remain valid if we require that at least ten analysts follow the firm when we use this variable. 'Share of assets abroad' refers to the fraction of total assets in the last fiscal year generated from foreign countries as reported in the Thomson Worldscope dataset. It is calculated as a complement to the firm's assets from the US. Since the breakdown and the names of the regions/countries differ firm by firm in the Thomson Worldscope dataset, the US is defined as the broadest region that geographically includes the US.[7] 'Share of assets in country' variables are calculated accordingly, e.g. 'Share of assets in Japan' denotes the fraction of total assets in the last fiscal year generated from the narrowest region that geographically includes Japan. 'Share of sales abroad' variable is defined accordingly.

In some motivational tests we link international bondownership and a proxy for potential diversification benefits to international investors that we call 'International Diversification'. We estimate the potential benefits of diversification by calculating the correlation between the monthly changes in yields of US corporate bonds in the secondary market and the returns on the JP Morgan ex US Corporate Bond Broad index. In particular, for each quarter and each firm we estimate the correlation between the monthly changes over the last twelve months and take an average over all bonds of the firm. A positive correlation means that a drop in the price of the US corporate bond is associated with higher returns on the non-US corporate bonds, i.e. more diversification benefits for US investors. Our results are consistent if we instead use other non-US corporate bond indices.

Descriptive statistics

We report the descriptive statistics in Table I. The average book value of assets of a median firm with bonds tracked in the Lipper database is about 1.3 billion. This compares to about 0.2 billion in the whole Compustat sample. Also, the median level of leverage is 0.39, tangibility is 0.96, market-to-book is 3.23 while profitability is 0.11. These figures are, respectively, 0.15, 0.98, 2.81 and 0.065 in the unconditional sample. These comparisons suggest that our sample is made of larger, more profitable firms that have higher average

[7] For instance, a firm might report sales from a self-described geographical category 'North America/Europe'. If no further details are provided, we treat the revenues from this geographical region as revenues from the US. Given that some other firms might have as narrow geographical category as 'United States', the international sales variable is not comparable across companies and can be only perceived as a crude proxy. Despite the fact that this control measure is noisy, it always appears in our specifications with the expected sign. All our results are robust to excluding this variable from the analysis. Since the number of firms covered in Thomson Worldscope dataset is incomplete, to avoid shrinkage of the sample, we assign a value of 0 to any of the international sales or assets variables for which we have missing data. In all regressions, where we use these variables, we include an additional (unreported) dummy to indicate if these data are available for the firm.

leverage ratio and higher average market-to-book ratio than the overall population of firms. Furthermore, the firms in our sample tend to have somewhat less tangible assets. The median Moody's rating of the firms in our sample is A2 while the median standard deviation of analyst earning forecasts is 0.06. We use these break points when we refer to the sample splits based on the above/below median rating and standard deviations of analyst forecasts.

The average firm in our sample has only a minor share of its bonds placed internationally. However, the median (mean) value of international bonds as a share over all bonds outstanding is 22% (33%) for the firms that had at least one international issue. This suggests that, while only a fraction of firms select to issue internationally, the firms that are active in the international bond market take part in it extensively.

The descriptive statistics show that international bondownership is higher in the firms that issue bonds internationally than in those which only issue domestically. Bonds issued internationally tend to be larger in size and carry a lower yield than the domestic issues.

III. Effect on Prices of Domestic Bonds and Equity

Before we explicitly test our hypotheses, we provide some preliminary evidence on the value effect of an international issue. In particular, we investigate how international issues affect the market value of already outstanding equity and domestic bonds. Kim and Stulz (1988) and Miller and Puthenpurackal (2005) argue that due to the differences in the institutional features of domestic and international securities, it is difficult to assess how effective borrowing costs differ between domestic and international bonds. Following Kim and Stulz (1988) we thus show that a new international issue induces a positive impact on the market values of outstanding domestic bonds and equity. Moreover, we show that such impact is stronger, the better is firm's international credit recognition.

We start with the impact on the bond market. We follow Bessembinder et al. (2009) in measuring the abnormal returns on the firm's bond prices in the secondary market when it issues a new bond.[8] To estimate abnormal return for the firm the actual return of each bond is netted of the expected return – i.e. the average returns over the previous 6 months before the start of event window.

Since the impact after the issue of a new bond is not independent for the different bonds of the same firm, we consider only one bond of the firm per event. In particular, out of all

[8] We use the issue date as recorded in SDC Global New Issues as the event date. We also manually checked 1536 random bond issues from our sample in the LexisNexis database and only found information about 8 distinct bond issues where information in the news sources was revealed by more than 10 days earlier than issue date as recorded in SDC Global New Issues database.

bonds of the firm that have daily price information in TRACE[9] at the time when the new bond is issued we pick the most traded bond, based on the volume of trades over the event window. We winsorize abnormal return at 1% level.

We consider three different event windows: (i) starting on the issue date and ending 1 day after the issue of the new bond, (ii) starting on the issue date and ending 2 days after the issue of the new bond and (iii) starting on the issue date and ending 5 days after the issue of the new bond. For each of these abnormal returns as the dependent variables we estimate at a firm-issue time level:

$$\text{Abn.return}_{\text{it}} = \beta_0 + \beta_1 \text{Int.Issue}_{\text{it}} + \beta_2 IO_{it-1} + \beta_3 IO_{it-1} * \text{Int.Issue}_{\text{it}} + \beta_4 z_{it-1} + \varepsilon_{it}, \qquad (1)$$

We focus on the prior international ownership (IO_{it-1}) as our main proxy for international recognition. In particular, IO_{it-1} is the fraction of the bonds of ith firm in quarter $t-1$, held by all international managing firm families. As we argued above, we distinguish international bondownership into bonds that are held by managing firms located outside of the US and bonds that are held by managing firms that belong to international families but are located in the US. Managing firms located outside of the US should be less exposed to the withdrawal risk of US investors and have higher benefits from diversifying into US corporate bonds. We therefore concentrate on the international bondownership by the funds located outside of the US as our main variable of interest. We nevertheless control for international bond ownership by international funds located in the US and refer to it as 'International bond ownership (NY)'. z_{it-1} is a set of standard bond- and firm-specific control variables including: availability of covenants in the new bond, its maturity, its issue size, tangibility, leverage, ROA, market-to-book ratio, asset size, fraction of borrowing from international banks, share of assets located abroad, rating and year dummies. Our results are robust to excluding any or all of these controls.

The results for (1) are provided in Table II. They show that issuing a bond abroad is related to a more positive effect on the secondary market price of the domestic bonds than issuing domestically, although the effect is statistically significant only over the longest event window. Over a six trading day window a new international issue on average increases the prices of the domestic bonds of the firm in the secondary market by 0.11% more than a domestic issue does. More importantly, we find that the effect of international recognition is positive if the firm issues an international bond. This effect already appears in the shortest event window. Over two day window after an international issue one standard deviation higher ownership is related to a 0.1% higher price.

[9] Since TRACE data is available only since 2002, our sample considered in this section does not fully coincide with the sample that was used to generate further results.

Next, we repeat the same analysis for the equity prices of the firm after a bond issue. Each firm's return is adjusted using the market model, estimated over the year before the start of the event window. We use the same event windows as defined above to calculate abnormal returns. Then, we use these abnormal returns as the dependent variables to estimate the same equation as in (1).

The results are reported in Table III. They confirm that international issuances improve the firm's value. Indeed, over the two day event window around an international bond issue the abnormal return on equity is higher than in the case of a domestic issue by around 0.1%. This is consistent with the finding in Kim and Stulz (1988) that the difference between two-day abnormal returns after international and domestic issues was equivalent to 0.77% in 1975-1985 sample period.

Moreover, the effect on the equity is related to firm's international recognition in international debt markets. The interaction of international issue with the share of international bondownership is positive and statistically significant in all event windows. One standard deviation higher international ownership is related to an increase in the value of equity of 0.24%-0.4% when a new international bond is issued by the firm. The results also imply a negative level effect of international ownership after a new domestic issue, possibly suggesting that equity investors prefer firms with higher existing international credit recognition to issue internationally.

IV The Firm's Choice

We now investigate how international recognition affects the probability to issue internationally. We estimate the following equation:

$$\text{Perc.Int.Bonds}_{it} = \beta_0 + \beta_1 IO_{it-1} + \beta_2 z_{it-1} + \beta_3 \lambda_{it} + \varepsilon_{it} \qquad (2)$$

where IO_{it-1} is defined as before. The vector z_{it-1} includes firm-specific characteristics such as tangibility, ROA, leverage market-to-book ratio, size of the firm, the fraction of bank borrowing to ith firm in quarter t, provided by the international banks, share of assets located abroad, evaluated at the quarter before the issuance takes place.

To address the sample selection – i.e., the fact that the sample is observable only if the firm issued any bonds over the quarter – we employ a Heckman (1979) two stage procedure. For each quarter and every firm in Compustat, we estimate the probit model that a firm issues bonds in a certain quarter and extract the inverse Mills ratio from:

$$\textit{Bond Issue}_{it} = \delta_0 + \delta_1 z_{it-1} + \eta_{it}, \qquad (3)$$

where the dependent variable takes the value of one if firm i issues bonds in quarter t and zero otherwise and z_{it-1} is a vector of standard firm-specific control variables: leverage, ROA, market-to-book ratio, asset size as well as time fixed effects. The inverse Mills ratio from (3) is denoted by λ_{it} and we include it in (2) as the control variable.

The results, reported in Table IV, show a positive relation between our measure of international recognition and the choice to issue internationally. One standard deviation higher international recognition is related to a 2.1% higher probability of issuing an international bond over the quarter. The effect is high considering that the average unconditional frequency of issuing internationally in the quarter is 18%.

Also, firms with better credit conditions issue internationally more. One level higher rating is related to 0.5% higher probability of international issue while one standard deviation lower standard deviation of analyst forecasts is related to 1.5% higher probability of international issue. Moreover, the standard deviation of analyst forecasts and the international bondownership appear to be complements in raising the probability of international issue.

Next, we look at the possibility that international bondownership has a non-linear effect on the probability of issue. We find that most of the power in explaining the offering yields in Table IV lies with firms characterized by low levels of international bondownership (below 15%). We obtain this result by a piecewise linear estimation of specification (2) in which we directly check for possible nonlinearities effects from international ownership. The selected breakpoint (15%) is chosen so as to produce the lowest mean squared errors for the piecewise linear regression in the overall sample.

The results show that there is no additional effect of foreign bondownership on the probability to issue internationally beyond a 15% international bondownership threshold. This confirms that there are limits to the benefits of foreign bondownership when the loss in monitoring becomes too large. In other words, monitoring and asymmetric information are not important considerations for low levels of international bondownership but when international bondownership increases beyond a certain threshold – i.e., 15% - the lower ability to monitor and the scarce ability to coordinate in the case of renegotiation or distress, more than outweigh the positive effect of the higher international investor risk tolerance.

Finally, unreported results show that firms are more inclined to issue their first *international* bond if they already have international investors holding their *domestic* bonds. In particular, we constrain the sample to the firms that have not issued any international bond before 1998 (as provided in the SDC database), and fit a Cox proportional hazards model where the outcome variable is whether the firm issues its first international bond while the explanatory variables are as in (2). IO_{it-1} is estimated only based on the firm's

domestic bonds. We find that the hazard ratio of international bond ownership is 1.4, significant at 6% level. This result implies that when the firm sees that international investors are willing to replace domestic investors in its domestic bonds - i.e the firm has higher international credit recognition compared to the domestic one - it starts catering to its investor base and issuing internationally. When we again split our variable for above 15% and below 15% international ownership, we find that international ownership below 15% is positively associated with the first international issuance while international ownership above 15% is associated negatively. Both are significant at below 0.1% level of statistical significance, both when included together in the regression or when estimations are performed separately.

With regards to the control variables, in line with the previous literature, international sales and international assets contribute positively to the probability of international financing. One standard deviation higher international sales is related to a 4.5% higher probability of issuing internationally. The effect of international assets is similar. Prior bank loans from foreign banks have a strong positive effect on the probability to issue bonds abroad. The economic effect is similar to that of the previous international bond ownership. Moreover, we confirm the findings of Siegfried, Simeonova and Vespro (2007) that larger firms and firms with higher leverage have higher propensity for international issues.

V. Cost of Financing

Next, we look at how the benefits of international issues relate to the international credit recognition - i.e. whether the difference between the yield spreads of international and domestic bond issuances is related to the ability of the firm to cater to international investors. Firm would be more willing to issue internationally if the borrowing cost is lower. What we aim to explain is whether this cost of borrowing in international markets is related to the international credit recognition.

V.A Matching Bonds

We first compare the international and domestic offering yield spreads for the firms that issue *both* at home and abroad over the quarter:

$$Yield\ spread_{it}^{int} - Yield\ spread_{it}^{dom} = \beta_0 + \beta_1 IO_{it-1} + \beta_2 \lambda_{it} + \beta_3 z_{it-1} + \varepsilon_{it}, \qquad (4)$$

where the dependent variable is the actual difference between the spreads of the offering yields of international and domestic bonds.

We do so by matching bonds. In particular, for each firm i that issued both domestically and internationally over the quarter t, we estimate the difference between the yield spreads

at which the firm raised debt in the international and domestic markets over the quarter. The matching procedure is as follows. First, following Bharath (2002), for each firm in each quarter, we match new international and domestic bond issues by rating, availability of covenants and closest maturity.[10] Next, from the matched pairs, we use the yield spread difference of the matched pair with the longest maturity as the representative spread for the firm in the quarter.

IO_{it-1} is defined as before. The vector z_{it-1} includes firm-specific characteristics such as tangibility, ROA, leverage market-to-book ratio, size of the firm, the fraction of bank borrowing to ith firm in quarter t, provided by the international banks, share of assets located abroad, evaluated at the quarter before the issuance takes place.

λ_{it} denotes the inverse Mills ratio based on the first stage probit for the probability that a Compustat firm issues both domestically and internationally over the quarter. In particular, to control for the fact that only some firms choose to actively participate in both international and domestic bond markets, we follow the Heckman (1979) two-stage procedure. Similarly to (3), for each quarter and every firm in the Compustat dataset, we first estimate the probability that such a firm issues both international and domestic bonds over the quarter:

$$Int.\&Dom.Bond\ Issue_{it} = \delta_0 + \delta_1 z_{it-1} + \eta_{it}\,, \qquad (5)$$

where the dependent variable is equal to one if firm i issues both international and domestic bonds and zero if it issues only domestic bonds, only international bonds or does not issue at all in the period. The main explanatory variables are: international sales, tangibility, ROA, leverage, market-to-book and size of the firm as well as time fixed effects. We use this model to retrieve the inverse Mills ratios λ_{it}. We include fixed offering year and rating effects. The data are collected from the SDC database as it also includes private issues, less well covered by Mergent. We cluster standard errors at the firm level.

The results, reported in Panel A of Table V, show that prior international bondownership is negatively related to the difference of yields that the firm pays in international and domestic primary markets. One standard deviation higher international ownership is related to a reduction of offering yield spreads of the order of 49.6bp. This is substantial in economic terms considering that the average difference is 37.3bp. In line with our working hypothesis, most of the impact is related to the ownership of managing firms located outside of the US.

As a robustness check, we also estimate the difference between international and domestic yield spreads by using the weighted average yield spreads of all the bonds that the

[10] We ensure that the maturity does not differ by more than five years. The average difference is less than two years.

firm issued over the quarter. The weighted average yield spreads are constructed separately for international and domestic bonds with weights equal to the size of the bond issue over the total size of issued international and domestic bonds over the quarter. Next, we take the difference between the weighted averages of international and domestic bonds and use it as the dependent variable. Our results are consistent when we use this alternative methodology. Although the results are stronger for the matched bonds, the main result still holds for the difference between the weighted average offering yield spreads of international and domestic bonds.

V.B Addressing Self-selection and Endogeneity

We now provide a more detailed analysis that directly accounts for both the firm's decision to obtain financing in a certain period and the firm's choice whether to issue internationally or domestically. We deal with these choices in the following way.

First, as before, we control for the fact that the sample is only observable if the firm issued any bonds over the quarter. We do so by applying the first stage of Heckman (1979) procedure as in (3) and extracting inverse Mills ratio λ_{it} that we include as the control variable further on. To address the second issue – i.e., the fact that the offering yield is conditional on the firm having chosen to issue internationally as opposed to domestically while the latter decision is related to the difference in expected yields in the two markets – we employ an extension of the standard endogenous switching regression model of Lee (1978).[11] This model has been used in corporate finance literature to address choices of firms that are endogenously defined by the outcome variable (e.g., Fang, 2005, Gopalan et al, 2010).

We start by relating the firm's decision to issue domestically or internationally, conditional on the firm issuing bonds, to the difference between the imputed yield spreads at which the firm can place its bond in the domestic and international markets. We control for other issuing motives, such as hedging needs and tax arbitrage – as proxied by the fraction of firm's turnover that is generated internationally.

In particular, for every quarter, we relate the percentage of new bonds in dollar terms that the firm places internationally to the offering yield that the firm can get by issuing

[11] Our extension accounts for the fact that we use overlapping samples – i.e. some firms can be active issuers in both markets and therefore for them both international and domestic yields are observable. Alternatively, we can follow Hotchkiss (1991) and estimate the switching regression model with unknown sample selection. In such a model, the sample separation is kept but the threshold is determined statistically from within the sample. We find that the threshold of percentage of international issues that maximizes the likelihood function specified in Hotchkiss (1991) is 0. This means that, contrary to (5) which defines an issuer both as domestic and international if it issues in both markets, in this specification the firm is considered as international issuer if it issues at least some of its bonds internationally and domestic issuer if it issues only domestically. The estimation of switching regression model with the sample selection at 0 would provide very similar results to the estimation of (5), so in the interest of brevity, we do not report them.

internationally and to the yield it would get by issuing domestically, as well as the fraction of international sales. We estimate the following system:

$$\begin{cases} Perc.Int.Bonds_{it} = \delta_0 + \delta_1(Off.yield_{it}^{int} - Off.yield_{it}^{dom}) + \delta_2 Int.Sales_{it-1} + \delta_3\lambda_{it} + \eta_{it} \\ Off.yield_{it}^{int} = \beta_0^{\text{int}} + \beta_1^{\text{int}} IO_{it-1} + \beta_2^{\text{int}} z_{it-1} + \varepsilon_{it}^{int} \\ Off.yield_{it}^{dom} = \beta_0^{dom} + \beta_1^{dom} IO_{it-1} + \beta_2^{dom} z_{it-1} + \varepsilon_{it}^{dom} \end{cases}, \quad (6)$$

where 'Percentage of international bonds' is the fraction of the bonds that the firm *i* issues internationally over the quarter *t*. The offering yield is the largest offering yield spread for the firm over the quarter (estimated separately for international and domestic bonds if the firm issues both). Alternatively, we estimate the offering yield spread as the weighted average of the offering yield spreads over the quarter, or the offering yield spread on the bond with the longest maturity. The results are consistent in all specifications.

Our main variable IO_{it-1} as well as the control variables are defined as before and are evaluated at the quarter before the issuance takes place. $Int.\ Sales_{it-1}$ is the fraction of firm's revenues that are generated abroad, z_{it-1} is a set of standard bond- and firm-specific control variables: availability of covenants, maturity, tangibility, leverage, ROA, market-to-book ratio, asset size, fraction of borrowing from international banks, share of assets located abroad and total amount of bonds issued over the quarter. The inverse Mills ratio from (3) is denoted by λ_{it}. The estimations are based on the firm-quarter-level observations. They include fixed year and rating effects. We bootstrap the standard errors.

The results are reported in Panel B of Table V. They show that the yield spread for international issues is lower in the presence of prior international bondowners. One standard deviation higher international ownership is related to a 25.1bp lower offering yield spread, a relatively high effect considering that the average yield spread in the sample is 72.4bp. The presence of a prior borrowing from international banks is positive, although not statistically significant. This suggests that international bank lenders are not perceived as substitutes to international institutional bondownership. All the control variables have the expected signs.

As with the probability to issue internationally, when we inspect the non-linear effects of international bondownership on yields, we find no additional effect of foreign bondownership on the offering yields beyond a 15% international bondownership threshold. All effect on international yield spreads by international credit recognition is concentrated among firms characterized by low levels of international bondownership (below 15%).

As a robustness check, we also implement an instrumental variables specification for the second equation of model (6) by instrumenting our measure of international credit recognition, the share of international bondownership, with the share of international bank borrowing. We understand the concern that since our dependent variable is a price the

exclusion restriction is difficult to satisfy. However, as shown before, the fraction of borrowing by international banks does not affect the yield spreads on bonds directly. As bank loans are usually senior to bonds, the fraction of proximate domestic borrowing has limited monitoring advantage for bondholders. On the other hand, this variable is related to how the borrower is recognized internationally and thus correlated with the international bondownership.

The results, reported in Table V, Panel C, show that, even with lower levels of statistical significance, the share of international bondownership remains statistically significant in explaining the offering yield spreads of international bonds.

Overall, the findings so far show that the international recognition of the firm plays a major role in the choice whether to issue internationally as it reduces the cost of borrowing and makes it even more convenient to issue abroad. Firms exploit this advantage.

VI. International Investor Demand

We now look at the international investor demand of newly issued international bonds. We claim that credit recognition not only differs domestically and internationally, it differs country by country as the diversification needs of investors from different countries are not same. We claim that one way to infer whether international investor purchases bonds of a particular US firm because of its recognition, is to proxy recognition by the previous ownership in the firm by the "peer" investors, i.e. those investors who originate from the same country..[12] We consider existing peer ownership as a proxy for firm's international recognition at an investor level. An institutional investor who considers whether to buy a newly issued bond can classify the existing prior bondownership of the issuing firm into (i) its own prior ownership, (ii) ownership by US investors (domestic bondownership), (iii) ownership by its peers (international credit recognition) and (iv) ownership by other international investors. For every newly issued bond of US firms in our sample and each managing firm family, we construct these ownership variables. We then study how they affect the demand of each international managing firm family, controlling for the other issuing firm- and institutional investor-specific characteristics. In particular, we estimate:

$$O_{ikjt} = \beta_0 + \beta_1 IO_{ijt-1} + \beta_2 IL_{ijt-1} + \beta_3 x_{jt-1} + \beta_4 z_{ikt-1} + \varepsilon_{ikjt} \quad , \qquad (7)$$

[12] Such international recognition proxies for country-level diversification benefits but also can be due to better "coordination" ability, thus reducing agency costs from the investors perspective. Indeed, peer ownership helps to coordinate actions in the case of debt renegotiation or enforcement of the covenants, and also provides a signal about the quality of the bond/firm.

where the dependent variable O_{ikjt} is the fraction of the issue size of the bond k of the ith firm, purchased by the jth institutional investor in quarter t.[13]

We focus on IO_{ijt-1},[14] which is the vector of three explanatory ownership variables: (i) domestic bondholding, (ii) holding by peers (international credit recognition) and (iii) previous bondownership by the same institutional investor, estimated as the fraction of the bonds held by jth institutional investor in firm i out of all bonds outstanding of firm i in quarter t-1.[15] All institutional investors that belong to an international fund family are considered international in this analysis, regardless of whether they are located in the US or in the foreign country.

We control for the characteristics of the managing firm as well as the characteristics of the issuer of the new bond. x_{jt-1} is a vector of managing firm-specific control variables. They are: the size of the managing firm, its ownership of international issues, degree of diversification as well as its investment profile. We define the investment profile in terms of the characteristics of the issuers in which managing firm holds bonds. For this purpose, we use five variables defined above: managing firm rating profile, leverage profile, M/B profile, issuer size profile and ROA profile. We also include a set of firm-specific control variables z_{ikt-1} such as: size, leverage, tangibility, ROA, market-to-book ratio and share of assets located in country of manager j at t-1. As before, we control for bank borrowing and include two variables: (i) borrowing US banks and (ii) bank borrowing from the same country where international managing firm is located. Finally, we include dummies for year and rating fixed effects. We cluster the standard errors at the managing firm level.

We note that institutional reasons or specific investment profiles may prevent some international institutions from investing into certain types of firms/bonds. In order to deal with this self-selection in the demand, we employ a tobit model (Amemiya, 1984). For each new bond issue, the potential investors are assumed to be the whole universe of international institutional investors that have non-zero holdings in the US bonds the period following the issue. We assume that they make a decision not to buy the newly issued bond if no purchase is recorded in the database.

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[13] Ideally, quarter t corresponds to the quarter in which the bond is issued. However, since there is some lag in recording information about new issues, we record the purchases of a new issue on the first date when the information about the holdings of the bond is provided in Lipper database. We exclude those observations where the first recorded purchase date for the bond is later than one year after the offering date of a bond as reported in Mergent. Our analysis is unaffected if we restrict the sample to the bond issues for which information in Lipper database is available at the quarter in which the bond is issued.

[14] We also estimate domestic and peer bondownership in IO_{ijt-1} differently. Instead of using the fractions of bondownership, we calculated the number of domestic and peer investors who hold bonds of firm i as a fraction of total number of respectively domestic and peer investors that are active in the US market. That is, for instance, we replace peer bondownership in firm i by the fraction of peers *in the market* that own bonds in firm i. The results using these alternative definitions of domestic and peer bondownership do not differ from the others and therefore we do not report them in the interest of brevity.

[15] The complement to the sum of the ownership by these three groups is the ownership by the international investors that are non peers to the managing family j.

The results are reported in Table VI. In Panel A, we report the demand of international investors of newly issued international bonds. They show that an average international investor will demand more bonds if the issuing firm already has a significant prior bondownership by its peers, i.e. good credit international recognition in investor's country. In particular, one standard deviation higher peer ownership is related to a 1.5% larger purchase in terms of face value of the bond, where average international investor owns 0.9% of the bonds of the firm, i.e. one standard deviation higher peer ownership increases the demand by 167% for an average international investor. Unreported results for domestic bonds are similar in terms of statistical significance and economic magnitude.

Previous ownership by the investor itself matters with a magnitude similar to peer ownership. Also, the decision to invest in the bonds of the US firm is positively affected by the firm having already borrowed from banks of the same country as the international institutional investor ("peer banks"). This effect is however not robust to country fixed effects and when manager characteristics are added as controls.

We also include a proxy for international diversification. Although the sample is reduced significantly, we find a positive link between the purchase of the firm's bonds by an international investor and how negative is the correlation between firm's secondary market bond prices and international corporate bond index.

Although we do not report the coefficients explicitly, it is interesting to note how the demand is influenced by investor-specific characteristics. For example, demand is positively related to the size of the institutional investor and negatively related to how much the investor already holds of international bonds as well as to how much it holds of the bonds issued by firms with high leverage. These findings are consistent with the investment firms being risk averse.

The results also remain valid after controlling for country-fixed effects that proxy for the different propensity of the managers from certain countries to participate in the US securities market due to country's tax treaties with US (Mihai and Dharmapala, 2010) or local market size and distance (Portes and Rey, 2005).

A potential criticism of our results is that we do not capture the international recognition but rather an unobserved taste from peer investors for similar securities. We note that such unobserved taste is rather identified by the prior ownership of the investor itself as it identifies all relevant unobserved tastes at a country level beyond peer ownership as well as investor's deviations from them. Also, the unobserved taste problem does not directly contradict our hypothesis. Even if we only captured the fact that investors from the same country pick similar bonds of US firms for some unobserved reasons, this would still be in line with our diversification argument - investors from the same country are more likely to

be exposed to similar type of diversification needs and thus invest into the bonds of similar US firms.

However, as a further test to explicitly control for this issue, we exploit the fact that such country-specific unobserved taste for the securities of the firm should not vary much over time. Thus, for every firm *i* we pick the first period when bondownership data is available in Lipper and construct a measure of the ownership by peers in that period. We then use this variable as a control in the specification provided in Column G of Table V, Panel A. We find that, although this time-*invariant* component of international recognition is significant, the time-*varying* international recognition effect remains statistically significant as well.

Moreover, even if we put our best effort to control for institutional investor-specific effects in the previous regressions, these might have not been fully controlled for. Therefore, as a final test, we aggregate across all international institutional investors, who were previously analyzed separately, and assess the overall demand by international institutional investors of a specific newly issued bond. In unreported results we confirm that previous international bondownership in the firm is related to higher aggregate demand of a specific bond. One standard deviation higher international bondownership in a firm is related to 9.8% higher aggregate purchase by international investors of the new bond issue. This is economically relevant as on average international investors own 18.2% of the US corporate bonds.

Next, we split the sample according to various firm and bond characteristics and investigate whether the impact of international credit recognition differs depending on these characteristics. We perform a chi-squared test for the equality of marginal effects of our international credit recognition variable, based on a seemingly unrelated regression estimation for each of the pairs – i.e., above and below median for each of the characteristic – with marginal effects estimated at means of variables in each subsample. We report the results in Table VI, Panel B.

In line with our hypothesis, the effect of international credit recognition is mostly concentrated in "better quality" firms – i.e., firms with a sizable amount of domestic borrowing, firms with high ratings, firms characterized by low deviation of analysts, firms with more assets in the country of the international investor, and bonds with no covenants.

Finally, the previous results are based on the analysis of investor demand for newly issued bonds. We also perform a similar analysis for already outstanding bonds to confirm that international investor reliance on peers holds universally for US corporate bonds. We use three specifications for our panel: bond fixed effects regression, Fama-MacBeth regression and Arellano-Bond GMM estimator of dynamic panel data model. In all the three

specifications, we find that peer bondownership is positively related to the demand of international investors. Also, the economic size of the effect is significant. One standard deviation higher peer bondownership is related to 0.04-0.06% higher investment by an average international managing firm in terms of the outstanding bonds of the firm. This is a 20-30% increase above the median bondownership of international investor in US firms. We do not report results but they are available at request.

Overall, these results suggest that international investors seek to invest in the firms that already have international ownership – and especially peer ownership – in the firm's bonds, supporting the international recognition explanation.

VII. The Real Effects of International Investors

We argued that international credit recognition improves the borrowing terms of the firm. This might reduce its financial constraints. In a similar spirit, Gande and Saunders (2009) show that securitization in the loan market, by allowing the firm to borrow at better conditions, reduces financial constraints and this increases both bond and equity value. We investigate this issue by looking at whether international bondownership reduces investment cash flow sensitivity – a standard way of proxying for financial constraints. We then focus on the firm's probability of financial distress.

We start by estimating a standard investment cash flow sensitivity model:

$$I_{it} = \beta_0 + \beta_1 CF_{it} + \beta_2 IO_{it-1} + \beta_3 IO_{it-1} * CF_{it} + \beta_4 z_{it-1} + \varepsilon_{it}, \qquad (8)$$

where our focus is on the interaction term between cash flow and IO_{it-1} in explaining the level of investment by the firm. IO_{it-1} is defined as before. z_{it-1} is the set of control variables which includes: tangibility, ROA, leverage, market-to-book, size of the firm, fraction of borrowing from international banks and share of assets located abroad. We include fixed firm, offering year and rating effects.

The results are reported in Table VII. They show that firms with higher international credit recognition have lower investment-cash flow sensitivity. One standard deviation higher non-US located international bondownership is related to a 22% lower investment cash flow sensitivity. Investment-cash flow sensitivity is reduced when the firm has low levels of international bondownership, while it is increased when it has high levels of international bondownership. Thus, catering to international investors does indeed help to improve the financial conditions of the firm.

Next, we provide some indirect evidence of the relationship between international credit recognition and the probability of default on debt. In line with the previous analysis, we split international bondownership into bondownership by institutional investors located in the US

but owned by the foreign financial groups and international bondownership by institutional investors that are located outside of the US. We test whether the presence of international bondholders (located outside of US), i.e. international credit recognition, was higher in the bonds that eventually defaulted. We expect that international credit recognition should be negatively related to the ex-post default of the bonds. We estimate:

$$Default_{ikt} = \beta_0 + \beta_1 IO_{it-1} + \beta_3 z_{ikt-1} + \varepsilon_{ikt}, \quad (9)$$

where the dependent variable is a dummy equal to 1 if the bond k of firm i defaults over the quarter t and 0 if the bond does not default over the quarter t. IO_{it-1} is defined as above. z_{it-1} are the issue and firm-level characteristics as defined above and include: maturity, issue size, tangibility, ROA, leverage, market-to-book, size of the firm and share of assets located abroad. We use fixed year and rating effects and cluster the errors at the firm level.

We provide two specifications. In the first specification, we use the whole sample of bonds. We estimate the international bondownership at a bond level and we consider as *Default* any type of bond-level default (bankruptcy, interest, covenant, principal) as reported in the Mergent database. In the second specification, we perform a firm-level analysis and we focus on international bondownership at a firm level. We take all the firms in Compustat that we can match to the Lipper database and check whether they violate any covenants or file for bankruptcy in the following period. We use the covenant violation sample of Nini, Smith and Sufi (2009) and the bankruptcy filing sample from the combined dataset of BankruptcyData.com and LoPucki's bankruptcy research database.

The results are reported in Table VIII. We find that, controlling for the US based international bondownership, the fraction of non-US based international bondownership is negatively related to the probability of default. One standard deviation higher non-US located international bondownership is related to a 9% lower probability of default in a bond-level analysis and 5% lower probability in the firm-level analysis. On the contrary, at least in the bond level analysis, we find a positive relationship between US-based international bondownership and the probability of default. The signs of all the control variables are as expected. The probability of default is higher for the firms that are smaller, have smaller share of tangible assets, lower profitability and higher leverage.

VIII. Pricing Domestic Bonds

One could claim that international ownership in domestic bonds does not matter and what we capture with our variable of interest is rather past international issuances by US firms. We have already shown that concentration of international investors in the firms domestic bonds is associated with higher probability of issuing a first international bond. In our final

set of tests we further investigate this issue and look at whether a change in international bondownership in the domestic bonds in the secondary market is associated with a contemporaneous change in the yield spreads of these bonds.

We consider a dynamic model of the traded domestic bonds. We are interested in the relationship between the changes in international ownership in the bonds and the corresponding change in the yield spread. To reduce endogeneity concerns we use a three stage least squares procedure (Ferreira and Matos, 2008):

$$\begin{cases} \Delta Yield\ spread_{ikt} = \beta_0^1 + \beta_1^1 \Delta IO_{ikt} + \beta_2^1 \Delta IL_{it} + \beta_3^1 z_{ikt} + \varepsilon_{ikt}^1 \\ \Delta IO_{ikt} = \beta_0^2 + \beta_1^2 \Delta YieldSpread_{ikt} + \beta_2^2 \Delta IL_{it} + \beta_3^2 z_{ikt} + \varepsilon_{ikt}^2 \end{cases}, \qquad (10)$$

where ΔYield Spread$_{ikt}$ is the change in the option adjusted spread of kth bond of firm i over the quarter t. ΔIO$_{ikt}$ denotes the change in the fraction of overall international ownership in the kth bond of firm i by international investors over quarter t. Similarly, ΔIL_{it} denotes the change in fraction of borrowing by international banks in the ith firm over quarter t.

z_{ikt} is a set of standard bond, firm and market-specific control variables. They are: changes in issue size of the bond, firm size, leverage, market-to-book ratio, ROA, tangibility, share of assets located abroad, changes in interest rates in the market and changes in aggregate international investor bondholding in the US firms. We also include a dummy indicating a downgrade to a junk (i.e. non-investment grade) status to control for the fact that some institutional investors are limited in how much they can invest in non-investment grade bonds[16] and, therefore, in the presence of a downgrade below Baa, selling pressure can be an additional explanatory factor.

We use the change in issue size and the change in market rates as identifying restrictions for the change in yield spread while we use the change in aggregate international investor bondholding of US firms as additional determinant for the change of international bond ownership. A change in the market yields is unlikely to affect international ownership in a specific firm while the change in aggregate international investor holding is unlikely to lead to the yield change in a specific firm. Repayment of a particular bond should not change the interest of international investors in it. The regressions are based on bond-level observations. We match bonds by 8-digit CUSIPs. We use Mergent sample for the analysis as it reports 8-digit CUSIP in a more frequent manner than SDC.

We consider three alternative specifications: one based on all bonds, one based on the least traded bond among the bonds outstanding of the firm in quarter t, and one based on the longest maturity among the bonds outstanding of the firm in quarter t. In the first

[16] For example, according to the requirements of National Association of Insurance Commissioners, insurance firms are only allowed to hold up to 20% of the non-investment grade bonds as a percentage of their assets.

specification, ΔIO_{ikt} is estimated at a bond level. The latter two specifications pick one bond per firm per period, so as to reduce the effect of similar observations for frequent issuers, and thus ΔIO_{it} is estimated at a firm rather than a bond level. The least traded bond is defined as follows. For every active bond in period *t*, we calculate the number of funds in the Lipper database that changed the holding in that bond from period *t-1* to period *t*. For every firm in period *t,* we then choose the bond for which this number was smallest across all bonds of the firm and treat it as the least traded bond. Given that the impact of market segmentation is stronger in less liquid bonds, we expect the impact to be stronger if we condition on the least traded bonds. Also, given that the impact should increase with the duration of the bond, we expect the impact to be stronger for longer maturity bonds.

The results for the full sample are reported in Table IX, Panel A. They show that the changes in international bondownership are associated with changes in bond yield spreads. An increase in bond yields of one standard deviation is related to a 20% (16%) lower international bondownership in the base specification (for least actively traded bonds and longer maturity bonds). At the same time, an increase in international bondownership of one standard deviation is related to 89 (166 and 230) bp higher bond yield in the base specification (least actively traded bond and longer maturity bond respectively). The effect is sizable if compared to an average yield spread in the sample of 347.2bp.

In Subcolumn (ii) we also include Change in International Diversification as the explanatory variable. The results show a positive link between a quarterly change in this measure and international bondownership in the firm. Thus, the more the prices of issuer's corporate bonds move in the opposite direction to those of the non-US corporate bonds, the higher is the international investor bondholding in the firm. Although available only for the subsample of firms, these results motivate our use of international bondownership as a proxy for the international credit recognition, in particular because it is indeed related to diversification benefits of international investors.

We then break down the sample according to the quality of the bond – i.e., dispersion of analyst forecasts about the firm's earnings and rating quality. The results are reported in Panel B of Table IX. They show that higher international bondownership is related to higher yields for firms with higher dispersion of analyst forecasts (lower rating quality) and to lower yields for firms with low dispersion (high rating quality as well as non-rated bonds).

These results suggest that for domestic institutional investors to replace the international ones – i.e., for the fraction of international investors to decrease – yields have to increase. The effect is stronger in the subsamples of better rated firms and firms with higher transparency – i.e., low dispersion of analyst forecasts. In other words, for better quality bonds international investors are willing to step in and replace the demand of domestic

investors at the lower yield. Domestic investors ask for higher yields than international investors for the bonds of more transparent firms and the bonds with lower default risk. For these bonds, an increase in international ownership is even accompanied by a reduction in yields. In contrast, in the case of low rated bonds and less transparent firms, domestic investors are less willing to replace international investors. Indeed, in these cases, an analogous rate change increases domestic ownership by less and therefore also an increase in international ownership is accompanied by an increase in yields.

As additional robustness check, we estimate the following VAR specification:

$$\begin{cases} \Delta Yield\ spread_{ikt} = \beta_0^1 + \beta_1^1 \Delta Yield\ spread_{ikt-1} + \beta_2^1 \Delta IO_{ikt-1} + \beta_3^1 \Delta IL_{it-1} + \beta_4^1 z_{ikt} + \varepsilon_{ikt}^1 \\ \Delta IO_{ikt} = \beta_0^2 + \beta_1^2 \Delta IO_{ikt-1} + \beta_2^2 \Delta YieldSpread_{ikt-1} + \beta_3^2 \Delta IL_{it-1} + \beta_4^2 z_{ikt} + \varepsilon_{ikt}^2 \end{cases}, \quad (11)$$

where the variables are defined as before, except that the independent variables are estimated as changes over quarter *t-1,* while the dependent variables are changes over quarter *t*. In this specification we also add lagged dependent variables to explanatory variables. All the other variables are defined as above.

Unreported results confirm the previous ones. The effect of yields on international bond ownership is highly economically significant in the specifications for the least actively traded bond and the longer maturity bond: one standard deviation increase in yields is related to a 0.7% and 0.6% reduction in international bond ownership, respectively. Again, international investors are willing to substitute domestic investors at the lower yield. The inclusion of the lagged dependent variable reduces the economic significance of the results, displaying autoregressive features of the yield change, but it does not alter the key findings.

As an additional robustness check we also restrict the sample considering only firms that have never issued internationally. The concerns about a potential mechanical relationship arising from the fact that the firms may have international investors simply because they frequently issue abroad, are lower for these firms. The (unreported) results are almost identical to the previously discussed ones.

Finally, these results rule out an alternative potential explanation of our previous findings. Following Bolton and Scharfstein (1996), international ownership, by making renegotiation more difficult, could raise the cost of financial distress for the firm and therefore reduce the probability of strategic default. That means that a firm is more likely to issue internationally if it has a high fraction of international investors and is also less likely to experience the default. By targeting international investors the firm deliberately increases the costs of renegotiation of debt in the case of default. Given that the lack of coordination is magnified by the fraction of international investors the firm already has, a high fraction of international investors increases the cost for the firms with high probability of default to

issue internationally and makes it easier for the low probability of default firms to separate themselves from the high probability ones.

However, here, in our study of domestic bonds in the secondary markets we find that the positive effect of international bondownership is concentrated in high quality firms – i.e., high rating and low dispersion of analysts. Moreover, an increase in international bondownership in the secondary market of worse bonds is associated with an increase in the yields of the bonds as opposed to a decrease in yields as this alternative theory would posit.

Conclusion

We study the international borrowing by US firms by focusing on the international issuances of bonds by US firms in the period from 1998 to 2006. We argue that international issuances provide a cheaper way of financing for US firms that have high international credit recognition as they allow them to cater to the investors that are less sensitive to the general US firm credit risk. We claim that firm's international credit recognition can be proxied by international bondownership in the firms previously issued (domestic and international) bonds.

Firms target international investors to reduce their cost of financing. We show that the difference between domestic and international yield spreads on average is negative and is more negative the higher fraction of prior international bondownership. Firms exploit the benefits of international bondownership by being more likely to issue internationally when they have a higher fraction of international investors. We use an endogenous switching regression model to address self-selection concerns that the firm's issue decision is determined by its potential cost of financing in international and domestic markets as well as instrumental variable and three stage least square estimation to control for possible unobserved reasons why firms have both lower yields and higher international ownership.

Finally, we show that the ability to finance internationally has real effects on the operations of the firm. International issuances increase the value of outstanding bonds and equity while international bondholding reduces the financial constraints of the firm, lowering the firm's investment sensitivity to cash flows as well as its probability of distress.

We believe that our results have wider implications, beyond the issuances of international bonds. The rise in international ownership has provided the US firms with a possibility to refinance at a cheaper cost and thus made it easier to restructure and expand investment. The prior corporate governance literature has indicated the benefits reaped by international firms listing in the US, while we show that the benefits of international capital markets are not only accruing to firms coming from less financially developed markets but also to US

firms. Although we provide evidence on international bonds, internationally recognized firms that have access to international capital should be able to raise any type of capital at the better terms.

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Appendix. List of Variables

Name of the Variable	Used In	Depend./ Explan.	Description	Source
Bond Ownership Variables				
Share purchased by int. investor	Table VI	Depend.	Fraction of the face value of newly issued bond k of the firm i purchased by managing firm j	Lipper
Share of dom. investors	Table VI	Explan.	Fraction of the face value of outstanding bonds of the firm i held by managing firm families that have most of their assets registered in the US	Lipper
International credit recognition	Table VI	Explan.	Fraction of the face value of outstanding bonds of the firm i held by managing firm families that have most of their assets registered in the same country as managing firm j	Lipper
International credit recognition (first)	Table VI	Explan.	First recorded fraction of the face value of outstanding bonds of the firm i held by managing firm families that have most of their assets registered in the same country as managing firm j	Lipper
Previous own ownership	Table IV	Explan.	Fraction of the face value of outstanding bonds of the firm i held by managing firm j	Lipper
International credit recognition	Tables II-V,VII-VIII	Explan.	Fraction of the face value of outstanding bonds of the firm i held by managing firms that are registered outside of the US	Lipper
Share of int. investors (NY)	Tables II-V,VII-VIII	Explan.	Fraction of the face value of outstanding bonds of the firm i held by managing firms that are registered within US but are associated with the managing firm families that have most of their assets registered outside of US	Lipper
Change in int. investor own.	Table IX	Depend./ Explan.	Change in fraction of the face value of outstanding bonds of the firm i held by managing firm families that have most of their assets registered outside of the US	Lipper
Change in aggr. int. investor own.	Table IX	Explan.	Change in aggregate international investor ownership of corporate bonds in the US	Treasury
Bank Borrowing Variables				
Share of dom. borrowing	Table VI	Explan.	Fraction of the outstanding bank debt of the firm i, lent by banking groups that have ultimate owners registered in the US	LPC
Share of peer bank borrowing	Table VI	Explan.	Fraction of the outstanding bank debt of the firm i, lent by banking groups that have ultimate owners registered in the same country as managing firm j	LPC
Share of int. borrowing (Local)	Tables II-V,VII-VIII	Explan.	Fraction of the outstanding bank debt of the firm i, lent by banks that are registered outside of the US	LPC
Share of int. borrowing (NY)	Tables II-V,VII-VIII	Explan.	Fraction of the outstanding bank debt of the firm i, lent by banks that are registered in the US but have ultimate owner registered outside the US	LPC
Change in int. borrowing	Table IX	Explan.	Change in fraction of the outstanding bank debt of the firm i, lent by banking groups that have ultimate owners registered outside of the US	LPC

(continued on next page)

Yield Variables				
Difference between offering yield spreads	Table V, A	Depend.	Difference between the offering yield spreads on international and domestic bonds for firm i over the quarter t, where the bonds are matched by the ratings, the availability of covenants and closest maturity. Alternatively, the difference is estimated as the difference between weighted averages of the offering yield spreads for international and domestic issues, where weights are determined by the sizes of the issues. Offering yield spreads are calculated as the number of basis points over the comparable maturity Treasury bond for fixed rate issues and the number of basis point spread between the coupon rate and the rate of the index off which the coupon is reset for floating rate issues, winsorized at 0.1% level	SDC
Offering yield spread	Table V, B	Depend.	Number of basis points for bond k over the comparable maturity Treasury bond for fixed rate issues and the number of basis point spread between the coupon rate and the rate of the index off which the coupon is reset for floating rate issues, winsorized at 0.1% level	SDC
Change in yield spread	Table IX	Depend./ Explan.	Change in option adjusted spread over the Treasury bond of similar maturity	Bloomberg
Quality spread in the market	Table IX	Explan.	Difference between Moody's Long term corporate yield averages for Aaa bonds and Baa bonds	Treasury
Credit spread in the market	Table IX	Explan.	Difference between Moody's Long term corporate yield spread for Aaa bonds and 30 year Treasury bond rate	Treasury
30 year Treasury bond rate	Table IX	Explan.	30 year Treasury bond rate	Treasury
Other Bond Characteristics				
Maturity	Tables IV-IX	Explan.	Maturity in days until the expiration of bond k	Mergent, SDC
Issue size	Tables VII-IX	Explan.	Size of the face value of the bond k at the time of issue, normalized by the asset size of firm i	Mergent, SDC
Total issue size over quarter	Tables IV-V	Explan.	Sum of sizes of the face values of the bonds over quarter t, normalized by the asset size of firm i	SDC
Moody rating	Tables II-IX	Explan.	Moody rating of the bond, either used as a dummy for every rating category, or a scale variable from 0 to 21, where 21 refers to Aaa rating	Mergent, SDC
Dummy for rating availability	Tables II-IX	Explan.	Dummy that takes value 1 if rating for the bond is available	Mergent, SDC
Subordination	Table VI	Explan.	Seniority of the bond, estimated on a scale from 0 to 7, where 7 refers to Senior security level	Mergent
Covenants	Table VI	Explan.	Number of bondholder protective covenants in bond k, where the maximum is 21	Mergent
Covenants	Tables V-VIII	Explan.	Dummy that takes value 1 if bondholder protective covenants are available in bond k	SDC
Default	Table VIII, Column A	Depend.	Dummy that takes value 1 if bond k defaults in quarter t, where default includes bankruptcy, as well as default on interest, covenant and principal	Mergent
Default	Table VIII, Column B	Depend.	Dummy that takes value 1 if firm i violates any of its covenants or files for bankruptcy in quarter t	Nini, Smith, Sufi (2009), BankruptcyData.com
Bond downgraded to junk	Table IX	Explan.	Dummy that takes value 1 if bond k is downgraded to non-investment grade status in quarter t	Bloomberg

(continued on next page)

Firm Characteristics				
Tangibility	Tables II-IX	Explan.	=1-data33/data6	Compustat
ROA	Tables II-IX	Explan.	=data13/data6, where data6 is lagged by a year.	Compustat
Leverage	Tables II-IX	Explan.	=(data34+data9)/data6	Compustat
Market to book	Tables II-IX	Explan.	=data199*data25/data11	Compustat
Asset size	Tables II-IX	Explan.	=ln(data6)	Compustat
Investment	Table VII	Depend.	=data128/data8, where data8 is lagged by a year	Compustat
Cash flow	Table VII	Explan.	=(data14+data18)/data8, where data8 is lagged by a year	Compustat
Share of assets in country	Table VI	Explan.	Assets located in a country, which is considered as broadest region that geographically includes the country of managing firm *j*	Thomson Worldscope
Share of assets abroad	Tables II-V, VII-IX	Explan.	Assets located in foreign countries, taken as a compliment to assets in the US, which is considered as the broadest region that geographically includes US	Thomson Worldscope
Analyst deviation	Tables IV, VI, IX	Explan.	Cross-sectional standard deviation of earnings forecasts across all analysts following the firm	IBES
Abnormal bond return	Table II	Depend.	The return over the event window (-2,2, -5,5 and -10,19), adjusted for the expected return of each traded bond by the average returns over the previous 6 months and aggregated over different bonds of the firm, weighting by the value of the bonds outstanding	TRACE
Abnormal equity return	Table III	Depend.	The return over the event windows (-1,1 and -2,2), adjusted for the expected return using the market model, estimated over the last one year of trading before the start of event window	CRSP
International diversification	Table VIA, IXA	Explan.	The correlation between the monthly returns on the JP Morgan ex US Corporate Bond Broad index and the monthly changes in yields of firm's corporate bonds in the secondary market over the previous twelve months	Datastream Bloomberg
Managing Firm Characteristics				
Managing firm size	Table VI	Explan.	Aggregate face value of bonds that are held by the managing firm *j*	Lipper
Managing firm own. of int. issues	Table VI	Explan.	Fraction of the international bonds out of all face value of bonds of US firms held by a managing firm *j*	Lipper
Managing firm concentration	Table VI	Explan.	HHI for the managing firm *j*, where shares are the portfolio weights of investments into the bonds of different issuers	Lipper
Managing firm rating profile	Table VI	Explan.	Average of ratings of bonds held by managing firm *j*, weighted by the face values of bonds	Lipper
Managing firm leverage profile	Table VI	Explan.	Average of leverages of issuers, whose bonds are held by managing firm *j*, weighted by the face values of bonds held by managing firm *j*	Lipper
Managing firm market to book profile	Table VI	Explan.	Average of market to book ratios of issuers, whose bonds are held by managing firm *j*, weighted by the face values of bonds held by managing firm *j*	Lipper
Managing firm issuer size profile	Table VI	Explan.	Average of asset sizes of issuers, whose bonds are held by managing firm *j*, weighted by the face values of bonds held by managing firm *j*	Lipper
Managing firm ROA profile	Table VI	Explan.	Average of ROA of issuers, whose bonds are held by managing firm *j*, weighted by the face values of bonds held by managing firm *j*	Lipper

Table I. Descriptive Statistics

This table presents summary statistics for the main variables used in the subsequent analysis. For these statistics we require non-missing information on firm size and international bondownership (a match between Compustat and Lipper).

	Source	Mean	Median	St. Dev.	N
Firm variables					
Asset size ($m)	Compustat	12,366.6	1,263.1	63,883.7	3184
Tangibility	Compustat	0.900	0.955	0.131	3184
ROA	Compustat	0.106	0.117	0.178	3091
Leverage	Compustat	0.306	0.285	0.185	3180
Market to book ratio	Compustat	17.028	3.156	222.257	3133
Share of assets abroad	Thomson Worldscope	0.205	0.089	0.268	1937
Share of sales abroad	Thomson Worldscope	0.205	0.089	0.268	1937
Moody rating	Mergent	A2	A2	4.062	2016
Share of international bonds outstanding	Mergent	0.038	0.000	0.143	2223
St. deviation of analyst earnings forecasts	IBES	0.391	0.063	5.705	2130
Bond ownership variables					
Int. own. across all firms	Lipper	0.237	0.182	0.206	3172
Int. own. from funds within US (NY part)	Lipper	0.153	0.121	0.152	3172
Int. own. from funds outside of US (Local part)	Lipper	0.085	0.018	0.163	3172
Int. own. in firms that issue dom. debt	Lipper/SDC	0.194	0.141	0.212	1591
Int. own. in firms that issue int. debt	Lipper/SDC	0.206	0.170	0.173	374
Bank borrowing variables					
Int. bank borrowing across all firms	LPC Dealscan	0.265	0.247	0.205	1786
Int. bank borrowing from banks within US (NY part)	LPC Dealscan	0.068	0.034	0.111	1786
Int. bank borrowing from banks outside of US (Local part)	LPC Dealscan	0.197	0.162	0.183	1786
Int. bank borrowing in firms that issue dom. debt	LPC Dealscan	0.205	0.154	0.217	1591
Int. bank lendi borrowing ng in firms that issue int. debt	LPC Dealscan	0.290	0.286	0.231	374
Bonds in primary market					
Issue size ($m)	SDC	204.5	79.5	352.0	22453
Issue size for international issues ($m)	SDC	469.2	271.0	549.9	4348
Maturity (years)	SDC	5.9	4.0	5.6	22453
Maturity for international issues (years)	SDC	5.6	5.0	4.3	4348
Offering yield spread (bp)	SDC	84.1	60.0	132.3	16976
Offering yield spread for international issues (bp)	SDC	72.4	41.0	123.1	3122
Domestic bonds in secondary market					
Issue size ($m)	Bloomberg	138.6	95.8	312.6	16657
Maturity (years)	Bloomberg	9.1	6.6	9.5	16657
Option adjusted spread (bp)	Bloomberg	347.2	129.2	1775.6	16656
Int. managing firm variables					
Ownership by single int. investor (firm level)	Lipper	0.009	0.002	0.031	
Ownership by peers to single int. investor (firm level)	Lipper	0.055	0.029	0.072	
Int. managing firm size ($m)	Lipper	886.3	46.8	4,470.6	690
Int. managing firm concentration	Lipper	0.248	0.171	0.232	690
Int. managing firm ownership of int. issues	Lipper/Mergent	0.505	0.492	0.292	690
Int. managing firm rating profile	Lipper/Mergent	Ba1	Ba1-Ba2	4.139	690
Int. managing firm leverage profile	Lipper/Compustat	0.296	0.272	0.188	690
Int. managing firm M/B profile	Lipper/Compustat	2.003	2.482	57.285	690
Int. managing firm issuer size profile ($m)	Lipper/Compustat	195,630.0	155,091.5	209,184.8	690
Int. managing firm ROA profile	Lipper/Compustat	0.055	0.045	0.049	690
Dom. managing firm variables					
Ownership by single dom. investor (firm level)	Lipper	0.014	0.001	0.050	
Dom. managing firm size ($m)	Lipper	1,233.4	26.0	5,377.1	1255
Dom. managing firm concentration	Lipper	0.159	0.055	0.359	1255
Dom. managing firm ownership of int. issues	Lipper/Mergent	0.185	0.092	0.232	1227
Dom. managing firm rating profile	Lipper/Mergent	Baa2-Baa3	Baa3-Ba1	4.111	1255
Dom. managing firm leverage profile	Lipper/Compustat	0.120	0.074	0.127	1247
Dom. managing firm M/B profile	Lipper/Compustat	2.506	2.073	13.995	1245
Dom. managing firm issuer size profile ($m)	Lipper/Compustat	63,502.8	34,673.9	102,437.3	1247
Dom. managing firm ROA profile	Lipper/Compustat	0.038	0.025	0.082	1244

Table II. Abnormal Returns on Domestic Bonds in Secondary Market

We report estimates from OLS regressions where the dependant variable is the return on the bond prices in the secondary market of corporate bonds after a new bond is issued by the firm. For each firm abnormal return is calculated using the last available daily price information from TRACE, adjusting the return of each traded bond for the average returns over the previous 6 months and aggregating over different bonds of the firm, weighting by the value of the bonds outstanding.

An issue is defined as international if SDC defines it as international, global or eurobond issue. International credit recognition is estimated as the previous share of international investors in the firm's domestic and international bonds. In particular, the ownership by international investors is split into the ownership by investors that are registered outside of US (Local part) and ownership by investors that are registered within US but belong to non-US managing firm families (NY part). International credit recognition refers to Local part of international bond ownership.

Column A reports results for 2 day event window fter the issue, Column B reports results for 4 day event window after the issue while Column C reports results for 6 day event window after the issue. Subcolumns (i) and (ii)-(iii) differ by interaction effect between International issue and International credit recognition estimated in subcolumns (ii) and (iii). These regressions include time and rating dummies. Subcolumn (iii) excludes all control variables. We use heteroskedasticity robust standard errors.

	(A) (0,1) event window			**(B) (0,3) event window**			**(C) (0,5) event window**		
	(i)	**(ii)**	**(iii)**	**(i)**	**(ii)**	**(iii)**	**(i)**	**(ii)**	**(ii)**
International issue	0	0	-0.000*	0	0	0	0.001***	0	0
	1.116	-0.646	-1.8	1.618	-0.945	-1.444	2.681	0.593	-0.282
International credit recognition	0.001	-0.001	0.001	0.001	-0.002	0.002	0.006***	0.003*	0.006***
	0.609	-0.589	0.646	0.504	-1.108	1.504	3.331	1.67	3.413
International issue *		0.005**	0.004**		0.009***	0.007***		0.007**	0.006*
International credit recognition		2.351	2.096		3.254	2.84		2.192	1.777
Share of int. investors (NY part)	0.002**	0.002**	0.004***	0	0	0.001	0	0.001	0.002
	2.231	2.28	3.907	0.077	0.132	0.843	0.323	0.37	1.417
Share of int. borrowing (Local part)	-0.002***	-0.002***		-0.001**	-0.001*		-0.002***	-0.002***	
	-3.398	-3.328		-1.993	-1.895		-3.428	-3.368	
Share of int. borrowing (NY part)	-0.001	-0.002		-0.001	-0.001		-0.004**	-0.004**	
	-1.182	-1.325		-0.372	-0.556		-2.431	-2.557	
Maturity of the bond issued	0	0		0	0		0	0	
	0.266	0.27		1.316	1.321		0.21	0.214	
Covenants of the bond issued	0	0		0	0		-0.001**	-0.001**	
	-1.067	-1.147		-1.038	-1.147		-2.148	-2.226	
Issue size of the bond issued	-0.002	-0.002		-0.001	0		-0.001	0	
	-0.54	-0.468		-0.144	-0.045		-0.123	-0.058	
Tangibility	-0.002**	-0.002**		-0.002*	-0.002*		-0.002	-0.002	
	-1.992	-2.06		-1.764	-1.866		-1.41	-1.481	
ROA	-0.001	-0.001		-0.001	-0.001		-0.001**	-0.001*	
	-1.291	-1.277		-1.62	-1.595		-1.969	-1.955	
Leverage	0.002***	0.002***		0.001**	0.001*		0.001	0.001	
	3.934	3.843		2.004	1.883		1.223	1.146	
Market to book ratio	0	0		0	0		0	0	
	0.519	0.536		-0.428	-0.414		0.159	0.171	
Asset size	0.000**	0.000**		0.000***	0.001***		0.000***	0.000***	
	2.329	2.415		4.91	5.007		2.908	2.989	
Share of assets abroad	0	0		0	0.000*		0	0	
	0.421	0.5		1.635	1.734		0.24	0.32	
Constant	0.002	0.003	0.002***	-0.003	-0.002	0.003***	0	0.001	0.003***
	0.933	1.052	9.026	-1.17	-0.854	12.084	0.104	0.273	12.541
R-squared	0.038	0.039	0.002	0.039	0.041	0.003	0.052	0.052	0.004
N	9052	9052	10024	9052	9052	10024	9052	9052	10024

* p<0.10, ** p<0.05, *** p<0.01

Table III. Abnormal Returns on Equity in Secondary Market

We report estimates from OLS regressions where the dependant variable is the abnormal return on the equity prices after a new bond is issued by the firm. For each firm abnormal return is calculated using the last available daily price information from CRSP, adjusting the return using the market model, estimated over the last one year of trading before the start of event window.

An issue is defined as international if SDC defines it as international, global or eurobond issue. International credit recognition is estimated as the previous share of international investors in the firm's domestic and international bonds. In particular, the ownership by international investors is split into the ownership by investors that are registered outside of US (Local part) and ownership by investors that are registered within US but belong to non-US managing firm families (NY part). International credit recognition refers to Local part of international bond ownership.

Column A reports results for 2 day event window fter the issue, Column B reports results for 4 day event window after the issue while Column C reports results for 6 day event window after the issue. Subcolumns (i) and (ii)-(iii) differ by interaction effect between International issue and International credit recognition estimated in subcolumns (ii) and (iii). These regressions include time and rating dummies. Subcolumn (iii) excludes all control variables. We use heteroskedasticity robust standard errors.

	(A) (0,1) event window			(B) (0,3) event window			(C) (0,5) event window		
	(i)	(ii)	(iii)	(i)	(ii)	(iii)	(i)	(ii)	(ii)
International issue	0.001**	0	0	0	-0.001	0	-0.002**	-0.003***	-0.001
	2.16	0.761	0.633	-0.222	-0.904	0.089	-2.094	-2.801	-1.582
International credit recognition	-0.005**	-0.006**	-0.005**	-0.004	-0.006*	-0.005*	0.001	-0.001	-0.001
	-2.061	-2.482	-2.441	-1.391	-1.734	-1.662	0.274	-0.336	-0.41
International issue *		0.012**	0.010**		0.012	0.011		0.020**	0.018**
International credit recognition		2.438	2.313		1.296	1.333		2.244	2.162
Share of int. investors (NY part)	-0.006***	-0.006***	-0.004**	-0.015***	-0.015***	-0.010***	-0.011***	-0.010***	-0.007**
	-2.794	-2.733	-2.317	-4.983	-4.939	-3.901	-2.784	-2.727	-2.197
Share of int. borrowing (Local part)	-0.002**	-0.002**		-0.004***	-0.004***		-0.003*	-0.003*	
	-2.305	-2.34		-3.105	-3.128		-1.883	-1.917	
Share of int. borrowing (NY part)	0.002	0.002		0.004	0.004		0.001	0.001	
	0.818	0.835		0.894	0.905		0.215	0.23	
Maturity of the bond issued	0	0		0	0		0	0	
	0.882	0.882		-0.246	-0.247		-0.486	-0.487	
Covenants of the bond issued	-0.002**	-0.002*		-0.001	0		0.002	0.002	
	-1.996	-1.951		-0.402	-0.368		1.016	1.063	
Issue size of the bond issued	-0.001	-0.001		0.001	0.001		-0.002	-0.002	
	-0.354	-0.333		0.136	0.153		-0.351	-0.325	
Tangibility	0.002	0.002		-0.008***	-0.008***		-0.011***	-0.011***	
	0.914	0.826		-2.737	-2.8		-3.089	-3.175	
ROA	0.003	0.003		-0.001	-0.001		-0.004	-0.004	
	1.519	1.523		-0.293	-0.291		-1.227	-1.224	
Leverage	0.001	0.001		0.003**	0.003**		0.001	0.001	
	0.999	1.003		2.424	2.425		0.5	0.503	
Market to book ratio	0	0		0	0		0	0	
	0.478	0.531		1.367	1.404		1.149	1.195	
Asset size	0	0		0	0		0	0	
	1.299	1.317		1.352	1.364		-0.856	-0.84	
Share of assets abroad	0	0		0	0		0	0	
	0.981	0.932		0.526	0.492		-0.045	-0.093	
Constant	-0.008***	-0.007***	0	-0.012***	-0.012***	0.001**	0.002	0.003	0
	-3.225	-2.979	1.427	-3.783	-3.59	2.228	0.526	0.759	0.069
R-squared	0.006	0.006	0	0.011	0.011	0.001	0.016	0.016	0
N	25933	25933	29663	25933	25933	29663	25933	25933	29663

* p<0.10, ** p<0.05, *** p<0.01

Table IV. Probability of International Issues

We report the marginal effects at means of variables from firm-level probit regressions of the decision of the US firm to issue an international bond. An issue is defined as international if SDC defines it as international, global or eurobond issue. The dependent variable is equal to 1 if the firm issues at least one international issue over the quarter and equal to 0 if the firm issues only domestic issues over the quarter. Here, an issue is defined as international if SDC defines it as international, global or eurobond issue.

In Column A international assets is used as a control variable while in Column B international sales is used as a control variable. In Columns C and D the discrete value of rating and standard deviation of analyst forecasts are added as explanatory variables (in other specifications rating dummies are used instead), in Column D they are also interacted with our main explanatory variable, International credit recognition. In Column E a piecewise linear model is estimated where our main explanatory variable, International credit recognition is split into two, above and below 15% ownership.

International credit recognition is estimated as the previous share of international investors in the firm's domestic and international bonds. In particular, the ownership by international investors is split into the ownership by investors that are registered outside of US (Local part) and ownership by investors that are registered within US but belong to non-US managing firm families (NY part). International credit recognition refers to Local part of international bond ownership. International bank borrowing is defined analogously. All regressions include time and rating dummies (where rating is not used as a discrete variable).

	(A) Main	(B) Int. sales	(C) Rating, analyst dev.	(D) Interacted	(E) Piecewise linear
International credit recognition	0.094**	0.089*	0.107**	0.048	
	2.062	1.898	2.031	0.685	
International credit recognition <=.15					0.644***
					3.257
International credit recognition >.15					-0.062
					-0.865
Share of int. investors (NY part)	-0.007	-0.005	-0.006	-0.007	-0.008
	-0.161	-0.115	-0.136	-0.142	-0.188
Share of int. borrowing (Local part)	0.090***	0.082**	0.074*	0.073*	0.088***
	2.601	2.292	1.921	1.908	2.586
Share of int. borrowing (NY part)	0.043	0.055	0.038	0.039	0.042
	0.615	0.789	0.454	0.458	0.595
Share of assets abroad	0.113***		0.120***	0.120***	0.104***
	5.571		5.356	5.354	5.113
Share of sales abroad		0.103***			
		5.759			
Total issue size over quarter	0.006*	0.006*	0.007	0.008*	0.007**
	1.783	1.807	1.558	1.754	2.042
Moody's rating			0.005**	0.005**	
			2.116	2.015	
Rating * Int. credit international recognition				0.006	
				0.996	
Analyst deviation			-0.001***	-0.001***	
			-3.834	-3.981	
An. dev. * Int. credit international recognition				-0.035***	
				-3.015	
Tangibility	0.073*	0.065*	0.085**	0.085*	0.065*
	1.895	1.666	1.963	1.958	1.683
ROA	0.191***	0.189***	0.210***	0.210***	0.181***
	3.153	3.147	3.424	3.434	3.148
Leverage	0.566***	0.559***	0.658***	0.660***	0.545***
	8.014	7.47	8.188	8.139	7.483
Market to book ratio	-0.000***	-0.00***	-0.000***	-0.000***	-0.000***
	-4.186	-4.231	-3.044	-3.039	-4.131
Asset size	0.438***	0.431***	0.484***	0.486***	0.427***
	7.606	7.23	7.382	7.344	7.219
Inverse Mills ratio	1.377***	1.355***	1.532***	1.539***	1.344***
	6.522	6.2	6.332	6.303	6.198
N	6320	6320	6022	6022	6320

* p<0.10, ** p<0.05, *** p<0.01

Table V. Yield Spreads in the Primary Market

Panel A. Difference in yield spreads between international and domestic issues

We report the estimates of firm-level regressions where the dependent variable is the difference between the offering yield spreads of international and domestic issues for a certain US firm, based on the new bond issues it has done over the quarter. An issue is defined as international if SDC defines it as international, global or eurobond issue. Offering yield spread is estimated as the number of basis points over the comparable maturity Treasury bond for fixed rate issues and as the number of basis point spread between the coupon rate and the rate of the index off which the coupon is reset for floating rate issues.

Column A calculates the difference between the offering yield spreads of matched international and domestic bonds where matching is done based on maturity, covenant and ratings. Column B calculates the difference between the weighted averages of offering yield spreads of international and domestic bonds the firm issued over the period, where weights are based on the issue sizes of the bonds. Bond-specific control variables (maturity, availability of covenants and ratings) in this column are estimated as the weighted averages of these control variables for international bonds. In Column C international sales is used as a control variable instead of international assets while in Column D a piecewise linear model is estimated where our main explanatory variable, International credit recognition is split into two, above and below 15% ownership.

International credit recognition is estimated as the previous share of international investors in the firm's domestic and international bonds. In particular, the ownership by international investors is split into the ownership by investors that are registered outside of US (Local part) and ownership by investors that are registered within US but belong to non-US managing firm families (NY part). International credit recognition refers to Local part of international bond ownership. International bank borrowing is defined analogously. All regressions include time and rating dummies and are clustered at the issuer level.

	(A) Matched bonds	**(B) Weighted averages**	**(C) Int. sales**	**(D) Piecewise linear**
International credit recognition	-285.109***	-190.879*	-191.783*	
	-2.674	-1.673	-1.892	
International credit recognition <=.15				-442.159**
				-2.458
International credit recognition >.15				20.306
				0.169
Share of int. investors (NY part)	50.792	104.226	29.053	41.75
	0.716	1.507	0.44	0.612
Share of int. borrowing (Local part)	29.915	-14.885	18.354	31.645
	0.963	-0.508	0.636	1.057
Share of int. borrowing (NY part)	-10.11	-18.008	-10.23	-10.943
	-0.564	-0.731	-0.582	-0.616
Maturity	0.244**	0.245	0.282**	0.243**
	2.041	1.52	2.203	2.006
Availability of covenants	-24.870**	-40.682***	-23.968**	-26.340**
	-2.359	-2.745	-2.158	-2.582
Total issue size over quarter	27.226	29.874	49.107**	25.356
	1.405	1.571	2.167	1.353
Tangibility	-89.254	-61.742	-109.75	-90.397
	-1.063	-0.961	-1.289	-1.084
ROA	-41.962	-81.965	-64.189	-54.16
	-0.255	-0.51	-0.37	-0.327
Leverage	85.651**	94.476**	-98.343	89.078**
	2.405	2.286	-0.958	2.501
Market to book ratio	0.034**	0.003	0.037**	0.036**
	2.109	0.159	2.338	2.189
Asset size	49.594***	23.918	-92.363	50.841***
	2.8	1.596	-1.124	2.888
Share of assets abroad	31.771*	31.392		34.758**
	1.877	1.562		2.015
Share of sales abroad			-42.545	
			-0.916	
Inverse Mills ratio	79.841**	46.905	-295.341	82.648**
	2.094	1.473	-1.367	2.187
Constant	-786.033***	-485.653*	1735.088	-785.703**
	-2.638	-1.903	1.233	-2.611
R-squared	0.079	0.072	0.084	0.08
N	540	541	540	540

* p<0.10, ** p<0.05, *** p<0.01

Panel B. International Issues

We report the coefficients of a firm-level two-stage estimation of an endogenous switching regression model with overlapping samples. The dependent variable is the offering yield spread of a new international bond issue. An issue is defined as international if SDC defines it as international, global or eurobond issue. Offering yield spread is calculated as the number of basis points over the comparable maturity Treasury bond for fixed rate issues and as the number of basis point spread between the coupon rate and the rate of the index off which the coupon is reset for floating rate issues.

In Column A, the offering yield is estimated as the largest offering yield spread of all new international bonds of the firm over the quarter, our standard specification, also used in Columns D-E. In Column B, the offering yield spread is estimated as the weighted average of the offering yield spreads over the quarter, while in Column C the offering yield spread on the bond with the longest maturity is used. In Column D bootstrapped standard errors are used for inference. In Column F a piecewise linear model is estimated where our main explanatory variable, International credit recognition is split into two, above and below 15% ownership.

International credit recognition is estimated as the previous share of international investors in the firm's domestic and international bonds. In particular, the ownership by international investors is split into the ownership by investors that are registered outside of US (Local part) and ownership by investors that are registered within US but belong to non-US managing firm families (NY part). International credit recognition refers to Local part of international bond ownership. International bank borrowing is defined analogously. All regressions include time and rating dummies.

	(A) Main	**(B) Weighted av. yield**	**(C) Longest maturity**	**(D) Bootstrap s.e.**	**(E) Piecewise linear**
International credit recognition	-145.375**	-107.025**	-80.788*	-145.38***	
	-2.459	-2.093	-1.869	-8.606	
International credit recognition <=.15					-289.91***
					-3.284
International credit recognition >.15					124.531
					0.785
Share of int. investors (NY part)	16.152	38.004	36.989	16.152	12.844
	0.472	1.295	1.327	0.384	0.376
Share of int. borrowing (Local part)	15.598	0.78	-0.706	15.598	13.49
	0.926	0.054	-0.052	1.136	0.796
Share of int. borrowing (NY part)	2.788	-16.576	-5.025	2.788	2.95
	0.05	-0.351	-0.11	0.023	0.053
Maturity	0.454***	0.465***	0.216***	0.454***	0.446***
	7.398	7.232	8.837	41.223	7.311
Availability of covenants	-28.157***	-19.808**	-22.712***	-28.157***	-29.189***
	-3.175	-2.436	-3.366	-3.048	-3.3
Total issue size over quarter	16.898	10.435	12.569	16.898	19.07
	1.213	0.88	1.097	0.608	1.384
Tangibility	-25.33	-27.138	-14.438	-25.330**	-29.005
	-1.133	-1.416	-0.79	-2.274	-1.295
ROA	-27.899	-27.184	-16.368	-27.899	-26.911
	-1.375	-1.545	-0.976	-0.287	-1.314
Leverage	88.518***	70.474***	51.847***	88.518***	103.397***
	4.789	4.427	3.515	3.388	5.43
Market to book ratio	0.01	0.007	0.007	0.01	0.007
	0.661	0.542	0.547	0.06	0.447
Asset size	2.853	2.678	-2.023	2.853	8.587
	0.432	0.474	-0.377	0.159	1.264
Share of assets abroad	26.163***	38.718***	34.934***	26.163*	41.139***
	2.637	4.516	4.394	1.847	4.096
Inverse Mills ratio	11.087	24.138	7.617	11.087	29.808
	0.561	1.419	0.472	0.209	1.436
Constant	355.393***	354.855***	413.419***	-27.921	303.480***
	3.158	3.56	4.59	-0.111	2.626
N	6320	6325	6324	6320	6320

* p<0.10, ** p<0.05, *** p<0.01

Panel C. Instrumental variables specification

We report the coefficients of a firm-level instrumental variables specification. The dependent variable is the offering yield spread of a new international bond issue. An issue is defined as international if SDC defines it as international, global or eurobond issue. Offering yield spread is calculated as the number of basis points over the comparable maturity Treasury bond for fixed rate issues and as the number of basis point spread between the coupon rate and the rate of the index off which the coupon is reset for floating rate issues.

In Column A, the offering yield is estimated as the largest offering yield spread of all new international bonds of the firm over the quarter. In Column B, the offering yield spread is estimated as the weighted average of the offering yield spreads over the quarter, while in Column C the offering yield spread on the bond with the longest maturity is used.

International credit recognition is estimated as the previous share of international investors in the firm's domestic and international bonds. In particular, the ownership by international investors is split into the ownership by investors that are registered outside of US (Local part) and ownership by investors that are registered within US but belong to non-US managing firm families (NY part). International credit recognition refers to Local part of international bond ownership and is instrumented by the share of borrowing from banks that are located outside of US while ownership by investors that are registered within US but belong to non-US managing firm families (NY part) is instrumented by the share of borrowing from banks that are located within US but belong to non-US financial groups. All regressions include time and rating dummies.

	(A) Main	**(B) Weighted av. yield**	**(C) Longest maturity**
International credit recognition	-1060.806*	-1444.04**	-1097.207*
	-1.829	-2.492	-1.886
Share of int. investors (NY part)	-385.537	38.383	301.999
	-0.494	0.046	0.386
Maturity	0.420***	0.391***	0.219***
	5.653	3.879	6.495
Availability of covenants	-28.218**	-3.491	-9.471
	-2.147	-0.178	-0.676
Total issue size over quarter	-28.231	-29.971	-11.589
	-1.093	-1.2	-0.5
Tangibility	-31.101	-20.826	-12.624
	-1.15	-0.776	-0.509
ROA	136.416***	122.206***	88.514***
	3.677	3.328	2.801
Leverage	0.014	0.01	0.006
	0.806	0.612	0.408
Market to book ratio	10.093	6.53	2.279
	1.501	0.928	0.399
Asset size	46.300**	65.104***	61.764***
	2.462	3.543	2.985
Share of assets abroad	33.169	18.031	15.404
	1.445	0.771	0.748
Constant	416.436	306.777	269.635
	1.591	1.266	0.918
N	1061	1066	1083

* p<0.10, ** p<0.05, *** p<0.01

Table VI. Purchases of Bonds by International Investors

Panel A. Newly Issued International Bonds

We report marginal effects at means of variables from bond/managing firm-level probit and tobit regressions where the dependent variable is the decision by a certain international investor to purchase some newly issued international bond of US firm. For each new bond issue, the set of potential investors is considered to be all non-US international managing firms that hold any securities of US firms. We record the purchases of a new issue on the first date when the information about the holdings of the bond is provided in Lipper database. We exclude those observations where the first recorded purchase date for the bond is later than one year after the offering date of a bond as reported in Mergent.

International credit recognition, Share of dom. investors, and Previous own ownership refer to the percentages of the face value of bonds of the firm that were held by respectively other investors that come from the same country as the international investor in question; US investors and international investor in question itself one quarter before the offering date of the issue. Share of dom. borrowing and Share of peer bank borrowing refer to the percentage of the issuer's loans from respectively US banks and banks that come from the same country as the international investor in question. Share of first international credit recognition refers to the first available record of International credit recognition for the firm in the dataset.

Column A fits a tobit model while Columns B-H provide estimates for the probit models. Columns A and B refer to the full sample. Columns C-D add country fixed effects. In addition, Column D includes the managing firm control variables estimated in the last quarter before the offering date of the issue. Managing firm controls include managing firm size, ownership of international issues, concentration ratio, rating profile, leverage profile, M/B profile, issuer size profile, ROA profile. Estimation in Column E includes Share of first peers as additional exogenous variable. Estimation in Column F includes International diversification, estimated at the firm level, as additional exogenous variable. All regressions include rating and time dummies, issuer controls (tangibility, ROA, leverage, asst size, market-to-book ratio) and are clustered at a manager level.

	(A) Tobit	(B) Probit	(C) With Country Fixed Ef.	(D) With Man. Firm Variables	(E) With First Peers	(F) With Int. div.
Int. credit international recognition	0.206***	0.054***	0.030***	0.010**	0.048***	0.034*
	5.308	3.653	3.288	2.463	3.544	1.798
Previous own ownership	0.165***	0.043***	0.031***	0.007**	0.043***	0.045***
	5.186	3.694	3.669	2.541	3.766	2.873
Share of dom. investors	0.066***	0.017***	0.010***	0.003**	0.016***	0.015*
	3.56	3.045	2.937	2.257	2.998	1.878
Share of dom. borrowing	0.011***	0.002***	0.001	0	0.002***	0.003**
	3.572	2.654	1.549	1.537	2.64	1.989
Share of peer bank borrowing	0.051***	0.013***	-0.005	-0.002	0.013***	0.014***
	3.795	2.841	-1.546	-1.594	2.83	4.048
Int. credit rep. (first)					0.009***	
					3.663	
International diversification						0.003**
						2.481
Issue size	-0.000*	0	0	0	0	0
	-1.659	-0.231	-0.531	-0.579	-0.074	0.495
Maturity	0	0	0	0	0	0
	0.324	0.639	0.842	0.384	0.588	-0.134
Subordination	0.001	0	0	0	0	-0.001
	0.637	0.279	0.785	0.593	0	-0.968
Covenants	-0.001**	-0.000**	-0.000**	-0.000**	-0.000*	0.000*
	-2.251	-2.079	-2.129	-1.961	-1.678	1.862
Share of assets in country	0.003	-0.001	-0.001	0	-0.001	0.000*
	0.391	-0.636	-1.049	-0.713	-0.604	1.862
Issuer controls	Yes	Yes	Yes	Yes	Yes	
Country fixed effects	No	No	Yes	Yes	No	
Managing firm controls	No	No	No	Yes	No	
Time dummies	Yes	Yes	Yes	Yes	Yes	
Rating dummies	Yes	Yes	Yes	Yes	Yes	
N	249168	249168	249168	217167	249168	82143

* p<0.10, ** p<0.05, *** p<0.01

Panel B. Interaction Effects for Newly Issued International Bonds

We report marginal effects at means of variables from bond/managing firm-level probit regressions where the dependent variable is the decision by a certain international investor to purchase some newly issued international bond of US firm. The specification and the variables used are the same as in Table VI Panel A, Column F. Here, we split the full sample according to the median values of various firm and bond specific characteristics: Previous own ownership, Share of dom. lending, Share of peer bank borrowing, Issue size, Maturity, Covenants, Rating, Deviation of analyst earnings forecasts and also by Share of assets in investor's country. We perform the splits one-by-one and indicate the variable according to which we split the sample in Column A. The median values of these variables that were used to split the samples are reported in Column B.

We only report the coefficients for International credit recognition (Column C) suppressing the control variables. For each split, we report the coefficients for these variables for Above median and Below median subsamples in subcolumns (i) and (ii) respectively. In the (iii) subcolumn, a chi-squared test is performed using the seemingly unrelated estimation for the pairs of the two models (Above median and Below median).

As the full-sample median value for International credit recognition is close to 0 which does not allow estimating marginal effect International credit recognition below median, we perform the split by median value of International credit recognition for the subsample observations for which International credit recognition is strictly larger than zero.

(A)	**(B)**	**(C) International credit recognition**		
Variable used for the split	**Median value**	**(i) Above median**	**(ii) Below median**	**(iii) Difference**
Previous own ownership	0%	0.146**	0.006**	0.14
		2.338	2.228	2.571
Share of dom. borrowing	60%	0.015***	0	0.015***
		6.00	0.39	32.923
Share of peer bank borrowing	0%	0	0.008*	-0.008
		0.059	2.046	2.543
Issue size	9.62	0.002	0.005	-0.003
		1.153	0.911	0.207
Maturity	2467	0.006	0.018***	-0.012***
		0.895	4.449	6.901
Covenants	5	0	0.018***	-0.018***
		0.391	6.566	36.913
Moody rating	A2	0.012**	0.002	0.01
		2.331	1.412	2.466
Analyst deviation	0.06	0.014	0.004*	0.01***
		0.866	1.935	11.662
Share of assets in country	0%	0.012**	-0.003	0.015***
		2.494	-1.464	14.309

* p<0.10, ** p<0.05, *** p<0.01

Table VII. Investment-Cash Flow Sensitivity

We report the estimates of panel regressions where the dependent variable is the investment level of the firm, defined as the fraction of capital expenditures over the Property, plant and equipment in the previous fiscal year while main explanatory variable, cash flow, is defined as the sum of earnings before extraordinary items and depreciation.

Column A provides the main specification while Column B estimates the piecewise linear model where Share International credit recognition is split into two, above and below 15% ownership.

International credit recognition is estimated as the previous share of international investors in the firm's domestic and international bonds. In particular, the ownership by international investors is split into the ownership by investors that are registered outside of US (Local part) and ownership by investors that are registered within US but belong to non-US managing firm families (NY part). International credit recognition refers to Local part of international bond ownership. International bank borrowing is defined analogously. All regressions include time, rating and firm fixed effects.

	(A) Main	(B) Piecewise linear
Cash flow	0.044***	0.051***
	20.413	20.242
International credit recognition	-0.027	
	-0.443	
Cash flow * Int. credit recognition	-0.050**	
	-2.325	
International credit recognition <=.15		-0.013
		-0.076
Cash flow * Int. credit recognition <=15		-0.296***
		-5.79
International credit recognition >.15		-0.086
		-1.021
Cash flow * Int. credit recognition>15		0.050*
		1.71
Share of int. investors (NY part)	-0.015	-0.014
	-0.399	-0.379
Share of int. borrowing (Local part)	0.025	0.014
	0.702	0.403
Share of int. borrowing (NY part)	0.036	0.026
	0.443	0.321
Tangibility	-0.057	-0.054
	-0.883	-0.851
ROA	-0.135***	-0.138***
	-4.296	-4.404
Leverage	-0.511***	-0.517***
	-10.373	-10.554
Market to book ratio	0	0
	0.056	0.118
Asset size	0.058***	0.061***
	4.15	4.348
Share of assets abroad	-0.173***	-0.175***
	-6.577	-6.655
Constant	-0.007	-0.028
	-0.027	-0.107
N	3963	3963

* p<0.10, ** p<0.05, *** p<0.01

Table VIII. Probability of Default

We report the marginal effects at means of variables from probit regressions, where the dependent variable is defined as 1 if the bond defaults and 0 if it does not default over the next quarter.

In Column A default is defined as default (bankruptcy, interest, covenant, principal) on a bond as reported in the Mergent database. The analysis reported in Column A is performed at a bond level and the share of int. investors is defined at a bond level as well. All bonds in Mergent database that could be matched for bond ownership information to Lipper are considered.

In Column B default is defined as the covenant violation or bankruptcy filing at the firm level. The sample used for covenant violations is described in Nini, Smith and Sufi (2009) and retrieved from Amir Sufi's website. The sample for bankruptcy (either Chapter 7, or Chapter 11) filings is retrieved from BankruptcyData.com and Prof. Lynn M. LoPucki's bankruptcy research database. The analysis reported in Column B is performed at a firm level and the share of int. investors is defined at a firm level as well. All Compustat firms that could be matched for bond ownership information to Lipper are considered.

International credit recognition is estimated as the previous share of international investors in the firm's domestic and international bonds. In particular, the ownership by international investors is split into the ownership by investors that are registered outside of US (Local part) and ownership by investors that are registered within US but belong to non-US managing firm families (NY part). International credit recognition refers to Local part of international bond ownership. All regressions include time dummies and use clustered standard errors at the firm level.

	(A) Bond level	**(B) Firm level**
International credit recognition	-0.002*	-0.008**
	-1.877	-2.017
Share of int. investors (NY part)	0.001***	0.003
	2.812	0.765
Share of assets abroad	-0.001**	0.005*
	-2.067	1.877
Maturity	-0.000**	
	-2.019	
Issue size	-6.013***	
	-2.742	
Tangibility	-0.001	-0.012**
	-1.124	-2.338
ROA	-0.006***	-0.020***
	-4.089	-3.627
Leverage	0.002***	0.025***
	3.689	6.742
Market to book ratio	0	0
	-1.461	-1.226
Asset size	-0.000***	-0.007***
	-5.017	-9.518
N	84540	67999

* p<0.10, ** p<0.05, *** p<0.01

Table IX. International Ownership of Domestic Bonds in the Secondary Market

Panel A. Full Sample

We report the estimates of a bond-level system of simultaneous equations of yield spread change and change in international investor bondownership. Changes are calculated at quarterly frequency. All bonds that have the yields reported in Bloomberg and could be matched at a bond-level to Lipper database are included in the analysis.

Yield spread is the option adjusted spread. Column A reports the results for the Change in yield spread equation while Column B reports results for Change in int. investor ownership equation. Subcolumns (i)-(ii) use all bonds of the firm in the panel and the change in international investor ownership as well as change in international diversification are estimated at a bond level. Subcolumn (iii) picks the most actively traded bond of the firm in quarter where the activity of trading is defined by the number of accounts that change holdings of the bond from Lipper. Subcolumn (iv) picks the bond with the longest maturity of the firm each quarter. In Subcolumns (iii)-(iv) the change in international investor ownership is estimated at a firm level.

	(A) Change in yield spread				(B) Change in int. investor own.			
	(i) All bonds	(ii) All bonds	(iii) Least active	(iv) Longest maturity bond	(i) All bonds	(ii) All bonds	(iii) Least active	(iv) Longest maturity bond
Change in int. investor own.	0.040*	-0.118***	0.069	0.107**				
	1.804	-2.755	1.588	2.017				
Change in yield spread					-4.014***	-1.455***	-3.161***	-3.128***
					-17.301	-7.019	-10.714	-10.507
Change in int. diversification		0.003***				0.008***		
		4.958				3.309		
Change in int. bank borrowing	-0.002	0.001	0	-0.001	-0.015**	-0.001	-0.009	-0.004
	-1.295	0.495	0.036	-0.409	-2.074	-0.118	-0.689	-0.316
Leverage	0.006***	0.003***	0.005***	0.005***	0.028***	-0.001	0.024***	0.023***
	13.506	4.132	5.917	5.36	10.562	-0.461	5.988	5.767
ROA	-0.008***	-0.003***	-0.012***	-0.012***	-0.035***	-0.007*	-0.051***	-0.052***
	-12.618	-4.143	-8.19	-7.551	-9.423	-1.903	-6.99	-6.951
Market to book ratio	0	0	0	0	0	0	0	0
	0.586	-1.404	0.862	0.854	-0.317	-1.174	-0.21	-0.294
Tangibility	-0.002***	0	-0.001	-0.001	-0.001	0	0.005	0.005
	-3.782	0.107	-0.568	-1.107	-0.569	0.117	1.287	1.164
Asset size	-0.000***	-0.000***	-0.000***	-0.000***	-0.003***	-0.001***	-0.002***	-0.002***
	-8.602	-3.204	-3.535	-2.722	-10.282	-3.396	-4.612	-4.565
Share of assets abroad	0	0	0	0	0	0.001	0	0
	0.445	-0.061	0.233	0.276	-0.176	0.592	-0.041	-0.239
Bond downgraded to junk	0.004***	-83.881***	0.002	0.002	0.037***	0.019***	0.026***	0.022**
	3.801	-8.362	0.8	0.811	6.745	2.846	2.991	2.514
Change in norm. bond size	-20.560***	0.003	-17.804***	-19.770***				
	-5.114	1.481	-2.601	-2.96				
Change in quality spread in market	0.006***	0.005***	0.008***	0.009***				
	16.165	4.951	10.164	9.739				
Change in credit spread in market	0.009***	0.007***	0.012***	0.015***				
	6.679	8.215	4.638	4.986				
Change in 30y T-bond rate	0.001***	0.001	0.001*	0.001				
	6.104	1.217	1.816	1.486				
Change in aggr. int. inv. own.					0.160***	0.335***	0.171***	0.176***
					8.368	11.417	5.512	5.565
Constant	0.006***	0.002**	0.005***	0.005***	0.027***	-0.004	0.018***	0.017***
	9.308	2.454	3.763	3.282	7.082	-1.059	2.726	2.667
N	75673	21994	23766	23100	75673	21.994	23766	23100

* p<0.10, ** p<0.05, *** p<0.01

Panel B. Sample Splits, Domestic Issues

We report the estimates of a bond-level system of simultaneous equations of yield spread change and change in international investor bondownership. The specification and the variables used are as the ones defined in Panel A, Subcolumn (i). Here, we split the full sample according to the median values of Rating and Deviation of analyst earnings forecasts. We perform the splits one-by-one. We only report the variables of interest, suppressing the control variables. Yield spread is the option adjusted spread. Column A uses all the bonds of the firm in the panel. Columns B and C report the results for the subsamples for firms with the st. dev. of analyst forecasts below and above 0.06, respectively. Columns D-F report the results for the subsamples for firms with the Moody's rating at or above A2, below A2 and no rating available, respectively.

	(A) All bonds	**(B) Low an. dev.**	**(C) High an. dev.**	**(D) High rating**	**(E) Low rating**	**(F) No rating**
Change in int. investor own.						
Change in yield spread	-4.014***	-4.689***	-3.809***	-26.235***	-5.705***	-0.895***
	-17.301	-12.563	-11.455	-16.463	-15.481	-4.336
Change in yield spread						
Change in int. investor own.	0.040*	-0.035**	0.137**	-0.036***	0.257***	-0.067**
	1.804	-2.064	2.196	-2.959	3.031	-2.219
N	75673	39016	29489	20471	43167	12035

* p<0.10, ** p<0.05, *** p<0.01

Figure 1A. Outstanding International Debt by US Firms ($bn)

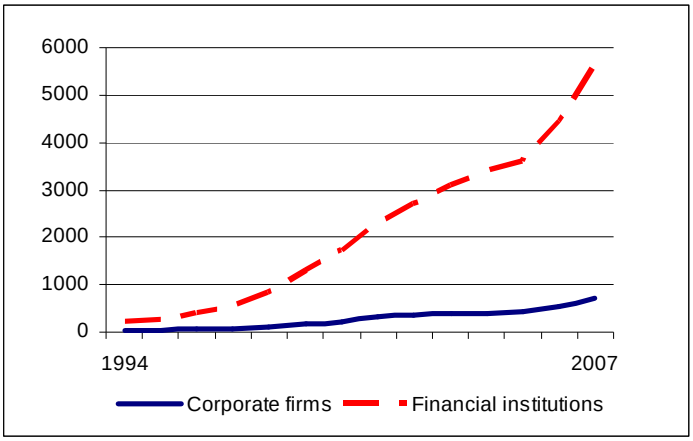

Figure 1B. Outstanding International Debt by US Firms (% All Outstanding Debt)

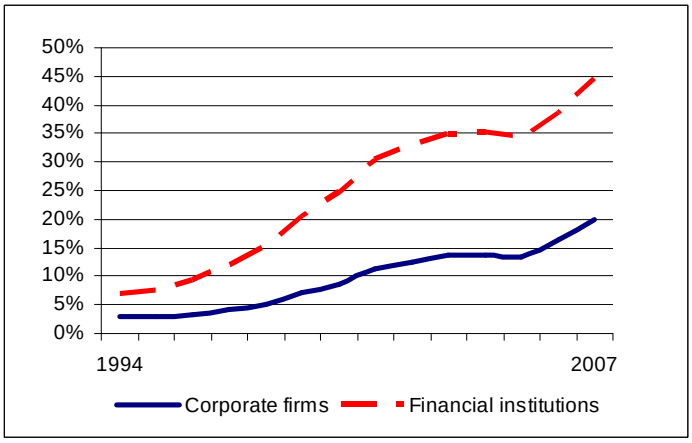

Figure 1C. Net New Issues of International Debt by US Firms ($bn)

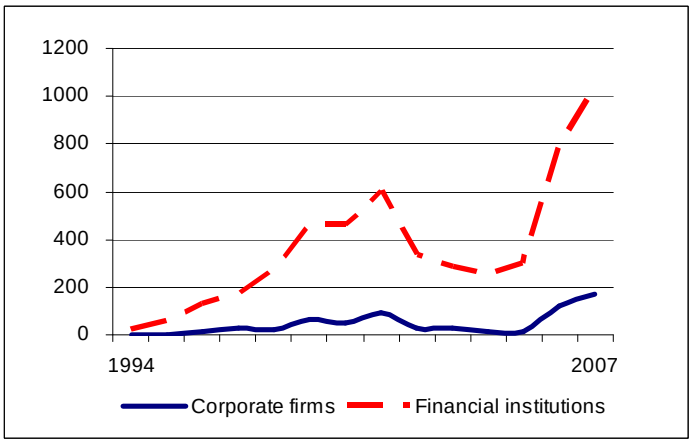

Figure 2. Average yield spreads of US corporate bonds (bp)