

# **Investor Base and Corporate Borrowing: Evidence from International Bonds**

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## **Abstract**

We examine international bond issues by US firms to study the benefits of investor taste for cross-border security issuances. We proxy for firms' international investor taste with the fraction of prior international bond holding in firms' domestic and international bonds and find that international investor demand increases with such taste. 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. Such international recognition may occur, for instance, if the diversification benefits of adding the security to investor's portfolio outweigh the negative effects of higher renegotiation costs for international compared to domestic investors.

**JEL Classification: G15, G32, G33**

**Keywords: international bond issues; international bond ownership; investor recognition hypothesis; international diversification**

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## Introduction

One of the key questions in international finance is what drives cross-border flows. These have taken various forms over time. Over the period 1970–90, international capital flows were mainly in the form of international bank lending and foreign direct investment such as cross-border M&As (Adler and Dumas, 1975; Errunza and Senbet, 1984). In the 1990s, after the wave of financial liberalization, direct portfolio investment took over as the main form of international capital flows (Bekaert and Harvey, 2000; Stulz, 2005).

Different explanations for cross-border flows have been put forward. On the one hand, they have been attributed to optimal portfolio rebalancing, whereby investors diversify across countries at different stages of the economic cycle (e.g., Tille and Van Wincoop, 2010). On the other, gravity models have been used to explain capital flows in terms of information and transaction costs, relying on proxies such as the size of the market and trading costs (Portes and Rey, 2005), an approach which stresses the importance of the distance between the firm and the investor to proxy for information asymmetry (e.g., Brennan and Cao, 1997).

In this context, a key question is whether and how firms are willing to reduce information asymmetry by issuing international securities, and thus reduce transaction costs for investors who seek portfolio diversification. The literature has so far been largely mute on this point, empirically as well as theoretically. The focus of this paper is to bridge the gap by investigating this question in a setting that, to the best of our knowledge, for the first time links investor-level international bond ownership to international bond issues. In this paper we provide detailed empirical evidence that accessing the international capital markets allows firms to attract financing at a lower cost.

We focus on US firms, whose international bond offering has been massive over the last decade. Figure 1 shows that the net corporate debt raised by US non-financial firms internationally 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 the total outstanding amount raised rising from \$48bn to \$730.6bn.<sup>1</sup> The rise is even more apparent for financial firms. Over the same period, the fraction of international

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<sup>1</sup> Aggregate statistics come from the US Department of Treasury International Capital System (for international bond ownership) and Bank of International Settlements (for international issues of securities).

bond ownership in US corporations grew 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.

We argue that in the international markets firms face a trade-off between diversification and the cost of renegotiation. International investors offer sizable diversification-related benefits to US firms as they are less sensitive to US-related macroeconomic risk. Thus borrowing from international investors lowers the cost of borrowing. Conversely, since international investors are more geographically dispersed, and are located further away from the issuer's headquarters in countries with different laws and traditions governing creditor rights (Kim, Sung and Wei, 2011), they are less able to renegotiate debt should such a need arise, and this increases the cost of borrowing. The firm's optimal position in this trade-off is driven by international investor taste for public bonds. The finding that international investors have taste for firm's bonds implied that the positive effects of the attention given to a firm's bonds in a particular country more than offset concerns about renegotiating ability. The greater the international taste for a firm's securities, the bigger the incentive to issue internationally. The concept of investor taste is related to "investor recognition" which has gained traction in the academic literature since Merton (1987). However, despite the prominence of this hypothesis, it has been a challenge to show that firms actively raise international financing to respond to investor demand.

These considerations suggest our testable hypotheses. First, there is higher demand among international investors for the bonds of internationally recognized firms ("higher taste"). Second, the stronger the international investor taste for a firm's bonds, the lower its cost of issuing international bonds. And third, this taste prompts more internationally recognized firms to issue more international bonds.

This mechanism is similar to what is referred to in corporate finance and banking as "relationship lending". Commercial banks develop a special long-term relationship with repeat borrowers. This provides them with access to inside information that allows the bank to better monitor the firm (e.g., (Diamond, 1984, Mayer, 1988, Sharpe, 1990, Boot, 2000, and Boot and Thakor, 2000). Bank monitoring, even if aimed simply at recovering the loan, improves overall firm governance. Banks

“acquire private information about loans and enhance the value of investment projects” (Diamond, 1984). This relationship with the bank lowers the moral hazard problem on the borrower side. However, such a relationship also creates a moral hazard on the side of the lender (“hold-up”). A prerequisite for the hold-up of the borrower is the lack of actual or potential lenders to replace the bank.

The equivalent of the special relationship in the bond market is the international investor taste for the bonds of a firm. This form of investor recognition enhances trust, which in turn allows the firm to get a lower rate. However, in the case of bond ownership, this is less likely given the more competitive nature of the bond market. Indeed, since there are multiple bondholders, the “special relationship” translates into interest rate smoothing without degenerating into the borrower hold-up problem that the bank lending relationship may generate (Boot and Thakor, 2000).

We test these hypotheses by focusing on the international issuance of bonds by US firms in the period from 1998 to 2006. We proxy for international investor taste using the fraction of international investors in the firm’s previously issued bonds.<sup>2</sup> International bond ownership is positively related to the extent to which international investors value holding the firm’s bonds more compared to domestic investors. It is negatively related to renegotiation costs, as the latter increase with the fraction of distant lenders. A US firm can thus choose to cater to its investors and issue international securities if it perceives strong international demand for its domestic securities. Critically, international ownership does not simply correspond to previous international issuances. Indeed, the very first international bond issuance may itself be triggered by the prior *international* investment in the firm’s *domestic* bonds. Firms that have never issued international securities may observe an increase in investments by international institutions in their domestic bonds, and start issuing internationally.

We start by looking at the investor demand. We find that the average international investor demands more bonds if the issuing firm already is appreciated in the investor’s home country. As a proxy for taste from the investor’s perspective we use “peer” bond ownership in the firm – i.e. the fraction of bond ownership by other institutional investors from the same country as the investor.

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<sup>2</sup> Previous literature has used ownership type to infer investor recognition (e.g., individual ownership in Amihud, Mendelson and Uno, 1999), or the quality of governance (e.g., institutional ownership in Nikolov and Whited, 2013).

These investors should have similar diversification needs and the ability to renegotiate debt of US firms. One standard deviation higher peer ownership is related to a 1.5% larger purchase in terms of the face value of the bond, while 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. This effect is similarly significant in economic terms in the case of the first international issuance. One standard deviation higher peer ownership in the firm's already outstanding *domestic* bonds is related to a 1.5% larger purchase of firm's first international bond by the average international investor.

Having provided supporting analysis that investor taste matters for future demand, we move to the main analysis, showing that international bond issuances command lower yield spreads than domestic ones – and that the difference is related to international taste. Figure 2 shows that the average yield spreads for international issues were lower than domestic issues for almost the entire period under consideration. If we compare, at quarterly frequency, the international and domestic offering yield spreads for bonds with similar characteristics of 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, the difference is more negative the more recognized the firm is by international investors. 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. These results suggest that for some firms, issuing internationally is cheaper than issuing domestically and that this benefit is related to international investor taste for their bonds.

Finally, in line with the fact that international issues provide benefits in terms of lower borrowing costs for globally recognized firms, we find that the latter are more likely to issue internationally. One standard deviation higher prior international bond ownership is associated with a 2.1% higher probability of issuing internationally. This effect represents an 11.7% increase with respect to the unconditional mean probability of issuing international bonds. Indeed the firm is more likely to issue its first international bond if it already has a large international bond holding in its domestic bonds.

Overall, our results pose a challenge to classic explanations for international bond issuances. Although we provide a consistent explanation based on the trade-off between investor diversification and renegotiation costs, this particular interpretation of investor recognition may well merit further theoretical investigation.

Our findings contribute to different streams of literature. First, they contribute to the research on international capital flows (Adler and Dumas, 1975, Errunza and Senbet, 1984, Bekaert and Harvey, 2000, Stulz, 2005, Portes and Rey, 2005, Tille and Van Wincoop, 2010). We provide a fresh look at the way firms issue bonds internationally by reducing the transaction costs for investors that seek portfolio diversification.

Second, they relate to the literature on international financing, which has hitherto focused on cross-listing of equity in the US or in other developed countries (e.g., Karolyi, 1998, 2006). For instance, Ahearne, Griever and Warnock (2004) found that a proxy for the reduction in information asymmetries – i.e., the portion of a country's market that has a public US listing – was a major determinant of a country's weight in US investors' equity portfolios. Indeed, while international investors can also invest in the domestic securities of foreign firms, owing to transaction costs (e.g., Chaplinsky and Ramchand, 2000) they prefer to invest in internationally issued securities. However, the focus on capital listing in the US and other developed countries has some limitations as it is ill-suited to analyze the effects of portfolio diversification on cross-border demand due to the mix between the benefits of portfolio diversification for US investors and the advantages of bonding to a better system of governance. Indeed, in addition to a large base of institutional investors seeking exposure to emerging market securities (Burger and Warnock, 2007), listing in the US also provides

access to better governance, such as superior US shareholder protection and more governance-savvy institutional investors (Doidge, Karolyi and Stulz, 2004). In other words, listing in the US or other major markets simultaneously gives the firm access to a more diversified pool of investors, better statutory governance, and appeals to investors that seek diversification in emerging market securities. These mixed motives make it hard to disentangle the different effects.

While some of the 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), a better information environment on the firm after the issue, higher liquidity of the firm’s securities (Miller and Puthenpurackal, 2005), currency hedging (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, 2010), many international bond issues of US firms are dollar-denominated, opening up the possibility that currency hedging or differences in general borrowing rates are not the sole reasons for international financing.

Third, our results help to address discordant findings on the role of interest rates in the international bond market. Whereas Graham and Harvey (2001) suggest that one of the primary reasons why firms issue in the foreign markets is the difference in interest rates, Henderson, Jegadeesh and Weisbach (2006) find no evidence that corporate bond issuances in the US and UK by foreign firms are determined by the differential in market interest rates. We show that not all firms are able to attract lower financing rates by issuing internationally; only those with an investor base seeking diversification via the firm’s corporate bonds.

Our findings are also related to the literature on international ownership, which has primarily 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 burgeoning literature on the foreign equity ownership of US corporations (e.g., Cai and Warnock, 2006, Parwada and Yang, 2009, Kang and Kim, 2010), the evidence on debt ownership is scarce. Burger and Warnock (2007) discuss participation in the foreign debt markets from the perspective of the US investor. We contribute by analyzing international ownership in the bond market and its impact on the decisions of US firms.

## 2. Conceptual Framework

Our main hypothesis posits that if there is high potential demand for a firm's bonds from international investors, a firm can lower its borrowing costs by issuing international bonds. Such firms thus have a higher propensity to issue international bonds compared to those with lower potential demand for their bonds.

We start building this hypothesis by laying out a framework to explain why investor demand for the securities of the same firm can vary across countries. In particular, the diversification benefits of investing in a specific company's bonds vary from one country to another, while an investor's ability to participate in the renegotiation of firm's bonds may depend on the distance from the US, as well as on the number of other investors from the same country holding the firm's bonds.

On the one hand, international investors offer sizable diversification-related benefits to US firms as they are less sensitive to US-related macroeconomic risk for two major reasons. First, due to a 'home bias', 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 general US macroeconomic conditions. This implies that the bonds issued by US firms act as high-quality diversification assets, helping international investors reduce their exposure to domestic firms. Such an effect is amplified by the fact that most of the international issuances are dollar-denominated and thus provide an additional potential source of diversification for investors who hold mainly 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. Given that asset managers are sometimes forced to sell to meet redemption calls (e.g., Chen, Hanson, Hong and Stein, 2008), the closer they are located to the source of the cash flows of the assets in which they invest, the more they will be subject to cash-flow shocks. Such shocks are correlated to the flows of the end-retail investors that invest in the asset management firm. 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 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 in worse conditions.

However, international investors have higher renegotiation costs. Indeed they are more geographically dispersed, are located further away from the issuer's headquarters, and come from countries with different legal systems and traditions to enforce creditor rights (Kim, Sung and Wei, 2011). They are therefore less able to enforce the covenants and coordinate in the event of default. This lower ability to coordinate in case of renegotiation can also make it more difficult for the firm to emerge from bankruptcy.<sup>3</sup> The trade-off between diversification benefits and potential renegotiation costs (or for that matter any other benefits and costs that vary at the country level) defines investor taste for any US firm's bonds.<sup>4</sup>

Firms are aware of aggregate international investor taste. If taste-based potential international demand is higher than potential domestic demand for firm's bonds, in the presence of market segmentation the cost of issuing international bonds will be lower. Thus, international investor taste leads more internationally recognized firms to issue more international bonds.

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

It is worth emphasizing that we do not rely on this particular trade-off for our theory that investor demand drives firm issuance decisions. For instance, we do not distinguish between "unobservable"

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<sup>3</sup> 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. There might also be other costs for international investors. For instance, international bonds might have currency risk, or lower liquidity than domestic bonds.

<sup>4</sup> An important role of international taste 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.

taste of international investors and conscious decisions by an international investor to invest in the same manner as its peers in the market. As an example, a German investor who is not able to properly assess the benefits of investing in bonds issued by a US firm can use the prior ownership of other German investors as a reference point to assess the quality of the investment in terms of the benefits for its portfolios net of the renegotiation costs.

### **3. Empirical Strategy and Data Description**

Our empirical strategy consists of three steps. We first establish that international investors prefer bonds issued by internationally recognized firms compared to the bonds issued by other firms. Second, we show that this higher demand leads to lower borrowing costs. Third, for this reason these firms choose to issue international bonds. Below we describe each of the stages in more detail.

#### *3.1. Demand side*

We start with the analysis of investor demand. According to our hypothesis, an international investor will invest in the bonds of a firm if they provide diversification benefits and do not have significantly high renegotiation costs. Thus, a proxy for investor taste can be the previous ownership in the firm by “peer” investors – i.e. those who originate from the same country. Indeed, investors in the same country have similar diversification needs and similar renegotiation costs vis-à-vis US firms.

Consider a German investor who holds similar investments in the bonds of two US firms, one of which has so far received larger investments from other German investors. We posit that, all else being equal, a firm with a larger fraction of ownership by German investors will be more recognized in Germany – i.e. for German investors the bonds of this firm offer better diversification benefits and/or lower renegotiation/coordination costs. When making an investment choice, a German investor will thus purchase a higher fraction of the bonds of this firm compared to those of the firm with lower German bond ownership. What we aim to show is that international issues are not only targeted at investors who already hold bonds of the issuing firm, but also attract attention from other investors with similar diversification and renegotiation profiles – i.e. their peers. These new investors may find investing in the domestically issued bonds prohibitively expensive and thus their additional demand

makes issuing internationally particularly attractive for those US firms that can anticipate such demand.

We focus on newly issued international bonds and use existing peer ownership as a proxy for investor taste for firm's bonds. We then study how it affects the demand for each international managing firm family, controlling for the other issuing firm- and institutional investor-specific characteristics. In particular, we estimate:

$$\%Purchase_{ikjt} = \beta_0 + \beta_1 Country\ Taste_{ijt-1} + \beta_2 z_{ijk t-1} + \varepsilon_{ikjt} , \quad (1)$$

where the dependent variable  $Purchase_{ikjt}$  is the fraction of the issue size of the bond  $k$  of the  $i$ th firm, purchased by the  $j$ th institutional investor in quarter  $t$ .<sup>5</sup>

We focus on  $Country\ Taste_{ijt-1}$ ,<sup>6</sup> estimated as the fraction of the bonds held by  $j$ th institutional investor's peers in firm  $i$  of all outstanding bonds of firm  $i$  in quarter  $t-1$ .  $z_{ijk t-1}$  includes our control variables. We control for an investor's prior ownership in the firm's bonds, ownership by US investors who can provide better monitoring,<sup>7</sup> as well as the bank borrowing from the same country where the international managing firm is located.

We also control for characteristics such as the size of the managing firm, its ownership of international issues, degree of diversification, as well as its investment profile (rating profile, leverage profile, M/B profile, issuer size profile and ROA profile). In addition, we include a set of firm-specific control variables such as size, leverage, tangibility, ROA, market-to-book ratio and share of assets located in the country of the manager  $j$  at  $t-1$ . Finally, we include dummies to capture year and rating fixed effects.

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<sup>5</sup> 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.

<sup>6</sup> We also estimate peer bond ownership differently. Instead of using the fraction of bond ownership, we calculated the number of peer investors who hold bonds of firm  $i$  as a fraction of total number of peer investors that are active in the US market. That is we replace peer bond ownership in firm  $i$  by the fraction of peers *in the market* that own bonds in firm  $i$ . The results using this alternative definition of peer bond ownership do not differ from the others and therefore we do not report them in the interest of brevity.

<sup>7</sup> The complement to the sum of the ownership by these three groups (peers, own ownership and US investors) is the ownership by the international investors that are non peers to the managing family  $j$ .

Institutional reasons or specific investment profiles may prevent some international institutions from investing in certain types of firms/bonds. In order to deal with self-selection in demand, we employ a Tobit model (Amemiya, 1984). For each new bond issue, the potential investors are assumed to be the entire universe of international institutional investors that have non-zero holdings in US bonds in 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.

### 3.2. Supply side

Next, we focus on the supply side of bonds – whether stronger investor taste at the country level leads to more bond issues in this country. However, for the majority of observations in our sample, we do not observe actual country destinations of bond issues. Thus, in the supply side analysis for each international issue we measure investor taste at the aggregate international level.

We encountered some additional methodological concerns. First, the frequency of issuances differs across firms and so the analysis at the bond level could be over-influenced by frequent issuers. We thus use a panel specification in which we look at the issuance activity of firms in each quarter of our sample.

Moreover, we need to account for double self-selection – the firm’s decision to obtain financing in a certain period as well as its choice whether to issue internationally or domestically. We deal with these choices in the following way. First, we control for the fact that the sample is only observable if the firm issued bonds over the quarter. To address this problem we employ a Heckman (1979) two-stage procedure. For each quarter and firm in Compustat, we estimate the probit model that a firm issues bonds in a certain quarter and extract the inverse Mills ratio from:

$$\text{Bond Issue}_{it} = \delta_0 + \delta_1 z_{it-1} + \eta_{it}, \quad (2)$$

where the dependent variable takes the value of 1 if firm  $i$  issues bonds in quarter  $t$  and 0 otherwise and  $z_{it-1}$  is a vector of firm-specific control variables such leverage, ROA, market-to-book ratio, asset size as well as time fixed effects. We use the availability of the bond rating as the exogenous variable. The inverse Mills ratio from (2) is denoted by  $\lambda_{it}$  and we include it further as the control variable.

The second selection issue is that the offering yield is conditional on the firm having chosen to issue internationally as opposed to domestically, while the decision where to issue is related to the difference in expected yields in the two markets. To address this issue we employ an extension of the standard endogenous switching regression model of Lee (1978).<sup>8</sup> This model has been used in the corporate finance literature to address choices of firms that are endogenously defined by the outcome variable (e.g., Gopalan, Milbourn, Song and Thakor, 2013).

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 also control for other issuing motives, such as hedging needs and tax arbitrage by using the fraction of the firm's sales that are generated internationally. This acts as the exogenous variable in this stage of the selection problem. We argue that the fraction of international sales should affect the yield spreads only via the decision to issue 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 internationally, and to the yield it would get by issuing domestically as well as the fraction of international sales. We estimate the following system:

$$\begin{cases} \% \text{Int.Bonds}_{it} = \delta_0 + \delta_1 (\text{Off. Yield Spr}_{it}^{\text{int}} - \text{Off. Yield Spr}_{it}^{\text{dom}}) + \delta_2 \text{Int.Sales}_{it-1} + \delta_3 \lambda_{it} + \eta_{it} \\ \text{Off. Yield Spr}_{it}^{\text{int}} = \beta_0^{\text{int}} + \beta_1^{\text{int}} \text{International Tastes}_{it-1} + \beta_2^{\text{int}} z_{it-1} + \varepsilon_{it}^{\text{int}} \\ \text{Off. Yield Spr}_{it}^{\text{dom}} = \beta_0^{\text{dom}} + \beta_1^{\text{dom}} \text{International Tastes}_{it-1} + \beta_2^{\text{dom}} z_{it-1} + \varepsilon_{it}^{\text{dom}} \end{cases} \quad (3)$$

where *Percentage of international bonds* is the fraction of the bonds that the firm  $i$  issues internationally over the quarter  $t$ , estimated as the face value of international bonds over the face value of all bonds that the firm issues over the quarter. *Offering Yield Spread* is the largest offering yield

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<sup>8</sup> 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. Thus, contrary to (3) 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 specification (3), so in the interest of brevity, we do not report them.

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 for all the specifications.

Our main variable *International Taste* $_{it-1}$  is the fraction of the firm's bonds held by institutional investors, evaluated in the quarter before the issuance takes place. *International 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 specification (3) is denoted by  $\lambda_{it}$ . The estimations are based on firm-quarter-level observations. They include fixed year and rating effects.

As an alternative, we predict international demand for the firm's bonds from our demand-side estimation (1) where we instrument the investor demand for a newly issued international bond using demand-side determinants. We replace the variable *International Taste* $_{it-1}$  with the predicted *International Demand* $_{it}$  which is the fraction of the firm's bonds in the quarter purchased by institutional investors, as predicted using the demand-side variables. Arguably, demand-side variables such as former peer ownership of international investors can only affect the current issuing yield through new international demand. This approach is similar to a mixed two-stage least squares model (Dhrymes and Lleras-Muney, 2012). This model estimates the first stage using all the available individual investor demand data, and estimates the second stage using the bond level. We follow this approach since, as suggested by Dhrymes and Lleras-Muney (2012), this mixed two-stage least squares estimator is more efficient than that obtained using the grouped bond-level data alone.

### 3.3. 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 and Bloomberg.

Quarterly data on bond holdings come from Lipper's eMAXX fixed-income database. This dataset 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 is 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 according to the country where the managing firm that manages the largest funds for the family is located. We use only those 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. SDC and Mergent collect data on issuances from security filings, prospectuses, news sources, wires as well as daily surveys of underwriters and other corporate finance contacts. We use the Mergent data set when we need to match bonds across different data sets 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 to be international issues. In the Mergent sample, the issues indicated as Eurobond, Global or listed on international bond exchanges are treated as international. We only consider bonds issued in US dollars. 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 left with 22,453 domestic and 4,348 international bond issues in the bond-level analysis.

Data on bank borrowing are provided by the LPC Loanconnector database. Financial data on firms are taken from the CRSP/Compustat database. We exclude firms with negative market-to-book ratio.<sup>9</sup> 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.

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<sup>9</sup> Given that a large fraction of international issues is 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 we use as controls. As reported in our robustness checks, our results are unaffected if we only focus on the non-financial firms.

Information on the geographical breakdown of the assets (as well as turnover) is taken from the Thomson Worldscope data set that uses self-reported data from firms, such as annual reports. Data on the general interest rate levels in the market are accessed via Datastream, while data on aggregate international investor ownership of corporate bonds in the US are collected from the Treasury Bulletin of the US Department of Treasury International Capital System.

A complete list of the variables we use is provided in the Appendix.

### *3.4. Descriptive statistics*

We report the descriptive statistics in Table 1. The average book value of assets of a median firm with bonds tracked in the Lipper database is about 1.3 billion, where the average is 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 leverage ratio and higher average market-to-book ratio than the overall population of firms. 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 earnings forecasts is 0.06.

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 firms that had at least one international issue. Thus, while only a fraction of firms select to issue internationally, firms that are active in the international bond market take part in it extensively. Also, the descriptive statistics show that international bond ownership is higher among 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.

## **4. International Investor Demand**

We begin our discussion of the results with the international investor demand. The results, reported in Table 2, Panel A, show that the average international investor demands more bonds if the issuing firm

already has significant prior bond ownership by its peers - i.e. good credit recognition in investor's country. One standard deviation higher peer ownership is related to a 1.5% (0.5 standard deviation) larger purchase in terms of the 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. These results are consistent in the subsample of the first international issuances by the firms. Unreported results for domestic bonds are similar in terms of statistical significance and economic magnitude.

Domestic bondholding is also positively related to the demand from international investors, although with a smaller economic magnitude. Prior ownership by the investor also 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").

Our results are robust to a variety of controls. In Column C we only look into the issuing firms that issue international bonds for the first time. Even in these cases, prior bond ownership by the investor's peers in the firm's domestic bonds predicts an investor's investment in the newly issued international bond of the firm. We also include a proxy for international diversification. Although the sample is reduced significantly, in Column D we find a positive link between the purchase of the firm's bonds by an international investor and how negative the correlation is between the firm's secondary market bond prices and the international corporate bond index. In Column E we limit the sample to non-financial firms.

However, to further investigate this issue, we augment our specification with country\*quarter-fixed effects (in Column F) that take care of country-level components of investor taste but allow us to compare international demand across different firms. Country fixed effects also proxy for the different propensity of managers from certain countries to participate in the US securities market due to their respective tax treaties with the US (Mihai and Dharmapala, 2010) or local market size and distance (Portes and Rey, 2005). More specifically, in Column G we additionally control for managing firm characteristics. In Column H we control for managing firm fixed effects,

country\*quarter fixed effects as well as issuer fixed effects. Purchases of international bonds remain robustly associated with international investor taste.

Despite our best efforts to control for institutional investor-specific effects in the previous regressions, these might have not been fully controlled for. Therefore, as a further test we aggregate across all international institutional investors that were previously analyzed separately, and assess the overall demand by international institutional investors for a specific newly issued bond. In Table 2, Panel B, we confirm that previous international bond ownership in the firm is related to higher aggregate demand for a specific bond. One standard deviation higher international bond ownership in a firm is related to 9.8% (0.5 standard deviation) higher aggregate purchase by international investors of the new bond issue. This effect is economically relevant as, on average, international investors own 18.2% of US corporate bonds. We also find that international investors are more inclined to buy a bond if it is issued internationally.

Finally, the previous results are based on the analysis of investor demand for newly issued bonds. We 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: a bond-level fixed effects regression, a Fama-MacBeth regression, and Arellano-Bond GMM estimator of dynamic panel data model. In all the three specifications we find that peer bond ownership is positively related to the demand of international investors. Also, the economic size of the effect is significant. One standard deviation higher peer bond ownership is related to 0.04-0.06% (0.13-0.2 standard deviation) higher investment by an average international managing firm in terms of the outstanding bonds of the firm. We do not report our results but they are available on 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 investor taste explanation.

## 5. Supply of International Bonds

In this section we look at how international investor taste fosters a firm's willingness to issue internationally as this can reduce the cost of borrowing. To test this issue, we investigate whether the cost of borrowing is related to international investor taste.

### 5.1. Main specification

Although we estimate the system (3) together using Lee's (1978) endogenous switching regression model; for the sake of brevity we only report the second equation of the system. The results are reported in Table 3. They show that the yield spread for international issues is lower in the presence of prior international bond owners. One standard deviation higher international ownership is related to a 25.1bp (0.2 standard deviation) 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 finding suggests that international bank lenders are not perceived as substitutes to international institutional bond ownership. All the control variables have the expected signs.

Our main specification picks the largest offering yield spread among all the international bonds of the firm issued over the quarter in cases where there are few. We next show that our results are not sensitive to whether we estimate the average yield spread, weighted by the issue size (Column B), or pick the bond of the longest maturity (Column C). Our results are also robust to bootstrapping standard errors (Column D) using 200 replications, instead of clustering them at the firm level as in our main specifications.

Next, we look at the possibility that international bond ownership has a non-linear effect on the probability of issue. We perform a piecewise linear estimation of specification (3) in which we directly check for a nonlinear impact 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. As shown in Column E, we find no additional effect of foreign bond ownership on the offering yields beyond a 15% international bond ownership threshold. The impact of international

investor taste is concentrated among firms characterized by low levels of international bond ownership (below 15%). This finding confirms that there are limits to the benefits of foreign bond ownership when the renegotiation costs become too high. In other words, renegotiation concerns are not important considerations for low levels of international bond ownership but when international bond ownership increases beyond a certain threshold – i.e., 15% - the reduced ability to coordinate in the case of renegotiation or distress more than outweighs the positive effect of the higher international investor risk tolerance.

## 5.2. Further robustness tests

As our first robustness test, we substitute our previous variable *International Taste*<sub>*it-1*</sub> with *International Demand*<sub>*it-1*</sub> which is the log dollar value of the firm's bonds in the quarter that is predicted to be purchased by international investors using the demand-side variables. In predicting the international demand we use the specification as reported in Table 2, Panel A, Column A. In the second stage we use the same specification as (3), substituting *International Taste*<sub>*it-1*</sub> with *International Demand*<sub>*it-1*</sub>. In Table 5, Column F, our reported results that show that predicted demand is also associated with smaller yield spreads of international bonds. This estimation explicitly links the effect of investor taste with international demand, which subsequently lowers the borrowing costs of the firm.

As reported in Figures 1-2, the dynamics of international debt issuance are quite different for financial and non-financial firms. In Column G we show that the effect persists and is in fact stronger – both in economic and in statistical terms – for non-financial firms.

As a further robustness check we also implement an instrumental variables specification for the second equation of specification (3) by instrumenting our measure of international taste, the share of international bond ownership, with the share of international bank borrowing. 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 is of limited

monitoring advantage for bondholders. On the other hand, this variable is related to how the borrower is recognized internationally and thus correlated with international bond ownership. Angrist-Pischke multivariate F statistic of excluded instruments is 13.6 and  $p=0.0002$ . The coefficient of international bank borrowing, the instrument for international taste, is 0.022, significant at 0.1%. The results, reported in Table 4, show that the share of international bond ownership remains statistically significant in explaining the offering yield spreads of international bonds.

We also adopt an alternative estimation method in which our dependent variable is the difference between the yield spreads for international and domestic bonds for the same firm in the same time period. We construct the spread between international and domestic yield for each firm that is active in both markets. Then we compare the international and domestic offering yield spreads for the firms that issue *both* at home and abroad over the same quarter, estimating the following specification:

$$\text{Off. Yield Spr}_{it}^{\text{int}} - \text{Off. Yield Spr}_{it}^{\text{dom}} = \beta_0 + \beta_1 \text{International Tastes}_{it-1} + \beta_2 z_{it-1} + \beta_3 \lambda_{it} + \varepsilon_{it} \quad (4),$$

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

To perform this analysis, we match 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 currency (dollar denomination), rating, availability of covenants and closest maturity.<sup>10</sup> 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. *International Taste* <sub>$it-1$</sub>  is defined as before.

Although this method allows us to remove all variation in the borrowing costs at the firm-quarter level, firms' access to international markets may still differ. We thus control for firm-specific characteristics such as tangibility, ROA, leverage market-to-book ratio, size of the firm, the fraction of bank borrowing to  $i$ th firm in quarter  $t$ , provided by the international banks, share of assets located

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<sup>10</sup> We ensure that the maturity does not differ by more than five years. The average difference is less than two years.

abroad, evaluated at the quarter before the issuance takes place. We include fixed offering year and rating effects, and cluster standard errors at the firm level. We also control for firm selection to be active in both markets by including the inverse Mills ratio  $\lambda_{it}$  based on the first-stage probit for the probability that a Compustat firm issues both domestically and internationally over the quarter. We use same explanatory variables in the first stage as in the specification (2).

The results, reported in Table 5, show that prior international bond ownership is negatively related to the difference in yields that the firm pays in international compared to domestic primary markets. One standard deviation higher international ownership is related to a reduction in offering yield spreads of the order of 49.6bp (0.4 standard deviation). This effect is substantial in economic terms considering that the average difference is 37.3bp. This suggests that that larger international bondholding reduces the cost of borrowing internationally more than it reduces the cost of borrowing domestically, and thus may explain why international bond issuances become more attractive for internationally recognized firms. More importantly, since the issuing firm is the same in both cases, the fact that the difference in the yield spreads is related to international bond ownership cannot be purely explained by the fact that better firms have both a larger investor base and also a lower cost of borrowing.

Our results are robust if we match bonds on the basis of currency, maturity, covenant and ratings (Column A), and if we use weighted averages of offering yield spreads of international bonds issued over the period (Column B).<sup>11</sup> As in the previous specifications, Column C shows that the main effect of international investor taste is concentrated among firms characterized by low levels of international bond ownership (below 15%). Overall, the findings so far show that the international investor taste for the firm plays a major role in the decision to issue internationally as it reduces the cost of borrowing.

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<sup>11</sup> In this case, 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.

## 6. Firm's Choice

### 6.1. Main specification

Next, we investigate how international recognition affects the probability of issuing internationally. Instead of estimating the full model as in (3), we fit the equation where we directly explain probability of international issue by its international credit recognition:

$$\% \text{Int.Bonds}_{it} = \beta_0 + \beta_1 \text{International Tastes}_{it-1} + \beta_2 z_{it-1} + \beta_3 \lambda_{it} + \varepsilon_{it} \quad (5)$$

where *International Taste*<sub>it-1</sub> is the fraction of the firms bonds held by institutional investors, evaluated in the quarter before the issuance takes place. The vector *z*<sub>it-1</sub> includes firm-specific characteristics such as tangibility, ROA, leverage market-to-book ratio, size of the firm, the fraction of bank borrowing to *i*th firm in quarter *t*, provided by the international banks, share of assets located abroad, evaluated in the quarter before the issuance takes place. The inverse Mills ratio from specification (2) is denoted by  $\lambda_{it}$ . The estimations are based on firm-quarter-level observations. We include fixed offering year and rating effects, and cluster standard errors at the firm level.

The results, reported in Table 6, show a positive relation between the measure of international investor taste and the choice to issue internationally. One standard deviation higher international bond ownership 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%.

With regards to the control variables, in line with previous findings, international sales 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. Moreover, 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 analyst forecasts deviation is related to 1.5% higher probability of international issue. Prior bank loans from foreign banks also have a strong positive effect on the probability of issuing 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 a higher propensity for international issues.

Next, we study whether there is a nonlinear relationship between international bond ownership and issuance choice. In Column C, we again find that most of the power of international investor taste lies with firms characterized by low levels of international bond ownership (below 15%). There is no additional effect of foreign bond ownership on the probability of issuing internationally beyond a 15% international bond ownership threshold.

Next, similarly to Section 5.2, we substitute our previous variable *International Bond Ownership*<sub>*it-1*</sub> with *International demand*<sub>*it*</sub> which is the log dollar value of the firm's bonds in the quarter that is predicted to be purchased by international investors using demand-side variables and re-estimate specification (5). Column D shows that the predicted international demand is positively associated with an international bond issue over the period.

Finally, in Column E we show that the effect persists in the sample of non-financial firms.

## 6.2. First international issue

As a final test, we zoom on the first international issuance of the firm. We find that firms are more inclined to issue their first *international* bond if they already have international investors holding their *domestic* bonds. More specifically, we constrain the sample to the firms that did not issue any international bonds 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 (5).

The results, reported in Table 7, show that international bond ownership (at levels below 15%) is statistically significant. These findings imply 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 investor taste compared to domestic taste – it starts catering to its investor base and issuing internationally. It is interesting to note that the only other variable that predicts the first international issue is the share of sales abroad.

## 7. Conclusion

We study international borrowing by US firms and argue that international issuances provide a cheaper way of financing for US firms that have high international credit recognition, as they allow such firms to cater to investors that are less sensitive to general US credit risks.

We find a higher demand from international investors for the bonds of the firms recognized in their country. Thus firms that have high international credit recognition target international investors to reduce their cost of financing. We show that yield spreads on international bonds decrease with international investor taste for firm's bonds. Firms exploit these benefits by issuing internationally when they have a high fraction of international investors.

Our results are robust to controls for the potential endogeneity of bond ownership and to other competing explanations for 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 a first international bond issuance.

Our results can also be interpreted in terms of the market saturation – i.e., US firms issue internationally when domestic credit markets are saturated. Such saturation is in line with our investor taste argument that international investors are willing to bear more US macroeconomic risk than domestic investors who may ultimately stop purchasing domestic securities.

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 has made it easier to restructure and expand investment. The prior corporate governance literature has demonstrated the benefits reaped by international firms listing in the US, while we show that the benefits of the international capital markets not only accrue to firms 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 on better terms.

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## Appendix. List of Variables

Name of the Variable	Used In	Depend./ Explan.	Description	Source
<i>Bond Ownership Variables</i>				
Country-level taste	Table 2A	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 taste	Table 2B, Tables 3-7	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
International demand	Table 3, 5-6	Explan.	Logarithm of dollar value of total international demand for firm $i$ bonds in quarter $t$ as predicted by variables reported in Table 2, Panel A	
Share purchased by int. investor	Table 2A	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 2A	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
Previous own ownership	Table 2A	Explan.	Fraction of the face value of outstanding bonds of the firm $i$ held by managing firm $j$	Lipper
Share of int. investors (NY)	Tables 2-7	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
<i>Bank Borrowing Variables</i>				
Share of dom. borrowing	Table 2A	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 2A	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 2B-7	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 2B-7	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
<i>Yield Variables</i>				
Offering yield spread	Table 3-4	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 (as defined in SDC New Issues dataset), winsorized at 0.1% level	SDC
Difference between offering yield spreads	Table 5	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 currency, 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
<i>Other Bond Characteristics</i>				
Maturity	Tables 2-5	Explan.	Maturity in days until the expiration of bond $k$	Mergent, SDC
Issue size	Tables 2	Explan.	Size of the face value of the bond $k$ at the time of issue,	Mergent,

Total issue size over quarter	Tables 3-7	Explan.	normalized by the asset size of firm $i$ Sum of sizes of the face values of the bonds over quarter $t$ , normalized by the asset size of firm $i$	SDC SDC
Moody rating	Tables 2-7	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
Subordination	Table 2A	Explan.	Seniority of the bond, estimated on a scale from 0 to 7, where 7 refers to Senior security level	Mergent
Covenants	Table 2	Explan.	Number of bondholder protective covenants in bond $k$ , where the maximum is 21	Mergent
Availability of Covenants	Tables 3-5	Explan.	Dummy that takes value 1 if bondholder protective covenants are available in bond $k$	SDC

#### *Firm Characteristics*

Tangibility	Tables 2-7	Explan.	$=1 - \text{data33}/\text{data6}$	Compustat
ROA	Tables 2-7	Explan.	$=\text{data13}/\text{data6}$ , where data6 is lagged by a year.	Compustat
Leverage	Tables 2-7	Explan.	$=(\text{data34} + \text{data9})/\text{data6}$	Compustat
Market to book	Tables 2-7	Explan.	$=\text{data199} * \text{data25}/\text{data11}$	Compustat
Asset size	Tables 2-7	Explan.	$=\ln(\text{data6})$	Compustat
Share of assets in country	Table 2	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 int. sales	Table 6-7	Explan.	Sales in foreign countries, taken as a compliment to sales in the US, which is considered as the broadest region that geographically includes US	Thomson Worldscope
Share of int. assets	Tables 2B-5	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 2B, 6	Explan.	Cross-sectional standard deviation of earnings forecasts across all analysts following the firm. All our results remain valid if we require that at least ten analysts follow the firm when we use this variable.	IBES
International diversification	Tables 2A	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. 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 indexes.	Datastream Bloomberg

#### *Managing Firm Characteristics*

Managing firm size	Table 2A	Explan.	Aggregate face value of bonds that are held by the managing firm $j$	Lipper
Managing firm own. of int. issues	Table 2A	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 2A	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 2A	Explan.	Average of ratings of bonds held by managing firm $j$ , weighted by the face values of bonds	Lipper
Managing firm leverage profile	Table 2A	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 2A	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 2A	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 2A	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
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**Table 1. 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 bond ownership (a match between Compustat and Lipper).

	Source	Mean	Median	St. Dev.	N
<b>Firm variables</b>					
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
<b>Bond ownership variables</b>					
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
International credit recognition (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
<b>Bank borrowing variables</b>					
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 borrowing in firms that issue int. debt	LPC Dealscan	0.290	0.286	0.231	374
<b>Bonds in primary market</b>					
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
<b>Domestic bonds in secondary market</b>					
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
<b>Int. managing firm variables</b>					
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
<b>Dom. managing firm variables</b>					
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 2. Purchases of Newly Issued International Bonds by International Investors**  
Panel A. Individual Purchases

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.

Country taste, 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.

Column A fits a tobit model while Columns B-H provide estimates for the probit models. Columns A and B refer to the baseline specification. Estimation in Column C constrains the sample to the first international issuances by the firm. Estimation in Column D includes International diversification, estimated at the firm level, as an additional variable. Column E limits the sample to non-financial firms. Column F adds country\*quarter fixed effects. In addition, Column G 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. Column H instead adds issuer and managing firm fixed effects. All regressions include rating and time dummies, issuer controls (tangibility, ROA, leverage, asset size, market-to-book ratio) and are clustered at a manager level.

	(A) Tobit	(B) Probit	(C) First Int. Issue	(D) Int. Div. Control	(E) Non-financial firms	(F) Country*Q f.e.	(G) Country*Q, Man. Firm Controls	(H) Country*Q, Issuer and Man. Firm f.e.
Country-level taste	0.206*** 5.308	0.054*** 3.653	0.040*** 4.296	0.034* 1.798	0.043*** 4.229	0.021** 2.179	0.011*** 4.502	0.030*** 5.819
Previous own ownership	0.165*** 5.186	0.043*** 3.694	0.033*** 3.817	0.045*** 2.873	0.030*** 4.007	0.038*** 4.03	0.008*** 4.397	0.023*** 4.548
Share of dom. investors	0.066*** 3.56	0.017*** 3.045	0.013** 2.476	0.015* 1.878	0.010** 2.103	0.004 1.37	0.001 1.02	0.011** 2.57
Share of dom. borrowing	0.011*** 3.572	0.002*** 2.654	0.003* 1.826	0.003** 1.989	0.003** 1.969	0 -0.179	0 0.224	-0.001 -1.091
Share of peer bank borrowing	0.051*** 3.795	0.013*** 2.841	0.005 1.320	0.014*** 4.048	0.010*** 2.73	-0.010** -2.364	-0.003** -2.324	-0.001 -0.341
International diversification				0.003** 2.481				
Issue size	-0.000* -1.659	0 -0.231	0.000* 1.860	0 0.495	0 -1.206	0 -0.034	-0.000** -2.35	0 -1.459
Maturity	0 0.324	0 0.639	0.000 0.174	0 -0.134	0 -0.04	0 0.684	0 0.251	0 1.229
Subordination	0.001 0.637	0 0.279	-0.001 -1.256	-0.001 -0.968	-0.001 -1.435	0.001 1.321	0 1.596	0.002** 2.552
Covenants	-0.001** -2.251	-0.000** -2.079	0.000 0.078	0.000* 1.862	0 -1.501	0 -1.4	-0.000* -1.842	-0.000** -2.006
Share of assets in country	0.003 0.391	-0.001 -0.636	0.003 1.428	0.000* 1.862	-0.003 -1.269	-0.003 -1.325	-0.001 -0.971	0.004* 1.796
Issuer controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	No	No	No	No	No	No	No	No
Issuer fixed effects	No	No	No	No	No	No	No	Yes
Managing firm fixed effects	No	No	No	No	No	No	No	Yes
Managing firm controls	No	No	No	No	No	No	Yes	No
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country*Quarter fixed effects	No	No	No	No	No	Yes	No	No
Rating dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	249168	249168	74267	82143	98904	249168	217167	249168

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

## Panel B. Aggregate Purchases

We report marginal effects at means of variables from bond-level tobit regressions where the dependent variable is the percentage of the face value of the newly issued bond of US firm that is purchased by all international investors combined. The set of international investors is considered to be all non-US international managing 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.

Column A refers to the full sample. Column B refers to the subsample that is matched with Mergent for bond level specific characteristics. Here, 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 taste 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 taste refers to Local part of international bond ownership. Share of int. borrowing is defined analogously.

	(A) All	(B) Mergent
International taste	0.469***	0.214***
	6.19	3.768
Share of int. borrowing	0.166**	0.008
	2.085	0.241
International issue		0.210***
		5.044
Issue size	2.748	8.431***
	0.382	3.35
Maturity	0	-0.000**
	-1.118	-2.4
Subordination		0.023
		1.023
Covenants		0.013***
		7.31
Tangibility	-0.183***	-0.106***
	-3.421	-2.943
ROA	-0.112	-0.048
	-1.551	-1.106
Leverage	0.12	-0.005
	1.486	-0.127
Market to book ratio	0	0
	-0.519	0.421
Asset size	0.025**	-0.021***
	2.459	-2.914
Moody rating	-0.007***	-0.003**
	-3.126	-2.517
Analyst deviation	0.001***	-0.002**
	6.693	-2.44
Share of assets abroad	-0.009	-0.021
	-0.322	-1.099
Constant	-0.227*	0.192
	-1.753	1.258
N	21448	8790

**Table 3. Yield Spreads of International Bonds**

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 E a piecewise linear model is estimated where our main explanatory variable, International taste is split into two, above and below 15% ownership. In Column F instead of International credit recognition variable we use the predicted International demand from the specification in Table 2, Column A. Column G reports the estimation for non-financial firms.

International taste 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 taste refers to Local part of international bond ownership. Share of int. 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	(F) Predicted demand	(G) Non- financial firms
International taste	-145.375** -2.459	-107.025** -2.093	-80.788* -1.869	-145.38*** -8.606			-352.062*** -2.605
International taste <=.15					-289.91*** -3.284		
International taste >.15					124.531 0.785		
Share of int. investors (NY part)	16.152 0.472	38.004 1.295	36.989 1.327	16.152 0.384	12.844 0.376		8.925 0.173
International demand						-11.765*** -3.319	
Share of int. borrowing (Local part)	15.598 0.926	0.78 0.054	-0.706 -0.052	15.598 1.136	13.49 0.796	-4.152 -0.242	-43.071 -1.24
Share of int. borrowing (NY part)	2.788 0.05	-16.576 -0.351	-5.025 -0.11	2.788 0.023	2.95 0.053	-33.247 -0.56	-32.899 -0.38
Maturity	0.454*** 7.398	0.465*** 7.232	0.216*** 8.837	0.454*** 41.223	0.446*** 7.311	0.517*** 8.18	0.311*** 2.695
Availability of covenants	-28.157*** -3.175	-19.808** -2.436	-22.712*** -3.366	-28.157*** -3.048	-29.189*** -3.3	-28.404*** -3.117	-18 -0.947
Total issue size over quarter	16.898 1.213	10.435 0.88	12.569 1.097	16.898 0.608	19.07 1.384	23.251 1.513	29.427 1.114
Tangibility	-25.33 -1.133	-27.138 -1.416	-14.438 -0.79	-25.330** -2.274	-29.005 -1.295	-36.069 -1.525	16.33 0.43
ROA	-27.899 -1.375	-27.184 -1.545	-16.368 -0.976	-27.899 -0.287	-26.911 -1.314	-33.420* -1.651	-40.278 -1.619
Leverage	88.518*** 4.789	70.474*** 4.427	51.847*** 3.515	88.518*** 3.388	103.397*** 5.43	101.130*** 4.204	99.014*** 2.916
Market to book ratio	0.01 0.661	0.007 0.542	0.007 0.547	0.01 0.06	0.007 0.447	1.054 0.938	0.015 0.825
Asset size	2.853 0.432	2.678 0.474	-2.023 -0.377	2.853 0.159	8.587 1.264	2.773 0.322	-0.745 -0.06
Share of assets abroad	26.163*** 2.637	38.718*** 4.516	34.934*** 4.394	26.163* 1.847	41.139*** 4.096	19.395* 1.731	16.082 0.69
Inverse Mills ratio	11.087 0.561	24.138 1.419	7.617 0.472	11.087 0.209	29.808 1.436	-1.97 -0.076	-13.968 -0.259
Constant	355.393*** 3.158	354.855*** 3.56	413.419*** 4.59	-27.921 -0.111	303.480*** 2.626	88.027 0.734	49.739 0.314
N	6320	6325	6324	6320	6320	5292	4297

\* p<0.10, \*\*

p<0.05, \*\*\* p<0.01



**Table 4. Yield Spreads: 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 taste 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 taste 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. Standard errors are clustered at the issuer level.

	(A) Main	(B) Weighted av. yield	(C) Longest maturity
International taste	-1127.173**	1455.706**	-1271.554*
	-1.979	-2.498	-1.947
Share of int. investors (NY part)	-40.095	63.645	471.438
	-0.052	0.076	0.538
Maturity	0.410***	0.389***	0.218***
	5.635	3.838	5.823
Availability of covenants	-24.868*	-2.94	-6.053
	-1.922	-0.149	-0.386
Total issue size over quarter	26.099	17.554	13.281
	1.153	0.747	0.578
Tangibility	-30.706	-30.19	-11.4
	-1.211	-1.202	-0.442
ROA	-25.094	-20.326	-9.657
	-0.943	-0.753	-0.349
Leverage	131.638***	122.236***	93.817***
	3.614	3.31	2.659
Market to book ratio	0.012	0.01	0.006
	0.721	0.601	0.318
Asset size	8.518	6.457	2.624
	1.287	0.913	0.413
Share of assets abroad	47.993***	65.418***	67.568***
	2.601	3.54	2.912
Constant	23.935	-29.398	-31.159
	0.256	-0.299	-0.276
N	1061	1066	1083

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

**Table 5. 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 currency, 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 a piecewise linear model is estimated where our main explanatory variable, International taste is split into two, above and below 15% ownership. In Column D instead of International credit recognition variable we use the predicted International demand from the specification in Table 2, Column A.

International taste 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 taste refers to Local part of international bond ownership. Share of int. borrowing is defined analogously. All regressions include time and rating dummies. Standard errors are clustered at the issuer level.

	(A) Matched bonds	(B) Weighted averages	(C) Piecewise linear	(D) Predicted demand
International taste	-285.109***	-190.879*		
	-2.674	-1.673		
International taste <=.15			-442.159**	
			-2.458	
International taste >.15			20.306	
			0.169	
Share of int. investors (NY part)	50.792	104.226	41.75	
	0.716	1.507	0.612	
International demand				-20.556**
				-2.115
Share of int. borrowing (Local part)	29.915	-14.885	31.645	10.956
	0.963	-0.508	1.057	0.354
Share of int. borrowing (NY part)	-10.11	-18.008	-10.943	160.58
	-0.564	-0.731	-0.616	1.298
Maturity	0.244**	0.245	0.243**	0.331***
	2.041	1.52	2.006	2.842
Availability of covenants	-24.870**	-40.682***	-26.340**	-25.045**
	-2.359	-2.745	-2.582	-2.354
Total issue size over quarter	27.226	29.874	25.356	26.337
	1.405	1.571	1.353	1.526
Tangibility	-89.254	-61.742	-90.397	1.188
	-1.063	-0.961	-1.084	0.017
ROA	-41.962	-81.965	-54.16	73.446
	-0.255	-0.51	-0.327	0.425
Leverage	85.651**	94.476**	89.078**	105.898***
	2.405	2.286	2.501	2.692
Market to book ratio	0.034**	0.003	0.036**	-0.508
	2.109	0.159	2.189	-0.205
Asset size	49.594***	23.918	50.841***	60.739***
	2.8	1.596	2.888	3.018
Share of assets abroad	31.771*	31.392	34.758**	25.379*
	1.877	1.562	2.015	1.92
Inverse Mills ratio	79.841**	46.905	82.648**	105.823**
	2.094	1.473	2.187	2.449
Constant	-786.033***	-485.653*	-785.703**	-928.502***
	-2.638	-1.903	-2.611	-2.834
R-squared	0.079	0.072	0.08	0.095
N	540	541	540	512

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

**Table 6. 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.

In Column A we provide our main specification. In Column B 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 C a piecewise linear model is estimated where our main explanatory variable, International taste is split into two, above and below 15% ownership. In Column D instead of International taste variable we use the predicted International demand from the specification in Table 2, Column A. Column E reports the estimation for non-financial firms.

International taste 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 taste refers to Local part of international bond ownership. Share of int. borrowing is defined analogously. All regressions include time and rating dummies (where rating is not used as a discrete variable). Standard errors are clustered at the issuer level.

	(A) Main spec.	(B) Rating, analyst dev.	(C) Piecewise linear	(D) Predicted demand	(E) Non-financial firms
International taste	0.089*	0.107**			0.078**
	1.898	2.031			2.565
International taste <=.15			0.644***		
			3.257		
International taste >.15			-0.062		
			-0.865		
Share of int. investors (NY part)	-0.005	-0.006	-0.008		0.004
	-0.115	-0.136	-0.188		0.135
International demand				0.038***	
				3.106	
Share of int. borrowing (Local part)	0.082**	0.074*	0.088***	0.258***	-0.009
	2.292	1.921	2.586	5.239	-0.332
Share of int. borrowing (NY part)	0.055	0.038	0.042	0.073	0.021
	0.789	0.454	0.595	0.627	0.412
Share of sales abroad	0.103***	0.120***	0.104***	-0.033	0.071***
	5.759	5.356	5.113	-1.093	5.69
Total issue size over quarter	0.006*	0.007	0.007**	0.05	0.008**
	1.807	1.558	2.042	0.845	2.16
Moody's rating		0.005**		-0.146	
		2.116		-1.494	
Analyst deviation		-0.001***		0.206***	
		-3.834		3.235	
Tangibility	0.065*	0.085**	0.065*	0.003	0.021
	1.666	1.963	1.683	1.036	0.519
ROA	0.189***	0.210***	0.181***	0.144***	0.108**
	3.147	3.424	3.148	5.048	2.517
Leverage	0.559***	0.658***	0.545***	0.038***	0.311***
	7.47	8.188	7.483	3.106	3.06
Market to book ratio	-0.00***	-0.000***	-0.000***	0.258***	-0.000***
	-4.231	-3.044	-4.131	5.239	-3.19
Asset size	0.431***	0.484***	0.427***	0.454***	0.282***
	7.23	7.382	7.219	6.009	3.205
Inverse Mills ratio	1.355***	1.532***	1.344***	1.369***	0.889***
	6.2	6.332	6.198	4.866	2.873
N	6320	6022	6320	5294	4351

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

**Table 7. Probability of First International Issue**

We report the coefficients from firm-level Cox proportional hazards models of the decision of the US firm to issue a first international bond. An issue is defined as international if SDC defines it as international, global or eurobond issue. The dependent variable is considered a failure event if in that particular quarter the firm issues its first international bond, as recorded in SDC.

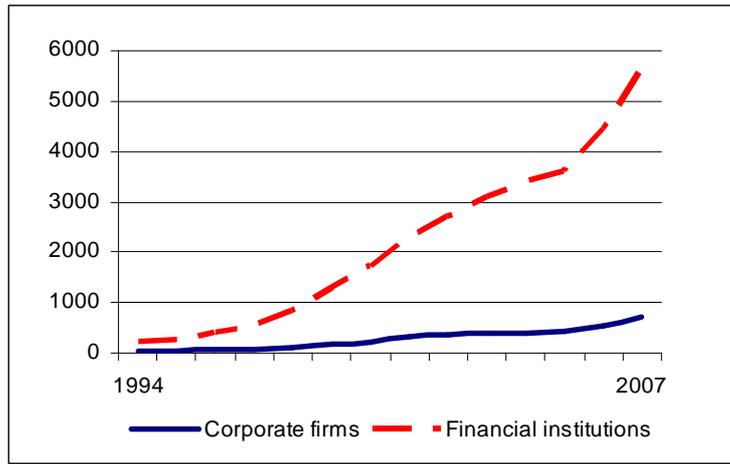
In Column A we provide our main specification. In Column B a piecewise linear model is estimated where our main explanatory variable, International taste is split into two, above and below 15% ownership.

International taste is estimated as the previous share of international investors in the firm's domestic 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 taste refers to Local part of international bond ownership. Share of int. borrowing is defined analogously. All regressions include time and rating dummies (where rating is not used as a discrete variable). Standard errors are clustered at the issuer level.

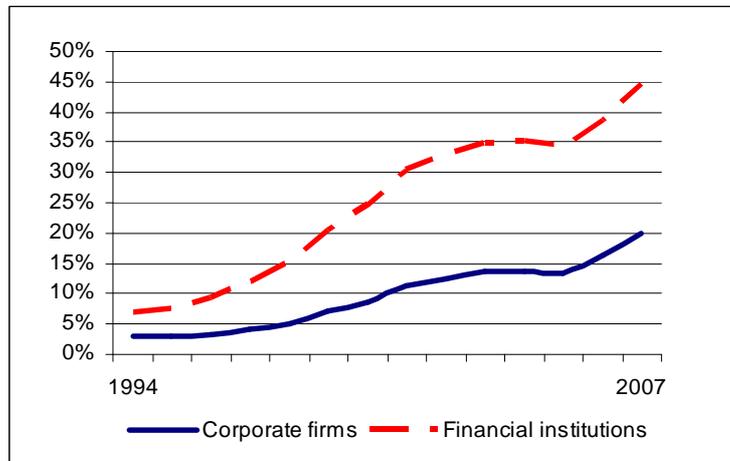
	(A) Main spec.	(B) Piecewise linear
International taste	0.33	
	0.678	
International taste <=.15		3.574**
		2.261
International taste >.15		-0.774
		-1.012
Share of int. investors (NY part)	0.54	0.47
	1.319	1.131
Share of int. borrowing (Local part)	0.058	0.052
	0.205	0.184
Share of int. borrowing (NY part)	0.451	0.524
	0.521	0.608
Share of sales abroad	0.452***	0.400***
	3.878	3.34
Total issue size over quarter	0.213	0.21
	0.74	0.736
Tangibility	0.192	0.198
	0.641	0.658
ROA	-0.072	-0.116
	-0.321	-0.512
Leverage	-0.331	-0.607
	-0.695	-1.227
Market to book ratio	0	0
	-0.394	-0.474
Asset size	-0.313	-0.471
	-0.884	-1.3
Inverse Mills ratio	-1.403	-1.905
	-1.016	-1.357
N	583	583

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

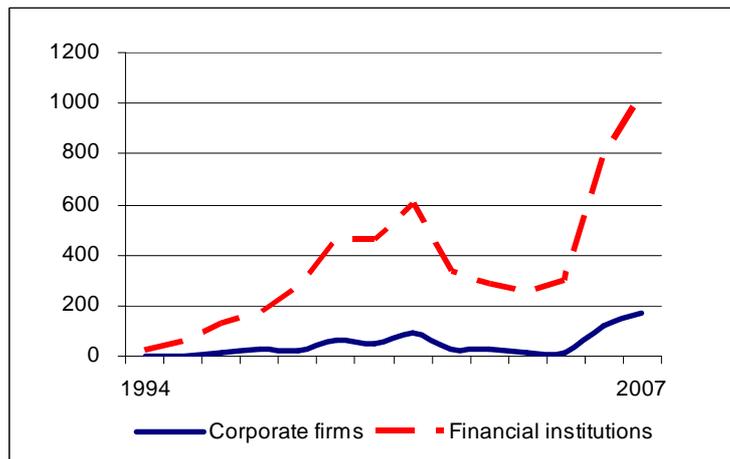
**Figure 1A. Outstanding International Debt by US Firms (\$bn)**



**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)**

