

Shareholders as Creditors of First Resort*

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Abstract

We study firms' decisions to enter public bond markets for the first time (bond IPOs). We show that a firm's ability to access the public bond market is greatly improved by the presence of "habitual dual holders" (HDHs) – financial conglomerates which have the tendency to simultaneously hold both equity and bonds of their portfolio firms – among its shareholders. HDHs are more likely to buy bonds in the IPO and take larger bond positions than bond investors without equity stake in the firm. Larger equity ownership by HDHs is associated with a larger fraction of the issue ending up in the hands of pre-IPO shareholders, lower offering yield spreads, more covenants overall, but fewer covenants restricting payout to shareholders. Our results suggest that sharing of familiarity about the firms within financial groups reduces the segmentation between debt and equity markets, thus, facilitating firms' access to new sources of financing.

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1. Introduction

Despite the abundance of sources of borrowing, vast majority of even publicly listed firms specialize in only one type of debt (Colla, Ippolito, and Li, 2013).¹ On the other hand, the benefits of access to multiple sources of borrowing are significant: for example, firms are able to borrow at lower rates from the banks after issuing public debt for the first time (Hale and Santos, 2009). This under-diversification of sources of debt indicates that firms with established access to equity investors may be unable to reach out to investors in debt markets, i.e., security markets are at least partially segmented (e.g., Kapadia and Pu, 2012).

Segmentation between different asset markets is in part the outcome of a global trend toward increased investment specialization and narrower investment mandates of institutional asset managers (Cardona and Fender, 2003, He and Xiong, 2013). As fund managers dedicate time and resources to specialize in trading of particular securities, they give up the ability to undertake investments outside of their area of expertise (Lukas, 1978).

Specifically, because of investment specialization, institutional asset managers follow only firms which have already issued securities covered by investors' investment mandates and thus, are unaware of *publicly available* information about other firms. For example, information about zero leverage firms used by equity investors may not be readily utilized by fixed income investors.² Moreover, the cost of transmitting public information to investors so that they will use it efficiently can be considerable (Merton, 1987). Segmentation between asset markets lowers the supply of capital, impedes the firm's ability to issue new types of securities, and leads to under-diversification of sources of financing.

In this paper we demonstrate that a certain group of institutional shareholders mitigates market segmentation for their portfolio firms and facilitates their access to new sources of debt. We argue and show

¹ Moreover, about one out of seven large public non-financial U.S. firms have zero leverage (Strebulaev and Yang, 2013).

² Fixed income investors arguably face even large search problem than equity investors. For example, at the end of May 2017 there were more than 7 thousand investment grade bonds and over 14 hundred high yield bonds in the secondary market with multiple new issues coming to the primary market every week. At the same time, even some of the notable corporate bond funds hold only several hundreds of individual bonds (e.g., USAA Intermediate-Term Bond Fund (597 bonds), Delaware Extended Duration Bond Fund (152 bonds), Fidelity Corporate Bond Fund (349 bonds); see also Cici and Gibson (2012)).

that the firm's ability to tap into the new source of financing: public debt – is greatly improved by the presence of “habitual dual holders” (HDHs) – financial conglomerates which have the tendency to simultaneously hold both equity and bonds of their portfolio firms – among its shareholders. So if the equity division of a group is already familiar with the firm and recommends it to its fixed income affiliate (thus making *public* information more salient), the latter should be more willing to buy firm's bonds which would expand the supply of bond capital available to the issuer and improve issue's financing terms.³ Consequently, the dual holding propensity of existing shareholders appears to be a key determinant of the firm's decision to enter public bond markets for the first time (bond IPO).

Our analysis focuses on 388 bond IPOs conducted between 2000 and 2013. To identify shareholders which are likely to buy bonds in bond IPOs – i.e., to become company dual holders – we examine financial conglomerates' quarterly holdings of equity (Spectrum 13f) and bonds (Lipper eMAXX) in publicly listed firms which already issued publicly traded bonds. We calculate conglomerate's dual holding propensity (DHP) as the ratio of the value of equity invested in firms in which the conglomerate also holds bonds and the value of equity invested in firms with public bonds outstanding (i.e., in which the conglomerate could, but may not have taken bond positions).⁴ DHP measures how likely the conglomerate is to hold both equity and bonds in the publicly listed firm when both equity and bonds of the firm are publicly traded.⁵

We show that bond investors with larger dual holding propensity are more likely to participate in the bond IPO and buy larger quantities of bonds. This, however, is true only when their conglomerate's affiliates are pre-IPO shareholders (“affiliated bond investors”). Affiliated bond investors which conglomerate's DHP is at the 75th percentile of its distribution are about 24.66% more likely to buy bonds

³ A number of recent studies provide evidence on coordination of decisions within financial conglomerates (Acharya and Johnson, 2007, Ritter and Zhang, 2007, Massa and Rehman, 2008, Bodnaruk, Massa, and Simonov, 2009, Jiang, Li, and Shao, 2010, Ivashina and Sun, 2011, Bodnaruk and Rossi, 2016).

⁴ The following example illustrates how the dual holding propensity (DHP) is constructed. Let conglomerate's total investment in equity be 1 billion with 600 million invested in companies with public bonds and the rest in companies without public bonds. If 150 million (out of 600) is invested firms in which the conglomerate also has bond positions, then the DHP would equal to $150/600 = 0.25$.

⁵ Utilizing a measure of dual holding propensity based on the number of positions rather than on a dollar amount invested does not affect results.

and take about 276.21% larger dollar positions than bond investors not affiliated with company shareholders.⁶ In contrast, affiliated bond investors which conglomerate's DHP is at the 25th percentile of DHP distribution are no different from pure bond investors in terms of likelihood and the size of the bond stake.

Directly observing that fixed income divisions of conglomerates scale up their participation in the bond IPOs when their equity affiliates hold company shares alleviates potential endogeneity concerns related to the company ownership structure, i.e., that the correlation between the equity ownership by HDH-conglomerates and their involvement in bond IPOs is driven by unobserved factors. Indeed, if there was no sharing of familiarity about the firm within a dual holding financial conglomerate, fixed income investors would base their decisions to buy bonds independently on whether affiliated equity funds hold shares of the company.

Some bond investors may have previously provided loans to bond IPO companies. To address the possibility that our results can be driven by prior borrower-lender relationship, we obtained from DealScan the list of all financial institutions which participated in syndicated loans to our sample companies over the five-year period prior to bond IPO. We then matched these loan providers with our data on bond investors and company shareholders. We find that very few bond investors who participate in syndicated loans also take equity stakes in the firm; controlling for prior lending relationship also does not affect our results. Similarly, we investigate and rule out the possibility that prior security underwriting relationships between the firm and some of its existing shareholders could explain our results.

To estimate the effect of aggregate habitual dual holders' presence on the firm's bond IPO process, we construct two firm-level measures of their equity ownership (HDH Ownership). The first measure, HDHO-1, is defined as the dual-holding-propensity weighted institutional equity ownership. The second measure, HDHO-2 is the equity ownership by institutional investors which DHP exceeds a certain threshold.⁷ Both

⁶ Throughout the paper all economic effects, unless otherwise noted, are reported relative to the corresponding sample means.

⁷ In the paper we present results for the threshold of 1/3. The results for 0.25 and 0.40 threshold are similar.

of these measures aim to capture the equity ownership by shareholders which are likely to become bondholders after the bond IPO. Indeed, the correlation between HDHO-1 and HDHO-2 and actual pre-IPO equity ownership by post-IPO dual holders is 65.57% and 56.54% correspondingly. Importantly, the correlations of our measures with firm's institutional ownership are considerably lower (40.09% and 32.44%); our results hold when controlling for the level of institutional ownership.

We find that pre-IPO shareholders buy on average (median) 13.02% (11.41%) of the bonds issued. Lipper eMAXX database does not, however, provide bond ownership of all investors as some types of institutional investors as well as individual investors do not have to disclose their holdings. So if we were to represent shareholders' bond ownership as the fraction of the issue covered in eMAXX, its sample average (median) would go up to 47.33% (48.88%). Since institutional investors resell a significant chunk of bonds purchased at the issuance to their clients (Schultz, 2012) the true bond purchases by shareholders at the IPO are somewhere in between these two estimates.

We then demonstrate that larger pre-IPO equity ownership by habitual dual holders is related to larger bond ownership by shareholders after the IPO. A one standard deviation larger HDHO-1 (HDHO-2) is related to the 12.03% (14.94%) larger fraction of bond issue ending up in the hands of pre-IPO shareholders. These economic effects, though quite substantial, nevertheless, provide only lower bound estimates of the actual shareholder bond purchases in the IPOs: if we had perfect foresight and were able to identify shareholders which are actually buying bonds in the IPO, then a one standard deviation larger equity ownership by these investors is related to 20.45% larger fraction of bond issue being owned by post-IPO dual holding institutions.

Importantly, habitual dual holders matter most when access to bond markets is difficult: the relationship between HDH pre-IPO equity ownership and bond purchases by shareholders is strongest for non-investment grade firms, particularly when market credit spreads are large. There are two economic mechanisms contributing to these findings. First, the costs of becoming aware about the company are larger for more opaque issuers. Second, anecdotal evidence points to more frequent communication between

equity and high-yield bond traders since junk bonds and equity have similar sensitivity to information (Merton, 1974).⁸

Not only are shareholders actively buying bonds in the bond IPOs, the number of them becoming bondholders (i.e., dual holders) is also abnormally large. Immediately after the IPO, equity ownership by dual holders is about 2.77% shares outstanding (or 26.76% relative to the sample mean) larger than in similar firms which issued public bonds before; virtually all of the effect could be attributed to pre-IPO shareholders (rather than incoming investors taking both bond and equity positions). The differences in dual holder equity ownership across bond IPO firms and firms with established access to public bond market disappear after about five quarters.

We then consider the decision to undertake bond IPO. We show that firms with higher equity ownership by habitual dual holders are more likely to seek access to public bond markets. A one standard deviation larger HDHO-1 (HDHO-2) is related to the 9.20% (7.30%) higher likelihood of conducting bond IPO in the subsequent quarter.

When we turn our attention to the bond IPO pricing, we find that equity ownership by habitual dual holders is associated with the lower cost of borrowing. A one standard deviation larger HDHO-1 (HDHO-2) is related to the 39.83 (35.95) bps lower offering yield spreads. For an average (median) bond offering of about 361 (278) million dollars of notional value it corresponds to about 1.33 (1.00) million dollars larger issue proceeds. As before, the results are concentrated among non-investment grade firms in times when the market perceives them to be particularly risky.

Bond IPOs by companies with more habitual dual holders have more protective covenants overall. Upon closer inspection, we find that these issues have more covenants which protect bond investors in case of ownership change, e.g., event-driven covenants (Billett, King, and Mauer, 2007). However, they have fewer covenants restricting payouts to shareholders. This last finding provides additional evidence of

⁸ From conversations with former LTCM trader.

coordination of decisions within financial conglomerates – a fixed-income arm of the conglomerate would not oppose the payout to shareholders if it benefits its equity affiliate.

Our results show that (some) institutional shareholders are among primary providers of debt capital to their portfolio firms. Sharing of familiarity about firms within these financial institutions reduces the segmentation between debt and equity markets and facilitates firms' access to new sources of financing. Ultimately, overcoming the segmentation between debt and equity markets should result in a more efficient allocation of capital.

What is the mechanism through which habitual dual holders affect the bond IPO process? While our results provide only circumstantial evidence in its support, a plausible mechanism is as follows. Corporate executives observe major holdings of securities issued by the company and are aware of the fact that some of the main shareholders have a tendency to hold bonds of their portfolio companies. Being aware of the characteristics of its shareholder base, management takes into account the extra supply of bond capital which would be provided by habitual dual holders when deciding on a bond IPO. Additionally, anecdotal evidence suggests that large shareholders are often directly solicited to participate in new bond issuances.⁹

There are three important points which warrant further discussion. First, equity divisions of financial conglomerates need not have any proprietary information about the firm for their fixed income affiliates to be more comfortable investing in firm's bonds. The relevant framework to think about information environment in our analysis is Merton (1987): existence of public information does not guarantee that investors are aware about it. So if there is larger number of bond investors who are not familiar with the company, the company has to bear the costs of reaching out to these investors; these costs could be prohibitively expensive for the issuance decision. A conglomerate's equity division's familiarity with the issuing firm reduces the public information acquisition costs for its fixed income affiliate, thus expanding the supply of capital and lowering the cost of capital for the firm.

⁹ From the conversations with a former Chief Financial Officer (CFO) of a major multinational corporation.

Second, the fact that bond IPOs with large presence of habitual dual holders have lower offering spreads does not imply that investors leave money on the table. Since HDHs are already familiar with the firm, they do not need to be compensated for the cost of becoming aware of the company. This expands the supply of bond capital available to the firm, thus making the equilibrium borrowing yield lower at the margin.

Third, some institutions' willingness to hold both the debt and equity of their portfolio firms could be an efficiency-increasing response to the agency cost of debt and equity, or an indication of conglomerate level preferences for holding multiple classes of securities issued by the same firm. Both of these interpretations still suggest that habitual dual holders expand the supply of bond capital available to firms, but require stronger assumptions about the decision making process.

Our paper makes several contributions. First, we add to the literature on capital market segmentation. A large body of work has studied the consequences of investor clienteles ("preferred habitat") and /or exogenous restrictions (e.g., taxation and transaction costs, narrow investment mandates, restrictions on foreign ownership etc) on asset allocation and pricing in the treasury (Culbertson, 1957, Simon, 1991, Greenwood and Vayanos, 2013), municipal (Kidwell and Koch, 1982, 1983), and corporate (Dick-Nielsen and Rossi, 2016) bond markets; international (Errunza and Losq, 1985, Foerster and Karolyi, 1999, Cooper and Kaplanis, 2000, Bekaert, Harvey, Lundblad, and Siegel, 2011) and domestic (Kadlec and McConnell, 1994, Bodnaruk and Ostberg, 2009) equity markets. To our knowledge, our paper is the first to demonstrate that certain types of investors help mitigate segmentation across equity and bond markets: a larger presence of habitual dual holders among firm's shareholders improves its access to bond financing.

Second, a well-established stylized fact in the capital structure literature is that many firms have overly conservative leverage, i.e., "low-leverage puzzle" (Graham, 2000). Prior literature mostly takes the view that capital structure is driven by firm's demand for capital. Graham (2000), Goldstein, Ju, and Leland (2001), Ju, Parrino, Poteshman, and Weisbach (2005), and Strebulaev (2007) study the role of tax benefits. Morellec (2004), Parrino, Poteshman, and Weisbach (2005), and Strebulaev and Yang (2013) consider managerial entrenchments and managerial risk-aversion. Rampini and Viswanathan (2013) show that low leverage firms are largely firms with few tangible assets. Hackbarth and Mauer (2012) argue that firms

choose low levels of leverage to retain financial flexibility. Bhamra, Kuehn, and Strebulaev (2010) tie leverage to macroeconomic risks.

Our paper takes the supply side perspective. We demonstrate that capital market segmentation may prevent firms from accessing some types of debt markets.¹⁰ Our findings suggest that some institutional shareholders alleviate segmentation between capital markets, thus increasing the supply of bond capital available to firm. In this regard, our results support Faulkender and Petersen (2006) who show that firms with access to public bond markets have 35% larger leverage.

Third, we contribute to the nascent literature on bond IPOs. Datta, Iskandar-Datta, and Patel (2000) find that firm's equity prices react negatively to bond IPO announcements. Hale and Santos (2008) study the demand side determinants of firm's decision to issue public bonds for the first time. Datta et al. (1999) and Cai, Helwege, and Warga (2007) provide evidence that information problems drive the underpricing in corporate bond IPOs. Our findings suggest that the segmentation between equity and bond markets may hinder firm access to public bond markets.

Fourth, there is a growing literature on dual ownership of firm's equity and debt by different types of institutional investors or company management (Sundaram and Yermack, 2007, Massa and Rehman, 2008, Chava, Kumar, and Warga, 2010, Jiang, Li, and Shao, 2010, Wei and Yermack, 2011, Bodnaruk and Rossi, 2016, Chava, Wang, and Zou, 2016). Our paper builds on Bodnaruk and Rossi (2016) and is different from other existing work in this area in a number of important ways. To start, we do not consider any particular group of investors, e.g., banks, but focus on the overall presence of investors with holdings of both debt (bonds) and equity. This allows us to get a better grip on the extent of dual holder ownership in firms. The average shareholdings by investors which hold both company debt and equity reported in the literature are in 0.5%-0.7% range (e.g., Jiang et al., 2010, Santos and Wilson, 2007). We estimate that aggregate equity ownership by dual holders is about 10% of shares outstanding (or about 15 times larger), indicating that

¹⁰ Colla et al. (2013) suggest that some firms may specialize in raising debt financing from few sources due to the lack of access to some segments of the debt markets.

dual holder ownership is economically a much more important phenomenon than what could be inferred from prior studies.

Additionally, our matching mechanism allows us to link bond and equity positions held by the affiliates of financial conglomerates. Growing evidence of coordinated behavior within financial groups (Acharya and Johnson, 2007; Ritter and Zhang, 2007; Massa and Rehman, 2008; Bodnaruk et al., 2009; Ivashina and Sun, 2011, Bodnaruk and Rossi, 2016) suggests that this approach is better at capturing the complexity of investors' exposure to the firm. We would like to emphasize that our approach does not assume that financial institutions continuously monitor all their affiliates' holdings of firm securities, but rather that they evaluate their overall exposure to the firm during significant corporate events such as bond IPOs.

The biggest difference between our paper and prior literature, however, is about the economic mechanisms studied. Jiang et al. (2010), Chava et al. (2016) investigate the role of private information obtained through prior lending relationship. We, on the other hand, explore the effects of dissemination of publicly available information / familiarity across financial markets.

Fifth, we add to the literature on (equity) ownership structure and the cost of borrowing. Ferreira and Matos (2012) show that banks are more likely to act as lead arrangers in loans when they exert control over the borrower. Bhojraj and Sengupta (2003) find that firms with larger institutional ownership enjoy lower bond yields and higher ratings on new bond issues. Michaely and Vincent (2013) find that firms tend to decrease their leverage following an increase in institutional ownership. Our results show that institutional equity ownership is important for access to bond financing as long as these shareholders directly participate in bond issues. When we do not include measures of HDH equity ownership in the regressions, institutional ownership is strongly related to the characteristics of bond IPO process. However, once HDH ownership is included, institutional ownership loses its significance or becomes marginally significant at best.

2. Testable Hypotheses

A rapid worldwide growth in the institutional asset management industry over the last three decades has been accompanied by a shift from broadly-based portfolios (balanced funds) toward more specialized

mandates focused on specific asset classes and investment “styles” (Cardona and Fender, 2003). The trend toward specialization has been observed across all OECD countries (Bank of International Settlements (BIS), 2003). For example, Blake, Rossi, Timmermann, Tonks, and Wermers (2013) document that by 2004 U.K. pension funds largely replaced previously dominant generalist balanced managers with a mix of active specialists and multi-asset managers. Narrowing of investment mandates, among other things, is characterized by increased emphasis on investment constraints, e.g., “limits on investing in specific securities or diversification rules” (BIS, 2003).

Specialist managers do not follow securities outside of their asset class. Even if they observe relevant information, they may lack the ability to process it efficiently and take advantage of investment opportunities. Merton (1987) provides the following example: “a bond trader who responds quickly to interest rate news by trading U.S. Treasury bonds, may not be willing to trade GNMA mortgage-backed bonds unless he has borne the set-up costs necessary to understand the effect on price of the prepayment feature of these bonds”. Thus, though specialist managers on average perform better (Blake et al., 2013, He and Xiong, 2013), the flip side of narrow investment mandates is “de facto segmentation of various asset markets from the broad financial markets” (He and Xiong, 2013). Collin-Dufresne, Goldstein, and Martin (2001), Gabaix, Krishnamurthy, and Vigneron (2007), Garleanu, Pedersen, and Poteshman (2009), Dick-Nielsen and Rossi (2016) provide evidence of segmentation in corporate bonds, mortgage backed securities, S&P500 index options, and convertible bond markets; all of these markets are mostly traded by financial institutions.

The segmentation between asset markets lowers the supply of capital available to the firm, particularly in markets in which it did not issue securities before. Firms’ ability to attract new sources of financing, therefore, should improve if there exist mechanisms which mitigate the extent of market segmentation. We argue that one such mechanism is the presence of institutions, which affiliates tend to hold multiple types of securities issued by the same company, among existing firm’s investors.

We build on the growing literature on coordination within financial conglomerates.¹¹ We reason that when the division of the conglomerate holds some firm's security, the familiarity about the firm is being more easily shared by affiliates specializing in other markets. This familiarity / public information sharing can occur via a direct communication between conglomerate's divisions or indirectly through a research department. So when the firm considers issuing a new type of security, conglomerate affiliates face lower costs of finding out about the firm (Merton, 1987).

We focus on public bond IPOs as publicly listed firms' ventures into a new asset class and investigate the role of "habitual dual holders" – financial conglomerates which have the tendency to simultaneously hold both equity and bonds of their portfolio firms – in helping firms access this new source of financing.

There are several considerations which make bond IPOs a fruitful environment for studying the impact of market segmentation on firm's financing decisions. First, the cost of mitigating market segmentation is likely to be large prior to the firm issuing a given type of securities for the first time (as opposed to seasoned issues). Though the firm may have a long track record with equity investors, it lacks history of coupon payments, covenant violations, renegotiations etc. Second, the benefits of accessing public bond markets accrue over a long time. For example, firms are able to borrow at lower rates from the banks after completing bond IPO (Hale and Santos, 2009). Third, widespread placement of bonds in public offerings mitigates concerns that the observed findings could be driven, for example, by prior bank-borrower relationships.¹² Fourth, by focusing on the firms which have never issued a particular class of securities before we are ruling out a possibility that the relationship between ownership and issue characteristics suffers from reverse causality.

¹¹ Acharya and Johnson (2007) and Ivashina and Sun (2007) provide evidence that lending banks use private information about corporate clients to trade credit default swaps and equity. Ritter and Zhang (2007) show that lead underwriters allocate hot IPOs to affiliated funds. Massa and Rehman (2008) find that mutual funds use inside information available to the affiliated banks that are lending to firms to accumulate equity positions. Bodnaruk et al. (2009) demonstrate that financial conglomerates take positions in the targets prior to M&A deals becoming public when their affiliated investment banks advise to the bidders. Bodnaruk and Rossi (2016) find that mutual funds' voting behavior in M&As is affected by affiliates' bond ownership in the target.

¹² Indeed, Cai, Helwege, and Warga (2007) do not find evidence that prior banking relationship affect bond IPO underpricing.

We argue that when a conglomerate's affiliate is a firm's shareholder the information about the firm is more easily available and processable for affiliates specializing in bonds. Conditional on the size of equity assets and bond assets of the conglomerate, the tendency of a conglomerate to take both equity and bond positions in publicly listed firms with public bonds should be a good proxy for how likely the conglomerate's affiliates are to share this familiarity and, ceteris paribus, to buy bonds in the IPO. This leads to our first hypothesis:

Hypothesis 1: In a bond IPO, financial conglomerates are more likely to buy bonds if they are the firm's shareholders and they also display a high propensity for simultaneously holding both bonds and equity of their portfolio companies.

Sharing of familiarity about firms within financial conglomerates has two effects on the firm's bond issuing process. First, it increases the number of bond investors aware of the firm's characteristics leading to a larger supply of bond capital. Moreover, a larger presence of habitual dual holders among firm's shareholders should be associated with a larger fraction of supply of capital belonging to them. Our second hypothesis then is:

Hypothesis 2: Larger equity ownership by habitual dual holders is related to a larger fraction of the issue being bought by them.

Larger familiarity of affiliated bond investors with the issuers not only makes them more willing to provide capital, but also decreases their perceived riskiness of the issuer. When a large fraction of shareholders buy bonds in the IPO, the post-IPO conflict of interest between bondholders and shareholders should also be lower. Hence, we would expect that when the presence of habitual dual holders is large, the issuer should obtain better financing terms. We formulate our third hypothesis as follows:

Hypothesis 3: Larger equity ownership by habitual dual holders is related to lower bond IPO offering yield spreads.

Our testable hypotheses are based on the assumption of familiarity sharing within financial conglomerates. If affiliates of the financial conglomerate act independently, then the conglomerate's dual holding propensity is irrelevant to the behavior of its bond investing. Therefore, each of the above (familiarity sharing) hypotheses is contrasted against the null (independence) of no relation between dual holding characteristics of firm's shareholders and characteristics of bond IPO process.

3. Sources of data and matching procedure

3.1. Data and sample of firms

We use data from several sources. Bond and issuer characteristics, which we also use to construct the bond IPO sample, come from Mergent's FISD database. Equity ownership comes from the Spectrum 13F database, which consists of the quarterly 13F filings of qualified money managers to the U.S. Securities and Exchange Commission (SEC). Institutional bond holdings come from the Lipper eMAXX data set. Accounting variables and stock returns come from the Center for Research in Security Prices (CRSP)-Compustat Merged Industrial Database.

The time period of our study ranges from January 2000 to December 2013; the choice of the period is motivated by the availability of bond ownership data.

3.2. Construction of bond IPO sample

SDC Platinum database by Thomson Reuters is traditionally used as the main source of information for corporate events such as equity and bond issuances, mergers and acquisitions, repurchases etc. We found that this database, however, often misclassifies seasoned bond issuances for bond IPOs. Our estimates indicate that about 45% of bond IPOs as classified by SDC are actually seasoned bond issues. Additionally, a large number of first bond issuances by firms — we estimate it to be about 35% of all bond IPOs in our sample — are not reported in SDC.

Therefore, we use Mergent's Fixed Income Securities Database (FISD) to construct our sample of bond IPOs. We identify all cases when U.S. domiciled companies issued non-convertible public bonds for the first time (we include 144-a bonds since they become public eventually). Multiple issuers in FISD refer to the same parent identifier, which, however, is not a historic variable. In order to map FISD issuers' identifiers to their parent company in a way that correctly accounts for past merger and acquisition activity, we follow Bodnaruk and Rossi (2016). They use the company's CRSP PERMCO (or alternatively PERMCO) identifier as the unit of analysis and dynamically map all the bonds' CUSIP to the appropriate PERMNO (or PERMCO). We verify our sample by extensive cross-validation through media sources and company public filings. The following two examples illustrate our approach.

Example 1: (Ralph Lauren). In September of 2013, Ralph Lauren Corp. completed an offering of \$300 million of 2.625% senior unsecured notes due 2020. The bonds were assigned A3 rating and the issue proceeds were used for general corporate purposes. This was the first time Ralph Lauren Corp. issued non-convertible bonds in the U.S. However, since the company issued Euro bonds several times in recent years (e.g., in 1999, 2006 etc) we do not include Ralph Lauren Corp. in our sample of bond IPOs.

Example 2: (DreamWorks Animation). In August of 2013, DreamWorks Animation issued \$300 million of 6.875% senior unsecured notes maturing in 2020. The bonds fell in the junk grade category (Ba3 debt rating from Moody's and B rating from S&P). The debt was used to repay \$155 million of a revolving credit facility as well as contribute to general purposes. Since DreamWorks did not issue straight debt before we consider this event to constitute a bond IPO.

FISD data provides us with 452 bond IPOs for publicly listed firms. After imposing the filters of price and accounting information availability we end up with 388 bond IPO events involving 514 bonds. From the descriptive statistics reported in Table 1, the average (median) size of the bond offering is 363.95 (275) million dollars. About 28.79% of bonds obtain investment grade at the IPOs with the rest either receiving junk bond status (31.32%) or unrated (39.88%). The average (median) offering yield spread at the issuance is 385.74 (360.50) bps.

3.3. The matching procedure and identification of dual holders

To identify dual holders, we follow the approach of Bodnaruk and Rossi (2016). We proceed in several steps.¹³ First, we assign each institutional investor that enters Spectrum 13F or eMAXX data sets to a financial group with which it is affiliated. Given that different divisions of a financial conglomerate (banks, insurance firms, mutual fund families, etc.) appear in 13F filings and eMAXX as separate entities lacking common identifiers, we had to construct a database of financial conglomerates grouping different divisions of individual financial groups under single umbrellas, which we call “brands.” This database was manually assembled using information from various public sources and performing a name-by-name analysis.¹⁴ We assigned each financial conglomerate a brand name and created a set of identifiers for firms (“names” from Spectrum and eMAXX) affiliated with each brand.

Let us consider, for example, the “AXA” brand. “AXA” corresponds to the AXA Financial conglomerate, which as of December 31, 2005, had approximately \$643.3 billion in assets under management. AXA Financial includes the investment advisors AXA Advisors and Sanford C. Bernstein, the insurance firm AXA Equitable Life Insurance, the investment and mutual fund management firm AllianceBernstein, and the MONY group of firms (as of July 8, 2004). All these firms are assigned identifiers that uniquely match them to the “AXA” brand.

We also account for the evolution of brand affiliation. For example, “Morgan Keegan” is reported as an independent brand until March 30, 2001, when Regions Financial acquired it. Up to that date, “Morgan Keegan” was the unique brand of Morgan Keegan, but also included T.J. Raney, Scharff & Jones, Cumberland Securities, and J. Lee Peeler, all of which had been acquired by Morgan Keegan between 1989

¹³ Since Lipper’s data set covers only publicly traded bonds, we are able to construct measures of dual holder ownership for companies which 1) report some long-term debt; 2) have at least \$100 million in book value; 3) their bonds are covered by the Lipper eMAXX dataset. We do not believe that this affects our results in any significant way.

¹⁴ We used the directory of investment advisers maintained by the SEC (www.adviserinfo.sec.gov), Morningstar’s directory of mutual fund family websites (www.advisor.morningstar.com), and the websites of financial groups and mutual fund families. The completion dates of M&A transactions come from SDC. All affiliations and corporate control transaction dates are double-checked using extensive web querying.

and 1994. Effective March 30, 2001, the “Morgan Keegan” brand was retired, and all firms affiliated with it became the “Regions Financial” brand.

The matching algorithm described above has been previously employed by Bodnaruk et al. (2009) to which we refer for a more detailed description of brand construction. Additionally, the quality of the resulting estimates of equity ownership at the financial conglomerate level has been independently verified by the *Wall Street Journal*.¹⁵

M&A activity, bankruptcy, and other corporate events also complicate the match between debt and equity of the same firm. At any point in time, bonds issued by one company might be backed by another company. Therefore, a naive match by six-digit CUSIP (which changes over time) would result in a major loss of data. Consider merging the bonds issued by Compaq Computers Corp. with the relevant equity. Until 2002, a match by six-digit CUSIP would correctly match debt and equity, but after 2002 (when HP and Compaq merged), there is no longer a Compaq stock to be matched. The phenomenon just described is widespread, especially in the telecommunications industry where companies have very tangled family trees. To make sure debt and equity data are properly matched, we follow Rossi (2014) and implement the following three-step procedure:

1. match stocks and bonds by six-digit CUSIP or by name;
2. if the match is active until maturity, or until the end of the sample period, the match is full and the procedure is over; otherwise:
 - a. if the stock is delisted, verify why the stock is delisted;
 - b. if the stock is delisted because of M&A activity, obtain the acquiring firm permno and use the new company’s stock data;
 - c. if the company is liquidated, then stop;

¹⁵ On January 14, 2008, the *Wall Street Journal* (WSJ) ran a front page article on the Bodnaruk et al. (2009) paper, which alleged inside trading by advising investment banks in M&As. To provide the *Journal*’s readers with examples of suspicious transactions, the WSJ requested the authors to share the data on financial institutions’ ownership in M&As which then was double-checked by the *Journal* staff using their own sources.

- d. if the company is being reorganized (Chapter 11), then stop, but re-activate the link once the company re-emerges from bankruptcy;
3. repeat step 2 as needed.

We then assign a dual holder status to a financial conglomerate if its affiliates hold both company equity and debt and the par value of its bond positions represents at least 5%, but does not exceed 95% of a group's overall exposure — debt and equity — to the company.¹⁶ Equity and bond positions of affiliates are then aggregated at the level of conglomerate. Imposing these cutoffs ensures that we do not focus on equityholders with small bond holdings, so with no incentives to modify their behavior, or bondholders with a small equity stake, hence with no significant ability to affect corporate policies. We perform our analysis with more stringent cut-offs and the results are largely unaffected.

There are several important caveats to our identification of dual holders. First, since the data on equity ownership and debt ownership cover only institutional investors, we are able to identify only institutional dual holders. It is plausible that in some companies, e.g., those with smaller institutional ownership, there are wealthy private investors that hold significant stakes in equity and debt. Second, we only have information about company public debt ownership, but not private debt or bank loans. Third, the eMAXX bond ownership database does not cover hedge funds. All of these factors are likely to lead to underestimation of the number of dual holders and the magnitude of their equity ownership in the firm. Our estimates, therefore, provide a lower bound for the presence of dual holders in U.S. corporations.

Ownership data used in our study, while helpful at identifying aggregate equity and bond positions by dual holding financial conglomerates, do not allow us to break them down by institutional investor types, e.g., passive or actively managed mutual funds, hedge funds, or proprietary trading positions. We are also unable to achieve a sharper identification of dual holders by eliminating the positions by passive investors such as index funds. This happens due to the fact that in most cases, Spectrum 13F already aggregates positions of different subsidiaries that file jointly at some intermediate level (though there does not seem to

¹⁶ We also used different cut-offs, e.g., debt exposure between 10% (20%) and 90% (80%) of overall exposure; the results are not affected.

be any clear pattern how this aggregation is done across different financial groups or over time). The available mutual fund level equity ownership data (s12 filings) provide only partial coverage as it contains positions by mutual funds which are marketed to retail investors.

At the same time, when we linked individual mutual fund equity portfolio holdings from Thomson Reuters' s12 with eMAXX bond portfolio accounts we found that joint ownership of company equity and bonds by the same mutual fund / conglomerate affiliate is very rare (less than 2%). This corroborates our argument that dual holding propensity of the conglomerate stems from familiarity sharing across different conglomerate affiliates.

3.4. Dual Holding Propensity and Equity Ownership by Habitual Dual Holders

We identify shareholders who are likely to buy bonds in bond IPOs, i.e., likely to become company dual holders after the event. We posit that the conglomerate is more likely to do so when it is a “habitual dual holder” — it has a high tendency to hold bonds of their equity portfolio companies which issued public bonds. We calculate a conglomerate's dual holding propensity (DHP) as the ratio of the value of equity invested in firms in which the conglomerate also holds bonds and the value of equity invested in firms with public bonds outstanding (i.e., in which the conglomerate could, but may not have taken bond positions).

Consider, for example, Duff & Phelps Investment Management. At the end of December 2005 the value of its equity portfolio was 1,783.1 million dollars; 1,247.8 millions of this amount was invested in shares of companies with public bonds, of which 173.8 million dollars was the value of equity positions in companies which bonds also were held by Duff & Phelps. The dual holding propensity of Duff & Phelps is calculated as the ratio of 173.8 to 1,247.8 and is equal to 0.1393; this puts Duff & Phelps at the 97th percentile of DHP distribution of all institutional investors in the fourth quarter of 2005.

We report descriptive statistics of DHP in Table 1. DHP of an average (median) conglomerate is very small at 0.0119 (0.0000). In fact, for over 90% of conglomerates dual holding propensity is equal to zero. Once we require a conglomerate to have positive dual holding propensity, we find that the average (median) dual holding propensity for this subset is 0.1412 (0.0538). Moreover, some conglomerates demonstrate very

large dual holding propensities as could be inferred from large standard deviation of DHP distribution. This observation is confirmed when we consider top conglomerates by the average DHP over our sample period (reported in Appendix B).

Habitual dual holders can be found among different types of financial conglomerates such as insurance and re-insurance companies (Prudential, New York Life, Allstate etc), asset management companies (Advantus, Blackrock, Conning, Duff and Phelps), investment banks (Deutsche Bank, RBC), and even industrial companies (General Electric and General Motors). At the same time, some notable companies in these industries show very low propensities to hold both equities and bonds of their portfolio companies (e.g., AETNA and AON in insurance industry, Credit Suisse and Barclays in investment banking etc). Importantly, with the exception of Deutsche Bank (ranked 19th), investment banks with significant corporate bond underwriting business do not score highly on dual holding propensity (Citigroup (60), Goldman Sachs (76), Merrill Lynch (88), JP Morgan (89), Barclays (>200)); this provides corroborating evidence that our results are not caused by prior underwriting relationships.

Habitual dual holders do not stand out as particularly large shareholders: on average (median) HDH shareholder holds 0.60% (0.08%) of shares outstanding; even at the 90th percentile their equity ownership is still only 1.60%. HDHs, however, have strength in numbers: the average (median) number of HDH shareholders in bond IPOs is 34.69 (23) with a standard deviation of 44.93.¹⁷

Dual holding propensity is a very persistent characteristic (Table 2): the likelihood that a conglomerate in a top quartile by DHP will remain in this group after 1 (2, 3, 4, and 8) quarter is 84.50% (83.23%, 81.41%, 81.09%, and 82.26%); another 12.33% (13.15%, 14.54%, 14.55% and 11.51%) migrate from the top quartile to the second quartile. So even after two years over 90% of top quartile conglomerates still show above median DHP.

To assess the extent of aggregate habitual dual holder presence among company shareholders, we construct two measures of their equity ownership (HDH Ownership). The first measure, HDHO-1, is

¹⁷ All statistics in this paragraph calculated for shareholders with DHP of at least 0.05.

defined as the dual-holding-propensity weighted institutional equity ownership. The second measure, HDHO-2 is the equity ownership by institutional investors which dual holding propensity exceeds a threshold of 1/3. HDHO-1 has the property that it takes into account all shareholders with dual holding capacity taking into account heterogeneity of their dual-holding propensities; it does not, however, represent actual number of shares held by these investors. HDHO-2, on the other hand, focuses only on the subset of shareholders who are most likely to participate in the bond IPO, but has an advantage of representing actual shareholder ownership.

Bond IPOs do not have to be publicly announced. Therefore, when constructing our sample of bond IPOs we only have their offering dates. Bond IPOs process is conducted within 6-8 weeks, but for high yield issuers it can take up to three months (Tresnowski and Nowak, 2004, Mayer Brown, 2013). To ensure that our measures of ownership and dual holding propensity precede information about the upcoming issue becoming available, in all of our analysis we require a time gap of at least one full quarter between the date of variables measurement and IPO offering date.

Consider again DreamWorks Animation's bond IPO. At the end of the first quarter of 2013 – the closest data point preceding the IPO date by at least 3 months – DreamWorks had 47 shareholders with positive DHP. HDHO-1 for DreamWorks is calculated as the sum of equity stakes of these shareholders multiplied by their dual holding propensities and is equal to 0.1050. Eleven of these shareholders had DHP in excess of 1/3.¹⁸ HDHO-2 is then calculated as the sum of equity stakes of these eleven shareholders and is equal to 0.0575.

Both our measures aim to capture the equity ownership by shareholders which are likely to become bondholders after the bond IPO. Indeed, the correlation between HDHO-1 and HDHO-2 and actual pre-IPO equity ownership by post-IPO dual holders is 65.57% and 56.54% correspondingly. Importantly, the correlations of our measures with firm's institutional ownership are considerably lower (40.09% and 32.44%); all our results are unaffected by inclusion of institutional ownership among control variables.

¹⁸ The shareholders with DHP above 1/3 were Prudential, AIG, Advantus Capital Management, ING, Metropolitan Life, AXA, Deutsche Bank, RBC, Nationwide, Vanguard, and Liberty Mutual.

In Table 1 we report descriptive statistics of our variables for different subsamples used in our study. In a full set of COMPUSTAT firms, average (median) HDHO-1 / HDHO-2 is 2.61% / 2.38% (1.83% / 0.90%) of company equity. Bond IPO companies have larger presence of habitual dual holders among their shareholders: their average (median) HDHO-1 / HDHO-2 is 3.86% / 3.75% (3.04% / 1.91%). Importantly, both of them provide only lower bound estimate of actual shareholder involvement in bond IPOs: on average (median) shareholders which bought shares in the bond IPOs held 10.84% (8.04%) of firm's shares outstanding.

In Table 3 we study habitual dual holder ownership in bond IPO firms and in comparable firms prior to the event. We observe that according to both measures habitual holders own larger percentage of event firms shares than shares of similar firms. The difference in ownership is very similar in magnitude going back as far as eight quarters before the IPO. The slight upward trend in habitual dual holder ownership of all groups of firms is likely to be related to the improving coverage of Lipper eMAXX bond ownership database over time.

4. Empirical findings

4.1. Conglomerate's dual holding propensity and bond purchases in the IPO

We start by investigating who buys bonds in bond IPOs. For each bond IPO event, we identify all bond investors in the eMAXX bond ownership database. We determine whether the investor held firm's bonds at the end of the first quarter after the IPO and the par amount of its holdings. We then move back in time to the closest end of the quarter preceding the IPO date by at least three months to find out whether the investor affiliates were the firm's shareholders prior to the bond IPO, the size of their equity stake, and conglomerate's dual holding propensity at that point. So, for example, for DreamWorks' bond IPO which took place on August 7, 2013, we consider investors' bond ownership in the firm on September 30th, and their affiliates' equity ownership and conglomerate dual holding propensity on March 31st, 2013.

We then proceed to relate conglomerate's bond ownership after the IPO to its pre-IPO equity ownership in the company, dual holding propensity, and a set of control variables. Importantly we separately control

for the size of equity assets under management by the conglomerate and the (par) value of its aggregate bond holdings; these account for the fact that larger conglomerates are mechanically more likely to invest in any security. To control for unobserved persistent conglomerate characteristics and the potential non-linear effect of institutions' sizes not picked up by assets under management, we include conglomerate dummies.

Additional controls include issuer (size, book-to-market, institutional equity ownership, cash, leverage, ROE, Growth of Sales) and issue characteristics (offering amount, time to maturity, change of control provision, redeemable, global offer dummies, junk bond / non rated bond dummies), and bond market variables (term spread, credit spread). We also include industry (SIC2) and yearly dummies. All investor and issuer characteristics are measured at the end of the previous calendar year. All variables are described in Appendix A. Standard errors are double-clustered at the investor and time (year) level.

The results are presented in Table 4. In the probit analysis (first two specifications), the dependent variable is a bond ownership dummy, which takes the value of 1 if a conglomerate held firm's bonds after the IPO and zero if it did not. In the Tobit analysis, the dependent variables is the logarithm of (one plus) the par value of a conglomerate's bond position.

We find that affiliated bond investors (i. e., bond investors whose affiliates hold equity in the firm before the IPO) are 18.06% more likely to buy its bonds at the IPO than non-affiliated bond investors. This corroborates our argument that conglomerate's familiarity with the firm is an important driver of its decision to participate in the bond IPO.

Conglomerate' dual holding propensity on its own is not related to bond ownership. So when a conglomerate is not a shareholder of the firm (i.e., non-affiliated bond investor), its tendency to hold both equity and bonds of its portfolio companies does not affect its willingness to participate in the bond IPO. DHP, however, strongly amplifies the effect of equity ownership, as the interaction terms in the regressions suggest. Affiliated bond investors with conglomerate's DHP at the 75th percentile of its distribution are about 24.66% more likely to buy bonds and take about 276.21% larger dollar positions than non-affiliated bond investors. In contrast, affiliated bond investors with conglomerate's DHP at the 25th percentile of DHP

distribution are no different from pure bond investors in terms of likelihood and the size of their bond stakes.

There are two important observations we would like to make. First, the fact that dual holding propensity of a conglomerate has an effect on its bond IPO participation only in conjunction with prior equity position suggests coordination between the equity and fixed income arm of financial institutions. Second, including conglomerate dummies as well as the size of the equity and bond stakes of the conglomerate among our control variables rules out the potential criticism that our results could be mechanical, i.e., due to larger financial institutions being more likely to participate in any new security issuance.

Some bond investors may have previously provided loans to bond IPO companies. So, if these financial groups also hold equity stakes in bond IPO firms, our analysis may spuriously pick prior lender-borrower relationships rather than the familiarity sharing between equity and fixed income divisions of financial conglomerates. To address this concern, from DealScan database, we obtained the list of all financial institutions which participated in syndicated loans to our sample companies over 5-year period prior to bond IPO and matched these loan providers with our data on bond investors and company shareholders. We find that there is little overlap between bond investors which participate in syndicated loans and bond investors which hold equity stakes in the firm. First, the correlation between dummy variables identifying these two categories of bond investors is only 9.2%. Second, on average (median) habitual dual holders with prior lending relationship with a company represent only 1.25% (0.3%) of the total HDH equity ownership in our firms. Third, our results (unreported) are not affected if we include controls for lending relationship in our analysis or execute it only on bond investors without prior relationship.

In a similar vein, we have explored the role of prior underwriting relationships between issuers and investment banks. First of all, the average (median) time since the firms in our sample of bonds IPO became publicly listed in an equity market is 12.54 (9) years; since going public on average they had less than one underwriting relationship – all of these suggests that any bond with investment banks is unlikely to be strong. When we re-estimate our analysis (unreported) controlling for whether an investor has an investment

banking affiliate and for the number of recent underwriting relationship of the firm, our results are unaffected.

4.2. How much bonds do shareholders buy?

Prior results established that, at the individual investor level, shareholders with bond appetite participate in the bond IPOs to a larger degree than other bond investors. Do bond purchases by shareholders aggregate to a meaningful amount relative to the total size of the issue? If so, how strong is the relationship between equity ownership by habitual dual holders and bond purchases by affiliated bond investors?

From the descriptive statistics reported in Table 1, we observe that on average (median), bond ownership by pre-IPO shareholders is 13.02% (11.41%) of the size of the issue. Lipper eMAXX does not, however, provide bond ownership of all investors as some types of institutional investors as well as individual investors do not have to disclose their holdings. So, if we were to represent shareholders' bond ownership as the fraction of the issue covered in eMAXX, its sample average (median) would go up to 47.33% (48.88%). Institutional investors resell a significant chunk of bonds purchased at the issuance to their clients (Schultz, 2012). The true bond purchases by shareholders at the IPO are, therefore, somewhere in between these two estimates.

In Table 5, we relate our two measures of pre-IPO habitual dual holder equity ownership to the post-IPO fraction of bond issue held by pre-IPO shareholders. Additionally, we consider a third measure — actual equity ownership by shareholders which purchased IPO bonds. This measure, even though it suffers from a look-ahead bias, allows us to evaluate how well our two main measures capture shareholder bond buying behavior.

We find that larger pre-IPO equity ownership by habitual dual holders is associated with larger bond ownership by the pre-IPO shareholders after the IPO. A one percentage larger equity ownership by habitual dual holders translates into about 0.45% larger bond ownership by shareholders.¹⁹ In terms of economic

¹⁹ We also performed the analysis using post-IPO bond ownership by shareholders relative to fraction of the issue covered in Lipper eMAXX (unreported). The results are very similar.

impact, a one standard deviation larger HDHO-1 (HDHO-2) is related to the 12.03% (14.94%) larger fraction of bond issue (relative to a sample mean) ending up in the hands of pre-IPO shareholders.

At the same time, these findings provide only lower bound estimates of the actual shareholder bond purchases in the IPOs: if we were to have perfect foresight and were able to identify shareholders which are actually buying bonds in the IPO, then a one standard deviation larger equity ownership by these investors is related to 20.45% larger fraction of bond issue (relative to a sample mean) being owned by post-IPO dual holding institutions.

The results on shareholder purchases of bonds at the individual investor level and at the aggregate level suggest that habitual dual holders increase the supply of bond capital. We argue that this happens because shareholders are more familiar with the firm than those bond investors which do not have equity positions in the firm. If that is the case, we would expect habitual dual holder presence among firm's shareholders to matter most when the access to the external capital markets is complicated.

We conduct two cross-sectional tests to support our conjecture. First, we split bond IPOs by bond rating into investment grade and non-investment grade / non-graded subsamples. We find (Table 6, Panel A) that shareholder equity ownership and bond ownership are correlated only for junk bonds. Second, we explore the variation in the cost of external capital as proxied by the credit spread between BBB- and AAA- rated corporate bonds. From Table 6, Panel B we could see that bond purchases by shareholders in non-investment grade firms are particularly strong when credit spreads are high.

4.3. How many shareholders participate in bond IPOs?

Thus far we have established that shareholders purchase a significant portion of IPO bonds. Is the number of shareholders buying bonds, i.e., becoming dual holders in the firm, unusual or is it similar to what could be observed for firms which issued public bonds for some time?

We address this question in Table 7. We study dual holder equity ownership for IPO and non-IPO firms with public bonds. We consider two measures of dual holder equity ownership. The first one, DHEO-1 is the fraction of equity owned by shareholders which also hold bond stake in the company at that point in

time. The second one, DHEO-2 is defined likewise for non-IPO firms; for the IPO firms we calculate it as the fraction of equity owned by pre-IPO shareholders which remain with the company until that point and also hold bond stake in the company. Contrasting the results for DHEO-1 and DHEO-2 allows us to evaluate the impact of pre-IPO shareholders on the post-IPO difference in dual holder equity ownership between sample and control firms.

We relate measures of dual holder equity ownership to a set of company characteristics and a dummy variable indicator which takes the value of one if a company undertook a bond IPO and zero otherwise. We perform this analysis for quarters one through five after the IPO. That is, for example, for quarter one analysis, each quarter we only keep firms which did bond IPO one quarter before (sample firms) and firms with public bonds which did bond IPO more than one quarter before (control firms).

We find that immediately after the IPO, equity ownership by dual holders is about 2.77% larger in terms of shares outstanding than in similar firms which issued public bonds before; this represents about 26.78% of the unconditional mean. Virtually all of the difference in dual holder equity ownership could be attributed to pre-IPO shareholders (rather than incoming investors taking both bond and equity positions). The differences in dual holder equity ownership across bond IPO firms and firms with established access to public bond market disappear after about five quarters. In unreported analysis we compared post-IPO equity ownership by dual holders in bond IPO firms and control groups of firms matched on observables (i.e., industry and size; size and book-to-market ratio); the results are statistically very similar and economically slightly stronger.

Thus, shareholders not only purchase large quantities of bonds at the bond IPO, but also the number of them doing this is unusually high.

4.5. Are firms with larger habitual dual holder equity ownership more likely to undertake a bond IPO?

So far we have found that shareholders with high dual holding propensities tend to buy large quantities of IPO bonds. The next natural question is whether firms recognize the benefits of having HDHs among

their shareholders. We perform a set of probit regressions to study the effect of habitual dual holder equity ownership on the decision to undertake a public bond IPO (Table 8).

Each quarter, we consider industrial COMPUSTAT firms without public bonds outstanding. We then investigate whether a firm has done a bond IPO in the near future. In Specifications 1 and 2 a bond IPO dummy takes the value one if the IPO occurred at some date in the second quarter from the current quarter, i.e., between three and six months in the future, zero otherwise. To mitigate concerns related to the rumors about the upcoming event circulating before the announcement, in Specifications 3 and 4 we remove habitual dual holder ownership and IPO decision even further apart and require that IPO occurred three full quarters in the future.

Firms with larger HDH ownership are considerably more likely to do bond IPOs. A one standard deviation larger HDHO-1 (HDHO-2) is related to the 9.20% (7.30%) higher likelihood of conducting bond IPO in the second subsequent quarter (14.47% (11.72%) when we consider the fourth quarter ahead). This represents about 1/3 of economic impact of firm size (+34.19%) and cash holdings (-27.32%) and is similar to the effect of leverage (+14.03%). Additionally, we executed our analysis only on the set of firms which are similar to bond IPO firms by observable characteristics, e.g., industry and size, and size and book-to-market ratio. In these unreported findings, our baseline results are fully confirmed; they are also economically stronger.

4.5. Habitual dual holder equity ownership and IPO bond pricing

We now explore whether the presence of habitual dual holders not only helps the firm to sell its bonds, but also to do so at a better price. There are two reasons why we expect this price effect. First, coordination within financial conglomerates should increase familiarity of bond investing affiliates with the issuing firm as well as decrease perceived the riskiness of the issuer. Second, when a large fraction of shareholders buy bonds in the IPO, it leads to better alignment of bondholder and shareholder interests and the post-IPO conflict of interest between them should be lower.

We relate bond offering yield spreads to pre-IPO measures of dual holder equity ownership in Table 9. We control for a set of issuer and issue specific characteristics, as well as characteristics of bond market (term spread and credit spread). In Specifications 3 and 4 we utilize a very granular set of 21 bond rating dummies — one for each bond rating, i.e., AAA, AA etc — which allows us to evaluate the economic effect of HDH ownership on the cost of bond financing within bond rating. Importantly, we control for bond covenants as investors trade-off protection and promised yield (Bradley and Roberts, 2015).

Equity ownership by habitual dual holders is related to a lower cost of bond financing. A one standard deviation larger HDHO-1 (HDHO-2) is related to the 39.83 (35.95) bps lower offering yield spreads or 10.18% (9.19%) relative to unconditional mean. To put these results in the perspective, for an average (median) bond offering of about 361 (278) million dollars of notional value it corresponds to about 1.33 (1.00) million dollars larger issue proceeds.

It is also worth noting that inclusion of bond covenants does not affect our results. In Specifications 3 and 4 we controlled for three bond covenants which are available for all issues. Inclusion of more refined covenant indexes (Billet et al., 2007) covering a subset of bond IPOs (unreported) produced similar findings.

Prior literature (Bhojraj and Sengupta, 2003, Michaely and Vincent, 2013) found that firms with larger institutional equity ownership pay lower interest on their bonds. We show that when both HDH ownership and institutional ownership are included in the regression the latter loses its statistical significance. If we were to exclude HDH ownership (unreported), institutional ownership becomes strongly statistically significant, its coefficient also almost doubles. The fact that HDH ownership suppresses institutional ownership suggests that institutional equity ownership is important for access to bond financing as long as these shareholders directly participate in bond issues.

Similar to the analysis of post-IPO bond ownership, we conduct two cross-sectional tests to provide additional support to our findings. In Table 10, Panel A we split bonds by their ratings; in Panel B we additionally interact measures of HDH ownership with credit spread. Consistent with prior results, we find

that habitual dual holder equity ownership reduces the cost of bond financing primarily for non-investment grade firms, particularly when accessing bond markets for these firms is difficult.

4.6. Bond IPO covenants

We proceed to investigate protection offered to fixed income investors in bond IPO issues. Following Billett et al. (2007), we construct bond-level index of covenant protection covering 15 major categories and relate it to pre-IPO measures of dual holder equity ownership. Among other control variables we include offering yield; Bradley and Roberts (2015) argue that borrowers trade off promised yield and covenants. In Table 11, we report the findings of a set of Tobit regressions. In Panel A (B) the key explanatory variable is HDHO-1 (HDHO-2).

Bond IPOs by companies with larger equity ownership by habitual dual holders have more covenants overall. One standard deviation larger HDHO-1(HDHO-2) is associated with 0.14 (0.26) more covenants (or 5.95% (10.82%) more relative to the unconditional mean). This corresponds to about one-fifth of the effect of one standard deviation increase in offering spread (-47.09%), one-third of the effect of issue size (-23.44%), and one-half of the effect of firm leverage (+19.99%). So investors with both equity and debt exposure to the company do require higher protection.

When we analyze the different types of bond investor protection – payout policy covenants, event-driven covenants, financing policy covenants, and investment restriction covenants (Billet et al., 2007) – we find that bond IPOs have more covenants which protect investors in case of ownership change, e.g., event-driven covenants.

However, they have lower number of covenants restricting payouts to shareholders. In fact, one standard deviation larger HDHO-1(HDHO-2) is related to 0.22 (1.08) lower number of payout restricting covenants which represents 118.47% (581.94%) of the sample mean. This finding provides additional evidence of coordination of decisions within financial conglomerates – a fixed-income arm of the conglomerate does not have an incentive to constrain payout to shareholders if it benefits its equity affiliate. It is also consistent with prior evidence pointing to financial institutions taking into account their overall

exposure to the firm across different types of securities when designing contractual features of debt. For example, Coval, Greenwood, and Tufano (2013) describe that though \$900 million emergency financing offer to Williams Corp. by Berkshire Hathaway and Lehman Brothers contained a large number of various covenants and restrictions, it required only partial reduction of ordinary stock dividends. The complete elimination of ordinary dividends could have resulted in cancellation of preferred dividends; Berkshire Hathaway's subsidiary previously took a \$290 million preferred stock position in Williams.

4.7. Additional Robustness Checks

One possible concern with our findings is that HDH-conglomerates prefer less risky firms within given credit rating category. HDH-conglomerates might take equity positions in safer firms, and when these firms issue bonds, fixed income affiliated of HDH-conglomerates buy the bonds as well. Since these borrowers are less risky it would ensure a negative correlation between offering yield spreads and equity ownership by HDH-financial conglomerates. This would suggest that habitual dual holders are not directly affecting the IPO process, but rather self-select into future bond issuers at the pre bond IPO stage. We note that this interpretation also suggests familiarity sharing / cooperation within HDH-conglomerates.

We believe that this chain of events is unlikely for a number of reasons. First, the self-selection story would require that HDH equity ownership is lower in firms with more difficult access to external financing. However, (in unreported results) we do not find any relationship between equity ownership by habitual dual holders and firm's characteristics like Tobin's Q, leverage, cash holdings, dividend yield, or growth of sales which are traditionally included in the indexes of financial constraints (e.g., Kaplan and Zingales, 1997, Whited and Wu, 2006). This holds true whether we consider a full sample of COMPUSTAT firms without public bonds, restrict our analysis to firms matched on observables (e.g., size and book-to market ratio; industry and size; size, leverage, and institutional ownership etc), or adopt simultaneous regression approach (e.g., Bhojraj and Sengupta, 2003, Ferreira and Matos, 2008). Likewise, we find no evidence that high HDH ownership firms are able to borrow from banks at lower rates before bond IPO.

To rule out that habitual dual holders flock to future bond IPO companies because of private information about the upcoming event we explore the HDH equity ownership around bond IPOs (Table 3). While we do find that HDH ownership in bond IPO firms slowly increases prior to the event so does the HDH ownership in similar firms which do not undergo bond IPO. We attribute these patterns to the improvement in bond ownership covered by Lipper eMAXX database over time. Additionally, all our results carry on when we use HDH ownership lagged by one year instead of pre-IPO HDH ownership (see Table 8 for the bond IPO decision; results for other outcome variables available upon request).

5. Conclusion

We study firms' decisions to enter public bond markets for the first time (bond IPOs). We show that a firm's ability to access the public bond market is greatly improved by the presence of "habitual dual holders" (HDHs) – financial conglomerates which have the tendency to simultaneously hold both equity and bonds of their portfolio firms – among its shareholders. HDHs are more likely to buy bonds in the IPO and take larger bond positions than bond investors without equity stake in the firm. Larger equity ownership by HDHs is associated with larger part of the bond issue ending up in the hands of pre-IPO shareholders, lower offering yield spreads, and more bond covenants, but less covenants restricting payout to shareholders.

Our study identifies a new breed of institutional shareholders who are among primary providers of debt capital to their portfolio firms. Sharing of familiarity about firms within these financial institutions reduces the segmentation between debt and equity markets and facilitates firms' access to new sources of financing. Ultimately, overcoming the segmentation between debt and equity markets should result in a more efficient allocation of capital.

Appendix A. Description of variables

| Variable | Description of variable and source of data |
|-----------------------------------|---|
| Dual holding propensity, DHP | The ratio of the value of equity invested in firms in which the conglomerate also holds bonds and the value of equity invested in firms with public bonds outstanding. |
| HDHO-1 | Dual-holding-propensity weighted institutional equity ownership. |
| HDHO-2 | The equity ownership by institutions with a dual holding propensity exceeding a threshold of 1/3. |
| DHEO-1 | The fraction of equity owned by shareholders which also hold bond stake in the company. |
| DHEO-2 | Defined like DHEO-1 likewise for non-bond IPO firms; for the IPO firms it is calculated as the fraction of equity owned by pre-IPO shareholders which remain with the company until that point and also hold bond stake in the company. |
| Institutional ownership (IO) | Year-end fraction of shares outstanding owned by institutional fund managers. Source: Spectrum 13F. |
| Market capitalization (MarketCap) | Year-end market value of company equity. Source: CRSP. |
| Book-to-market (B/M) | The ratio of book value of equity to its market value. Source: Compustat. |
| Growth of sales | The percentage growth in sales from the past year. Source: Compustat. |
| Leverage | The ratio of long-term debt to the total assets of the firm. Source: Compustat. |
| Cash | The ratio of cash holdings to total assets. Source: Compustat. |
| Dividend yield | The ratio of cash dividend to total assets. Source: Compustat. |
| ROE | The ratio of earnings to average equity for the prior fiscal year. Source: Compustat. |
| Offering yield spread | The difference in annualized yield between IPO bond and Treasury bond of most similar maturity. Source: TRACE |
| Term spread | The yield spread between the 10-year T-bond and three-month T-bill. Source: St.Louis Fed website |
| Credit spread | The average yield spread between Moody's Baa-rated and Aaa-rated corporate bonds. Source: St. Louis Fed website |

Appendix B

Financial conglomerates with the highest average dual holding propensity

We report top 50 financial conglomerates with the highest average dual holding propensity observed in our sample as well as some notable companies which did not make top 50 list. Dual Holding Propensity (DHP) is the ratio of the value of equity in dual holding positions (i.e., simultaneous ownership of equity and bonds) to the value of equity invested in firms with public bonds outstanding.

Top 50 Conglomerates

| <u>Conglomerate name</u> | <u>DHP</u> | <u>Conglomerate name</u> | <u>DHP</u> |
|--------------------------------|------------|--------------------------------|------------|
| Conning Asset Management | 0.6859 | United Fire Casualty | 0.3281 |
| Shenkman Capital Management | 0.6375 | PPM America | 0.3269 |
| Prudential | 0.6234 | Advent Capital Management | 0.3030 |
| New York Life | 0.6146 | USAA Investment Corp | 0.2792 |
| Allstate | 0.6046 | Summit Investment Partners | 0.2654 |
| Metropolitan Life | 0.5862 | American Family Insurance | 0.2640 |
| AIG | 0.5470 | Cincinnati Financial | 0.2509 |
| ING | 0.5245 | Vanguard Group | 0.2469 |
| AEGON | 0.5212 | Ohio Casualty Group | 0.2428 |
| Hartford Investment Management | 0.5188 | AXA | 0.2385 |
| Harleysville Insurance | 0.4867 | Amica Mutual Insurance | 0.2352 |
| General Electric | 0.4663 | Wellington Management | 0.2266 |
| Members Capital Advisors | 0.4486 | Liberty Mutual | 0.2245 |
| State Farm | 0.4483 | General Motors | 0.2201 |
| Allianz | 0.4449 | Chubb | 0.2193 |
| Advantus Capital Management | 0.4428 | Julius Baer | 0.2134 |
| Penn Mutual Life Insurance | 0.4308 | Kornitzer Capital Management | 0.1975 |
| PartnerRE Asset Management | 0.4086 | CCM Investment Advisers | 0.1973 |
| Deutsche Bank | 0.3958 | Dodge Cox | 0.1850 |
| Amerita | 0.3930 | SMC Capital | 0.1778 |
| Nationwide | 0.3865 | Duff Phelps | 0.1761 |
| Sentry Investment Management | 0.3641 | NISA Investment Advisers | 0.1730 |
| RBC | 0.3612 | Federated Investors | 0.1699 |
| SAFECO | 0.3588 | Hardesty Investment Management | 0.1570 |
| Blackrock | 0.3373 | Utendahl Group | 0.1522 |

Notable others

| <u>Conglomerate name</u> | <u>DHP</u> | <u>Conglomerate name</u> | <u>DHP</u> |
|--------------------------|------------|--------------------------|------------|
| Citigroup | 0.1251 | Morgan Stanley | 0.0670 |
| HSBC | 0.1213 | Merrill Lynch | 0.0605 |
| FIDELITY | 0.0851 | JP Morgan | 0.0585 |
| TRowePrice | 0.0846 | UBS | 0.0299 |
| Goldman Sachs | 0.0737 | Credit Suisse | 0.0252 |

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Table 1

Descriptive statistics of main variables

We present descriptive statistics on the variables used in our study. We report it for the following groups of variables used in our study: a) bond investor characteristics covered in the Lipper eMAXX bond ownership dataset; b) bond characteristics, obtained from FISD; c) firm characteristics for the full sample of COMPUSTAT firms; d) firm characteristics for the sample of bond IPO firms; e) firm characteristics (at the bond level) for the sample of bonds which ownership is covered Lipper eMAXX after the bond IPO. The data covers the period between January 2000 and December 2013. Key variables of interest are Dual Holding Propensity (DHP): the ratio of the value of equity in dual holding positions (i.e., simultaneous ownership of equity and bonds) to the value of equity invested in firms with public bonds outstanding, and two measures of equity ownership by habitual dual holders: HDHO-1 and HDHO-2. HDHO-1 is defined as the dual-holding-propensity weighted institutional ownership of the firm. HDHO-2 is measured as the equity ownership by institutions with a dual holding propensity exceeding a threshold of 1/3. All variables are described in Appendix A.

| | n | mean | median | std | Q1 | Q3 | p90 |
|---|--------|----------|----------|-----------|---------|----------|-----------|
| Bond investor characteristics | | | | | | | |
| DHP | 126815 | 0.012 | 0.000 | 0.067 | 0.000 | 0.000 | 0.000 |
| DHP (if DHP>0) | 10664 | 0.141 | 0.054 | 0.188 | 0.011 | 0.208 | 0.427 |
| Bond characteristics | | | | | | | |
| Offering yield spread | 514 | 385.740 | 360.500 | 250.364 | 175.000 | 553.000 | 729.000 |
| Time to maturity | 514 | 8.923 | 8.075 | 4.670 | 7.014 | 10.017 | 10.047 |
| Offering amount (ths) | 514 | 363946 | 275000 | 329714 | 185000 | 450000 | 650000 |
| Change of control | 514 | 0.264 | 0.000 | 0.441 | 0.441 | 1.000 | 1.000 |
| Redeemable | 514 | 0.949 | 1.000 | 0.220 | 1.000 | 1.000 | 1.000 |
| Global offer | 514 | 0.134 | 0.000 | 0.340 | 0.000 | 0.000 | 1.000 |
| Non-Investment grade | 514 | 0.313 | 0.000 | 0.464 | 0.000 | 0.000 | 1.000 |
| Unrated | 514 | 0.399 | 0.000 | 0.490 | 0.000 | 0.000 | 1.000 |
| Firm characteristics (full sample) | | | | | | | |
| HDHO-1 | 108250 | 0.026 | 0.018 | 0.026 | 0.006 | 0.038 | 0.062 |
| HDHO-2 | 108250 | 0.024 | 0.009 | 0.035 | 0.001 | 0.031 | 0.071 |
| Market cap (mln) | 108250 | 1768.266 | 327.328 | 11162.166 | 115.015 | 961.890 | 2784.628 |
| Institutional ownership | 108250 | 0.483 | 0.504 | 0.249 | 0.280 | 0.685 | 0.813 |
| Book-to-market ratio | 108250 | 0.737 | 0.750 | 3.911 | 0.249 | 0.758 | 1.186 |
| Cash | 108250 | 0.242 | 0.165 | 0.236 | 0.045 | 0.374 | 0.640 |
| Leverage | 108250 | 0.120 | 0.027 | 0.172 | 0.000 | 0.199 | 0.361 |
| Dividend yield | 108250 | 0.007 | 0.000 | 0.019 | 0.000 | 0.003 | 0.023 |
| ROE | 108250 | 0.082 | 0.073 | 0.323 | -0.020 | 0.147 | 0.249 |
| Growth of sales | 108250 | 0.146 | 0.110 | 0.336 | 0.010 | 0.247 | 0.471 |
| Firm characteristics (bond IPO sample) | | | | | | | |
| HDHO-1 | 388 | 0.039 | 0.030 | 0.031 | 0.015 | 0.054 | 0.090 |
| HDHO-2 | 388 | 0.038 | 0.019 | 0.044 | 0.006 | 0.058 | 0.103 |
| Market cap (mln) | 388 | 4971.133 | 1112.668 | 14630.220 | 450.632 | 3066.186 | 10570.697 |
| Institutional ownership | 388 | 0.587 | 0.616 | 0.214 | 0.458 | 0.755 | 0.846 |
| Book-to-market ratio | 388 | 0.858 | 0.803 | 3.008 | 0.300 | 0.820 | 1.340 |
| Cash | 388 | 0.105 | 0.050 | 0.138 | 0.017 | 0.135 | 0.287 |
| Leverage | 388 | 0.229 | 0.206 | 0.186 | 0.064 | 0.357 | 0.502 |
| Dividend yield | 388 | 0.008 | 0.000 | 0.020 | 0.000 | 0.008 | 0.026 |
| ROE | 388 | 0.103 | 0.097 | 0.526 | 0.018 | 0.178 | 0.251 |
| Growth of sales | 388 | 0.128 | 0.086 | 0.292 | 0.010 | 0.205 | 0.476 |

| | n | mean | median | std | Q1 | Q3 | p90 |
|---|-----|----------|----------|-----------|---------|----------|-----------|
| Firm characteristics at the bond level (sample with available post-IPO bond ownership) | | | | | | | |
| Bond ownership by shareholders | 383 | 0.130 | 0.114 | 0.099 | 0.058 | 0.185 | 0.252 |
| Equity ownership by shareholders buying bonds | 383 | 0.108 | 0.080 | 0.101 | 0.026 | 0.162 | 0.255 |
| HDHO-1 | 383 | 0.044 | 0.037 | 0.033 | 0.018 | 0.063 | 0.094 |
| HDHO-2 | 383 | 0.043 | 0.026 | 0.045 | 0.007 | 0.069 | 0.111 |
| Market cap (mln) | 383 | 9683.831 | 2151.539 | 22714.017 | 712.287 | 7359.976 | 23349.096 |
| Institutional ownership | 383 | 0.607 | 0.634 | 0.204 | 0.480 | 0.775 | 0.851 |
| Book-to-market ratio | 383 | 0.709 | 0.820 | 3.092 | 0.457 | 0.925 | 1.189 |
| Cash | 383 | 0.119 | 0.059 | 0.145 | 0.018 | 0.178 | 0.325 |
| Leverage | 383 | 0.207 | 0.176 | 0.187 | 0.022 | 0.339 | 0.477 |
| Dividend yield | 383 | 0.009 | 0.000 | 0.020 | 0.000 | 0.010 | 0.027 |
| ROE | 383 | 0.075 | 0.108 | 0.445 | 0.026 | 0.198 | 0.287 |
| Growth of sales | 383 | 0.129 | 0.085 | 0.258 | 0.009 | 0.187 | 0.396 |
| Term spread | 383 | 1.743 | 2.040 | 1.172 | 0.740 | 2.800 | 3.010 |
| Credit spread | 383 | 1.080 | 0.980 | 0.390 | 0.860 | 1.240 | 1.350 |

Table 2

Persistence of dual holding propensity

We report the results on the persistence of dual holding propensity. Each quarter we identify financial conglomerates in the highest (lowest) quartile of dual holding propensity. Dual holding propensity is defined as the ratio of the value of equity in dual holding positions (i.e., simultaneous ownership of equity and bonds) to the value of equity invested in firms with public bonds outstanding. Investors are followed for eight quarters to determine which quartile they belong in the subsequent quarter. Quartile 4 (1) represents the highest (lowest) DHP quartile. Numbers reported are percentages. Panel A (B) reports on DHP persistence for conglomerates in the top (bottom) quartile of DHP distribution.

Panel A: Persistence in dual holding propensity for investors in the top quartile of DHP in Quarter 0

| Quarter | Quartile | | | |
|---------|----------|-------|------|------|
| | 4 | 3 | 2 | 1 |
| 0 | 100.00 | | | |
| 1 | 84.50 | 12.33 | 2.65 | 1.35 |
| 2 | 83.23 | 13.15 | 2.97 | 1.49 |
| 3 | 81.41 | 14.54 | 3.05 | 1.72 |
| 4 | 81.09 | 14.55 | 3.35 | 2.03 |
| 8 | 82.26 | 11.51 | 4.17 | 3.36 |

Panel B: Persistence in dual holding propensity for investors in the bottom quartile of DHP in Quarter 0

| Quarter | Quartile | | | |
|---------|----------|-------|-------|--------|
| | 4 | 3 | 2 | 1 |
| 0 | | | | 100.00 |
| 1 | 2.93 | 8.49 | 25.84 | 63.71 |
| 2 | 3.89 | 11.66 | 27.36 | 58.11 |
| 3 | 5.03 | 14.75 | 29.30 | 51.59 |
| 4 | 5.75 | 16.96 | 31.23 | 46.41 |
| 8 | 9.57 | 23.72 | 32.28 | 34.72 |

Table 3

Habitual dual holder equity ownership around bond IPOs

We present descriptive statistics of habitual dual holder equity ownership (HDH ownership) around the bond IPOs. The sample of IPO covers period between January 2000 and December 2013. We consider two measures of HDH ownership. HDHO-1 is defined as the dual-holding-propensity weighted institutional ownership. HDHO-2 is measured as the equity ownership by institutions with a dual holding propensity exceeding a threshold of 1/3. Dual holding propensity is defined as the ratio of the value of equity in dual holding positions (i.e., simultaneous ownership of equity and bonds) to the value of equity invested in firms with public bonds outstanding. Quarter 0 (Q_t) is the quarter of bond IPO; HDH ownership at this date corresponds to the first end-of-the quarter ownership after the bond IPO. We present average HDH ownership for bond IPO firms as well as for the firms matched by industry (SIC2) and size (within 30% of market capitalization) as well as firms matched by size (within 30%) and book-to-market. We keep up to 10 control firms which satisfy matching criteria; if matching procedure yields more than 10 matched, those which come closest according to the second criterion are maintained. We require both bond IPO firms and control firms to have institutional equity ownership data available for quarters -4 through +2 around bond IPO. Panel A (B).reports the means values of HDHO-1 (HDHO-2); t-statistics for the difference in sample averages are reported as well.

Panel A: HDHO-1

| | IPO firms | IS matched | SBM matched | IPO vs IS match | | SBM match vs IPO | |
|-----------|-----------|------------|-------------|-----------------|---------|------------------|---------|
| | | | | t-test | p-value | t-test | p-value |
| Q_{t-4} | 0.0385 | 0.0293 | 0.0303 | 4.11 | (0.01) | 3.77 | (0.01) |
| Q_{t-3} | 0.0390 | 0.0317 | 0.0323 | 3.08 | (0.01) | 2.90 | (0.01) |
| Q_{t-2} | 0.0413 | 0.0330 | 0.0325 | 3.34 | (0.01) | 3.67 | (0.01) |
| Q_{t-1} | 0.0418 | 0.0344 | 0.0344 | 2.95 | (0.01) | 3.08 | (0.01) |
| Q_t | 0.0420 | 0.0338 | 0.0349 | 3.30 | (0.01) | 2.90 | (0.01) |
| Q_{t+1} | 0.0444 | 0.0382 | 0.0372 | 2.50 | (0.02) | 3.04 | (0.01) |
| Q_{t+2} | 0.0449 | 0.0384 | 0.0368 | 2.46 | (0.02) | 2.97 | (0.01) |

Panel A: HDHO-2

| | IPO firms | IS matched | SBM matched | IPO vs IS match | | SBM match vs IPO | |
|-----------|-----------|------------|-------------|-----------------|---------|------------------|---------|
| | | | | t-test | p-value | t-test | p-value |
| Q_{t-4} | 0.0366 | 0.0239 | 0.0270 | 3.98 | (0.01) | 3.02 | (0.01) |
| Q_{t-3} | 0.0362 | 0.0274 | 0.0280 | 2.73 | (0.01) | 2.58 | (0.02) |
| Q_{t-2} | 0.0396 | 0.0305 | 0.0310 | 2.55 | (0.02) | 2.43 | (0.02) |
| Q_{t-1} | 0.0411 | 0.0325 | 0.0328 | 2.33 | (0.03) | 2.33 | (0.03) |
| Q_t | 0.0425 | 0.0310 | 0.0335 | 3.22 | (0.01) | 2.51 | (0.02) |
| Q_{t+1} | 0.0456 | 0.0340 | 0.0352 | 3.08 | (0.01) | 2.83 | (0.01) |
| Q_{t+2} | 0.0456 | 0.0335 | 0.0341 | 3.10 | (0.01) | 3.02 | (0.01) |

Table 4

Holdings of IPO bonds by firm's shareholders: investor level

We report the results of multivariate regressions of the relationship between pre-IPO bond investor equity ownership in the firm, its dual holding propensity (DHP), and the bond investor holding of IPO bonds after the event. For each bond IPO, we identify all bond investors in the eMAXX bond ownership database at the end of the quarter right after the event. We determine whether the investor held firm's bonds after the IPO and the par amount of its holdings. We then move back in time to the closest end of the quarter preceding the IPO date by at least three months to find out whether the investor was the firm's shareholder prior to the bond IPO, the size of its equity stake, and its dual holding propensity at that point. All investor and issuer characteristics are measured at the end of the previous calendar year. All variables are described in Appendix A. Standard errors are double-clustered at the investor and time (year) level.

| | <u>probit</u> | | | <u>probit</u> | | | <u>Tobit</u> | | <u>Tobit</u> | | |
|------------------------------|---------------|---------------------|--------|---------------|---------------------|--------|--------------|---------------------|--------------|---------------------|--|
| | estimate | t-stat | ME | estimate | t-stat | ME | estimate | t-stat | estimate | t-stat | |
| DHP | -0.186 | (-1.38) | -0.027 | -0.069 | (-0.06) | -0.010 | -0.306 | (-1.08) | -0.127 | (-0.68) | |
| Shareholder dummy | 0.152 | (3.55) | 0.023 | -0.037 | (-0.71) | -0.005 | 0.307 | (3.71) | 0.069 | (1.01) | |
| DHP × Shareholder dummy | | | | 0.866 | (5.01) | 0.127 | | | 1.665 | (5.66) | |
| log(Offering amount) | 0.318 | (5.16) | 0.046 | 0.318 | (5.19) | 0.047 | 0.570 | (73.57) | 0.567 | (72.12) | |
| log(Total bond assets) | 0.157 | (8.27) | 0.023 | 0.156 | (8.20) | 0.023 | 0.374 | (63.13) | 0.400 | (65.82) | |
| log(Total equity assets) | 0.006 | (0.30) | 0.001 | 0.014 | (0.73) | 0.002 | 0.049 | (20.87) | 0.118 | (36.11) | |
| Log(Time to maturity) | -0.099 | (-1.57) | -0.014 | -0.099 | (-1.58) | -0.015 | -0.174 | (-1.73) | -0.173 | (-1.75) | |
| Change of Control dummy | 0.097 | (1.38) | 0.015 | 0.094 | (1.33) | 0.014 | 0.137 | (8.39) | 0.124 | (8.89) | |
| Redeemable dummy | 0.003 | (0.02) | 0.000 | 0.003 | (0.02) | 0.000 | 0.032 | (0.15) | 0.034 | (0.19) | |
| Global offer dummy | 0.031 | (0.37) | 0.005 | 0.031 | (0.37) | 0.005 | 0.010 | (0.08) | 0.012 | (0.10) | |
| Junk bond dummy | 0.052 | (0.67) | 0.008 | 0.050 | (0.64) | 0.007 | -0.003 | (-0.02) | -0.008 | (-0.07) | |
| Not rated bond dummy | 0.050 | (0.65) | 0.007 | 0.050 | (0.65) | 0.007 | 0.006 | (0.05) | 0.003 | (0.03) | |
| log(Market capitalization) | 0.176 | (6.86) | 0.026 | 0.177 | (6.91) | 0.026 | 0.266 | (7.13) | 0.266 | (7.04) | |
| Institutional ownership | -0.175 | (-1.42) | -0.026 | -0.178 | (-1.45) | -0.026 | -0.248 | (-1.28) | -0.257 | (-1.37) | |
| log(Book-to-market ratio) | 0.092 | (2.62) | 0.013 | 0.093 | (2.64) | 0.014 | 0.106 | (12.84) | 0.108 | (2.04) | |
| Cash | -0.230 | (-1.03) | -0.034 | -0.228 | (-1.03) | -0.033 | -0.468 | (-1.29) | -0.466 | (-1.31) | |
| Leverage | 0.432 | (2.98) | 0.063 | 0.440 | (3.06) | 0.065 | 0.636 | (2.84) | 0.648 | (2.96) | |
| ROE | 0.029 | (0.63) | 0.004 | 0.028 | (0.62) | 0.004 | 0.056 | (0.72) | 0.053 | (0.70) | |
| Growth of Sales | 0.082 | (0.94) | 0.012 | 0.087 | (0.99) | 0.013 | 0.106 | (0.77) | 0.116 | (0.85) | |
| Term Spread | -0.049 | (-0.67) | -0.007 | -0.047 | (-0.64) | -0.007 | -0.096 | (-0.57) | -0.093 | (-0.56) | |
| Credit Spread | 0.214 | (1.49) | 0.031 | 0.211 | (1.48) | 0.031 | 0.326 | (1.44) | 0.326 | (1.54) | |
| Interactions of DHP w | | | | | | | | | | | |
| Conglomerate characteristics | | N | | | Y | | | N | | Y | |
| Industry dummies | | Y | | | Y | | | Y | | Y | |
| Conglomerate dummies | | Y | | | Y | | | Y | | Y | |
| Yearly dummies | | Y | | | Y | | | Y | | Y | |
| Clustering | | Conglomerate + Year | | | Conglomerate + Year | | | Conglomerate + Year | | Conglomerate + Year | |
| N | | 74040 | | | 74040 | | | 74040 | | 74040 | |
| Pseudo R ² | | 0.2548 | | | 0.2611 | | | 0.2118 | | 0.2229 | |

Table 5

Holdings of IPO bonds by firm's shareholders: aggregate level

We report the results of multivariate regressions of the relationship between pre-IPO habitual dual holder (HDH) equity ownership and post-IPO bond ownership by pre-IPO firm's shareholders. The dependent variable is the fraction of bond issue held by pre-IPO shareholders at the end of the quarter immediately after the IPO. We consider two measures of HDH ownership. HDHO-1 is defined as the dual-holding-propensity weighted institutional ownership. HDHO-2 is measured as the equity ownership by institutions with a dual holding propensity exceeding a threshold of 1/3. Additionally, we consider actual equity ownership by shareholders which purchased IPO bonds. Measures of HDH ownership are as of the closest end of the quarter preceding the IPO date by at least three months. All issuer characteristics are measured at the end of the previous calendar year. All variables are described in Appendix A. Standard errors are double-clustered at the industry (SIC2) and time (year) level.

| | estimate | t-stat | estimate | t-stat | estimate | t-stat |
|--------------------------------------|-----------------|---------|-----------------|---------|-----------------|---------|
| HDHO-1 | 0.482 | (2.19) | | | | |
| HDHO-2 | | | 0.428 | (1.81) | | |
| Eq. own by shareholders buying bonds | | | | | 0.264 | (4.03) |
| log(Time to maturity) | -0.018 | (-1.91) | -0.018 | (-1.82) | -0.018 | (-1.79) |
| log(Offering amount) | -0.023 | (-1.84) | -0.024 | (-2.03) | -0.034 | (-2.99) |
| log(Market capitalization) | 0.036 | (5.16) | 0.037 | (5.55) | 0.033 | (3.92) |
| Institutional ownership | 0.047 | (2.35) | 0.048 | (2.38) | 0.034 | (1.84) |
| log(Book-to-market ratio) | -0.008 | (-0.60) | -0.007 | (-0.57) | -0.008 | (-0.63) |
| Cash | -0.048 | (-0.89) | -0.048 | (-0.84) | -0.059 | (-1.27) |
| Leverage | 0.015 | (0.55) | 0.015 | (0.61) | 0.015 | (0.68) |
| ROE | -0.003 | (-0.36) | -0.004 | (-0.49) | -0.004 | (-0.38) |
| Growth of sales | -0.022 | (-1.05) | -0.024 | (-1.09) | -0.026 | (-1.28) |
| Term spread | 0.002 | (0.12) | 0.001 | (0.05) | 0.001 | (0.07) |
| Credit spread | -0.013 | (-0.68) | -0.012 | (-0.57) | -0.016 | (-0.85) |
| Change of Control dummy | 0.001 | (0.08) | 0.001 | (0.06) | 0.001 | (0.10) |
| Redeemable dummy | 0.041 | (2.12) | 0.042 | (2.19) | 0.032 | (1.80) |
| Global offer dummy | -0.016 | (-0.87) | -0.019 | (-1.04) | -0.019 | (-1.05) |
| Junk bond dummy | -0.016 | (-0.83) | -0.017 | (-0.89) | -0.029 | (-1.76) |
| Not rated bond dummy | -0.004 | (-0.18) | -0.005 | (-0.23) | -0.012 | (-0.56) |
| Industry dummies | Y | | Y | | Y | |
| Yearly dummies | Y | | Y | | Y | |
| Clustering | Industry + Year | | Industry + Year | | Industry + Year | |
| N | 383 | | 383 | | 383 | |
| Adj R ² | 0.4861 | | 0.4976 | | 0.5189 | |

Table 6

Holdings of IPO bonds by firm's shareholders: aggregate level — cross-sectional tests

We report the results of multivariate regressions of the relationship between pre-IPO habitual dual holder (HDH) equity ownership and post-IPO bond ownership by pre-IPO firm's shareholders by bond rating and conditional on economy-wide credit risk. The dependent variable is the fraction of bond issue held by pre-IPO shareholders at the end of the quarter immediately after the IPO. We consider two measures of HDH ownership. HDHO-1 is defined as the dual-holding-propensity weighted institutional ownership. HDHO-2 is measured as the equity ownership by institutions with a dual holding propensity exceeding a threshold of 1/3. Additionally, we consider actual equity ownership by shareholders which purchased IPO bonds. We split bond IPOs into investment grade rated and non-investment-grade / unrated subsamples. Panel A reports results for the two subsamples. In Panel B we additionally interact measures of HDH equity ownership with credit spread. Control variables are as in Table 5. Measures of HDH ownership are as of the closest end of the quarter removed from IPO date by at least three months. All issuer characteristics are measured at the end of the previous calendar year. All variables are described in Appendix A. Standard errors are double-clustered at the industry (SIC2) and time (year) level.

Panel A: by bond rating

| | | | <u>Investment Grade</u> | | | | <u>Non-Investment Grade and Unrated</u> | | | | | |
|---------------------------------------|----------|-----------------|-------------------------|-----------------|----------|-----------------|---|-----------------|----------|-----------------|----------|-----------------|
| | estimate | t-stat | estimate | t-stat | estimate | t-stat | estimate | t-stat | estimate | t-stat | estimate | t-stat |
| HDHO-1 | -0.042 | (-0.03) | | | | | 0.511 | (2.32) | | | | |
| HDHO-2 | | | 0.200 | (0.20) | | | | | 0.485 | (1.84) | | |
| Eq. own. by shareholders buying bonds | | | | | -0.056 | (-0.35) | | | | | 0.315 | (6.93) |
| Controls | | Y | | Y | | Y | | Y | | Y | | Y |
| Rating dummies | | Y | | Y | | Y | | Y | | Y | | Y |
| Industry dummies | | Y | | Y | | Y | | Y | | Y | | Y |
| Yearly dummies | | Y | | Y | | Y | | Y | | Y | | Y |
| Clustering | | Industry + Year | | Industry + Year | | Industry + Year | | Industry + Year | | Industry + Year | | Industry + Year |
| N | | 126 | | 126 | | 126 | | 257 | | 257 | | 257 |
| Adj R ² | | 0.6996 | | 0.7001 | | 0.7000 | | 0.5481 | | 0.5558 | | 0.5986 |

Panel B: conditional on macro credit risk

| | <u>Investment Grade</u> | | | | <u>Non-Investment Grade and Unrated</u> | | | | | | | |
|---------------------------------------|-------------------------|---------|-----------------|---------|---|---------|-----------------|----------|-----------------|---------|-----------------|---------|
| | estimate | t-stat | estimate | t-stat | estimate | t-stat | estimate | t-stat | estimate | t-stat | estimate | t-stat |
| HDHO-1 | 3.269 | (0.62) | | | | | -1.815 | (-1.74) | | | | |
| HDHO-1 × Credit spread | -3.141 | (-0.61) | | | | | 2.051 | (2.02) | | | | |
| HDHO-2 | | | -0.065 | (-0.02) | | | | | -1.531 | (-2.30) | | |
| HDHO-2 × Credit spread | | | 0.241 | (0.09) | | | | | 1.788 | (2.87) | | |
| Eq. own. by shareholders buying bonds | | | | | 0.266 | (1.05) | | | | | -0.310 | (-1.79) |
| Eq. own. by shldrs × Credit spread | | | | | -0.282 | (-1.05) | | | | | 0.566 | (3.63) |
| Credit spread | 0.100 | (0.31) | -0.089 | (-0.59) | -0.045 | (-0.49) | -0.132 | (-12.41) | -0.125 | (-6.08) | -0.128 | (-8.39) |
| Controls | Y | | Y | | Y | | Y | | Y | | Y | |
| Rating dummies | Y | | Y | | Y | | Y | | Y | | Y | |
| Industry dummies | Y | | Y | | Y | | Y | | Y | | Y | |
| Yearly dummies | Y | | Y | | Y | | Y | | Y | | Y | |
| Clustering | Industry + Year | | Industry + Year | | Industry + Year | | Industry + Year | | Industry + Year | | Industry + Year | |
| N | 126 | | 126 | | 126 | | 257 | | 257 | | 257 | |
| Adj R ² | 0.7026 | | 0.7031 | | 0.7027 | | 0.5474 | | 0.5553 | | 0.5792 | |

Table 7

Dual holder equity ownership of bond-IPO firms

We report the results of analysis of post-IPO dual holder equity ownership for bond IPO firms and for firms which have issued public bonds for some time. We consider two measures of dual holder equity ownership. DHEO-1 is the fraction of equity owned by shareholders which also hold bond stake in the company. DHEO-2 is defined likewise for non-IPO firms; for the IPO firms we calculate it as the fraction of equity owned by pre-IPO shareholders which remain with the company until that point and also hold bond stake in the company. We relate measures of dual holder equity ownership to a set of company characteristics and a dummy variable indicator which takes the value of one if a company undertook a bond IPO and zero otherwise. We perform this analysis for quarters one through five after the IPO. That is, for example, for quarter one analysis, each quarter we only keep firms which did bond IPO one quarter before (sample firms) and firms with public bonds which did bond IPO more than one quarter before (control firms). All variables are described in Appendix A. Standard errors are double-clustered at the industry (SIC2) and time (year) level.

Panel A: DHEO-1

| | Q1 | | Q2 | | Q3 | | Q4 | | Q5 | |
|----------------------------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|
| | estimate | t-stat | estimate | t-stat | estimate | t-stat | estimate | t-stat | estimate | t-stat |
| Bond IPO dummy | 0.028 | (4.68) | 0.029 | (5.50) | 0.018 | (3.36) | 0.015 | (3.01) | 0.007 | (1.48) |
| log(Market capitalization) | 0.048 | (55.29) | 0.048 | (55.23) | 0.048 | (55.11) | 0.048 | (55.02) | 0.048 | (55.03) |
| Institutional ownership | 0.131 | (20.50) | 0.131 | (20.41) | 0.130 | (20.38) | 0.130 | (20.35) | 0.131 | (20.39) |
| log(Book-to-market) | 0.023 | (13.76) | 0.023 | (13.84) | 0.023 | (13.73) | 0.023 | (13.75) | 0.023 | (13.81) |
| Cash | -0.033 | (-4.29) | -0.033 | (-4.29) | -0.033 | (-4.32) | -0.033 | (-4.29) | -0.034 | (-4.31) |
| Leverage | 0.175 | (23.84) | 0.175 | (23.82) | 0.175 | (23.82) | 0.175 | (23.86) | 0.176 | (23.81) |
| Dividend yield | -0.625 | (-9.15) | -0.626 | (-9.18) | -0.631 | (-9.17) | -0.630 | (-9.17) | -0.631 | (-9.18) |
| ROE | 0.000 | (-0.17) | 0.000 | (-0.15) | 0.000 | (-0.11) | 0.000 | (-0.12) | 0.000 | (-0.07) |
| Growth of Sales | 0.005 | (1.34) | 0.005 | (1.36) | 0.005 | (1.26) | 0.005 | (1.25) | 0.005 | (1.27) |
| Term spread | 0.081 | (12.04) | 0.085 | (12.01) | 0.084 | (12.38) | 0.083 | (12.27) | 0.083 | (12.20) |
| Credit spread | 0.683 | (16.63) | 0.699 | (16.59) | 0.694 | (16.15) | 0.680 | (16.75) | 0.687 | (16.49) |
| Industry dummies | Y | | Y | | Y | | Y | | Y | |
| Quarterly dummies | Y | | Y | | Y | | Y | | Y | |
| Clustering | Sic2 + Year | | Sic2 + Year | | Sic2 + Year | | Sic2 + Year | | Sic2 + Year | |
| N | 50,428 | | 50440 | | 50444 | | 50440 | | 50443 | |
| Pseudo R ² | 0.9388 | | 0.9387 | | 0.9338 | | 0.9378 | | 0.9392 | |

Panel B: DHEO-2

| | <u>Q1</u> | | <u>Q2</u> | | <u>Q3</u> | | <u>Q4</u> | | <u>Q5</u> | |
|----------------------------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|-------------|---------|
| | estimate | t-stat | estimate | t-stat | estimate | t-stat | estimate | t-stat | estimate | t-stat |
| Bond IPO dummy | 0.026 | (4.37) | 0.025 | (4.66) | 0.011 | (1.97) | 0.002 | (0.46) | -0.006 | (-1.09) |
| log(Market capitalization) | 0.047 | (52.06) | 0.047 | (51.96) | 0.047 | (51.91) | 0.047 | (51.85) | 0.047 | (51.78) |
| Institutional ownership | 0.126 | (20.08) | 0.126 | (20.05) | 0.125 | (20.00) | 0.126 | (19.98) | 0.126 | (19.98) |
| log(Book-to-market) | 0.024 | (14.36) | 0.024 | (14.44) | 0.024 | (14.32) | 0.024 | (14.37) | 0.024 | (14.41) |
| Cash | -0.011 | (-1.40) | -0.011 | (-1.40) | -0.011 | (-1.42) | -0.011 | (-1.39) | -0.011 | (-1.42) |
| Leverage | 0.153 | (21.44) | 0.153 | (21.40) | 0.153 | (21.37) | 0.153 | (21.39) | 0.153 | (21.34) |
| Dividend yield | -0.461 | (-6.68) | -0.462 | (-6.70) | -0.469 | (-6.75) | -0.467 | (-6.73) | -0.466 | (-6.70) |
| ROE | 0.001 | (0.50) | 0.001 | (0.52) | 0.001 | (0.56) | 0.001 | (0.58) | 0.001 | (0.64) |
| Growth of Sales | 0.002 | (0.56) | 0.002 | (0.60) | 0.002 | (0.49) | 0.002 | (0.45) | 0.002 | (0.45) |
| Term spread | 0.071 | (10.64) | 0.073 | (10.49) | 0.072 | (10.70) | 0.071 | (10.61) | 0.071 | (10.56) |
| Credit spread | 0.599 | (15.40) | 0.615 | (15.40) | 0.607 | (14.98) | 0.596 | (15.73) | 0.601 | (15.33) |
| Industry dummies | Y | | Y | | Y | | Y | | Y | |
| Quarterly dummies | Y | | Y | | Y | | Y | | Y | |
| Clustering | Sic2 + Year | | Sic2 + Year | | Sic2 + Year | | Sic2 + Year | | Sic2 + Year | |
| N | 50,428 | | | | 50440 | | | | 50444 | |
| Pseudo R ² | 0.966 | | | | 0.9665 | | | | 0.9672 | |

Table 8

Habitual dual holder equity ownership and the decision to undertake bond IPO

We report the results of multivariate regressions of the relationship between pre-IPO habitual dual holder (HDH) equity ownership and the firm's decision to undertake a bond IPO. Each quarter we consider all non-financial / non-utility COMPUSTAT firms which do not have public bonds outstanding. In Specifications 1 and 2 (3 and 4) the dependent variable takes the value of one, if the firm issued public bonds for the first time on some date between three and six months (nine and twelve months) in the future, zero otherwise. We consider two measures of HDH ownership. HDHO-1 is defined as the dual-holding-propensity weighted institutional ownership. HDHO-2 is measured as the equity ownership by institutions with a dual holding propensity exceeding a threshold of 1/3. All issuer characteristics are measured at the end of the previous calendar year. All variables are described in Appendix A. Standard errors are double-clustered at the industry (SIC2) and time (year) level.

| | <u>HDH ownership at Q_{t-1}</u> | | | | | | <u>HDH ownership at Q_{t-4}</u> | | | | | |
|----------------------------|--|-----------------|--------|------------|-----------------|--------|--|-----------------|--------|------------|-----------------|--------|
| | <u>(1)</u> | | | <u>(2)</u> | | | <u>(3)</u> | | | <u>(4)</u> | | |
| | estimate | t-stat | ME | estimate | t-stat | ME | estimate | t-stat | ME | estimate | t-stat | ME |
| HDHO-1 | 2.998 | (3.46) | 1.168 | | | | 4.848 | (5.36) | 1.717 | | | |
| HDHO-2 | | | | 1.778 | (3.58) | 0.697 | | | | 2.921 | (5.40) | 1.046 |
| log(Market capitalization) | 0.174 | (12.48) | 0.068 | 0.179 | (13.25) | 0.070 | 0.165 | (10.79) | 0.058 | 0.173 | (11.56) | 0.062 |
| Institutional ownership | 0.111 | (1.15) | 0.043 | 0.174 | (1.97) | 0.068 | 0.069 | (0.67) | 0.024 | 0.172 | (1.86) | 0.062 |
| log(Book-to-market) | 0.146 | (4.92) | 0.057 | 0.145 | (4.89) | 0.057 | 0.103 | (3.85) | 0.036 | 0.102 | (3.83) | 0.037 |
| Cash | -0.982 | (-5.51) | -0.382 | -0.974 | (-5.50) | -0.382 | -0.962 | (-6.07) | -0.341 | -0.947 | (-6.03) | -0.339 |
| Leverage | 0.691 | (7.01) | 0.269 | 0.695 | (7.09) | 0.272 | 0.711 | (7.30) | 0.252 | 0.719 | (7.41) | 0.258 |
| Dividend yield | -1.303 | (-1.09) | -0.507 | -1.457 | (-1.21) | -0.571 | -1.605 | (-1.30) | -0.568 | -1.936 | (-1.54) | -0.693 |
| ROE | -0.054 | (-1.67) | -0.021 | -0.054 | (-1.69) | -0.021 | -0.054 | (-1.63) | -0.019 | -0.054 | (-1.64) | -0.019 |
| Growth of Sales | 0.001 | (0.01) | 0.000 | -0.001 | (-0.01) | 0.000 | -0.003 | (-0.04) | -0.001 | -0.001 | (-0.01) | 0.000 |
| Interest rate coverage | 0.000 | (0.52) | 0.000 | 0.000 | (0.58) | 0.000 | 0.000 | (1.97) | 0.000 | 0.000 | (2.03) | 0.000 |
| Term spread | -0.803 | (-1.44) | -0.313 | -0.812 | (-1.45) | -0.319 | -0.277 | (-0.71) | -0.098 | -0.274 | (-0.71) | -0.098 |
| Credit spread | -1.550 | (-1.35) | -0.604 | -1.497 | (-1.32) | -0.587 | -0.023 | (-0.05) | -0.008 | 0.015 | (0.03) | 0.005 |
| Industry dummies | | Y | | | Y | | | Y | | | Y | |
| Quarter dummies | | Y | | | Y | | | Y | | | Y | |
| Clustering | | Industry + Year | | | Industry + Year | | | Industry + Year | | | Industry + Year | |
| N | | 108250 | | | 108250 | | | 105023 | | | 105023 | |
| Pseudo R ² | | 0.1401 | | | 0.1397 | | | 0.1439 | | | 0.1430 | |

Table 9

Habitual dual holder equity ownership and pricing of IPO bonds

We report the results of multivariate regressions of the relationship between pre-IPO habitual dual holder (HDH) equity ownership and bond IPO offering yield spreads. The dependent variable is the difference in annualized yield between IPO bond and Treasury bond of most similar maturity. We consider two measures of HDH ownership. HDHO-1 is defined as the dual-holding-propensity weighted institutional ownership. HDHO-2 is measured as the equity ownership by institutions with a dual holding propensity exceeding a threshold of 1/3. Measures of HDH ownership are as of the closest end of the quarter preceding the IPO date by at least three months. All issuer characteristics are measured at the end of the previous calendar year. All variables are described in Appendix A. Standard errors are double-clustered at the industry (SIC2) and time (year) level.

| | estimate | t-stat | estimate | t-stat | estimate | t-stat | estimate | t-stat |
|----------------------------|-----------------|---------|-----------------|---------|-----------------|---------|-----------------|---------|
| HDHO-1 | -15.203 | (-4.84) | | | -12.776 | (-2.98) | | |
| HDHO-2 | | | -11.012 | (-2.52) | | | -9.085 | (-2.05) |
| log(Time to maturity) | -0.353 | (-1.81) | -0.389 | (-1.95) | -0.386 | (-2.29) | -0.420 | (-2.38) |
| log(Par amount offered) | 0.425 | (2.61) | 0.438 | (2.66) | 0.247 | (1.50) | 0.261 | (1.50) |
| log(Market capitalization) | -1.114 | (-8.04) | -1.137 | (-8.29) | -0.769 | (-5.08) | -0.792 | (-5.06) |
| Institutional ownership | -0.199 | (-0.53) | -0.369 | (-1.08) | -0.276 | (-0.69) | -0.409 | (-1.11) |
| log(Book-to-market) | 0.187 | (1.49) | 0.187 | (1.43) | 0.193 | (1.34) | 0.191 | (1.40) |
| Cash | 0.464 | (0.69) | 0.428 | (0.65) | 0.749 | (1.66) | 0.707 | (1.63) |
| Leverage | 0.616 | (1.26) | 0.667 | (1.34) | 0.257 | (0.64) | 0.276 | (0.63) |
| ROE | -0.088 | (-0.50) | -0.094 | (-0.55) | -0.065 | (-0.45) | -0.073 | (-0.51) |
| Growth of Sales | 0.123 | (0.57) | 0.180 | (0.90) | 0.016 | (0.08) | 0.061 | (0.31) |
| Term spread | -0.452 | (-1.66) | -0.431 | (-1.59) | -0.484 | (-2.08) | -0.470 | (-2.00) |
| Credit spread | 0.526 | (0.98) | 0.530 | (1.00) | 0.492 | (1.22) | 0.501 | (1.26) |
| Change of control dummy | | | | | -0.558 | (-1.84) | -0.562 | (-1.81) |
| Redeemable dummy | | | | | 0.435 | (1.26) | 0.431 | (1.22) |
| Global offer dummy | | | | | -0.546 | (-1.53) | -0.488 | (-1.40) |
| Industry dummies | Y | | Y | | Y | | Y | |
| Yearly dummies | Y | | Y | | Y | | Y | |
| Rating dummies | N | | N | | Y | | Y | |
| Clustering | Industry + Year | | Industry + Year | | Industry + Year | | Industry + Year | |
| N | 514 | | 514 | | 514 | | 514 | |
| Adj R ² | 0.7034 | | 0.7023 | | 0.7556 | | 0.7557 | |

Table 10

Habitual dual holder equity ownership and pricing of IPO bonds — cross-sectional tests

We report the results of multivariate regressions of the relationship between pre-IPO habitual dual holder (HDH) equity ownership and bond IPO offering yield spreads by bond rating and conditional on economy-wide credit risk. The dependent variable is the difference in annualized yield between IPO bond and Treasury bond of most similar maturity. We consider two measures of HDH ownership. HDHO-1 is defined as the dual-holding-propensity weighted institutional ownership. HDHO-2 is measured as the equity ownership by institutions with a dual holding propensity exceeding a threshold of 1/3. We split bond IPOs into investment grade rated and non-investment-grade / unrated subsamples. Panel A reports results for the two subsamples. In Panel B we additionally interact measures of HDH equity ownership with credit spread. Control variables are as in Table 8. Measures of HDH ownership are as of the closest end of the quarter preceding the IPO date by at least three months. All issuer characteristics are measured at the end of the previous calendar year. All variables are described in Appendix A. Standard errors are double-clustered at the industry (SIC2) and time (year) level.

Panel A: by bond rating

| | <u>Investment grade</u> | | | | <u>Non-investment grade</u> | | | |
|--------------------|-------------------------|---------|-----------------|---------|-----------------------------|---------|-----------------|---------|
| | estimate | t-stat | estimate | t-stat | estimate | t-stat | estimate | t-stat |
| HDHO-1 | -3.001 | (-0.30) | | | -12.749 | (-3.03) | | |
| HDHO-2 | | | -2.034 | (-0.16) | | | -8.777 | (-2.39) |
| Controls | | Y | | Y | | Y | | Y |
| Industry dummies | | Y | | Y | | Y | | Y |
| Yearly dummies | | Y | | Y | | Y | | Y |
| Rating dummies | | Y | | Y | | Y | | Y |
| Clustering | Industry + Year | | Industry + Year | | Industry + Year | | Industry + Year | |
| N | 148 | | 148 | | 366 | | 366 | |
| Adj R ² | 0.8467 | | 0.8464 | | 0.7219 | | 0.7204 | |

Panel B: conditional on macro credit risk

| | <u>Investment grade</u> | | | | <u>Non-investment grade</u> | | | |
|------------------------|-------------------------|---------|-----------------|---------|-----------------------------|---------|-----------------|---------|
| | estimate | t-stat | estimate | t-stat | estimate | t-stat | estimate | t-stat |
| HDHO-1 | -10.001 | (-0.28) | | | 14.472 | (1.11) | | |
| HDHO-1 × Credit spread | 6.815 | (0.22) | | | -24.660 | (-2.12) | | |
| HDHO-2 | | | -17.071 | (-0.64) | | | 14.143 | (1.19) |
| HDHO-2 × Credit spread | | | 14.585 | (0.75) | | | -21.759 | (-2.06) |
| Credit spread | -0.427 | (-0.23) | -0.723 | (-0.62) | 1.760 | (2.01) | 1.759 | (2.00) |
| Controls | | Y | | Y | | Y | | Y |
| Industry dummies | | Y | | Y | | Y | | Y |
| Yearly dummies | | Y | | Y | | Y | | Y |
| Rating dummies | | Y | | Y | | Y | | Y |
| Clustering | Industry + Year | | Industry + Year | | Industry + Year | | Industry + Year | |
| N | 148 | | 148 | | 366 | | 366 | |
| Adj R ² | 0.8471 | | 0.8480 | | 0.7252 | | 0.7238 | |

Table 11

Habitual dual holder equity ownership and bond IPO covenants

We report the results of multivariate Tobit regressions of the relationship between pre-IPO habitual dual holder (HDH) equity ownership and bond IPO covenants. Following Billett, King, and Mauer (2007), we construct an aggregate index of bond IPO covenant protection as well as we consider four covenant sub-indexes: (1) payout covenants; (2) financing activity covenants; (3) event driven covenants; and (4) investment policy covenants. The key explanatory variables are two measures of HDH ownership. HDHO-1 is defined as the dual-holding-propensity weighted institutional ownership. HDHO-2 is measured as the equity ownership by institutions with a dual holding propensity exceeding a threshold of 1/3. Measures of HDH ownership are as of the closest end of the quarter preceding the IPO date by at least three months. All issuer characteristics are measured at the end of the previous calendar year. All variables are described in Appendix A. Standard errors are double-clustered at the industry (SIC2) and time (year). Panel A (B) reports results for HDHO-1 (HDHO-2).

Panel A: HDHO-1

| | <u>All Covenants</u> | | <u>Payout Covenants</u> | | <u>Event driven Covenants</u> | | <u>Financing Covenants</u> | | <u>Inv. Policy Covenants</u> | |
|----------------------------|----------------------|----------|-------------------------|----------|-------------------------------|----------|----------------------------|----------|------------------------------|----------|
| | estimate | t-stat | estimate | t-stat | estimate | t-stat | estimate | t-stat | estimate | t-stat |
| HDHO-1 | 5.113 | (1.85) | -7.952 | (-3.08) | 1.259 | (1.73) | 5.200 | (3.48) | 7.987 | (6.64) |
| Offering spread | -0.005 | (-12.26) | 0.000 | (1.91) | -0.002 | (-16.46) | -0.003 | (-14.49) | -0.001 | (-9.50) |
| log(Time to maturity) | 0.121 | (1.46) | -0.347 | (-5.05) | 0.055 | (2.49) | 0.065 | (1.57) | -0.046 | (-1.46) |
| log(Par amount offered) | -0.739 | (-50.83) | -0.900 | (-74.56) | -0.267 | (-69.28) | -0.366 | (-49.72) | -0.257 | (-46.08) |
| log(Market capitalization) | 1.248 | (101.80) | 0.620 | (57.13) | 0.219 | (66.82) | 0.705 | (113.70) | 0.528 | (112.03) |
| Institutional ownership | 0.770 | (2.98) | -0.243 | (-1.11) | 0.365 | (5.42) | 0.420 | (3.19) | 0.525 | (5.20) |
| log(Book-to-market) | -0.074 | (-0.65) | 0.105 | (0.95) | -0.034 | (-1.11) | 0.105 | (1.83) | -0.026 | (-0.57) |
| Cash | 0.563 | (1.13) | -3.310 | (-5.57) | 0.475 | (3.63) | 0.592 | (2.26) | -0.508 | (-2.35) |
| Leverage | 2.732 | (6.05) | 0.283 | (0.88) | 0.921 | (7.58) | 1.217 | (5.45) | 0.979 | (5.85) |
| ROE | -0.316 | (-2.48) | 0.250 | (2.47) | 0.049 | (1.49) | -0.506 | (-8.09) | -0.458 | (-9.55) |
| Growth of Sales | -0.214 | (-1.02) | 2.726 | (18.01) | 0.062 | (1.12) | -0.325 | (-2.97) | 0.065 | (0.77) |
| Term spread | -0.632 | (-9.21) | -0.287 | (-5.06) | -0.196 | (-10.75) | -0.300 | (-8.15) | 0.033 | (1.14) |
| Credit spread | 2.817 | (17.79) | 0.973 | (8.28) | 0.845 | (20.25) | 1.368 | (16.99) | 0.975 | (15.94) |
| Industry dummies | Y | | Y | | Y | | Y | | Y | |
| Yearly dummies | Y | | Y | | Y | | Y | | Y | |
| Rating dummies | Y | | Y | | Y | | Y | | Y | |
| Clustering | Industry + Year | | Industry + Year | | Industry + Year | | Industry + Year | | Industry + Year | |
| N | 507 | | 507 | | 507 | | 507 | | 507 | |
| Adj R ² | 0.1707 | | 0.3619 | | 0.2819 | | 0.2224 | | 0.2795 | |

Panel B: HDHO-2

| | <u>All Covenants</u> | | <u>Payout Covenants</u> | | <u>Event driven Covenants</u> | | <u>Financing Covenants</u> | | <u>Inv. Policy Covenants</u> | |
|----------------------------|----------------------|-----------------|-------------------------|-----------------|-------------------------------|-----------------|----------------------------|-----------------|------------------------------|-----------------|
| | estimate | t-stat | estimate | t-stat | estimate | t-stat | estimate | t-stat | estimate | t-stat |
| HDHO-2 | 7.810 | (3.53) | -32.798 | (-3.98) | 1.961 | (3.38) | 8.501 | (6.98) | 7.050 | (6.93) |
| Offering spread | -0.004 | (-11.70) | 0.001 | (0.89) | -0.002 | (-15.86) | -0.003 | (-13.57) | -0.001 | (-8.86) |
| log(Time to maturity) | 0.127 | (1.52) | -1.495 | (-4.66) | 0.056 | (2.53) | 0.086 | (2.09) | -0.028 | (-0.89) |
| log(Par amount offered) | -0.752 | (-51.59) | -3.962 | (-70.38) | -0.270 | (-69.81) | -0.360 | (-48.98) | -0.257 | (-45.78) |
| log(Market capitalization) | 1.267 | (103.23) | 2.583 | (51.15) | 0.223 | (68.07) | 0.705 | (114.19) | 0.530 | (111.57) |
| Institutional ownership | 0.614 | (2.38) | -1.144 | (-1.13) | 0.319 | (4.73) | 0.337 | (2.57) | 0.579 | (5.69) |
| log(Book-to-market) | -0.063 | (-0.56) | 0.189 | (0.37) | -0.030 | (-0.97) | 0.115 | (2.02) | -0.031 | (-0.67) |
| Cash | 0.532 | (1.07) | -14.196 | (-5.27) | 0.465 | (3.58) | 0.576 | (2.23) | -0.479 | (-2.20) |
| Leverage | 2.593 | (5.69) | 1.275 | (0.83) | 0.880 | (7.19) | 1.094 | (4.88) | 0.918 | (5.40) |
| ROE | -0.326 | (-2.55) | 1.216 | (2.68) | 0.046 | (1.39) | -0.537 | (-8.72) | -0.477 | (-9.93) |
| Growth of Sales | -0.287 | (-1.37) | 12.128 | (17.42) | 0.045 | (0.80) | -0.409 | (-3.72) | 0.032 | (0.37) |
| Term spread | -0.627 | (-9.11) | -1.453 | (-5.53) | -0.195 | (-10.67) | -0.283 | (-7.69) | 0.045 | (1.56) |
| Credit spread | 2.889 | (18.21) | 5.400 | (9.16) | 0.865 | (20.70) | 1.391 | (17.31) | 0.988 | (16.01) |
| Industry dummies | | Y | | Y | | Y | | Y | | Y |
| Yearly dummies | | Y | | Y | | Y | | Y | | Y |
| Rating dummies | | Y | | Y | | Y | | Y | | Y |
| Clustering | | Industry + Year | | Industry + Year | | Industry + Year | | Industry + Year | | Industry + Year |
| N | | 507 | | 507 | | 507 | | 507 | | 507 |
| Adj R ² | | 0.1713 | | 0.4232 | | 0.2820 | | 0.2235 | | 0.2779 |