WILLEM SCHRAMADE

Corporate Bond Issuers

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Willem Schramade

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Foreword

Four years ago I decided to quit my prestigious but ill-fitting job at GE and venture into something genuinely interesting: a PhD trajectory in Rotterdam with ERIM. This turned out to be a good choice and I never regretted it for a single second. The past four years have been very rewarding and it was great to have such nice and interesting colleagues.

My greatest thank goes to Peter and Abe for their excellent supervision. If more PhD students had such supervision, drop-out rates would be much lower. I also appreciated having good roommates (Petra, Maarten and Patrick) and being surrounded by unique characters such as Erik (never wary of a controversial opinion) and Emiel (the sheep expert). Definite highlights were the acceptation of our article in *The Journal of Corporate Finance*, and the trip to Japan.

Still, all good things come to an end (to be replaced by even better experiences, of course). Moreover, I felt it was time to start something new and develop a different set of skills. This is where PwC came in, offering me a promising opportunity to go into consulting, while staying involved in research and teaching. The best of both worlds, I feel.

Of course these four years have not been limited to professional life. I have come to appreciate Rotterdam as a great place to live. It's a pity this still seems beyond comprehension for many. In my limited spare time, I very much enjoyed the eating and drinking sessions with friends at places like Westerpaviljoen and Kralingse Plas. I hope we continue to do this. My special thanks goes to Mark and Maarten who introduced me to the city even before joining ERIM. Eliane, I probably learned even more from you than from the PhD-trajectory. Hopefully, more good things are ahead. Finally, I thank my family and notably my mom for their persistent support and interest in my well-being. In spite of some medical setbacks, I think our bonds have only grown stronger.

Willem Schramade
Rotterdam
September 2006

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Chapter 1 Introduction

1.1 Background on corporate bonds

Corporate bond markets have experienced a spectacular growth over the past decade. In the Eurozone, the amount of straight corporate bonds outstanding has grown from just over € 300 billion in 1995 to 1050 billion in 2005[1]. US bond markets are even larger. And even though stocks receive much more media attention, bond issues by far exceed equity issues[2]. Thus, the importance of bond finance to corporations can hardly be overestimated.

In a financial sense, bonds are certificates of debt issued by a government or corporation that guarantee payment of the borrowed amount plus interest by a specified future date. In normal speech however, bonds can also refer to connections, restraints, ropes, chains, or legal agreements. As a verb, 'to bond' means to bring together, create ties, develop a relationship, or join firmly. Hence, bonds are associated with relationships, in both positive and negative senses. As we will see in Chapter 2, this dual connotation also holds for corporate bonds.

Bonds are an important source of finance for corporations, but they are certainly not the only one. Firms usually finance their operations with a combination of securities. This mix is referred to as the firm's capital structure. Debt versus equity is generally seen as the most important distinction here, but there are also various categories within and between these two archetypes. For example, convertible bonds and preferred equity have features of both debt and equity. Within debt, one can distinguish between private (or inside) debt (e.g., bank debt) and public (or outside) debt, of which corporate bonds are the most common version. Still, even bonds come in many guises, as they may or may not have covenants attached, have floating, fixed or zero rates, and all kinds of option features. See Fabozzi (2001) for an extensive overview.

Surprisingly, bonds have received little research attention in comparison to stocks. This is slowly changing though, probably because some recent developments have put bonds in the spotlight. As mentioned above, bond markets have grown enormously, especially

[1] Eurostat, Bond market statistics, March 2006.
[2] In 2005, global equity issuing amounted to US$ 513 billion, while total non-government bond issuance (including asset-backed, mortgage-backed and municipals) reached US$ 5733 billion. Source: Thomson ONE Banker Volume Analysis.

over the past decade. Back in the 1980s, bonds were used in a wave of leverage buy-outs (LBOs) instigated by Michael Milken and Drexel Burnham Lambert (see Bruck [1989] for a vivid account) and bond market traders temporarily reached star status, considering themselves 'masters of the universe' (Lewis, 1999; Wolfe, 1989). In the 1990s, speculation in bonds with option features resulted in multi-billion dollar losses for Orange County and other local government investors in the US (see for example Partnoy, 1998). In recent years, the scandals at Enron and Parmalat and the downgradings of large firms such as GM and Ford have received quite some attention and raised questions about the functioning of the agencies that rate bonds and bond-issuing firms.

In this thesis, we investigate the use of bond finance by corporations. Following the lifecycle of bond issuers, we study how the presence of bonds affects firm value and which factors influence the cost of bond finance. In four separate research projects, we investigate (i) the disciplinary power of bonds when the firm enters the bond market, (ii) the relation between issuing costs and bank ties, (iii) the way bond yields are affected when the firm issues more frequently, and (iv) the conflict of interest between stockholder and bondholders when firms buy back their own bonds. In the next subsection, we start with a literature review of research related to corporate bond finance.

1.2 Literature review

In this subsection we will first discuss capital structure in general and then focus on debt structure, i.e. the distinction between bonds and private debt (notably bank debt). Subsequently, we will review the various costs of bond finance: yields paid to bondholders, fees paid to underwriters, and, potentially, stock price reactions.

Capital structure
Modigliani and Miller (1958) show that the firm's capital structure is irrelevant for firm value in a perfect market because shareholders can mimic any capital structure. This is an important result, since it provides guidance to finding out when capital structure does matter, i.e. in the presence of market imperfections. These imperfections include taxes, costs of distress, information asymmetries, and agency costs. Due to the tax deduction of interest payments, debt provides a valuable tax shield (Modigliani and Miller, 1963). However, as Miller (1977) notes, this advantage also depends on the taxes that investors pay on the dividends, capital gains and interest they receive. As a result, investors may have varying preferences and firms can cater to different clienteles. More debt may save taxes, but it also increases the costs of financial distress. Kraus and Litzenberger (1973) build a model where the cost of financial distress is traded off against the tax benefits of debt. Another imperfection stems from information asymmetry: managers are likely to have better information regarding the true value of the firm than investors have and this might affect the firm's capital structure choices. Ross (1977) shows that managers of high quality firms may increase debt to make a credible signal about the value of the firm. The signal is credible because costs of distress make such a signal too expensive for low quality firms. Furthermore, Myers and Majluf (1984) identify a lemons problem (Akerlof, 1970) in the equity issuance market: undervalued firms have incentives not to issue

equity, while it is very tempting for overvalued firms to do an equity issue. Investors anticipate this and will interpret an equity issue as bad news. In this pecking order, firms will prefer to finance their investments with internal cash or with debt issues and regard an equity issue as a last resort. Product market imperfections might also affect capital structure: Brander and Lewis (1986) show that in oligopolistic markets, firms with much debt have strong incentives to pursue an aggressive (high output) strategy, since shareholders are only interested in the states of the world in which debt is paid back in full. The fifth and final imperfection we discuss is the presence of agency costs, i.e. conflicts of interest between the stakeholders of the firm. Agency costs of debt concern the diverging interests between shareholders and debtholders. Two forms are identified. First, there is the risk of asset substitution or risk shifting: since debt is paid first, the presence of debt effectively turns equity into a call option and thus creates an incentive for risk seeking (Jensen and Meckling, 1976). Second, there is the underinvestment or debt overhang problem (Myers, 1977): projects might have a positive NPV from a firm's perspective, but might not be beneficial to (and might thus be rejected by) shareholders if the cash inflows from the investment are used mainly to pay off debtholders. In Stulz (1990), both types of agency costs of debt are combined in one model to obtain an optimal capital structure. We note that the stockholder-bondholder conflict is often mitigated by including covenants in bonds, which impose restrictions on the actions that management can take to the detriment of bondholders (see for example Smith and Warner, 1979). Agency costs of equity refer to the conflict of interest between shareholders and the managers they hired to run the firm. Here, debtholders are not a direct party, but can affect the relation because the firm has the obligation to service the debt. Jensen (1986) argues that debt helps to discipline managers because the obligatory interest payments reduce the free cash flows that managers have at their discretion. Zwiebel (1996) formalizes this and shows that the disciplinary power of debt is largest when managers are not entrenched. However, Stulz (1988) argues that debt can also be used by insiders to keep a control lock, since it allows them to attract finance without diluting their ownership. However, this effect is mitigated since investors will value the firm accordingly. In the next chapter of this thesis, we will show that both these conflicting forces are at work in firms that enter the bond market.

Public versus private debt

Bonds are classified as public or arm's-length debt since they are tradable and do not involve a close relationship between lender and borrower. In contrast, relations are much closer in case of private debt and especially bank debt, which is often accompanied by an array of services. As a result, there is more information exchange between the parties. The distinction between public and private debt (or outside and inside debt) has attracted quite some research attention. The advantages of inside/private debt, especially if provided by banks, are emphasized by Campbell and Kracaw (1980) and Fama (1985). According to Campbell and Kracaw (1980), banks have a comparative cost advantage due to their information production (access to information that is not publicly available) and are hence superior monitors. Fama (1985) stresses that for small firms, the contracting costs of bank (inside) debt are lower than for outside (public) debt. Bank loans are short-term and the renewal process triggers periodic evaluation of the firm's payment abilities. However, Sharpe (1990) and Rajan (1992) argue that banks misuse

private information to extract rents from their customers. Morck and Nakamura (1999) indeed find evidence of rent-seeking behavior by Japanese banks. In the model of Berlin and Loeys (1988), the choice between public and private debt reflects a tradeoff between the inefficiencies of rigid bond covenants and the agency costs of hiring a delegated monitor. And in Bolton and Freixas (2000) there is a tradeoff between the financial flexibility (reorganizational skills) of banks and the lower intermediation cost of bonds. Datta *et al.* (2000) investigate the situation where firms go to the bond market for the first time (do a bond IPO) and partly shed their bank ties They find negative stock price reactions to bond IPOs, which are mitigated when bank monitoring is continued. Thus, it seems that bank loans result in better monitoring and disciplining than bonds. Still it is not clear whether there is disciplinary power in public debt. We will investigate this further in the next chapter by relating the stock reactions to bond IPO announcements to the bond's potential for reducing agency costs.

Bond yields

In comparison to equity, the pricing of bonds seems straightforward. In principle, bond prices result from discounting a clear pattern of promised cash flows. However, the rates (yields) at which these cash flows need to be discounted vary, as interest rates fluctuate over time. In addition, interest rates also differ across maturities, which is referred to as the term structure of interest rates: the array of prices or yields on bonds with different terms to maturity. There is a large strand of literature concerned with modeling bond prices and price changes of bonds after issuing (see for example Marsh [1995] for an overview). However, in this thesis we will focus on pricing at issue, since this is most relevant for the firm. Cash flows may be promised, but they are not certain. Much more than most sovereign bonds, corporate bonds carry default risk. Fisher (1959) finds that default risk is the prime determinant of the risk premium on a firm's bonds. The marketability or liquidity or a bond is the second most important determinant. Cohan (1962) is probably the first to empirically examine the determinants of yield spreads on corporate bonds. He finds that for yields to be comparable across bonds, one at least has to control for rating, type of bond and maturity. Larger firms with more stable cash flows have lower yields. In subsequent research, additional factors were identified that affect the yield spread. The reputation of the bond's underwriters is one such factor, as Livingston and Miller (2000) and Fang (2002) document that reputable banks obtain lower yields. Moreover, competition is important. Gande *et al.* (1999) and Takaoka and McKenzie (2005) find that yields have declined significantly with commercial bank entry to the underwriting market, in the US and Japan respectively. Corporate governance also seems to matter as Klock *et al.* (2005) find that antitakeover governance provisions lower the cost of debt financing. In addition, Miller (2002) reports that investors demand economically significant premiums on bonds issued by firms that do not have a prior history of on-going disclosure or are located in countries that do not protect investors' rights. Datta *et al.* (1999) document that the existence of bank debt lowers at-issue yield spreads for bond IPOs by about 68 basis points on average, thanks to valuable bank monitoring. Bae *et al.*, (1997) and Crabbe (1991) find that event-risk covenants, which are aimed at preventing extreme risk shifting, significantly lower yields. Recent papers (Henderson *et al.*, 2006; Miller, 2002; McBrady and Schill, 2005) show that firms also purposely issue bonds abroad or in different currencies to benefit from lower yields.

Moreover, firms issue more when interest rates are lower (Barry *et al.*, 2004; Henderson *et al.*, 2006) and use debt market conditions in an effort to determine the lowest-cost maturity at which to borrow (Baker *et al.*, 2003). However, not all firms are equally likely to be able to exploit favorable market conditions. We expect that frequent bond issuers should have better market knowledge than infrequent issuers, which should allow them to obtain lower yields. We will investigate this relation between issue frequency and yields in Chapter 4 of this thesis.

Underwriting fees

When issuing their bonds, firms are usually assisted by underwriters to bring their bonds to the market. The underwriter buys the bonds from the firm and subsequently sells them to investors at the risk of being stuck with bonds that are hard to sell. As a result, the underwriter is effectively short in a put option (Smith, 1977). In compensation for running this risk and for other services, the underwriter charges fees. Not surprisingly, these fees are found to increase in the risk of the issue. For example, Esho *et al.* (2004) find that fees on Eurobonds are higher for issues denominated in less liquid and higher risk currencies, with longer maturity, and with greater credit risk. Foster (1989) finds higher fees for issues with low ratings. Counter to the positive relation with risk, he finds lower fees for larger issues. However, Altinkilic and Hansen (2000) show that this effect is misleading because larger issues are generally done by larger firms, which tend to be safer. As in yields, underwriter reputation and competition also matter for fees. Chemmanur and Fulghieri (1994) formally show that high reputation underwriters can charge higher fees because they are more effective in reducing info asymmetries. Empirically, Fang (2002) and Roten and Mullineaux (2002) find that high reputation underwriters indeed charge higher fees. Furthermore, fees are found to fall as competition among underwriters increases (e.g., Gande *et al.*, 1999; Santos and Tsatsaronis, 2003; Takaoka and McKenzie, 2005). In addition, fees can be affected by bank ties. Yasuda (2005) finds a significant fee discount when there are relationships between firms and commercial banks. However, we suspect that bank ties might have a flip side: firms that are dependent on banks may see their risk increase as these banks become weaker, which should be visible in fees. In Chapter 3 we will explore this further.

Stock price reactions

In addition to the interest and fees that firms pay on their bonds, they might incur costs in the form of adverse stock price reactions. However, Eckbo (1986) and Mikkelson and Partch (1986) find no significant stock price reaction to straight debt issues. Still, there seem to exceptions for specific types of bonds or firms. For example, Pilotte (1992) finds that mature firms have negative announcements effects to straight bond offerings, while growth firms experience no significant price changes. And Datta *et al.* (2000) find negative stock price reactions to bond IPOs, which they explain by reduced bank monitoring and increased maturity. In some cases, stock price reactions are actually positive, such as in Miller (2002) for Yankee bond offerings (bonds sold by foreign firms in the US) and in Johnson (1995) for bond issues by low-growth low-dividend firms, which supports arguments that debt and dividends are substitutes. The reverse of bond issues, i.e. bond tender offers, are found to result in positive stock price reactions for distressed firms (Chatterjee *et al.*, 1995) but are non-significant for broader samples

(Kruse *et al.*, 2005). In Chapter 5 we will also examine stock price reactions for bond tender offers. In contrast to the previous research, we will do so for a European sample of more mature firms where distress is less of a motive and tenders are likely to have different drivers. Moreover, we will relate stock returns to bond returns to see if there is stockholder-bondholder conflict in bond tenders.

Stockholder-bondholder conflict
As discussed above, stockholder-bondholder conflict refers to the possibility of wealth transfers between stockholders and bondholders. These may occur through dividends. However, Long *et al.* (1994) find no evidence of wealth transfers from bondholders to stockholders by manipulation of dividend policy following bond issues. Their evidence is consistent with firms being restrained by reputation, less so by covenants. Maxwell and Stephens (2003) do find bondholder losses in stock repurchases, which increase in the size of the repurchase and in the risk of the firm's debt. Levy and Sarnat (1970) argue that bondholders win in M&A since the cash flows of the combined firm become safer (coinsurance effect). However, bondholders might also loose when new debt is issued simultaneously (e.g., Chowdry and Nanda, 1993). Empirical evidence is mixed, though target firm bondholders seem to fare better than acquirer bondholders (e.g., Billett *et al.*, 2004). Constistent with the coinsurance argument, Maxwell and Rao (2003) find bondholder losses of 0.6-0.9% at spin-off announcements. Parrino and Weisbach (1999) measure the magnitude of the stockholder-bondholder conflict in specific projects, using Monte Carlo simulation. They find distortions both toward turning down positive NPV projects (underinvestment) and toward taking negative NPV projects (overinvestment). Underinvestment increases in leverage and the firm's cash flow volatility, whereas overinvestment increases in project cash flow volatility and the correlation between project and firm cash flows. Mann and Powers (2005) find that bondholders receive significant premiums in bond tender offers but do not investigate returns to shareholders. We will fill this gap in Chapter 5.

1.3 Outline of the thesis

This thesis is composed of four research projects, in which we follow the lifecycle of bonds and bond issuers. Firms that start to issue bonds are typically mature firms with limited need for bank support and financing needs that are large enough to warrant the higher fixed costs of borrowing at arm's length. As firms start issuing more often, their reputation strengthens and their dependence on banks further diminishes, unless banks are also shareholders in the firm. Moreover, when firms issue even more frequently, they learn to spot opportunities in the market and obtain better pricing in the form of lower yields. At some stage however, the market may consider the firm to be over-issuing and will adapt pricing to reflect increased risk. Finally, the firm's management might think for some reason that its mix of outstanding bonds is suboptimal and may therefore engage in buying back the firm's bonds.

In the first project (Chapter 2) we examine a sample of 225 firms from 37 countries that access the bond market for the first time during 1995-2003. By relating stock price

reactions to agency cost proxies, we test whether bonds discipline management. We find that bond market entry is received unfavorably when the debt issue is motivated by keeping a lock on control. In contrast, when free cash flow is high and dividends are low, discipline is expected to increase due to bond market entry, and stock price reactions are more positive. The strength of these relations is found to be affected by differences in shareholder protection across countries. The impact of free cash flow is larger when investor protection is stronger, whereas dividends and control locks play a more important role in countries with weaker shareholder protection.

In Chapter 3, we focus on bond issuers that have to adapt to a changing environment in terms of bond market access and bank ties. We relate bank ties and fees on corporate bond issues. The sample consists of bonds issued by Japanese corporations in the years 1994-2002, a period of deregulation beneficial to bond markets and detrimental to banks. Over time, we find that fees have increased for those firms that are related to bank-led (financial) keiretsu, even after controlling for risk factors. This is in sharp contrast to the simultaneous trend of falling fees for firms that do not belong to keiretsu. These firms benefited from increased underwriter competition due to deregulation. Moreover, we find that the higher fees for keiretsu firms were not offset by lower yields. It seems that, against the background of bond market deregulation and weaker banks, keiretsu membership had become a burden rather than an advantage.

Chapter 4 investigates how the cost of bond finance changes when firms start issuing more often. We therefore document bond issue frequency for windows from one week to six years for the 592 US firms that issued at least once in US$ during 2001-2003. We find that frequent bond issuers obtain economically significant yield spread discounts vis à vis less frequent issuers. For large firms, issue frequency in windows up to one year matters most, which is consistent with benefits through increasing market literacy. That is, as they issue more often, they benefit from being better informed about market participants and market opportunities. For smaller firms, gaining a reputation seems more relevant than market literacy. For them, it is beneficial to be a recent issuer so as to avoid paying significant premiums.

Chapter 5 considers the situation where firms want to reduce or even terminate the amount of bonds they have outstanding. We document the € 73 billion in bond tender offers by European firms over the period 1996 to 2005. In contrast to the US, European tenders seem aimed at active balance sheet management rather than distress relief. Bondholders receive on average a 3.9% premium over the bond's market price. Still, we find no evidence of wealth transfers from stockholders, since the average shareholder wealth effect does not differ significantly from zero and is not affected by tender premiums. Moreover, wealth effects for both bondholders and shareholders increase in the remaining time to maturity. Tendering the bonds, rather than waiting for them to mature, appears to be a valuable option for both types of financiers of the firm.

Chapter 6 concludes and provides directions for further research.

Chapter 2 Bond market entry around the world: does public debt discipline managers?*

2.1. Introduction

Entering the public bond market marks an important change for a firm. By introducing a large amount of widely held debt, the firm effectively changes the nature of its agency problems. On the one hand, the nature of debt offers the potential of increased discipline. On the other hand, debt may be used to keep a lock on control. Strikingly few studies have examined bond IPOs, which is in sharp contrast to the large body of literature on equity IPOs (e.g., Ritter and Welch, 2002). The impact of bond IPOs on agency costs of equity has received even less attention. This is surprising, since the theoretical literature has given ample reason to expect that bond IPOs mark an important change in a firm's capital and ownership structure. For example, bonds may increase the agency costs of equity when they raise capital with the motivation of keeping a lock on control (Stulz, 1988, Bebchuk, 1999). Conversely, debt can mitigate agency costs of equity by reducing the free cash flow available for spending at the discretion of managers (Jensen, 1986). We find that the size of bond IPOs equals on average 22% of total assets prior to the offering. Hence, bond IPOs entail the introduction of a large amount of public debt where there was previously no public debt at all, while seasoned bond offers are usually plain refinancings. Bond IPOs therefore provide an excellent setting for studying the relation between public debt and agency problems of equity. So far, research on bond IPOs has almost exclusively focused on underpricing (e.g., Cai *et al.*, 2005, Datta *et al.*, 1997, Helwege and Kleiman, 1998). A notable exception is Datta *et al.* (2000) who examine stock price reactions for a sample of 143 US bond IPOs for the 1970-1994 period. They compare the monitoring role of bonds vis-à-vis bank debt. Datta *et al.* (2000) find negative stock price reactions to bond IPO announcements, which are in sharp contrast to

*This chapter is based on Schramade (2006). I thank Abe de Jong, Linda van de Gucht, Peter Roosenboom and Bing Yu for their comments; as well as seminar participants at the Eastern Finance Association 2006 Annual Meetings in Philadelphia, Erasmus School of Economics, Free University of Amsterdam, Maastricht University, Nijmegen School of Management, RSM Erasmus University, University of Exeter, University of Groningen, and University of Leuven; Gerard Mertens, Harriët van Veldhoven and NIB Capital for data access; and Gerard de Kool, Menzo Reinders and Margot Snieders for research assistance. Of course, all errors remain mine.

the zero announcement effects generally found for seasoned debt offers (e.g., Eckbo, 1986). This finding confirms that bond IPOs are fundamentally different from seasoned bond offers.

The contribution of this paper is that we investigate the impact of international bond market entry on the agency costs of equity. We relate the wealth effects of 225 bond IPO announcements to free cash flow, dividends, and control locks. Since high free cash flow and low dividends indicate a need for increased disciplining, a bond IPO should in those cases be good news for shareholders. Conversely, bond IPOs motivated by the desire to keep a lock on control should negatively affect shareholder wealth. The control lock motivation seems most appropriate at threshold levels of ownership, i.e. where insiders have just enough voting power to remain entrenched. The second contribution of this paper lies in its international sample of firms from 37 countries. This allows us to examine the role of shareholder protection, which is likely to affect the nature of the agency problem and the impact of the bond IPO. For example, Bebchuk (1999) and LaPorta *et al.* (1999) show that control locks are more important when private benefits are high and shareholder protection is weak.

We find that there is indeed a disciplining role of new public debt and that it varies with international differences in shareholder protection. In contrast to Datta *et al.*'s (2000) findings, we fail to find a significantly negative stock price reaction to the announcement of the bond IPO. However, the variance in stock price reactions is very high, indicating that bond IPOs can have a major equity value impact for many firms. Free cash flow, dividends and control locks are found to be important drivers of announcement returns. That is, stock price reactions are more favorable for firms that appear to be in need of additional disciplining, as evidenced by high free cash flow or low dividends. Announcement returns are more negative for firms that seem to be motivated by keeping a lock on control. Moreover, the size of these effects is not uniform around the globe, but varies with shareholder rights. Free cash flows are more important in countries where investor protection is strong, such as in the Anglo-Saxon countries. Where shareholder rights are weaker, dividends and keeping a lock on control tend to be more relevant.

The remainder of this paper is organized as follows. Section 2 gives an overview of previous research and our hypothesis building. Sample selection and descriptive statistics are given in Section 3. Section 4 describes the results of the event study, as well as univariate and multivariate analyses. Section 5 summarizes and concludes.

2.2 Literature review and hypotheses

Bond IPOs have received limited research attention so far. Cai *et al.* (2005), Datta *et al.* (1997), and Helwege and Kleinman (1998) study bond IPO underpricing. Datta *et al.* (1999) find that the presence of bank debt lowers at-issue yield spread of bond IPOs. Closest in set-up to our paper are Datta *et al.* (2000), since they also study wealth effects and they consider agency costs by comparing the disciplining role of bank debt versus bonds. For a sample of 143 US bond IPOs in the 1970-1994 period, Datta *et al.* (2000)

find a negative announcement effect. Negative wealth effects are consistent both with debt maturity theories (e.g., Flannery, 1986) and with some debt ownership theories. According to some debt ownership theories, banks are superior monitors (e.g., Campbell and Kracaw, 1980, Fama, 1985), in which case a reduction in bank debt should be bad news for shareholders. Others argue that banks may misuse their private information (bank hold-up or bank monopoly power) to expropriate clients (e.g., Rajan, 1992, Sharpe, 1990). A reduction in bank debt should then be bad news for shareholders. Datta *et al.*'s (2000) findings are consistent with the view that banks are better monitors than bondholders. However, they do not test what determines the disciplining power in public bonds. To fill this gap in the literature, we will relate the wealth effects of bond IPO announcements to proxies for the need of additional discipline: free cash flow, dividends and control locks.

The free cash flow hypothesis (Jensen, 1986) posits that debt reduces the agency costs of free cash flow or overinvestment by reducing the cash flow available for spending at the discretion of managers. Debt forces managers to disgorge cash rather than spend it on investments with negative net present values. This effect might be stronger for public debt than for private debt. First, defaults of public debt are more visible than those of private debt. Second, private debt holders such as banks may have dual roles as creditors and shareholders, which constrains their incentives to advance shareholders' interests (Morck and Nakamura, 1999). Although dispersed public debt might yield coordination problems when renegotiating, Bolton and Scharfstein's (1996) model suggests that these coordination problems might actually improve the disciplinary role of debt as it increases management's incentives to deter default. Zwiebel (1996) shows that managers have an incentive to discipline themselves as they trade off empire building with ensuring sufficient efficiency to prevent control changes. The overinvestment problem particularly applies to firms with high free cash flow, as these are more likely to undertake value-destroying mergers. Thus, the higher a firm's free cash flow, the more in need it is of additional disciplining, and the more shareholders will appreciate a bond issue. We therefore expect a positive relation between free cash flow and abnormal stock reactions.

Hypothesis 1: free cash flow has a positive effect on abnormal returns to bond IPO announcements.

The trade-off in Zwiebel's (1996) model predicts that managers' incentives to discipline themselves increase as control changes become more likely. Empirical evidence indicates that this incentive is indeed absent when managers are entrenched. For example, De Jong and Veld (2001) find that entrenched Dutch managers avoid debt when it is most disciplining. Berger *et al.* (1997) document leverage increases in the aftermath of entrenchment reducing shocks. Therefore, we expect the role of free cash flow to be most effective at low levels of management entrenchment, i.e. when shareholder protection is high and concentrated is low. At high levels of shareholder protection, minority shareholders have better chances of effectively challenging management and large shareholders in court, for example over expropriation issues. As a result, the effectiveness of bond discipline should be higher (and the relation with stock price reaction more positive) when shareholder protection is strong.

Hypothesis 2A: the positive relation between free cash flow and abnormal announcement returns is stronger when shareholder protection is high.

At low levels of ownership concentration, management is less likely to be entrenched. As the chance of losing control thus becomes more real, management will have more incentives to discipline itself and will be more likely to initiate the bond IPO for that reason.

Hypothesis 2B: the positive relation between free cash flow and abnormal announcement returns is stronger when concentrated ownership is low.

Dividends are another way to increase discipline. Jensen (1986) claims that debt is a better way for managers to bond themselves than dividends are, since dividends can be reduced in the future. However, there are good reasons to suspect that dividends can substitute for debt. First, dividend reductions are costly since they usually result in significant stock price declines (e.g., Aharony and Swary, 1980). Second, higher dividends will, ceteris paribus[3], result in a higher dependence of the firm on capital markets. Dividends thus keep firms in the capital market, where monitoring of managers is available at low cost (Easterbrook, 1984). So, the more dividends a firm pays, the less likely it seems to need additional disciplining in the form of debt.

Hypothesis 3: dividends and abnormal returns to bond IPO announcements are negatively related.

Indeed, Johnson (1995) finds this negative relation between dividends and stock price reactions to seasoned debt offers, which supports the argument that debt and dividends are substitutes. The lower the level of dividends, the higher the need for additional discipline with bonds, ceteris paribus. We expect this substitution effect to be even stronger in countries where shareholder protection is weak. As LaPorta *et al.* (2000) argue, a reputation for good treatment of shareholders is worth most in countries with weak protection of minority shareholders, since those shareholders have little else to rely on. They lack the legal power to extract dividends, which also explains why LaPorta *et al.* (2000) find that dividends are lower in countries with weaker investor protection. Moreover, the dividend signal may be stronger there, since the cost of attracting new capital is higher (and the loss of private benefits is larger) when investor protection is weak.

Hypothesis 4A: the negative relation between dividends and abnormal announcement returns is stronger when shareholder protection is poor.

In a similar vein, the need for increased discipline with bonds is higher when concentrated ownership is high. A controlling position typically results in a discount of firm value because more expropriation is expected. Increased discipline (by either bonds

[3] Of course, at very high levels of firm cash holdings, this relation will not hold. We therefore control for cash holdings.

or dividends) will then be of even more avail to minority shareholders. The substitution effect between bonds and dividends is thus likely to be stronger.

Hypothesis 4B: the negative relation between dividends and abnormal announcement returns is stronger when concentrated ownership is high.

A bond IPO might also be motivated by insiders' desire to attract capital without losing control. Stulz (1988) argues that insiders may increase leverage only in order to have more voting power for a given investment in their firm. At higher levels of voting rights insiders may become entrenched, and their incentives to maximize shareholder value might give way to incentives to expropriate minority shareholders. Accordingly, Stulz (1988) predicts a curvilinear relationship between concentrated ownership and firm value, which has been confirmed by, among others, Morck *et al.* (1988) and McConnell and Servaes (1990). Bond IPOs motivated by keeping a lock on control are likely to result in negative wealth effects. Moreover, the control lock motive seems most relevant at threshold levels of concentrated ownership, at which insiders have just enough shares to remain entrenched, rather than at very high or very low levels. We therefore expect a curvilinear relationship between abnormal returns and concentrated ownership, which is initially negative and later becomes positive.

Hypothesis 5A: For low levels of concentrated ownership, the relation between concentrated ownership and abnormal returns to bond IPO announcements is negative.

Hypothesis 5B: For high levels of concentrated ownership, the relation between concentrated ownership and abnormal returns to bond IPO announcements is positive.

Before testing these hypotheses, we will first outline our sample in Section 3.

2.3 Sample and data description

2.3.1 Sample formation

As far as we know, there is no official database of initial public bond offers around the world. We therefore have to construct the database, going through a rigorous process of deleting issues that are not bona fide bond IPOs. Including issues that are not initial public bond offers would bias our data towards finding weaker results, since seasoned bond issues are less likely to be major events to the firm. To exclude seasoned bond issues, we check that no bonds have been issued by the firm or by companies directly related to the issuer, such as its parent, subsidiaries or merger partners. We start out by taking all corporate debt issues from the SDC new issues database, amounting to 145,940 issues for the 1995-2003 period. We then list the first issue for each firm in that period, which results in 15,623 issues. Subsequently, we delete the 4,208 firms that have issues in SDC before 1995[4] under exactly the same name. The remaining set of 11,415 issuers

[4] For domestic European issues, SDC has coverage back to 1991, but coverage goes back further for Japanese (1977), US (1970) and Eurobond (1963) issues.

still includes double counts, due to the same firm issuing under slightly differing names (for example, Abbey National Funding PLC, Abbey National Funding Jersey, Abbey National PLC, etc.). We first delete the double counts within our list of issuers, which reduces the number of potential bond IPOs by 45%. Then we check manually whether the remaining firms issued in earlier years under slightly different names. 29% of these issues now drops out. Our next step is to check DataStream for stock listing at the time of the issue (essential for the event study). Many state-owned firms and subsidiaries now drop out. We also exclude private bonds[5]. At both these stages about half of the then remaining sample drops out. We proceed by checking Bloomberg, Factiva, and LexisNexis for announcement dates, for simultaneous other news, and for the possibility that the issue is not a bona fide bond IPO. We therefore track name changes, takeovers, issues by subsidiaries, and earlier issues not covered in SDC. In the process, we delete 78% of the remaining issues and we are left with a sample of 236 bond IPOs. For these issues, Worldscope and Thomson One are consulted for financial statement data. However, for 11 issues, we cannot find sufficient data. This results in a final sample of 225 bond IPOs, from 37 countries. Table 1 shows the number of issues per country, along with country data on investor protection and the size of public bond and stock markets. Countries with the largest number of issues are the G-7 countries along with major developing economies such as Brazil and Indonesia. The shareholder rights and creditor rights indices are from LaPorta *et al.* (1998). They will be used later on in this paper as proxies for investor protection. The distribution of issues over the years is relatively even, with the smallest number of issues in the first and final years (16 in 1995, 17 in 2003) and the highest number in the middle of the sample period (33 in 1999). This is consistent with the overall level of corporate bond issues over that period.

[5] We exclude private issues because the distinction between private bonds and other types of private debt such as bank debt is not very clear and is even becoming increasingly blurred (Thomas and Wang, 2004).

Table 1. Country level descriptives

Country	Number of issues	Shareholder rights	Creditor rights	Stock market as a percentage of GDP	Public bond market as a percentage of GDP
Argentina	1	4	1		10%
Australia	3	4	1	86%	22%
Austria	4	2	3	15%	39%
Belgium	2	0	2	79%	100%
Brazil	11	3	1	25%	50%
Canada	5	5	1	95%	64%
Chile	3	5	2	72%	28%
Colombia	3	3	0	8%	NA
Czech Republic	1	3	3	17%	34%
Denmark	1	2	3	54%	55%
Finland	1	3	1	180%	38%
France	15	3	0	79%	45%
Germany	11	1	3	55%	30%
Hong Kong	2	5	4	276%	8%
India	4	5	4	25%	21%
Indonesia	8	2	4	14%	NA
Ireland	2	4	1	66%	27%
Italy	8	1	2	51%	96%
Japan	9	4	2	72%	79%
Luxemburg	1	0	2	79%	100%
Mexico	1	1	0	13%	8%
New Zealand	1	4	3	44%	30%
Norway	1	4	2	36%	19%
Peru	4	3	0	20%	2%
Philippines	1	3	0	45%	29%
Portugal	3	3	1	52%	34%
Russia	4	2	3	22%	4%
Singapore	3	4	4	163%	23%
South Korea	5	2	3	56%	15%
Spain	4	4	2	64%	51%
Sweden	4	3	2	124%	53%
Switzerland	5	2	1	246%	24%
Taiwan	6	3	2	102%	14%
Thailand	7	2	3	34%	11%
The Netherlands	2	2	2	150%	48%
United Kingdom	29	5	4	167%	32%
United States	50	5	1	150%	48%
Total	**225**				
Average	**6.1**	**3.0**	**2.0**	**99%**	**41%**

Sample period is from 1995 to 2003. Number of issues is the number of bond IPOs in our sample. Shareholder rights and creditor rights are from LaPorta *et al.* (1998), except the data for Russia and Czech Republic, which are from Pistor *et al.* (2000). Stock and bond market size to GDP are from the Worldbank's Financial Structure Database.

Table 2 shows firm and issue characteristics for the 225 bond IPOs in our sample.

Table 2. Firm and issue characteristics

Panel A: Firm characteristics

Variable	Mean	Median	Minimum	Maximum	Standard Deviation	Number of observations
FCF	0.16	0.14	-2.85	1.38	0.29	179
Dividend payout	0.33	0.29	0.00	1.00	0.32	225
Concentrated ownership	0.36	0.34	0.00	0.94	0.26	192
Sales	1512	527	0	21031	2515	225
Total Assets	2236	920	20	34022	3646	225
Debt-to-assets	0.30	0.25	0.00	2.06	0.25	225
Years since equity IPO	10.6	6.7	0.6	38.4	10.0	225
Market-to-book	1.93	1.49	-38.01	14.67	3.65	225

Panel B: Issue characteristics

Variable	Mean	Median	Minimum	Maximum	Standard Deviation	Number of observations
Maturity	8.08	6.91	1.00	50.00	7.17	225
Principal	232.7	143.5	0.2	3200.0	350.7	225
Relative issue size	0.222	0.137	0.002	2.44	0.300	225
Rated issues	0.46	0	0	1	0.500	225
Domestic issues	0.88	1	0	1	0.326	225

Sample period is from 1995 to 2003. Free cash flow is the average of the ratio of undistributed free cash flow and market value, for the three years before the bond IPO. Undistributed free cash flow equals operating income before depreciation minus taxes, interest expenses, preferred dividends and common dividends. Dividend payout is the ratio of dividends and net income, in the year before the bond IPO, and truncated at 1. Concentrated ownership is the ratio of closely held shares and total shares outstanding, in the year before the bond IPO. Sales and Total assets are in millions of US$ in the year preceding the bond IPO. Debt-to-assets is the ratio of the book value of debt and total assets, both in the year preceding the bond IPO. Years since equity IPO is the time in years between the equity IPO and the bond IPO of a firm. Market-to-book is the ratio of the market value of equity and the book value of equity, both in the year preceding the bond IPO. Maturity is time to maturity in years. Principal is in millions of US$. Relative issue size is the ratio of principal and pre-issue? total assets. Rated issues is a dummy variable that equals 1 if the issue is rated by one of the major US rating agencies (Fitch, Moody's, and S&P's), and 0 otherwise. Domestic issues is a dummy variable that equals 1 if the issue is issued in the home market and 0 otherwise.

The same variables are split by region in Table 3. We show the UK and Continental Europe separately, partly because of the large number of UK issues, and partly because the UK has much stronger shareholder rights than Continental Europe. As Table 3 shows, the UK and Continental Europe also differ in their issue and firm characteristics.

Table 3. Firm and issue characteristics per region

Panel A. Firm characteristics by region

Variable		North America	UK	Continental Europe	Asia	Latin America	All
Free cash flow to market value	Mean	0.137	0.137	0.216	0.163	0.097	0.163
	Median	0.120*	0.139	0.161*	0.129	0.201*	0.139
	N	41	26	54	40	16	179
Dividend payout	Mean	0.308	0.423**	0.346	0.230**	0.409*	0.335
	Median	0.154	0.382**	0.328	0.156**	0.391	0.286
	N	55	29	69	45	23	225
Percentage closely held shares	Mean	26.7***	11.4***	43.0***	48.0***	60.4***	35.7
	Median	20.2***	0.8***	43.5***	46.7***	63.8***	33.9
	N	51	27	63	36	11	192
Sales	Mean	981.2*	2281.1	2556.7***	535.0***	634.5*	1512.4
	Median	496.2	1611.0***	954.8***	231.6***	168.1***	527.4
	N	55	29	69	45	23	225
Total assets	Mean	1700.7	2394.8	3478.7***	1339.4*	1217.9	2236.3
	Median	804.5	2320.2**	1625.5**	459.6***	326.5***	919.5
	N	55	29	69	45	23	225
Debt to total assets	Mean	0.269	0.401**	0.269	0.335	0.280	0.298
	Median	0.235	0.251	0.251	0.264	0.250	0.246
	N	55	29	69	45	23	225
Years since equity IPO	Mean	8.8	19.3***	10.9	8.4*	6.6**	10.6
	Median	5.0**	17.4***	8.5	6.6	6.6	6.6
	N	55	29	69	45	23	225
Market-to-book	Mean	2.88**	0.70*	2.09	1.84	1.00	1.93
	Median	1.87***	1.61	1.57	1.31	0.95***	1.49
	N	55	29	69	45	23	225

Panel B. Issue characteristics by region

Variable		North America	UK	Continental Europe	Asia	Latin America	All
Maturity	Mean	9.1	15.0***	6.4***	4.5***	8.9	8.1
	Median	10.0***	10.1***	5.1**	5.0***	6.0	6.9
	N	55	29	69	45	23	225
Principal	Mean	290.9	425.1***	231.5	114.3**	91.1**	232.7
	Median	150.0***	323.8***	158.6	52.6***	36.6***	143.5
	N	55	29	69	45	23	225
Principal to total assets	Mean	0.345***	0.235	0.173*	0.198	0.127	0.222
	Median	0.248***	0.151	0.103***	0.097	0.123*	0.137
	N	55	29	69	45	23	225
Rated issues	Mean	0.909***	0.690***	0.391	0.000***	0.174***	0.462
	N	55	29	69	45	23	225
Domestic issues	Mean	0.927	0.828	0.855	0.911	0.870	0.880
	N	55	29	69	45	23	225

Sample period is from 1995 to 2003. Free cash flow is the average of the ratio of undistributed free cash flow and market value, for the three years before the bond IPO. Undistributed free cash flow equals operating income before depreciation minus taxes, interest expenses, preferred dividends and common dividends. Dividend payout is the ratio of dividends and net income, in the year before the bond IPO, and truncated at 1. Concentrated ownership is the ratio of closely held shares and total shares outstanding, in the year before the bond IPO. Sales and Total assets are in millions of US$ in the year preceding the bond IPO. Debt-to-assets is the ratio of the book value of debt and total assets, both in the year preceding the bond IPO. Years since equity IPO is the time in years between the equity IPO and the bond IPO of a firm. Market-to-book is the ratio of the market value of equity and the book value of equity, both in the year preceding the bond IPO. Maturity is time to maturity in years. Principal is in millions of US$. Relative issue size is the ratio of principal and total assets. Rated issues is a dummy variable that equals 1 if the issue is rated by one of the major US rating agencies

(Fitch, Moody's, and S&P's), and 0 otherwise. Domestic issues is a dummy variable that equals 1 if the issue is issued in the home market and 0 otherwise. Statistical differences from the rest of the sample are denoted by *(10% level), ** (5%), and ***(1%).

We will first discuss firm characteristics and then issue descriptives.

2.3.2 Firm characteristics

Lehn and Poulsen (1989) define free cash flow as the ratio of undistributed free cash flow and market value, where undistributed free cash flow equals operating income before depreciation minus taxes, interest expenses, preferred dividends and common dividends. As our measure of free cash flow, we take the average value of the Lehn and Poulsen ratio for the three years before the bond IPO, because this average is less likely to be imbalanced by outliers. Firm characteristics split by region are given in Panel A of Table 3. Free cash flow is higher in Europe and Latin America (where market-to-book ratios are low) and lower in North-America (where market-to-book-ratios are high). European and UK firms are larger than the others. UK firms differ in that they are older, more levered, pay higher dividends, and have less growth options than the rest of the sample. They thus closely resemble the typical low growth firm as described by Jensen (1986). Apparently, UK dividends are on average high enough to keep median free cash flow (0.139) at the median of the entire sample (also 0.139).

Dividend payout is the ratio of common cash dividends and net income, in the year before the bond IPO (see also Johnson, 1995, and LaPorta *et al.*, 2000). We truncate dividend payout at unity 1 to avoid extreme outliers in cases where net income is close to zero. The median of 0.29 is very close to the 0.30 that LaPorta *et al.* (2000) find for a set of over 4,000 firms from roughly the same countries as our sample. Dividends are highest in the UK and lowest in Asia, which largely matches the results of LaPorta *et al.* (2000), who find that dividends are higher in countries with better investor protection. An exception is the high level of dividends in Latin America, which might be due to the mandatory dividend rules in Brazil, Chile and Colombia. The dividend picture is also consistent with Faccio *et al.* (2001) who find that firms in Europe pay higher dividends than in Asia, dampening insider expropriation in Europe and not in Asia. Dividends are relatively low for North-American firms. A potential explanation is that they have more growth options and thus need more cash to finance their investments. Likewise, Fama and French (2001) find that the proportion of US firms paying cash dividends has fallen from 66.5% in 1978 to 20.8% in 1999. They explain this shift by the changing nature of US listed firms, which increasingly tilts toward small firms with low profitability and strong growth opportunities, typical of firms that do not pay dividends.

Concentrated ownership is measured as the ratio of shares held by the largest five shareholders and total shares outstanding, in the year before the bond IPO. This measure obviously has its limitations. For example, the measure does not account for the possible presence of pyramid structures or differential voting rights, and it is not necessarily so that the largest five are the only significant shareholders. We might therefore underestimate the actual level of ownership concentration. In addition, it is implicitly assumed that these large shareholders are in coalition with each other, which might not be the case. In this respect we are likely to overestimate the actual level of ownership

concentration. On balance, it is a crude measure, which makes it less likely to be found significant in our regressions, but it is the best measure we can consistently calculate. Previous research has shown that cash flow ownership is a good indicator of ownership concentration in countries with strong shareholder protection (e.g., LaPorta *et al.*, 1999). In countries with weak ownership concentration the evidence is mixed: cash flow ownership does underestimate ownership concentration in many Asian countries (Claessens *et al.*, 2000) but only in some European countries (Faccio and Lang, 2002). The values we find for ownership concentration in our sample range from completely dispersed, through intermediate forms of ownership concentration, to complete control. Ownership concentration is high in Asia, Continental Europe and Latin America, while it is much more dispersed in North-America. UK firms are even more dispersed than North-American firms, which can be explained from the difference in size: smaller firms, such as those in North-America, are less likely to be dispersed. Overall, these regional differences in ownership are very similar to those reported in LaPorta *et al.* (1999), who measure the percentage of widely held companies in a sample of 27 countries. Firms are more likely to have concentrated ownership when private benefits are high and shareholder protection is weak.

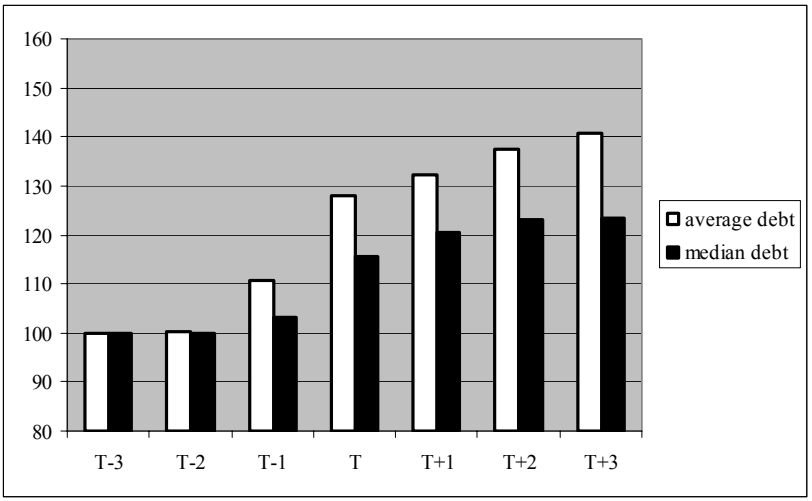
Firms differ greatly in size as measured by sales and total assets (as measured in millions of US$ in the year before the bond IPO)[6]. As said, European firms are typically the largest. Outside the UK, most firms have little debt in their financial structure before the bond IPO, which often follows within less than 10 years after the equity IPO. The dispersion in market-to-book ratios is high, with the standard deviation at twice the mean market-to-book.

Graph 1 shows the evolution of debt levels for the 207 sample firms for which we had non-zero debt from the third book year before the bond IPO to the third book year since the bond IPO.

T-1 denotes the last annual report before the bond IPO, T refers to the first annual report since the bond IPO. T-3 is the reference year for which the debt level is set at 100. As Graph 1 shows, debt levels start to increase in the last year before the bond IPO. Not surprisingly, they increase most in the year of the bond IPO, and then rise further in subsequent years. This pattern continues to apply when the sample is split by shareholder rights (not reported in graphs). The only difference between both groups is that firms from countries with the full score on shareholder rights experience steeper increases in debt levels in subsequent years.

[6] Sales vary from zero for Norwegian drilling firm Ocean Rig to US$ 21 billion for German travel giant TUI. Total assets range from US$ 20 million for Korean Cybertek Holdings to US$ 34 billion for Russian Sberbank.

Graph 1. Evolution of debt levels around the bond IPO



The graph shows mean and median levels of total debt in the 207 sample firms with sufficient data points and non-zero debt levels before the bond IPO. The third book year before the bond IPO (T-3) is taken as a reference and set at 100. The measurement period runs until the third book year since the bond IPO (T+3). T-1 denotes the beginning of the year of the bond IPO (the end of the preceding year), T is the end of the year of the bond IPO.

2.3.3 Issue characteristics

Issue characteristics are given in Panel B of Table 2. Mean and median maturities are below 10 years and range from 1 to 50 years. Only four firms issue 50 year bonds, and three of them are from the UK. The smallest principal is for the Brazilian firm Tectoy, which issued a US$ 200,000 bond. But in general, issues are much larger than that, with the median principal at US$ 143.5 million and the mean principal at US$ 232.7 million. The largest issue is the US$ 3.2 billion megadeal by US giants Progress Energy (total assets at US$ 19.9 billion). In terms of relative issue size (16%), that deal is not even extraordinary. The relative size of the issues (measured as principal by total assets) is large in general, with sample firms issuing bonds of on average 22% of total assets[7]. When comparing debt levels in the year before and after the bond IPO, the amount of debt on average increases by 14%, while debt ratios increase by 6 percentage points, which implies that assets increase as well.

Less than half of all issues are rated by one of the major US rating agencies (Fitch, Moody's, S&P). The vast majority of issues are domestic, in the sense that they are sold and listed in their own currency and in their own country, or region in the case of the Eurozone[8]. The 27 firms that issue internationally (in the off-shore Eurobond[9] market or

[7] Outliers are the issues by Tectoy (0.2%) and Ocean Rig (244%).

[8] Galati and Tsataronis (2001) find that the Euro introduction resulted in lower barriers to cross-border financial transactions. Moreover, banks and investors in the Eurozone fixed income markets have become more focused on the characteristics of individual borrowers rather than the nationality of the issue.

in a foreign market) are mainly from countries that have small domestic bond markets, such as European countries that do not belong to the Eurozone.

As stated in the previous section, we extensively searched for bond IPO announcements. In two thirds of those issue announcements, no mention is made of the purpose of the issue. Where motives are given, they range from very general, such as refinancing[10] (i.e., replacing existing private debt; reported by 22% of the firms), expansion (16%), or "general corporate purposes", to very specific. Often, a combination of these motives is found. For example, Indonesian firm Selamat Sempurna stated it would use 50% of the issue proceeds to buy machinery, 35% to repay debts and 15% as working capital (Dow Jones International News, 29 May 2000). Some also hint to more specific purposes, such as Brazilian firm Duratex SA: "We want to keep a bit of cash on the side, which can be a good idea in Brazil." (Bloomberg, 8 November 2002). The issue by UK cable operator TeleWest involved low initial interest payments, allowing the firm some years to invest heavily in expanding its network. The company said the deal "was a real milestone" (Financial Times, 12 October 1995).

Issue characteristics split by region are given in Panel B of Table 3. UK firms have much longer maturities than the overall sample average. Compared to North-American firms, this can be explained by the fact that they are much larger and have lower growth rates (lower market-to-book). This is consistent with Stohs and Mauer's (1996) findings that long-term debt is issued by larger, less risky firms in low-growth industries. The longer maturities of both UK and North-American firms, given their size and growth rates, in comparison to the rest of the sample, are also as expected. Demirgüç-Kunt and Maksimovic (1999) find that in countries with active stock markets, large firms have more long-term debt. Principal amounts are smallest in Asia and Latin America, and largest in the UK, which is hardly surprising given the size of the firms from these respective regions. Latin American issues are very small, also relative to firm size. Relative issue size is by far the largest for American firms, which might be due to the well-developed US corporate bond market, where junk issues are not as uncommon as they are elsewhere (e.g., De Bondt and Marqués, 2004). The extent to which issues are rated varies greatly across regions. Whereas the vast majority of North-American and UK issues are rated by one of the three major (US) rating agencies, this is much less the case in Continental Europe (39%) and Latin America (17%). Strikingly, none of the Asian issues is rated by one of the major US agencies. Asia counts many local rating agencies that might have rated these issues, but we do not have systematic information on that. Finally, as to domestic issues, there are hardly any differences between regions. As pointed out before, the decision to issue abroad might be motivated by a small domestic bond market, which might be more country specific than region specific.

[9] Eurobonds are not clearly distinguished in the SDC New Issues Database. We therefore checked currencies, issuer nation and place of listing (Luxemburg and London for Eurobonds).

[10] If the replaced debt is bank debt, discipline might be reduced. We therefore control for the refinancing motive in our regressions.

2.4 Results

2.4.1 Event study results and univariate analysis

Abnormal returns to bond IPO announcements are calculated using standard event study methodology. To estimate the market model parameters, we take a clean period from day -150 to day -50. Day 0 is the first announcement date. The market returns are DataStream market total return indices per country. Table 4 shows abnormal returns for the whole sample of 225 observations. Panel A shows descriptives for several windows. None of these differs significantly from zero. However, for most windows, there are significantly more negative than positive abnormal returns.

Table 4. Abnormal returns to bond IPO announcements

Panel A. CARs per window

Event window	Mean	Median	Minimum	Maximum	Standard Deviation	Number of observations	Fraction of positive CARs
(-1,+1)	0.06%	-0.44%	-29.45%	26.51%	5.32%	225	0.427**
(-30,-3)	-0.89%	-1.74%	-46.60%	110.23%	15.79%	225	0.440*
(-2)	0.01%	-0.17%	-9.85%	14.25%	2.71%	225	0.458
(-1)	-0.24%	-0.20%	-28.85%	23.18%	3.59%	225	0.409***
(0)	0.07%	-0.11%	-6.63%	11.28%	2.15%	225	0.444*
(+1)	0.23%	0.03%	-6.16%	16.65%	2.57%	225	0.529
(+2)	-0.13%	-0.13%	-10.88%	11.63%	2.49%	225	0.476
(+3,+30)	-0.67%	-0.58%	-54.10%	96.48%	15.64%	225	0.476

Panel B. CARs per region for the (-1,+1) window

Region	Mean	Median	Minimum	Maximum	Standard Deviation	Number of observations	Fraction of positive CARs
North-America	0.60%	-0.23%	-8.79%	23.23%	5.57%	55	0.491
UK	0.38%	-0.38%	-5.53%	12.61%	3.97%	29	0.483
Continental Europe	-0.44%	-0.67%	-9.88%	10.99%	3.54%	69	0.377**
Asia	0.42%	-0.67%	-10.46%	26.51%	6.94%	45	0.422
Latin America	-0.56%	-0.25%	-29.45%	11.80%	7.35%	23	0.391

Table 4. Abnormal returns to bond IPO announcements (continued)

Panel C. Mean CARs (-1,+1) per range of free cash flow, dividends, and ownership

	Shareholder rights index (LLSV, 1998)			
	=5		<5	
FCF range	N	CAR	N	CAR
<0	2	-4.04%	4	4.62%
0-0.2	56	0.31%	63	-0.19%
0.2-0.4	15	1.77%	28	-1.18%
>0.4	2	0.92%	9	-0.81%
Dividend payout range	N	CAR	N	CAR
0-0.2	36	-0.13%	56	0.77%
0.2-0.4	22	1.78%	36	-0.51%
0.4-0.6	16	1.40%	14	-1.67%
0.6-0.8	6	0.59%	11	-0.89%
0.8-1.0	13	-0.63%	15	-2.01%
Concentrated ownership range	N	CAR	N	CAR
0-0.2	46	1.09%	21	1.07%
0.2-0.4	16	0.61%	30	-0.59%
0.4-0.6	12	-0.43%	25	-2.06%
0.6-0.8	7	2.83%	27	-0.85%
0.8-1.0	2	-1.74%	6	0.92%

CAR is the cumulative abnormal announcement return over the -1,+1 period. Sample period is from 1995 to 2003. Free cash flow is the average of the ratio of undistributed free cash flow and market value, for the three years before the bond IPO. Undistributed free cash flow equals operating income before depreciation minus taxes, interest expenses, preferred dividends and common dividends. Dividend payout is the ratio of dividends and net income, in the year before the bond IPO, and truncated at 1. Concentrated ownership is the ratio of closely held shares and total shares outstanding, in the year before the bond IPO. *, **, and *** indicate significance at the 10%, 5%, and 1% levels respectively.

Although our results do point towards negative stock price reactions to bond IPOs, we do not find the significantly negative stock price reactions of Datta *et al.* (2000). The story is in the variance of returns. This is apparent from the low minimum values, and high maximum values and standard deviations. Our focus is on the cumulative abnormal return (CAR) from day -1 to day +1, or CAR (-1,+1). We will use this window in our subsequent regressions. As in the other windows, both the average (+0.06%) and the median excess returns (-0.44%) are insignificant. But the variation in abnormal returns is very high, ranging from -29.5% to +26.5%, with a standard deviation of 5.3%. Panel B shows that this variation is hardly attributable to differences between regions, although the fraction of positive returns is higher in North America and the UK than it is elsewhere. Mean abnormal returns differ slightly across regions, but, again, none of the means differs significantly from zero. Median abnormal returns are negative but not significant for all regions.

For univariate tests of our hypotheses, we calculate the mean CARs per range of free cash flow, dividend payout and concentrated ownership (Panel C of Table 4). We also group them by shareholder rights index (LaPorta *et al.*, 1998), since we hypothesize shareholder

rights to be important for insiders' incentives, and thus to be related to the effects of free cash flow, dividends and control locks. We contrast firms from countries with a shareholder rights index of 5 (93 firms; 84 of these are from North America and the UK) with the rest. An alternative would be to differentiate between firms from Anglo-Saxon countries and the rest of the world. This yields almost identical results.

Hypothesis 1 predicts a positive relation between CARs and free cash flow, and Hypothesis 2A predicts this relation to be stronger when investor protection is high. We do find this relation for the strong shareholder protection part of the sample (shareholder rights index of 5). However, for the rest of the sample, where we expected the relation to be nonexistent or weak, it is actually negative.

According to Hypothesis 3, CARs and dividends should be negatively related. This relation should be even more negative when investor protection is weak (Hypothesis 4A). We indeed find this negative relation between CARs and dividends for the poor shareholder rights part of the sample. As expected, it applies to a lesser extent to firms with strong shareholder rights.

The control lock hypothesis predicts a curvilinear relation between concentrated ownership and CARs, which is initially negative and later positive. That is, at threshold levels of concentrated ownership, where insiders have just enough votes to remain entrenched, CARs should be lower than at other levels of concentrated ownership. Indeed, for both sub-samples CARs are lowest in the 40-60% range of concentrated ownership. Moreover, and also as hypothesized (Hypothesis 6), the effect is stronger for the weaker shareholder rights part of the sample.

Our results differ from those of Datta *et al.* (2000), who find a significantly negative stock reaction to bond IPO announcements. A potential explanation of the difference in results is the international composition of our sample versus the purely US sample that Datta *et al.* (2000) employ. In addition, the maturity of the issues in their sample is much longer than in ours, both in means (12 versus 8 years) and in medians (10 versus 7 years). This could explain the difference in CARs, since Datta *et al.* (2000) find maturity to be negatively related to CARs. Finally, the Datta *et al.* (2000) sample runs from 1970 to 1994, while ours starts where their ends, running from 1995 to 2003. In the mean time, debt markets have continued to develop. Especially in the US high-yield market, the distinction between public bond markets and other debt markets has become rather blurred (Thomas and Wang, 2004). Datta *et al.* (2000) consider a long time window, but because they do not show CARs per year, we cannot see if there is a trend in their data.

2.4.2 Regression results

The univariate analyses indicate that free cash flow, dividends and ownership might explain wealth effects at bond IPO announcements. To see if these relations hold after controlling for other factors, multivariate analyses are required as well. As De Roon and Veld (1998) point out, OLS may not be very efficient when regressing on abnormal returns. Since the abnormal returns are residuals from the market model, they not only measure the announcement effect, but also capture the nonsystematic risk of the firm. To

correct for this, we follow De Roon and Veld (1998) in using the residuals from the clean period in a Weighted Least Squares (WLS) framework. See Thompson (1995) for a discussion. Table 5 shows the results of the WLS regressions.

Table 5. Modeling abnormal returns to bond IPO announcements

Model	(1)	(2)	(3)	(4)	(5)	(6)
Free cash flow	-0.320	-0.0693***				-0.0708***
	(-1.50)	(-3.95)				(-4.42)
Free cash flow*Dummy		0.3325**				0.3809***
for shareholder rights=5		(2.41)				(3.24)
Free cash flow*Dummy		0.1720***				0.1458**
for <20% conc. ownership		(2.91)				(2.50)
Dividend payout			-0.0374**	-0.1290***		-0.1067**
			(-2.20)	(-2.81)		(-2.25)
Dividend payout*				0.0279**		0.0142
Shareholder rights score				(2.57)		(1.18)
Shareholder rights score				-0.0125**		-0.0167**
				(-2.00)		(-2.35)
Concentrated ownership					-0.2470**	-0.2819***
					(-2.34)	(-2.70)
Concentrated ownership					0.2814**	0.3387***
squared					(2.36)	(3.13)
Log Sales	-0.0036	-0.0027	-0.0072	-0.0063	-0.0081*	0.0005
	(-0.67)	(-0.45)	(-1.82)	(-1.54)	(-1.88)	(0.08)
Log Principal	0.0039	0.0038	0.0047	0.0052	0.0052	0.0027
	(0.82)	(1.00)	(1.25)	(1.28)	(1.21)	(0.66)
Debt-assets	0.0147	0.0151	-0.0124	-0.0223	-0.0064	-0.0067
	(0.60)	(0.82)	(-0.67)	(-1.25)	(-0.36)	(-0.35)
Log Age	0.0043	-0.0047	0.0096	0.0089	0.0054	0.0088
	(0.18)	(-0.25)	(0.58)	(0.56)	(0.31)	(0.55)
Maturity	0.0013	0.0015	0.0010	0.0010	0.0011	0.0018
	(1.37)	(1.25)	(1.17)	(1.30)	(0.99)	(1.66)
Market-to-book	-0.0018	-0.0011	-0.0011	-0.0018	-0.0013	-0.0011
	(-1.04)	(-0.88)	(-0.68)	(-0.98)	(-0.81)	(0.86)
Constant	-0.0143	-0.0115	0.0374	0.0695	0.0917*	0.0930
	(-0.25)	(-0.21)	(0.85)	(1.45)	(1.83)	(1.38)
R-squared	0.36	0.56	0.38	0.41	0.48	0.63
Adjusted R-squared	0.22	0.44	0.38	0.31	0.38	0.51
F-statistic	2.63	4.72	3.86	3.98	4.57	5.16
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Continent dummies	Yes	Yes	Yes	Yes	Yes	Yes
N	178	156	224	224	191	156

Dependent variable is the cumulative abnormal announcement return (CAR) over the -1,+1 period. Regression method is WLS, where the CAR is weighted by the estimated standard deviation of the market model residuals (σ_i) from the clean period. Sample period is from 1995 to 2003. Free cash flow (FCF) is the average of the ratio of undistributed free cash flow and market value, for the three years before the bond IPO. Undistributed free cash flow equals operating income before depreciation minus taxes, interest expenses, preferred dividends and common dividends. Dividend payout is the ratio of dividends and net income, in the year before the bond IPO,

and truncated at 1. Concentrated ownership is the ratio of closely held shares and total shares outstanding, in the year before the bond IPO. Sales and Total assets are in millions of US$ in the year preceding the bond IPO. Debt-to-assets is the ratio of the book value of debt and total assets, both in the year preceding the bond IPO. Years since equity IPO is the time in years between the equity IPO and the bond IPO of a firm. Market-to-book is the ratio of the market value of equity and the book value of equity, both in the year preceding the bond IPO. Maturity is time to maturity in years. Principal is in millions of US$. Relative issue size is the ratio of principal and total assets. Rated issues is a dummy variable that equals 1 if the issue is rated by one of the major US rating agencies (Fitch, Mood's, and S&P's), and 0 otherwise. Domestic issues is a dummy variable that equals 1 if the issue is issued in the home market and 0 otherwise. Dummies for regions, industries and years are included as well.

We run the WLS regressions both with and without using White's (1980) procedure for correcting *t*-statistics. Only the former are reported, but the latter yield almost identical results with only slightly differing standard errors for some variables. For our sample, OLS yields results that are weaker due to reduced efficiency, but qualitatively similar.

Hypothesis 1 predicts a positive relation between free cash flow and abnormal returns. Model 1 of Table 5 indicates that free cash flow independently fails to have explanatory power when considered for the entire sample. This is hardly surprising given Panel D of Table 4, which shows that the correlation between free cash flow and CARs is exactly opposite for the two sub-samples we distinguish. These opposite correlations suggest that the effect of free cash flow differs for the two sub-samples. Likewise, hypotheses 2A and 2B predict that free cash flow has a more positive relation when shareholder protection is high (2A) and when concentrated ownership is low (2B). Therefore, in Model 2 we interact free cash flow with a dummy that equals 1 if the score on shareholder rights is 5. In addition, we interact free cash flow with a dummy that equals 1 if concentrated ownership is below 20%, which is also the threshold level that LaPorta *et al.* (1999) apply. Both interactions have highly positive and significant coefficients. The coefficients can be interpreted as follows. If a firm scores 5 on shareholder protection, and has over 20% concentrated ownership, then the impact of free cash flow is calculated by multiplying the free cash flow value (or its change) by the sum of the first two coefficients in Model 2. For example, a 10% higher free cash flow will yield a 0.1*(-0.0693+0.3325)=0.0263 or 2.6% higher abnormal return. For a firm with concentrated ownership below 20%, a 10% higher free cash flow will yield a 1% higher abnormal return (0.1*[0.1720-0.0693]=0.0103), and 4.4% [1](0.1*[0.3325+0.1720-0.0693]=0.0435) higher if it also scores 5 on shareholder protection. So, the negative sign of free cash flow is more than offset by its interactions with low ownership and high shareholder rights.

Of course, shareholder protection and ownership concentration are related, as shown in for example LaPorta *et al.* (1999). However, it is useful to separate these effects, since still 45% of firms with a shareholder rights score of 5 exceed the 20% ownership concentration threshold, while 20% of the firms with poorer shareholder protection do have ownership concentration below 20%. In Model 6, we add the other explanatory variables, and find the same results, with only slightly different coefficients. Thus, at low levels of concentrated ownership and strong shareholder protection, higher free cash flow results in more positive CARs to bond IPO announcements. At high levels of concentrated ownership and low shareholder rights, the relation between free cash flow and CARs is no longer positive. Perhaps no real disciplining is expected when insiders are entrenched. In such cases, a firm seems to be bringing bad news by attracting more capital rather than paying it out.

In comparison to Model 1, Model 2 has 24 observations less but considerably higher R^2 and adjusted R^2. This might potentially be due to systematic biases. We therefore check this by running Model 1 with the observations from Model 2. We find that half of the rise in R^2 and adjusted R^2 is due to the missing observations and that the coefficient of free cash flow is now negative and significant. The reason is that the missing observations are mainly from countries with poor investor protection, which is consistent with expectations and does not distort our results.

Hypothesis 3 predicts a negative relation between dividends and CARs, since lower dividends indicate a greater need for disciplining. Model 3 of Table 5 confirms this hypothesis. Firms that pay out all of their net income have 3.7% less favorable abnormal returns than firms that pay no dividends, ceteris paribus. To test the complementary hypothesis (4A) that the dividend effect is stronger when shareholder rights are weak, we add shareholder rights separately and in interaction with dividends. Model 4 shows that the coefficient of dividend payout then becomes even more negative, while the interaction term is positive and significant. Multiplying the interaction term by 5 gives 0.1395, which offsets the -0.1290 coefficient of dividends independently. This suggests that the dividend effect disappears when shareholder rights are 5. Moreover, the shareholder rights index independently is negative and significant. Perhaps firms from countries with strong shareholder rights need less disciplining from bonds because they already are more disciplined. According to Hypothesis 4B, the negative relation between abnormal returns and dividends should be stronger when concentrated ownership is high. We test this hypothesis by running regressions with the interaction term of dividends and ownership (not reported in the tables). However, this term turns out to be insignificant, both when ownership is taken continuously and when it is included as a dummy. We can therefore reject Hypothesis 4B. In Model 6, we combine Model 4 with the other explanatory variables. Again, dividends are strongly negatively related to abnormal announcement returns. However, the interaction term of dividends and shareholder rights is now no longer significant, which suggests that there is in fact a dividend effect for firms with a shareholder rights score of 5. The results from Models 4 and 6 together suggest that dividends are indeed more important when shareholder rights are limited.

The control lock hypothesis predicts a curvilinear relationship between concentrated ownership and CARs. We test this hypothesis in Model 5 by adding concentrated ownership and its square to the basic model. Both coefficients turn out to be large and highly significant. Of course, it is their combined effect that matters. Initially, concentrated ownership is negatively related to abnormal returns. The inflection point is at 43.9% concentrated ownership, after which the relation becomes positive. In Model 6, the inflection point is slightly lower at 41.6%. Both inflection points correspond with levels of concentrated ownership where insiders are usually entrenched. Moreover, they have meaning within the dataset since 74 out of 192 firms have ownership above both inflection points. At (and around) the inflection point, abnormal returns are 5.4% (Model 5) and 5.9% (Model 6) lower than at zero concentrated ownership. Further from the inflection point the impact on CARs is less negative, which reflects the lower likelihood that the issue is motivated by keeping a lock on control.

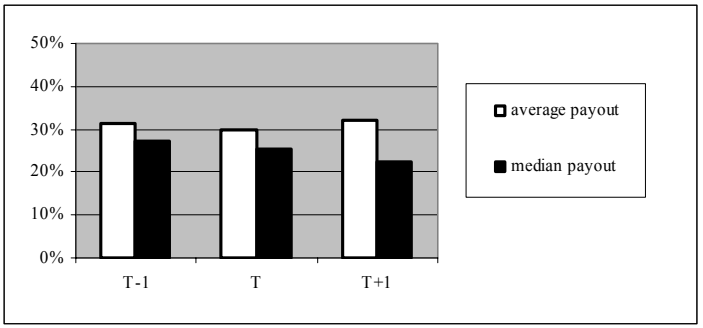
2.4.3 Robustness checks

To check for spurious relations, we conduct several robustness tests. For example, we run the interactions of free cash flow with alternative ownership cut-off points (not reported in the tables). As expected, higher cut-offs result in lower coefficients and lower significance. The other results are not affected. The interaction term remains significant for cut-off points of 25%, 30%, and 35%, and becomes insignificant at 40%.

The negative sign we find for dividends could potentially be explained from the fear that dividends will go down after the bond IPO, for example due to the constraint debt puts on dividends (John and Kalay, 1982). If this were the case one would expect dividends to go down after the bond IPO. To test for this alternative explanation, we compare dividend levels in the year before the IPO and in the year of the bond IPO. We have data for 212 firms and find that dividends rise slightly, both in mean (from 28.6% to 29.7%) and in median (from 33.5% to 35.5%). This is consistent with Long *et al.* (1994) who find that dividends do not fall after seasoned debt offers. For 186 firms we also have dividend levels in the year after the bond IPO. Graphs 2a and 2b show dividend levels for all three years, split by shareholder rights.

Graph 2. Changes in dividend

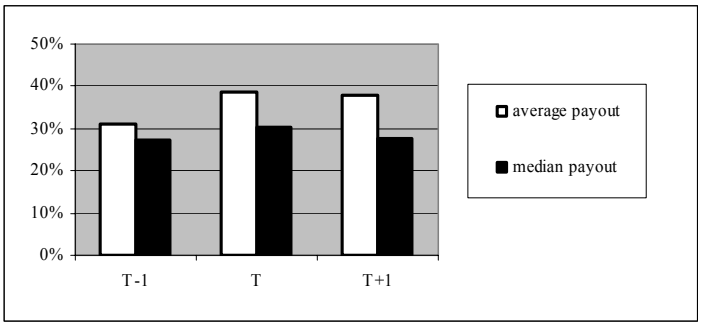
Panel A. For firms with shareholder rights equal to 5



The graph shows mean and median levels of dividend payout levels for the year before the bond IPO (T-1), the year in which the bond IPO is done (T) and the year following the bond IPO (T-1). Included are the 74 sample firms from countries with shareholder rights equal to 5 for which dividend data was available for all three years.

Graph 2. Changes in dividend (continued)

Panel B. For firms with shareholder rights below 5



The graph shows mean and median levels of dividend payout levels for the year before the bond IPO (T-1), the year in which the bond IPO is done (T) and the year following the bond IPO (T-1). Included are the 112 sample firms from countries with shareholder rights below 5 for which dividend data was available for all three years.

Only in the sub-sample with full shareholder rights do we find declining median dividends. For firms with shareholder rights below 5, the group where dividends take a more negative sign in our regressions and the suspicion of fear of lower dividends is thus likely to be higher, dividends do not decline after the bond IPO, neither in means, nor in medians. We therefore conclude that fear of dividends is unlikely to explain the negative sign of dividends in our regressions

Since shareholder rights are important in our analysis, we also run separate regressions for firms with a shareholder rights index of 5, and for those with a lower score (Table 6). Model 1 of Table 6 shows regression results for the poor shareholder protection sub-sample. In spite of the smaller sample size (89 observations), the results are remarkably strong and similar to those for the whole sample, apart from the negative sign for free cash flow. Dividends again take a strongly negative sign, even more so than for the whole sample. The same applies to ownership concentration, where the gap in abnormal returns between the inflection point (at 50.6%) and zero concentrated ownership almost doubles from a 5.9% discount (Model 6, Table 5) to a 12.3% discount. This is consistent with the notion that concentrated ownership is more important (valuable to insiders) when shareholder rights are weak and private benefits are larger (e.g., Bebchuk, 1999, Dyck and Zingales, 2004, Nenova, 2003). For the strong shareholder part of the sample we have even less observations (68), but we still find a strongly positive sign for free cash flow. Dividends and ownership are no longer significant, but do have the expected signs. This difference in significance confirms that in countries with strong shareholder protection, free cash flow is important, while dividends and ownership are less so.

To exclude country level effects, and rule out the possibility that the results for the strong shareholder part are driven by US observations, we further reduce the sample by running regressions for US bond IPOs only (Model 3 of Table 6). In spite of the low number of observations (35), we find the same results as in Model 2 of Table 6, with positive and significant coefficients for free cash flow.

Table 6. Modeling abnormal returns to bond IPO announcements for sub-samples

Model	**(1)**	**(2)**	**(3)**
Subset	Shareholder rights below 5 only	Shareholder rights equal 5 only	US only
Free cash flow	-0.0501***	0.3131*	0.3864*
	(-3.48)	(1.85)	(1.90)
Dividend payout	-0.0711**	-0.0030	-0.0163
	(-2.40)	(-0.07)	(-0.22)
Concentrated ownership	-0.4858**	-0.1509	-0.2614
	(-2.46)	(-0.99)	(-0.91)
Concentrated ownership squared	0.4797**	0.1682	0.1772
	(2.29)	(1.13)	(0.69)
Constant	0.1098**	-0.0363	-0.0081
	(2.12)	(-0.83)	(-0.10)
R-squared	0.52	0.33	0.40
Adjusted R-squared	0.44	0.19	0.08
F-statistic	6.76	2.27	1.23
Year dummies	Yes	Yes	Yes
Industry dummies	No	No	No
Continent dummies	No	No	No
N	89	68	35

Dependent variable is the cumulative abnormal announcement return (CAR) over the -1,+1 period. Regression method is WLS, where the CAR is weighted by the estimated standard deviation of the market model residuals (σ_i) from the clean period. Sample period is from 1995 to 2003. Free cash flow (FCF) is the average of the ratio of undistributed free cash flow and market value, for the three years before the bond IPO. Undistributed free cash flow equals operating income before depreciation minus taxes, interest expenses, preferred dividends and common dividends. Dividend payout is the ratio of dividends and net income, in the year before the bond IPO, and truncated at 1. Concentrated ownership is the ratio of closely held shares and total shares outstanding, in the year before the bond IPO. Dummies for years are included as well.

Not just shareholder rights, but creditor rights too could play a role in the disciplining power of new public debt. Creditor rights refer to the legal means that creditors have to take over control in the case of distress. The mere threat of a control change could discipline management. To test for this we replace the shareholder right dummies with creditor rights dummies[11]. While the other results stay the same, creditor rights turn out to be insignificant. This could be attributable to the fact that better creditor rights are not necessarily beneficial to shareholders. Notably in distress, shareholders and creditors might have conflicting interests regarding the distribution of cash flows.

In addition to testing the hypotheses put forward in Section 2, we control for other potential explanatory variables from for example Datta *et al.* (2000). Age is included to

[11] We do not use both dummies together in one regression, since they are both country level dummies, which are highly correlated. For example, each US firm has a shareholder rights score of 5 and a creditor rights of 1.

control for Diamond's (1991) reputation building argument. Older firms that are associated with less information asymmetry might be received more favorably by the market. Similar arguments might hold for firm size, as measured by the log of sales. Other variables that might be of influence are the size of the issue (log principal) and the firm's financial structure before the bond IPO (debt-assets ratio). Harvey *et al.* (2004) argue that it is important to measure leverage relative to assets in place because the benefits of debt are greater when a firm has a large base of assets in place. Datta *et al.* (2000) include market-to-book and maturity to test several conflicting debt maturity and debt ownership theories, which predict conflicting signs for the coefficients of both variables. None of the aforementioned variables is systematically significant in our regressions. In other regressions (not shown in the tables) we also control for other variables that might be of importance, such as the change in leverage, underwriter reputation, issuing motives, etc., but these all turn out to be insignificant. Perhaps most surprising is the insignificance of the change in leverage. Whether measured as the change in debt, the change in debt ratio or simply the relative size of the issue, the change in leverage does not affect announcement returns. This suggests that the size of the new debt is not as important as the fact that there is new debt and a new class of debt. Whether the former (new debt) or the latter (new class of debt) is more important, cannot be ascertained in this analysis, but requires a comparison with seasoned equity offers.

2.5 Summary and conclusions

Bond issues have the potential to fundamentally affect agency costs of equity, both for the better and for the worse. This applies even more to bond IPOs. While seasoned bond offers are often no more than renewals, bond IPOs introduce a new class of public debtholders. Furthermore, they are typically very large (22% of total assets). And in contrast to private debt, renegotiation of bonds is difficult while hold-up problems and coalitions with management are unlikely.

In contrast to Datta *et al.* (2000) we do not find uniformly negative stock price reactions to bond IPOs. Rather, we find the stock reaction to depend on the bond's impact on agency costs of equity. This is the first paper that relates shareholder wealth effects of bond IPOs to free cash flow, dividends and control locks. Moreover, we investigate an international sample, which allows us to examine the role of investor protection. Since the nature of agency problems varies across countries, the impact of bond IPOs on agency costs is likely to differ as well. When insiders are entrenched and shareholder protection is poor, they might be motivated by the desire to keep a lock on control.

We find that free cash flow is positively related to CARs when investor protection is high, but negatively when insiders are entrenched and investor protection is poor. This is consistent with the implication of Zwiebel's (1996) model that insiders only have incentives to discipline themselves when they can potentially loose control. The disciplining role of bond IPOs is found to be more important when dividends are low, because debt and dividends are substitutes. We also confirm the hypothesis that the role of debt versus dividends is stronger in countries with poor investor protection, since

shareholders lack the means to extract dividends. Bond IPOs may also be motivated by the desire to keep a lock on control. Consistent with this hypothesis, we find that CARs are significantly more negative at threshold levels of concentrated ownership. That relation is even stronger when shareholder rights are weak. This reflects the higher value of control locks to insiders when private benefits are high and investor protection is poor. Overall, our results confirm that bonds can provide valuable disciplining, both where strong shareholder rights make disciplining most effective, and where poor shareholder protection makes disciplining most needed.

The results of this paper add to those of Harvey *et al.* (2004), who examine a class of debt issues that is also likely to be associated with changes in agency costs of equity: emerging market syndicated loans. They show that debt can mitigate agency costs of equity (due to separation of voting and cash flow rights) for issuers from countries with weak investor protection. Our analysis is complementary in that we consider different agency mechanisms and for a wider range of investor protection. Our results indicate that debt can also affect agency costs of equity when shareholder rights are strong. We suspect similar results would be found for some types of seasoned debt offers, especially when they are associated with extreme levels of free cash flow, dividends, and ownership.

Chapter 3 Bond underwriting fees and keiretsu affiliation in Japan *

3.1 Introduction

During the 1980s and 1990s Japanese corporate bond markets were increasingly deregulated, opening up the markets to both more issuers and more underwriters. Notable events were the admission of foreign and commercial banks to the bond underwriting market in 1993, and the deregulation of underwriting fees and relaxation of eligibility guidelines for issuers in 1994.[12] As a result, there was a sharp decline in underwriting fees from 1.5% of proceeds in 1991 to 0.35-0.55% in 1995.[13] Takaoka and McKenzie (2005) document that commercial bank entry led to reductions in both fees and yield spreads. Another consequence of the reforms was increased access to public finance, which was especially useful for those firms not belonging to financial keiretsu. Until then keiretsu membership had meant better access to finance and insurance against failure (Sheard, 1989, Hoshi *et al.*, 1991). But in the 1990s, the banks at the core of these financial keiretsu increasingly got into trouble and could no longer guarantee bail-out to its member firms.

Against the background of bond market deregulation and the weakening position of banks, we examine fees on bond issues by Japanese corporations during the 1994-2002 period, to investigate the effects of keiretsu affiliation. Our focus is on bonds, because they are closely linked to the bankruptcy costs that are supposed to be lower for keiretsu firms (e.g. Hoshi *et al.*, 1990). Moreover, bonds were the most important source of public finance for Japanese firms in the 1990s. Over the 1993-1999 period, Japanese firms issued Yen 70.6 trillion in bonds against Yen 15.4 trillion in equity.[14] To our knowledge, the relation between fees and keiretsu affiliation has not been investigated in earlier studies.

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[12] Financial Institution Reform Act, passed in June 1992, effective in April 1993.

[13] Finance and Fiscal Affairs (Kinyu Zaisei Jijyou), December 1995.

[14] Japan Securities Dealers Association, Factbook 2003.

As in previous research on fees (e.g. Kim *et al.*, 2003), we find that fees, also referred to as spreads, increase in issue risk at the individual issue level. More importantly, we find that fees have risen over time for members of financial keiretsu, while fees have fallen for non-affiliated firms. This relation holds after controlling for risk factors. Moreover, these higher fees for keiretsu firms are not offset by lower yields. We see these rising fees as evidence that the costs of keiretsu membership have come to outweigh the benefits. Bank-lead corporate groups may have been an efficient solution to missing markets for public finance. But their success declined as the banks at their core suffered from the combined effects of deregulation and the 1990 burst of the financial bubble. Because banks could no longer guarantee bail-out to their member firms, the advantage of reduced bankruptcy costs diminished. Moreover, the disadvantages of being affiliated increased as the problems of keiretsu banks spilled over to affiliated firms. For example, Horiuchi and Shimizu (1998) report substantial placements of subordinated debt with affiliated firms, and Weinstein and Yafeh (1998) find higher costs of capital for keiretsu firms. Our results suggest that these spillovers also included higher fees on corporate bonds.

The next section first discusses the features of financial keiretsu, then continues with the parallel developments of financial market deregulation and the weakening of banks, and finally discusses the literature on underwriting fees. Sections 3 and 4 describe the data and methodology. The results are presented in Section 5. Section 6 concludes.

3.2 Literature and hypotheses

We start this section with a description of financial keiretsu and their advantages and disadvantages. Subsequently, we discuss how two simultaneous developments, namely bond market deregulation and feeble banks, have weakened the keiretsu system. Finally, we will explain how keiretsu affiliation relates to fees on bond issues.

3.2.1 Keiretsu

The Japanese versions of corporate groups are called keiretsu, and they come in two types. Vertical keiretsu are centered around a manufacturing firm and have an industry focus, whereas financial or horizontal keiretsu are centered around a large bank, and are active in many industries. These financial keiretsu will be the focus of our analysis. In the remainder of the paper we refer to financial keiretsu simply as keiretsu. Banks, although not allowed to own more than 5% of shares in a firm, are the most powerful players in the keiretsu. They yield their influence through cross-shareholdings, interlocking directorships and a Presidents' council where the keiretsu's most important firms meet. Moreover, the banks use their creditor rights to take full control in distressed group firms. Keiretsu advantages and disadvantages have been well documented in the literature.

A major advantage of the keiretsu system is its ability to solve information problems. For example, the keiretsu's main bank is argued to be both a superior monitor and a potential intervention agent (e.g., Sheard, 1989). Aoki (1990) emphasizes that the very threat of a bank takeover also plays an important monitoring role. In a similar vein, Berglöf and Perotti (1994) claim that the cross-holdings of debt and equity within keiretsu act as a

coalition-enforced threat of removal from control. Moreover, Hoshi *et al.* (1990) argue that keiretsu reduce bankruptcy costs by easier renegotiation and better access to capital. They find that after the onset of distress, affiliated firms invest more and sell more than non-affiliated firms. Main banks implicitly guarantee the loans made to their affiliated firms by other banks and voluntarily take more than their share of the losses in the case of distress (Aoki, 1988, and Hoshi *et al.*, 1990). Furthermore, since the main bank implicitly guarantees to bail out distressed members, affiliation can be seen as a form of insurance against bankruptcy (Sheard, 1989).

A flaw of the system is the potential for rent-seeking behavior, consistent with Rajan's (1992) hold-up model. Rent-seeking includes demanding too high interest rates and distorting investment decisions toward projects with low risk, high collateral and high leverage. Morck and Nakamura (1999), and Morck *et al.* (2000) find evidence of such rent-seeking behavior by banks. The distortion of investment decisions is also noted by Weinstein and Yafeh (1995) who find that keiretsu firms are both larger and more levered. Under bank influence, they produce more than optimal for value maximization. As a result, they are larger than their efficient size. Moreover, Weinstein and Yafeh (1998) find that affiliated firms are less profitable and have higher costs of capital. The lower profitability of keiretsu firms has also been found by Prowse (1992) and Kang and Shivdasani (1999). Nakatani (1984) argues that this lower profitability is offset by lower risk and more stable cash flows, but Beason (1998) does not find any support for this argument: although affiliated firms indeed perform worse, they do not have lower share price volatility.

Several observations indicate that the costs of keiretsu membership began to outweigh the benefits by the 1990s. First, over the past decade there has been a continuous dissolution of cross-holdings ('Cross-shareholdings decline for the 11th straight year', NLI Research Institute, January 2002). Second, as previously mentioned, keiretsu members perform worse than non-affiliated firms. Third, as we will argue in the next subsection, since the banks are in a state of crisis themselves, they can no longer perform their intervention function properly. Fourth, as we will show in section 2.3, bond market access has improved, thus reducing the need to be a keiretsu member to have access to public finance.

3.2.2 Weaker banks

With the burst of the stock market and real estate bubble in 1990, Japanese banks were left with a vast portfolio of non-performing corporate and property loans. Moreover, bank reserves declined due to the depressed equity prices. Profits fell, the bad loans grew worse and the first banks began to fall. There had not been a single bank failure since World War II, but from late 1994 to mid 1996, eight banks failed (Financial Times, 19 July 1996). The banking crisis was highlighted in late 1997, when Japanese banks were paying up to half a percentage point above the LIBOR, the so-called "Japanese premium". The convoy policy, in which the government ordered strong banks to help their weaker competitors, only worsened the problems (see e.g. Bremer and Pettway, 2002). In 1999 there was a wave of merger announcements among banks, most of them becoming effective in 2001. Seven out of eight core keiretsu banks were involved in

mergers among themselves, leaving eight keiretsu with only four main banks[15]. In the meantime, the banks' problems spilled over to firms with close banking ties. For example, banks managed to substantially mitigate the shortfall in equity capital by issuing subordinated debt which was largely placed with affiliated firms (Horiuchi and Shimizu, 1998). In addition, Kang and Stulz (2000) report that exogenous shocks to banks during Basle negotiations resulted in negative spillovers to bank clients, as they find that Japanese firms with more bank loans in 1989 performed worse in the 1990-1993 period. Thus, the close banking ties inherent to keiretsu affiliation have become much less appealing. An interesting example is the Fuyo keiretsu, where bad performance and a weak financial core resulted in the failure or sale of several important group members in late 1997 and early 1998, including Showa Line, Nihon Cement, Toa Steel, and the broker Yamaichi ('Inside the Fuyo keiretsu', Financial Times, 28 October 1998).

3.2.3 Bond market development

The Japanese bond markets were heavily regulated until the end of the 1970s, with limited access for both potential underwriters and firms wanting to issue bonds. For issuers, very strict eligibility prevailed, which ensured that only three firms could issue unsecured bonds in 1979. In addition, until 1993 there were caps to the amount that could be issued. Moreover, issuance required the involvement of a bond issuance committee ('kisaikai') dominated by banks, which resulted in a strong bargaining position for banks and high issuance costs, as the principal management bank charged fees that totaled 2-3% of the bond's principal (Yasuda, 2001). However, in 1988 the kisaikai was abolished. As to the eligibility guidelines, they were gradually loosened so that by 1989 they were met by over 300 firms (Hoshi *et al.*, 1993) and by approximately 500 firms in April 1993. Later, the lowest credit rating of companies eligible to issue unsecured bonds was lowered from A to BBB and the number of firms eligible to issue uncollateralized bonds increased to approximately 800 (Financial Times, 1 June 1995). Eventually, speculative grade firms were allowed to issue as well. Hoshi *et al.*, 1993 show that this resulted in a shift from bank to public debt. Many firms that used to issue in the Eurobond market and many more firms that previously did not issue at all, began to issue in the domestic bond market during the late eighties and nineties. The amount of corporate bonds outstanding almost doubled from 1993 to 2002[16], in spite of the deterioration in the financial condition of both issuers and banks by 1996 (Schena, 2002). As access to finance was one of the main advantages of the keiretsu system, the increased issuer access is likely to have made keiretsu affiliation less attractive.

Entry into the market for underwriter services was limited too. During the 1980s and the early 1990s, the Japanese Big Four investment banks (Nomura, Yamaichi, Nikko, and

[15] In 1999 Fuji Bank (Fuyo), Dai-Ichi Kangyo Bank (DKB), and the Industrial Bank of Japan (IBJ) announced to form the Mizuho financial group. In the same year, Sakura Bank (Mitsui) and Sumitomo Bank decided to become the Sumitomo Mitsui Banking Corporation, while Sanwa Bank and Tokai Bank teamed up to be United Financial of Japan (UFJ). Finally, in 2005, UFJ was taken over by Mitsubishi Tokyo Financial. As a result, now only three main banks remain for eight keiretsu.

[16] Japan Securities Dealers Association, Fact Book 2003.

Daiwa) dominated the market with over 95% market share[17]. But in April 1993 the Financial System Reform Law became effective, which gradually allowed foreign and commercial banks to underwrite bond issues. The result was that Japanese commercial banks took a large part of the bond underwriting market: the market share in corporate bond underwriting of the Big Four fell from 89% in 1994 to 62% in 1996 (The Nikkei Weekly, 14 April 1997). Nomura eventually recovered, but Nikko was sold to Citigroup and Yamaichi even failed in November 1997. Another result was that both fees and yields fell significantly (Takaoka and McKenzie, 2005). In the next section we will discuss the determinants of fees and the relation with keiretsu affiliation.

3.2.4 Fees

When investment banks underwrite securities, they charge substantial fees to the issuer. Fees are usually defined as a percentage of proceeds. On a US$ 1 billion bond issue, underwriters can easily charge 1% or US$ 10 million in fees. In spite of their economic significance, fees have received limited attention in the literature. Fees partly reflect the amount of effort investment bankers put into the underwriting process. In addition, fees are a compensation for the risk the underwriter is exposed to. That is, the underwriter's position can be described as a short position in a put option (Smith, 1977). The risk exists both in terms of direct cash flow consequences and in terms of potential loss of reputation and future market share. Accordingly, Kim *et al.* (2003) find issue and firm characteristics, such as leverage, rating and maturity to be the main explanatory variables for fees on US bond issues.

In other studies, fees have mainly been related to competition among underwriters, with underwriting fees found to decrease as competition increases. For example, Carow (1999) finds for various US securities markets that fees fall as innovative securities become mainstream. And for corporate debt markets specifically, fees have diminished with commercial bank entry in the US (Gande, *et al.*, 1999) and in Japan (Takaoka and McKenzie, 2005), and with the Euro introduction for Eurobond markets (Santos and Tsatsaronis, 2003). When competition is frustrated by collusion of underwriters, fees remain high, as found for the US equity IPO market (Chen and Ritter, 2000).

Fees also depend on underwriter characteristics. Chemmanur and Fulghieri (1994) show that high reputation investment banks can charge higher fees than their less reputable competitors. But empirical evidence is mixed for US and Eurobond corporate debt markets. Esho *et al.* (2002) and Fang (2002) confirm Chemmanur and Fulghieri's (1994) predictions, whereas Santos and Tsatsaronis (2003) and Livingston and Miller (2000) find that high reputation investment banks charge lower fees. In addition to underwriter reputation, the type of underwriter may also matter. In Puri's (1999) model, commercial banks, as lenders to firms, are better certifiers than investment banks. Therefore, commercial banks should charge higher fees than investment banks. However, for a sample of US corporate debt issues, Roten and Mullineaux (2002) find that commercial banks charge lower fees than investment banks. This may be explained by the fact that in their sample commercial banks have only just entered the market. For a US sample, Fang

[17] SDC league tables.

(2002) finds that high reputation underwriters charge higher fees but also obtain better prices (lower yields) for their clients. To control for this potential trade-off, we will also consider yield spreads.

There is some controversy in the literature regarding the competition on fees on Japanese corporate bonds. Hamao and Hoshi (2000) cite a newspaper article (Nikkei Financial, 3 February 1998) to claim that fees for corporate bonds of the same maturity were fixed across underwriters until the beginning of 1998. In contrast, Takaoka and McKenzie (2005) mention examples of changes in fees setting during this period. In addition, these authors document variation in fees for bonds with the same maturity within their sample. We will investigate this controversy in Section 5.

Since keiretsu affiliation seems to have become disadvantageous, this might be reflected in affiliated firms paying higher fees. This result should hold even after controlling for underwriter identity, issue risk, firm risk and yield spreads. In the next section we will discuss how we obtain our data and how we try to establish the link between keiretsu affiliation and fees.

3.3 Data and descriptive statistics

3.3.1 Data

From the SDC New Issues Database Data we select all domestic non-convertible fixed-rate corporate bond issues in the April 1994-2002 period, which are 3248 issues in total. We start in April 1994 because SDC does not have earlier coverage of fees on Japanese domestic bond issues. We focus on domestic issues because foreign issues are not comparable in terms of fees, due to different market conditions such as regulation and investment banking competition. The same applies to bonds with option-like features. Furthermore, we exclude financial firms as they are in the same industry as the underwriters and could potentially underwrite themselves. After exclusion of financials, 2924 issues are left. Fees data are available for 2899 of these issues. Other issue data, such as coupon, maturity, and syndicate composition are also taken from the SDC New Issues Database. Additional issuer data, e.g. sales and capital structure ratios are obtained from Worldscope/Thomson One. For 2519 issues we have all variables to be included in our regressions on fees.

To calculate the yield spread over benchmark, we follow the same procedure as Hamao and Hoshi (2000); we match every corporate bond issue with the two Japanese government bonds that are closest in remaining maturity. We then take the weighted average of these two yields as the benchmark yield. Since we do not have matching government bonds for all issues (in particular those with high maturities), the sample size is reduced by 20.5%, to 2003 issues.

For identifying keiretsu firms, Brown & Company's (formerly Dodwell Marketing Consultants) 'Industrial Groupings in Japan' is the most widely used source[18]. It is used by for example Kang and Shivdasani (1999) and Weinstein and Yafeh (1998). We employ both the 1995 and 2001 editions of Industrial Groupings in Japan, roughly corresponding with the beginning and end of our sample period, to establish whether issuers belonged to a financial keiretsu. In the next section, we discuss descriptive statistics for both keiretsu firms and non-affiliated firms.

3.3.2 Descriptive statistics

Keiretsu
Table 1 gives an impression of the vastness of the keiretsu. It shows the eight financial keiretsu and their sizes, both in number of firms and in sales.

Table 1. Financial keiretsu

Keiretsu	Issue amount (US$ billion)	Number of issues	Number of firms in Sample	Group firms in 1990**	Group firms in 2001**	1992 Sales (Yen billion)**	1999 Sales (Yen billion)**
Mitsubishi	29.8	204	30	178	271	43279	41732
Mitsui	15.5	161	28	140	207	30865	27869
Sumitomo	33.0	275	31	143	248	45300	39699
Fuyo	24.6	231	23	140	221	37677	29811
DKB	29.1	211	36	114	208	48055	34875
IBJ	1.8	18	6	28	47	3196	3076
Sanwa	15.7	174	29	112	193	35502	27633
Tokai	1.1	14	8	38	60	11583	6886
Double count*	1.5	15	2	3	2		
Sub-total	149.1	1273	189	890	1453	255457	211581
Non-affiliated	266.7	1246	203				
Total	415.8	2519	392				

The table shows the eight corporate groups as identified by Brown & Co's (formerly Dodwell Marketing Consultants) Industrial Groupings in Japan. Issue amount refers to the total proceeds from straight corporate bond issues by the groups' firms in billions of US$. Number of firms in sample is the number of firms that were involved in these issues. *Taiheiyo Cement belongs to both Mitsui and Fuyo; Mitsui OSK lines to both Mitsui and Sumitomo. **Source: Industrial Groupings In Japan, Brown & Company (1995, 2001).

The number of keiretsu affiliated firms grew during the 1990s, which suggests an increasing economic significance. But that impression is only superficial and due to a trend of both starting new ventures and spinning off parts of firms that remain within the keiretsu. The sales figures show a different picture. Due to the previously mentioned

[18] Other sources are Keizai Chosa Kyokai's 'Keiretsu no Kenkyu', and Toyo Keizai's 'Kigyyo Keiretsu Soran', but these have not been published recently. According to Yafeh (2002), the cessation of their publication is another indication of the keiretsu's demise.

disappointing operating performance, sales declined for all groups, in spite of the new ventures.

The 189 keiretsu firms in our sample issued US$ 149 billion in straight corporate bonds in the Japanese domestic market, which is 36% of the total issue amount in the sample. Keiretsu firms account for 47% of the 392 issuing firms and for just over half of the issues, which means that, on average, they issued slightly more bonds per firm than non-affiliated firms. An additional 13% of the firms belonged to a vertical keiretsu, making the percentage of firms belonging to either type of keiretsu 60%. This is more than the about 40 to 50% of listed manufacturing firms as reported by Weinstein and Yafeh (1995), but less than the 84% reported by Nakatani (1984). Our classification is corroborated by Morck *et al.*'s (2000) more recent sample, where 51% of firms belong to a financial keiretsu, which is close to the 47% we find.

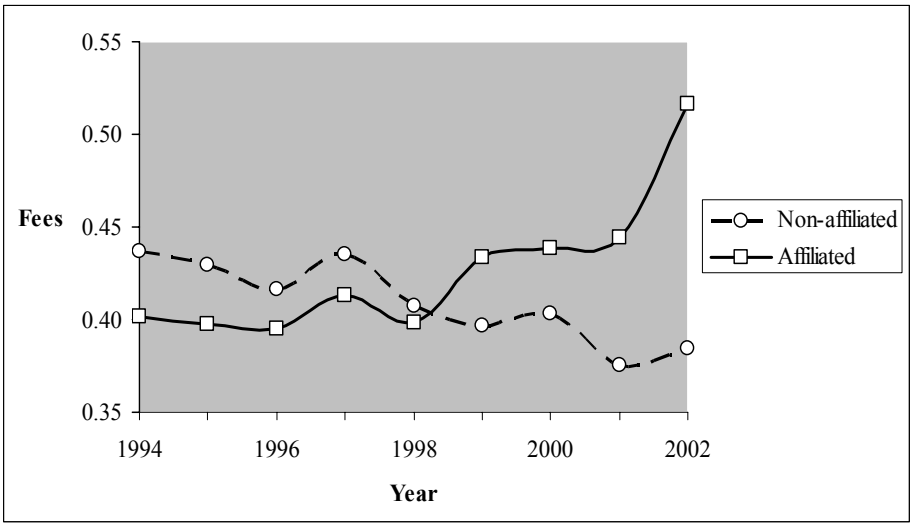
Keiretsu affiliation is relatively stable among our sample firms. Out of the 189 issuers that were members in at least one period, 175 were so in both periods. Eight firms are not listed as members in the 1995 edition of Industrial Groupings in Japan, but do appear in the 2001 edition. Three of them issued both before and during membership. Six firms appeared in the 1995 edition of Industrial Groupings in Japan, but do not return in the 2001 edition. None of these firms issued after 1998. For the other 378 firms in the sample (both members and nonmembers) affiliation did not change. This membership stability seems inconsistent with the dissolution of cross-holdings that has been going on over the past decade[19]. We note however, that bond issuers are generally large firms, even compared to other keiretsu firms. Average keiretsu firm sales were around US$ 1.5 billion in 1999 (Industrial Groupings in Japan, 2001), versus US$ 13.8 billion for the average affiliated firm that issued in 1999. Given their importance to the keiretsu, it is hardly surprising that membership among large firms is very stable. A mere 11% of all keiretsu firms are classified 4-star by Industrial Groupings in Japan, but 4-star firms account for 79% of all issues by keiretsu firms in our sample. This 4-star classification means that group members have a majority of the voting rights in the firm, and that the firm is a member of the presidents' council. Only the largest firms in the keiretsu are typically admitted to the Presidents' council.

Fees

Mean fees over the sample period are stable at just over 0.4% of proceeds, with the median at exactly 0.4%, and a standard deviation of 0.0085%. Given the sample mean issue size of US$ 165 million, the mean amount of fees is US$ 680,000. The 0.4% average is lower than previous studies find for Eurobond and US corporate debt markets (e.g. Kim *et al.*, 2003 and Esho *et al.*, 2002). The stability at just over 0.4% is misleading however, because when comparing fees for issues by affiliated with those by non-affiliated firms, a very different picture emerges, as Graph 1 shows.

[19] NLI Research Institute, 2002, Cross-shareholdings decline for the 11th straight year.

Graph 1. Mean fees for affiliated and non-affiliated firms' bond issues



The graph shows fees on 2519 Japanese domestic bond issues included in our regressions, over the 1994-2002 period, both for firms belonging to one of the eight financial keiretsu groups identified in table 2 (affiliated firms) and for non-group (non-affiliated) firms. Fees are gross fees paid to the underwriters as a percentage of the total proceeds of the issue.

During the first half of the sample period keiretsu firms enjoyed a slight discount in fees, but after 1998, this discount turned into a premium. Median fees for both affiliated and non-affiliated fees are at the same level as mean fees.

Issue characteristics

Means of fees and of other issue characteristics are given in Table 2, for affiliated and non-affiliated firm separately, and for each year of the sample period.

Table 2. Issue characteristics

Panel A: Number of issues and issue amounts

		1994	1995	1996	1997	1998	1999	2000	2001	2002	1994-2002
Number of issues	Affiliated	22	122	150	187	342	170	111	93	76	1273
	Non-affiliated	46	86	136	159	306	131	130	114	138	1246
	Total	68	208	286	346	648	301	241	207	214	2519
Issue amount	Affiliated	6610	20826	19711	19582	33966	16958	10687	12769	8165	149272
	Non-affiliated	15575	27546	30238	27895	49358	28124	26215	29877	31878	266706
	Total	22185	48372	49948	47476	83325	45082	36902	42645	40043	415978
	N	68	208	286	346	648	301	241	207	214	2519

See caption on next page.

Table 2. Issue characteristics (continued)

Panel B: Issue descriptives

		1994	1995	1996	1997	1998	1999	2000	2001	2002	1994-2002
Fees	Affiliated	0.400	0.397	0.397	0.410	0.398	0.436	0.445	0.428	0.525	0.418
	Non-affiliated	0.437	0.427	0.417	0.438	0.408	0.394	0.398	0.371	0.378	0.406
	Difference	-0.04***	-0.03***	-0.02***	-0.03***	-0.01***	0.04***	0.05***	0.06***	0.15***	0.01***
Principal amount	Affiliated	300.4	170.7	131.4	104.7	99.3	99.8	96.3	137.3	107.4	117.3
	Non-affiliated	338.6	320.3	222.3	175.4	161.3	214.7	201.7	262.1	231.0	214.0
	Difference	-38.2	-149.6***	-90.9***	-70.7***	-62.0***	-114.9***	105.4***	-124.8***	-123.6***	-96.8***
Principal amount as percentage of Total Assets	Affiliated	2.12%	2.40%	2.16%	1.70%	1.62%	1.36%	2.27%	1.13%	1.51%	1.77%
	Non-affiliated	1.36%	3.02%	2.47%	2.26%	1.75%	1.64%	2.02%	1.44%	1.10%	1.88%
	Difference	0.75%*	-0.62%	-0.31%	-0.56%**	-0.13%	-0.28%	0.25%	-0.31%	0.41%***	-0.11%***
Maturity	Affiliated	4.80	6.02	6.16	7.24	6.21	6.62	5.91	5.65	5.52	6.26
	Non-affiliated	7.75	8.18	7.65	9.50	8.10	8.16	7.44	7.28	7.63	8.03
	Difference	-2.95**	-2.16***	-1.49***	-2.27***	-1.88***	-1.53***	-1.53***	-1.63***	-2.11***	-1.77***
Coupon	Affiliated	3.89	2.81	2.71	2.42	2.19	2.15	2.01	1.17	1.16	2.22
	Non-affiliated	4.19	2.90	2.79	2.48	2.12	1.86	1.71	1.11	1.07	2.09
	Difference	-0.29**	-0.08	-0.08	-0.06	0.07*	0.29***	0.30***	0.07	0.08	0.13***
Number of managers	Affiliated	21.8	17.8	16.2	12.5	8.0	4.3	5.0	5.9	5.7	9.8
	Non-affiliated	28.1	20.4	18.6	14.1	9.7	9.8	9.3	9.1	7.8	12.3
	Difference	-6.3***	-2.6**	-2.4***	-1.5*	-1.07***	-5.4***	-4.3***	-3.2***	-2.1***	-2.6***
	N	68	208	286	346	648	301	241	207	214	2519
Yield spread over benchmark (in basis points)	Affiliated	-28.8	-18.1	5.5	32.3	82.8	68.4	48.7	41.2	32.0	43.4
	Non-affiliated	-42.6	-2.4	3.2	20.1	69.1	21.9	11.4	16.9	9.7	23.5
	Difference	13.8	-15.7**	2.3	12.2***	13.7***	46.5***	37.3***	24.3***	22.3***	19.9***
	N	50	151	238	239	484	260	211	180	190	2003

The table shows descriptive statistics for the 2519 issues that are included in the regressions shown in Tables 5, 6 and 7. Panel A shows the number of issues and the total amount issued in millions of US$, both for firms belonging to one of the eight financial keiretsu groups identified in Table 2 (affiliated firms) and for nongroup (non-affiliated) firms. Panel B reports means per year and for the whole sample period, again both for group and for nongroup (non-affiliated) firms. Differences in means for issues of both types of firms are shown too, with 1, 2 or 3 stars if they differ significantly at the 0.10, 0.05, and 0.01 levels respectively. Fees are gross fees paid to the underwriters as a percentage of the total proceeds of the issue. Principal amount equals total proceeds in millions of US$. Principal amount as a percentage of total assets are proceeds as a percentage of the total assets of the issuer at the end of the book year preceding the issue. Maturity signifies the number of years between the issue date and the promised redemption of the issue. Coupon is the promised annual payment to bondholders as a percentage of the bond's face value. Number of managers refers to the number of investment banks involved in the underwriting syndicate that brings the issue to the market. Yield spread over benchmark is the issue's yield to maturity minus the yield to maturity of a corresponding government bond.

Panel A shows the number of issues and the amount issued by affiliated and non-affiliated firms respectively. Issues by non-affiliated firm were typically larger, with a mean (median) value of US$ 214 million (US$ 151 million). The average mean (median) issue size of affiliated firms equals US$ 117 million (US$ 86 million). The total sample average is at US$ 163 million. Affiliates and non-affiliates placed approximately the same amount of issues, with affiliated firm doing slightly more issues up until 1999, and non-affiliated firms slightly more issues in the last few years. In general their numbers went up and down within the same proportions for most of the sample period, although the fall in issues by affiliated firms after 1998 is somewhat sharper than the fall in issues by non-affiliated firms.

Similar to Graph 1, Panel B of Table 2 distinguishes fees and other issue descriptives for issues of both types of firms. Initially, fees are lower for affiliated firms, but then they become increasingly higher than fees for non-affiliated firms. Yield spreads[20] and coupons follow a similar pattern, also with an initial advantage/equality turning into a later disadvantage. Only the principal amount as a percentage of total assets lacks a clear pattern. For the other variables, the differences between affiliated and non-affiliated firms are stable over the sample period. That is, affiliated firms place smaller issues, with shorter maturities, and they hire less managers in their underwriting syndicate over the whole sample period. It seems that both types of firms do different kinds of issues, but these differences existed over the whole period, so they do not provide an explanation for the change from a discount to a premium.

Firm characteristics

Next, we investigate firm characteristics. When looking at the industry distribution, we find that keiretsu firms are more often active in materials and consumer products, whereas non-affiliated firms dominate in the retail and energy sectors. Table 3 gives means of (previous year's) financial statement items for those firms that issued in that particular year, again split by both types of firms.

As to size, affiliated firms are smaller in terms of total assets for each sample year, but in terms of sales the picture is not very clear, with large swings in average sales. Affiliated firms have less fixed assets as a percentage of total assets, which is probably due to more non-affiliated firms being in capital intensive industries, which also explains their consistently higher mean total assets. Weinstein and Yafeh (1995) find that keiretsu firms are both larger and more levered. However, they compare affiliated and non-affiliated firms among listed manufacturing firms, not specifically among bond issuers, which are likely to be larger and more levered than the average listed firm. Therefore, in our sample affiliated and non-affiliated firms are probably more comparable in terms of size and

[20] Strikingly, average yield spreads over Japanese government bonds are negative in 1994 and 1995. This is due to anomalies in the Japanese government bond (JGB) market. As Boudoukh and Whitelaw (1991, 1993) point out, the JGB market was known for 1) illiquidity of the majority of traded bonds and 2) a coupon effect, whereby bonds were priced differently from the present value of their cash flows, depending on their coupon rates. In subsequent years, i.e. the period we are most interested in, liquidity has improved (Eom *et al.*, 1998) and we find positive yield spreads.

leverage. For most of the sample period both types of firms have similar debt ratios at around 65%. However, at similar total debt ratios, affiliated firms have lower long-term debt ratios than non-affiliated firms, indicating that affiliated firms have more short-term debt, which might reflect more bank debt or more trade credit from other affiliated firms.

As found in previous research (e.g., Prowse, 1992, Weinstein and Yafeh, 1998, Kang and Shivdasani, 1999), affiliated firms are less profitable than non-affiliated firms. We find significantly lower ROA and ROE, and also lower market-to-book ratios for most sample years. At the same time, keiretsu firms have higher earnings volatility during the whole sample period, which seems inconsistent with the idea of more stable cash flows (e.g. Nakatani, 1984, Khanna and Yafeh, 2005). But it is consistent with Beason (1998), who finds that the lower profitability of keiretsu firms is not offset by lower stock volatility. In spite of lower profitability, keiretsu firms in our sample are more liquid than non-affiliated firms, with significantly higher mean current ratios (and quick ratios) for each sample year. Overall levels of current ratios are low, with those of non-affiliated firms even on average below one. This is in line with Hoshi *et al.*'s (1989, 1991) findings for the 1980s that non-affiliated firms are more liquidity constrained. Morck and Nakamura (1999) argue that affiliated firms have higher liquidity so as to avoid disciplining from banks.

Table 3. Issuing firm characteristics

		1994	1995	1996	1997	1998	1999	2000	2001	2002	1994-2002
Sales	Affiliated	38432	31272	21540	15066	14613	37965	13802	22654	11732	20967
	Non-affiliated	17660	19168	17568	13741	18736	19673	17960	26048	22033	19013
	Difference	20772**	12104*	3972	1325	-4123**	18292***	4158	-3394	-10301***	1954
Total Assets	Affiliated	24750	19833	16970	14087	13675	24583	11903	18417	13027	16515
	Non-affiliated	39680	33141	28259	24476	28559	35910	32979	51619	40858	33438
	Difference	-14930*	-13308***	-11289***	-10388***	-14884***	-11327***	-21076***	-33202***	-27831***	-16923***
Return on Assets	Affiliated	1.52	1.47	1.90	2.04	1.87	0.95	1.06	1.00	2.05	1.61
	Non-affiliated	2.93	2.56	2.49	2.62	2.23	2.03	2.04	2.14	2.61	2.35
	Difference	-1.41***	-1.09***	-0.58***	-0.58***	-0.36***	-1.08***	-0.98***	-1.14***	-0.57	-0.74***
Market-to-book Ratio	Affiliated	2.323	2.066	2.232	2.119	1.809	1.635	1.492	1.970	1.529	1.882
	Non-affiliated	2.426	2.234	2.211	2.448	1.943	1.974	1.975	2.123	1.874	2.090
	Difference	-0.103	-0.168	0.021	-0.329**	-0.134*	-0.339***	-0.483***	-0.153	-0.345**	-0.208***
Debt as a percentage of Total Assets	Affiliated	67.89	64.84	66.29	64.44	61.28	73.44	65.70	66.77	59.39	65.09
	Non-affiliated	72.90	66.13	64.42	64.37	60.15	65.42	65.18	66.95	63.30	64.09
	Difference	-5.02	-1.29	1.87	0.07	1.13	8.01***	0.52	-0.18	-3.91	1.00
Long-term Debt as a percentage of Total Assets	Affiliated	53.74	51.05	52.85	50.03	46.03	61.84	53.32	54.23	46.45	51.41
	Non-affiliated	67.64	58.10	54.22	54.66	49.97	59.31	58.03	61.07	56.34	55.78
	Difference	-13.89***	-7.05**	-1.38	-4.64**	-3.94**	2.53	-4.71	-6.84**	-9.88***	-4.38***
Current Ratio	Affiliated	1.15	1.22	1.21	1.14	1.18	1.10	1.17	1.11	1.06	1.16
	Non-affiliated	0.52	1.01	0.91	0.94	0.97	0.83	0.79	0.76	0.82	0.88
	Difference	0.62***	0.21**	0.30***	0.020***	0.21***	0.27***	0.38***	0.35***	0.24***	0.28***
Standard deviation of EBIT by Total Assets	Affiliated	0.0114	0.0171	0.0144	0.0109	0.0104	0.0115	0.0159	0.0170	0.0148	0.0130
	Non-affiliated	0.0080	0.0137	0.0106	0.0092	0.0106	0.0104	0.0118	0.0138	0.0143	0.0113
	Difference	0.0034**	0.0034**	0.0038***	0.0018**	-0.0002	0.0011	0.0041***	0.0033	0.0005	0.0016***
Fixed Assets as a percentage of Total Assets	Affiliated	0.451	0.431	0.415	0.382	0.379	0.361	0.401	0.365	0.377	0.389
	Non-affiliated	0.796	0.613	0.537	0.576	0.537	0.636	0.654	0.691	0.614	0.602
	Difference	-0.345***	-0.182***	-0.122***	-0.194***	-0.158***	-0.274***	-0.253***	-0.326***	-0.237***	-0.213***
N		68	208	286	346	648	301	241	207	214	2519

The table shows descriptive statistics of the firms that made the 2519 issues that are included in the regressions shown in Table 5. Reported are means of issuer characteristics at the end of the book year preceding the issue, for those firms that actually made an issue. Means are reported separately for firms belonging to one of the eight financial keiretsu groups identified in Table 2 (affiliated firms) and for nongroup (non-affiliated) firms. Differences in means for issues of both types of firms are also shown, with 1, 2 or 3 stars if they differ significantly at the 0.10, 0.05, and 0.01 levels respectively. Sales and total assets are in millions of US$. Debt values are book values. Standard deviation of EBIT by total assets is over a 5 year period.

3.4 Methodology

To establish the relationship between keiretsu, risk, and fees, we run OLS regressions on fees. The basic model takes the following form:

$$FEES_i = \alpha + \beta_1 FK_i * BEFORE1999_i + \beta_2 FK_i * SINCE1999_i + \beta_3 BK_i + \beta_4 B4_i$$
$$+ \beta_5 LOG(PRINC_i) + \beta_6 LOG(SALES_i) + \beta_7 COUP_i + \beta_8 MAT_i + \beta_9 DR_i + \beta_{10} SDEBTA5_i$$
$$+ \beta_{11} FA_i + \beta_{12} CR_i + \beta_{13} ROA_i + \beta 2_{14} MB_i + \beta_{15} Y95_i + .. + \beta_{22} Y02 + \beta_{23} IND1_i + .. + \beta_{32} IND10_i$$

Underwriting fees are defined as a percentage of issue size, as in for example Gande *et al.* (1999) and Kim *et al.* (2003). Table 4 gives an overview of the independent variables to be used in the regressions, and the predicted signs of their coefficients.

Table 4. Variable descriptions

Variable	Label	Variable description	Predicted relation with fees
Log of principal amount	LOG(PRINC)	Logarithm of issue proceeds in millions of US$	+
Log of sales	LOG(SALES)	Logarithm of the firm's previous year's sales in millions of US$	-
Log of total assets	LOG(TA)	Logarithm of the firm's previous year's total assets in millions of US$	-
Coupon	COUP	Promised annual coupon payments as a percentage of the principal amount	+
Maturity	MAT	The bond's time to maturity in years	+
Debt ratio	DR	Book value of debt as a percentage of the book value of total assets	+
Standard deviation of EBIT by total assets	SDEBTA5	5-year standard deviation of EBIT divided by total assets	+
Fixed assets as a % of total assets	FA	Book value of fixed assets as a percentage of the book value of total assets	-
Current ratio	CR	Current assets divided by current liabilities	-
Return on assets	ROA	EBIT as a percentage of total assets	-
Market-to-book	MB	Market value of equity divided by the book value of equity	?
Lead belongs to same keiretsu	BK	Dummy that equals 1 if the lead manager of the underwriting syndicate belongs to the same keiretsu as the issuer	?
Big Four lead	B4	Dummy that equals 1 if the lead manager of the underwriting syndicate is a Big Four firm	+
Japanese commercial bank lead	JCB	Dummy that equals 1 if the lead manager of the underwriting syndicate is a Japanese commercial bank	-
Affiliated	FK	Dummy that equals 1 if the issuing firm belongs to a financial keiretsu	+

The table shows the variables to be used in the regressions on fees and the predicted signs of their coefficients. The log of principal amount, coupon, maturity, debt ratio, standard deviation of EBIT by total assets, and the affiliated dummy are all associated with higher risk and expected to be positively related to fees. Big Four lead is a proxy for underwriter reputation, which is also associated

with higher fees. The market-to-book ratio and the dummy for a lead manager belonging to the same keiretsu are variables that can go either way. The log of sales, fixed assets ratio, and current ratio are associated with lower risk, and thus have a negative sign. In addition to the variables mentioned in this table, year dummies and industry dummies will be employed too.

The affiliated dummy (FK) equals one if the firm belongs to a financial keiretsu according to the Industrial Groupings in Japan classification. This dummy is used to establish the relation between keiretsu and fees. We interact FK with the time period dummies to account for changes in the influence of affiliation over time. Most other variables are meant to establish the link between fees and risk. Consistent with Altinkiliç and Hansen (2000), we take both the size of the issue, LOG(PRINC), and the size of the issuing firm, LOG(SALES), into account. At a fixed firm size, larger issues are riskier than smaller ones. At a fixed issue size, issues by large firms are less risky than those by smaller firms. Therefore, we expect fees to relate positively to issue size (measured as the log of the principal amount) and negatively to firm size (as measured by the log of sales or the log of total assets). An obvious proxy for risk would be the bond's credit rating. We do not use it here because in our sample only 14% of the issues are rated by either S&P or Moody's, and we do not have the ratings by Japanese agencies such as Mikuni, JCR, JBRI or NIS. We believe this is not problematic given that issue and firm characteristics are good predictors of rating in our sample[21]. Issue characteristics to be used as regressors on fees include issue size, but also the bond's coupon (COUP), its maturity (MAT), and the type of underwriter (B4, JCB, BK). MAT, or maturity is the number of years between the issue date and the planned redemption of the issue. Coupon (COUP) is the promised annual payment to be made to the bondholders, as a percentage of the issue size. Both are expected to be positively related to issue risk (see e.g. Kim *et al.*, 2003).

We employ three dummies to control for the type of underwriter. First, there is a dummy (B4) that equals one if the lead manager of the underwriting syndicate is one of the Big Four firms (Nomura, Yamaichi, Nikko and Daiwa). These firms have traditionally been the most reputable underwriters in Japan. Since Chemmanur and Fulghieri's (1994) model predicts that high reputation underwriters charge higher fees than their less reputable counterparts, we expect to find a positive sign for this dummy. Likewise, we expect to find a negative sign for the second underwriter dummy, JCB, which takes a value of 1 if the lead underwriter is a Japanese commercial bank and 0 otherwise. Third, we use a dummy (BK) that equals one if the lead manager belongs to the same keiretsu as the issuer. It is difficult to attach a predicted sign to this dummy. On the one hand, a positive sign will result if keiretsu banks have a strong bargaining position via-à-vis their member firms and charge them higher fees. On the other hand, a negative sign will result if keiretsu firms benefit from their close banking relationships to obtain better deals and pay lower fees. However, such a negative sign could also result from keiretsu banks misusing their private information to underwrite less risky issues, as Hori and Osano (2002) suggest.

[21] To test if firm and issue characteristics are good predictors of rating, we run ordered logit regressions on the 266 rated issues in our sample. The results show that ratings increase significantly in firm size and fixed assets and decrease significantly in financial and operating risk. Results are available upon request from the corresponding author.

Firm characteristics include firm size and the aforementioned dummy for affiliation, but also the firm's debt ratio (DR), variability in operating profits (SDEBTA5), fixed assets ratio (FA), current ratio (CR), return on assets (ROA), and market-to-book ratio (MB). These are all measured in the year preceding the issue. Financial risk, in the form of the debt ratio, is measured as the book value of assets as a percentage of total assets. For the variability of operating profits (SDEBTA5), or operational risk, we take the 5-year standard deviation of the ratio of EBIT and total assets. For both financial and operating risk we expect a positive relation with fees. The fixed assets ratio (book value of fixed assets as a percentage of total assets), current ratio (current assets by current liabilities), and return on assets (EBIT by beginning of year total assets), are all expected to be negatively associated with risk, and thus take a negative sign. The sign of the market-to-book ratio (market value of equity by book value of equity) is not clear upfront, as it is both associated with value (low risk) and growth options (high risk).

Given the effects of competition on fees reported in several studies (e.g., Carow, 1999, Gande *et al.*, 1999, and Santos and Tsatsaronis, 2003), and the reported fall in fees in the Japanese corporate bond (Takaoka and McKenzie, 2005), it seems advisable to look at the change over time and include year dummies (Y95 for 1995, Y96 for 1996, etc.). As risk may also differ across industries, for example due to varying degrees of regulation, we also include industry dummies (IND1 through IND10).

3.5 Results

We run OLS regressions on fees using the independent variables discussed in section 4. To explicitly account for the possibility that the effect of keiretsu affiliation changes over time, we not only use year dummies, but also interact the affiliation dummy with the year dummies (not reported in the tables) and with the time period dummies (before 1999 and since 1999). Table 5 reports the results of the regressions. Model 1 is the basic model that includes all the likely explanatory variables discussed previously. Models 2, 3 and 4 are robustness tests to model 1, where non-significant variables are left out (Model 2), the log of sales is replaced by the log of total assets (Model 3), and the Big Four dummy is replaced by commercial bank dummy (Model 4).

Table 5 indicates that fees indeed increase in risk, as reported by Kim *et al.* (2003) for the US. Fees increase in coupon, maturity, debt ratio, and earnings volatility, while they decrease in firm size (sales or total assets), liquidity, and, not significantly in a statistical sense, in fixed assets and profitability. The log of the issue amount is the only variable that does not take the expected sign, nor is it statistically significant. Comparing models 2, 3 and 4 with the basic model shows that the results are robust to model changes, also when replacing sales by total assets. Significance levels do not differ, and the coefficients and R^2 hardly change across the models. This is surprising since sales and total assets differ so markedly for the sample firms (see Table 3). We note however, that the economic role of size is not very substantial. The -0.005 coefficient of log sales implies that even the largest firm (US$ 200 billion in sales) enjoys merely a 0.02% discount (5%

of average fees) vis à vis the smallest firm (US$ 120 million in sales). The same discount results for firms that have a 1.3 percentage point (or 1.6 standard deviation) lower coupon than the sample mean coupon. Most other variables are in the same range of limited economic significance.

Table 5. Modeling fees on bond issues

Model	1	2	3	4
Before 1999*Keiretsu	-0.0046	-0.0039	-0.0046	-0.0053
affiliated	(-1.27)	(-1.10)	(-1.26)	(-1.47)
Since 1999*Keiretsu	0.0637***	0.0649***	0.0633***	0.0627***
affiliated	(7.42)	(7.61)	(7.37)	(7.33)
Lead belongs to same	-0.0139***	-0.0152***	-0.0138***	-0.0111**
keiretsu as the issuer	(-2.93)	(-3.53)	(-2.90)	(-2.37)
Big four lead	0.0043		0.0045	
underwriter	(1.35)		(1.39)	
Commercial bank lead				-0.0117***
underwriter				(-3.73)
Log of principal amount	0.0001	0.0004	0.0005	0.0004
	(0.04)	(0.10)	(0.15)	(0.12)
Log of sales	-0.0056***	-0.0054***		-0.0055***
	(-3.99)	(-3.94)		(-3.90)
Log of total assets			-0.0060***	
			(-3.76)	
Coupon	0.0147***	0.0150***	0.0145***	0.0148***
	(3.22)	(3.31)	(3.16)	(3.27)
Maturity	0.0069***	0.0068***	0.0069***	0.0069***
	(10.57)	(10.50)	(10.49)	(10.60)
Debt ratio	0.0004***	0.0004***	0.0004***	0.0004***
	(3.30)	(4.09)	(3.61)	(3.42)
Standard deviation of	0.5570**	0.5671**	0.5444**	0.5437***
EBIT by total assets	(2.49)	(2.33)	(2.44)	(2.46)
Fixed assets as a	-0.0173	-0.0200*	-0.0130	-0.0169
% of total assets	(-1.55)	(-1.78)	(-1.18)	(-1.52)
Current ratio	-0.0113***	-0.0113***	-0.0106***	-0.0118***
	(-3.92)	(-3.83)	(-3.76)	(-4.06)
Return on assets	-0.0017		-0.0018	-0.0018
	-(1.12)		(-1.18)	-(1.20)
Market-to-book	-0.0008		-0.0007	-0.0005
	(-0.57)		(-0.53)	(-0.39)
Constant	0.3587***	0.3530***	0.3617***	0.3643***
	(11.22)	(11.91)	(10.72)	(11.58)
Industry dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
R-squared	0.36	0.35	0.36	0.36
Adjusted R-squared	0.35	0.35	0.35	0.35
Observations	2519	2519	2519	2519

OLS regressions with White (1980) heteroskedasticity-consistent errors. Dependent variable is fees paid to the underwriters as a percentage of proceeds. Principal amount equals total proceeds in millions of US$. Sales are reported sales in the year preceding the issue. The same applies to total assets, current ratio, return on assets, and market-to-book. Coupon is the promised annual payment to

bondholders as a percentage of the bond's face value. Maturity signifies the number of years between the issue date and the promised redemption of the issue. Debt ratio is the ratio of book debt to total assets at the end of year preceding the issue. Standard deviation of EBIT by total assets is over a 5 year period. Lead belongs to same keiretsu as the issuer is a dummy that equals 1 if the issuer and the lead manager of the underwriter syndicate belong to the same keiretsu. Big Four lead is a dummy that equals 1 if the lead manager is one of the Big Four Japanese investment banks (Nomura, Yamaichi, Nikko, or Daiwa). Keiretsu affiliated is a dummy that equals 1 if the issuer belongs to a horizontal keiretsu and 0 otherwise.

Much more significant in an economic sense, are the interaction terms of keiretsu affiliation with the period dummies. Before 1999, keiretsu firms have slightly lower fees, but the difference is not significant. Since 1999, fees have been significantly higher (6.3-6.4 percentage points, or 15% of mean fees) for keiretsu firms than for non-affiliated firms. In other regressions (not shown in the tables), we interact keiretsu affiliation with separate year dummies. Those regressions show that keiretsu firms pay a premium over non-affiliated firms growing from 0.04% of proceeds (10% of average fees) in 1999 to 0.15% of proceeds (35% of average fees) in 2002. In 1998 the premium is already visible, but is statistically not significant. Apparently this effect grows stronger over the sample period as the consequences of the banking crisis become clear.

The table also shows that Big Four investment bankers charge slightly higher fees, but in neither a statistically nor economically significant way. We also find that they typically underwrite larger issues, by larger firms with lower debt ratios and more fixed assets (not reported in tables). This is consistent with the model by Chemmanur and Fulghieri (1994) and with empirical findings by Esho *et al.* (2002) for US firms in the Eurobond market.

As Takaoka and McKenzie (2005) report, commercial bank entry to the underwriting business resulted in lower fees. During their sample period (1992-2002), commercial banks charged lower fees than investment banks. To see if this also applies to our sample, we replace the Big Four dummy with a commercial bank dummy in Model 4. In contrast to the Big Four dummy, the commercial bank dummy is highly significant and negative, indicating that commercial banks indeed charged lower fees. We do not include both dummies in one regression, because we would run into a multicollinearity problem due to their significantly negative correlation (-0.89 at the 0.01 level). While the other variables are not affected, both the Big Four and the commercial bank dummy are highly significant. To see whether the commercial bank discount affected fees for keiretsu firms differently than those of non-affiliated firms, we also run regressions (not reported in the tables) with the interactions of keiretsu affiliation, commercial bank, and year dummies. These regressions indicate that the commercial bank discount applies to both types of firms, but more strongly to non-affiliated firms. The other results remain the same.

There is a 0.015 percentage point (4% of average fees) discount for keiretsu firms that hire an underwriter from their own keiretsu. Potentially, this could be due to bankers giving discounts to their keiretsu peers, or to banks using private information to select the better issues. The latter explanation would be consistent with the suggestion by Hori and Osano (2002) that banks misuse their private information for their self-interest at the expense of other banks in bond underwriting. Upon closer inspection, we find that in close to half of the issues by keiretsu firms, they hire a bank from their own keiretsu as their lead manager (not in the tables). The firms that do so are much smaller (average

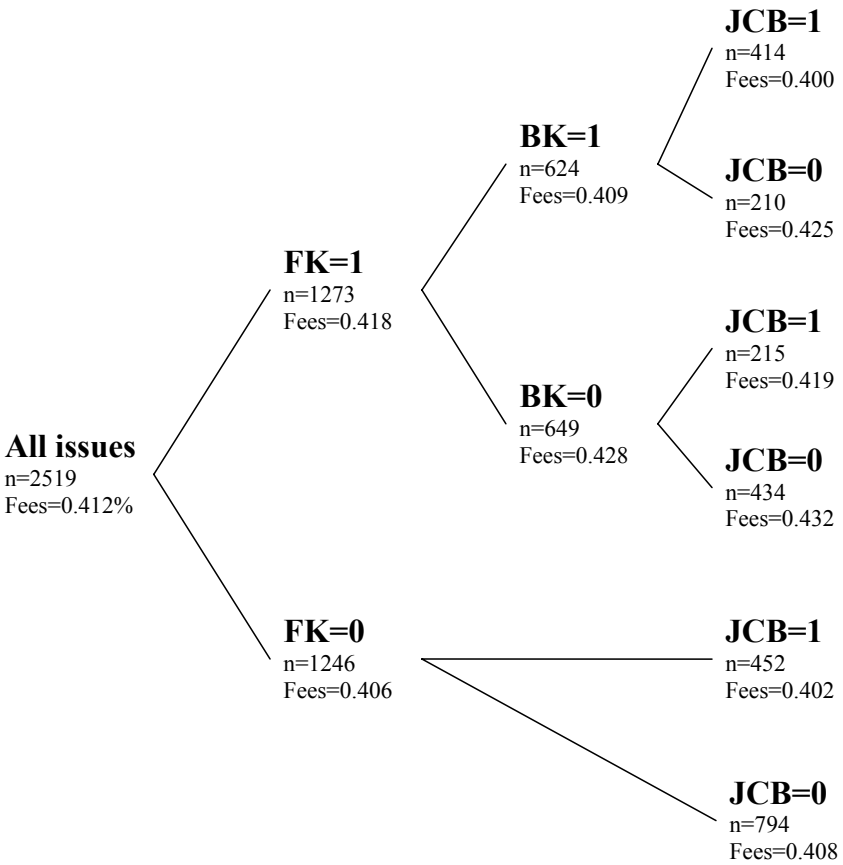
sales significantly smaller at the 5% level and median sales at the 10% level) than those that do not, which suggests they might be more likely to be subjected to bank hold-up. Moreover, these firms are more profitable than keiretsu firms that do not hire their keiretsu bank as underwriter (average ROA significantly larger at the 10% level, median ROA larger at the 5% level), and have a higher standard deviation of profitability (significant at the 1% level), suggesting there might indeed be some selection by banks going on.

Since fee discounts apply both to Japanese commercial bank underwriting (JCB) and to underwriting by a bank from the firm's own keiretsu (BK), this raises the question to what extent these two variables are related. Figure 1 gives an overview of keiretsu affiliation, underwriter choice, and mean fees for each of the resulting categories in our sample.

Figure 1 shows that underwriters from the firm's own keiretsu tend to be commercial banks. Still, in one out of three times, the keiretsu underwriter is an investment bank. This is in spite of the fact that not all keiretsu have active investment banks. In those cases where the keiretsu firm does not hire an underwriter from its own group (BK=0), we find the reverse effect: a Japanese commercial bank is hired in 215 cases (JCB=1) and 434 times an investment bank or foreign bank is chosen (JCB=0). The correlation between commercial bank underwriting (JCB) and hiring within the firm's own keiretsu (BK) is 0.27 and significant at the 1% level. Conditional upon keiretsu affiliation (FK=1), the correlation is 0.33, at the same level of significance. Thus, Japanese firms seem more inclined to hire an investment bank than a commercial bank as underwriter, except when the underwriter is from the firm's own keiretsu. Within each category (values of FK and BK), fees paid to commercial bank underwriters are lower than those paid to investment banks[22]. This indicates that the commercial bank effect does not coincide with the effect of hiring within the firm's own keiretsu. Rather, the effects seem complementary.

[22] The difference is significant in all cases, except when comparing within the FK=1 and BK=0 category.

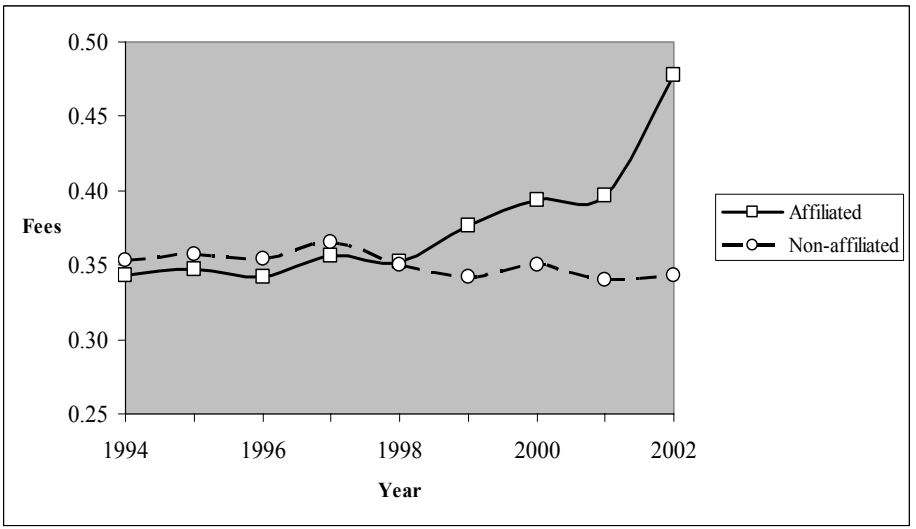
Figure 1. Keiretsu affiliation and underwriter choice



FK is a dummy that equals one for firms affiliated to a financial keiretsu, and zero otherwise. BK is a dummy that states whether a keiretsu firm hires an underwriter from its own keiretsu (BK=1) or not (BK=0). JCB is a dummy that equals one if the underwriter is a Japanese commercial bank, and zero otherwise. N is the number of issues that meet the stated condition. Fees are mean fees for the specified issues.

In Graph 1 we show fees over time for affiliated and non-affiliated firms. Using the regression coefficients from Table 5, we now construct risk-corrected fees for both types of firms. Graph 2 shows that the same pattern appears: at first slightly lower fees for affiliated firms, but later higher and rising fees for affiliated firms.

Graph 2. Risk-corrected fees for affiliated and non-affiliated firms' bond issues



The graph shows risk-corrected fees on 2519 Japanese domestic bond issues included in our regressions, over the 1994-2002 period, both for firms belonging to one of the eight financial keiretsu groups identified in table 2 (affiliated firms) and for nongroup (non-affiliated) firms. Risk-corrected fees are calculated adding the coefficients for year dummies, keiretsu dummies and their interaction terms to the constant.

Since affiliated firms pay increasingly higher fees over the years, keiretsu firms could be subject to a different regime than affiliated firms. To test this, we run regressions on fees for affiliated and non-affiliated firms separately. Of course, the interaction terms of affiliation dummies with time period and year dummies now disappear, and instead year dummies are reported independently. Table 6 shows the results of these regressions.

Table 6 yields results similar to Table 5 in that it shows again that fees increase in issue and firm risk. Not all the issue and firm characteristics that proxy for risk have equally strong results as in Table 5, suggesting that both types of firms are indeed subject to different dynamics. Still, most significant variables have the same sign as in the regressions of Table 5. The signs for the sizes of issue and issuer do differ however, due to the problem noted by Altinkiliç and Hansen (2000) that larger issues are usually done by larger firms. Another deviation from Table 5 is the market-to-book ratio, which takes a significantly positive sign for non-affiliated firms, and a significantly negative sign for keiretsu firms. We note however, that non-affiliated firms generally have higher market-to-book ratios than affiliated ones. For non-affiliated firms, overvaluation may thus be an issue, whereas a lack of growth options may be more of a concern with respect to keiretsu firms.

Table 6. Modeling fees separately for affiliated and non-affiliated firms

Model	Non-affiliated	Affiliated	Difference
1995	-0.0251*	0.0220**	-0.0471***
	(-1.93)	(2.04)	(-2.79)
1996	-0.0360***	0.017	-0.0529***
	(-2.69)	(1.44)	(-2.98)
1997	-0.0303*	0.0348***	-0.0651***
	(-1.69)	(2.64)	(-2.93)
1998	-0.0494**	0.0326**	-0.0820***
	(-2.48)	(2.40)	(-3.40)
1999	-0.0595***	0.0609***	-0.1204***
	(-2.77)	(3.77)	(-4.48)
2000	-0.0513*	0.0793***	-0.1306***
	(-1.83)	(4.42)	(-3.93)
2001	-0.0745***	0.0960***	-0.1705***
	(-2.80)	(5.27)	(-5.29)
2002	-0.0735***	0.1587***	-0.2323***
	(-2.79)	(5.47)	(-5.92)
Lead belongs to same keiretsu as the issuer		-0.0154***	-0.0154***
		(-3.10)	(-3.10)
Big Four lead underwriter	0.0124***	-0.0027	0.0151**
	(4.21)	(-0.51)	(2.53)
Log of principal amount	-0.0104**	0.0133***	-0.0237***
	(-2.03)	(3.50)	(-3.71)
Log of sales	-0.0066***	-0.0032	-0.0034
	(-4.05)	(-1.37)	(-1.19)
Coupon	-0.0014	0.0264***	-0.0279***
	(-0.18)	(4.97)	(-2.95)
Maturity	0.0093***	0.0058***	0.0036**
	(10.69)	(5.20)	(2.53)
Debt ratio	0.0003**	0.0003	0.0000
	(2.02)	(1.51)	(0.09)
Standard deviation of EBIT by total assets	0.6282*	0.2058	0.4224
	(1.75)	(1.16)	(1.06)
Fixed assets as a percentage of total assets	-0.0533**	0.0026	-0.0559**
	(-2.24)	(0.20)	(-2.06)
Current ratio	-0.0083**	-0.0149***	0.0066
	(-2.23)	(-2.68)	(0.99)
Return on assets	-0.0047**	-0.0043	-0.0090***
	(-2.15)	(2.46)	(-3.22)
Market-to-book	0.0035**	-0.0060***	0.0095***
	(2.52)	(-2.51)	(3.44)
Constant	0.4972***	0.2328***	-0.2643***
	(10.66)	(7.47)	(-4.71)
Industry dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
R-squared	0.46	0.43	0.44
Adjusted R-squared	0.45	0.41	0.42
Observations	1246	1273	2519

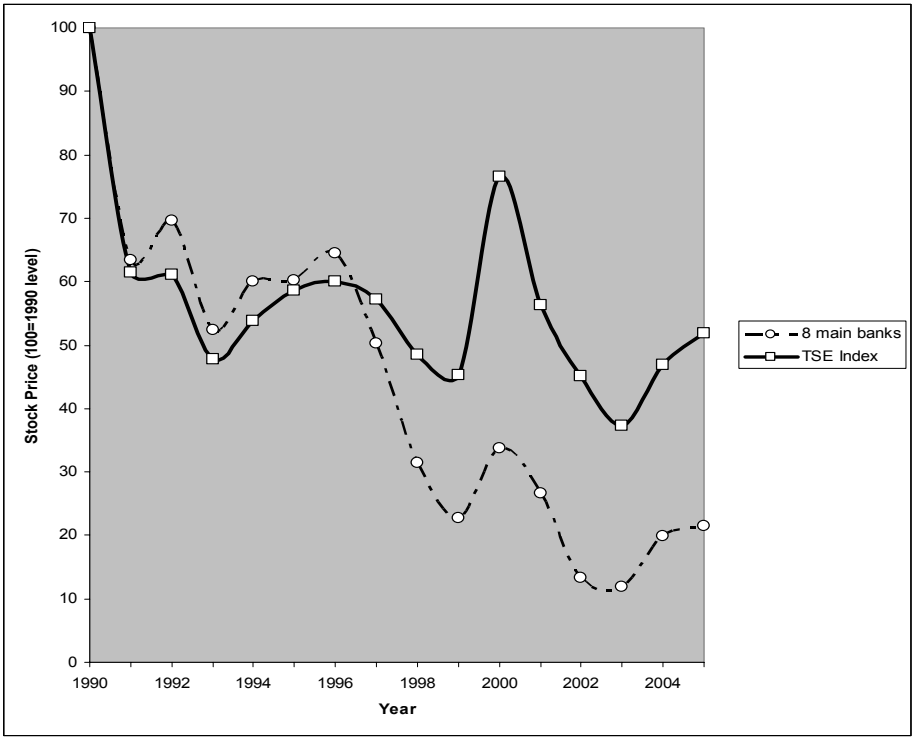
OLS regressions with White (1980) heteroskedasticity-consistent errors. Dependent variable is fees paid to the underwriters as a percentage of proceeds. Principal amount equals total proceeds in millions of US$. Sales are reported sales in the year preceding the

issue. The same applies to current ratio, return on assets, and market-to-book. Coupon is the promised annual payment to bondholders as a percentage of the bond's face value. Maturity signifies the number of years between the issue date and the promised redemption of the issue. Debt ratio is the ratio of book debt to total assets at the end of year preceding the issue. Standard deviation of EBIT by total assets is over a 5 year period. Lead belongs to same keiretsu as the issuer is a dummy that equals 1 if the issuer and the lead manager of the underwriter syndicate belong to the same keiretsu. Big Four lead is a dummy that equals 1 if the lead manager is one of the Big Four Japanese investment banks (Nomura, Yamaichi, Nikko, or Daiwa). 1995, 1996, etc. are year dummies that equal 1 if the issue is done in that particular year. Keiretsu affiliated is a dummy that equals 1 if the issuer belongs to a horizontal keiretsu and 0 otherwise. Industry dummies are included but not reported.

More importantly, Table 6 confirms that the fee differentials from Graph 1 also hold after controlling for risk. All year dummies in the affiliated regression have a positive sign, while all year dummies in the non-affiliated regression have a negative sign. Surprisingly, the coefficients are significant in 15 out of 16 cases. Thus, fees for issues by affiliated firms keep rising during the sample period, while those for issues by non-affiliated firms keep falling. As Graph 1 showed earlier, nominal fees on affiliated issues rose from 0.400% in 1994 to 0.525% in 2002, a rise of 0.125% (31% of 1994 fees). However, from Table 6 can be seen that, after correcting for risk, the rise amounts to 0.159%, or 40% of 1994 fees. In contrast to Table 5, Table 6 shows that a difference between both types of issuers has existed at least from the start of the sample period, and not just since 1998 or 1999, although an acceleration from then on can be discerned. This acceleration coincides with the substantial divestment of shares by keiretsu firms noted earlier. The results stay the same if we replace the Big Four dummy by a commercial bank dummy (not reported in the tables). The commercial bank dummy is small and negative for keiretsu firms (-0.0052, *t*-statistic is -1.06) and significantly negative for non-affiliated firms (-0.0168, *t*-statistic is -4.93). As noted earlier, the commercial bank discount applies more strongly to non-affiliated firms. We also run regressions on fees for the 917 issues by those firms with the strongest keiretsu ties, that is, the ones with a 4-star affiliation. These regressions (not reported in the tables) are similar to the one reported in table 6 for all affiliated firms, but with even larger coefficients for the year dummies. Thus the pattern stays intact but it shows that the effect increases with the intensity of affiliation.

Since we claim keiretsu membership has become a burden due to weak banks, it is informative to show how badly the banks performed. Graph 3 shows the performance of the eight main keiretsu banks versus the Tokyo Stock Exchange index.

Graph 3. Stock price performance of the eight keiretsu main banks versus the TSE



Source: DataStream. Relative stock prices versus 1990, with the 1990 price set at 100. Equal weights are assigned to the eight main banks. After the mergers, the new firm's stock price is taken, with the combined weight of the merger partners.

As said, we find that keiretsu membership results in higher fees, ceteris paribus, from 1999 on. Graph 3 shows that this follows shortly after the keiretsu banks began to perform worse than the Tokyo Stock Exchange index. To see whether our results are driven by any single keiretsu, we run regressions with additional dummies per individual keiretsu, again interacted with year dummies (not reported in the tables). We find the same pattern as in Table 5: insignificant results until 1998, and almost exclusively positive and significant coefficients from 1999 on. For the Fuyo keiretsu, the results are even stronger, which might reflect the large number of failing firms in that keiretsu (see Section 2.2 on this).

In 1999 the wave of merger announcements led to the formation of UFJ, SMBC and Mizuho. Given the strong ties between keiretsu firms and their banks, this might have triggered the higher fees for keiretsu firms. The only keiretsu not directly affected was Mitsubishi. If the higher fees for keiretsu firms were directly related to merger troubles, then Mitsubishi should be an exception. However, when including dummies for individual keiretsu in our regressions (not reported in the tables) we find that the

Mitsubishi keiretsu firms were no exception in paying higher fees. Neither do we find different patterns in financing between non-affiliated firms, Mitsubishi firms, and the other keiretsu firms. These three types of firms all have their bond issuing peak in 1998, and a sharp decline in 1999 (see also Table 2). Therefore, the higher fees of keiretsu firms do not seem to be related to merger troubles, although they might be triggered by the merger wave.

In Section 2 we mentioned the controversy regarding the competition on fees on Japanese corporate bonds. Hamao and Hoshi (2000) argue that fees were fixed by maturity across underwriters until early 1998, while Takaoka and McKenzie (2005) dismiss this claim. To investigate this further, we run separate regressions for both periods (1994-1997 and 1998-2002). For the analysis in this paper it is important that our results still hold in the two periods. With respect to the view points of Hamao and Hoshi (2000) and Takaoka and McKenzie (2005), we have two important findings. First, the explanatory power of maturity is much higher in the 1994-1997 period (*t*-statistic of 50.6) than in the 1998-2002 period (*t*-statistic of 4.9). Second, we compare the variation in fees for the two most common maturities, 5 year bonds (601 observations) and 10 year bonds (443 observations). In both cases, variation is significantly (at 1% level) lower in the period before 1998; 0.025 versus 0.093 for 5 year bonds, 0.007 versus 0.051 for 10 year bonds. Although the presence of variation in all samples indicates that fees were not totally fixed by maturity before 1998, the difference is striking. The results suggest that underwriters have used a narrow bandwidth per maturity class. Concluding, both our observations are in line with Hamao and Hoshi's (2000) arguments and maturity certainly was a more important determinant of fees before 1998 than later on.

In addition to the issue and firm characteristics included in our regressions, market-based risk factors could also have explanatory value. To test this hypothesis, we re-run the regressions (not reported in the tables) from Table 5 and add the firms' standard deviation of daily stock returns and beta's (measured over the year preceding the issue). The inclusion of these variables does not affect the keiretsu effect, but does reduce the sample by 50% to 1214 observations.

Fang (2002) finds that high reputation underwriters charge higher fees, but that this cost disadvantage for the issuer is offset by lower yields (better prices). The same trade-off could potentially apply for the keiretsu firms in our sample. Perhaps their higher costs in terms of fees are offset by lower yields. However, Panel B of Table 2 shows that yield spreads for keiretsu firms are higher rather than lower for all years since 1997. Still, corrected for risk this might not be so. To test this hypothesis, we run regressions on the yield spread over benchmark, for which we use nearly the same explanatory variables as in the earlier regressions on fees. We only exclude the coupon, because it is too closely related to the yield. Other studies that regress on the yield over benchmark use similar explanatory variables (e.g., Gande *et al.*, 1999). In Model 2 we add the fees themselves as explanatory variable. Table 7 shows the results of the regressions on yield spreads over benchmark.

Table 7. Modeling yield spreads over benchmark

Model	1	2	3
Before 1999*Keiretsu affiliated	-1.5	-1.1	-1.6
	(-0.59)	(-0.44)	(-0.61)
Since 1999*Keiretsu affiliated	12.7***	8.4***	12.6***
	(3.31)	(2.14)	(3.27)
Lead belongs to same keiretsu	-3.2	-2.3	-3.3
as the issuer	(-1.31)	(-0.95)	(-1.31)
Big four lead underwriter	-4.6**	-4.9***	
	(-2.54)	(-2.71)	
Commercial bank lead underwriter			3.9**
			(2.16)
Fees		74.6***	
		(5.08)	
Log of principal amount	-4.5***	-4.1***	-4.7***
	(-2.91)	(-2.71)	(-3.10)
Log of sales	-7.6***	-7.1***	-7.6***
	(-8.17)	(-7.75)	(-8.18)
Maturity	-2.9***	-3.4***	-2.9***
	(-10.37)	(-11.95)	(-10.33)
Debt ratio	0.6***	0.6***	0.6***
	(9.31)	(8.57)	(9.41)
Standard deviation of EBIT	344.4***	297.5***	345.8***
by total sales	(3.59)	(2.97)	(3.63)
Fixed assets as a percentage	-37.8***	-35.7***	-37.8***
of total assets	(-6.08)	(-5.82)	(-6.08)
Current ratio	2.2	3.0	2.3
	(0.94)	(1.26)	(0.96)
Return on assets	0.0	0.2	0.10000
	(0.07)	(0.28)	(0.11)
Market-to-book	-2.7***	-2.7***	-2.8***
	(-3.07)	(-3.06)	(-3.11)
Constant	56.2***	23.4*	53.7
	(-4.84)	(-1.88)	(4.58)
Industry dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
R-squared	0.53	0.54	0.53
Adjusted R-squared	0.53	0.53	0.53
Observations	2003	2003	2003

OLS regressions with White (1980) heteroskedasticity-consistent errors. Dependent variable is yield spread over benchmark. Keiretsu affiliated is a dummy that equals 1 if the issuer belongs to a horizontal keiretsu and 0 otherwise. Fees is the fees paid to the underwriters as a percentage of proceeds. Lead belongs to same keiretsu as the issuer is a dummy that equals 1 if the issuer and the lead manager of the underwriter syndicate belong to the same keiretsu. Big Four lead is a dummy that equals 1 if the lead manager is one of the Big Four Japanese investment banks (Nomura, Yamaichi, Nikko, or Daiwa). Principal amount equals total proceeds in millions of US$. Sales are reported sales in the year preceding the issue. The same applies to current ratio, return on assets, and market-to-book. Coupon is the promised annual payment to bondholders as a percentage of the bond's face value. Maturity signifies the number of years between the issue date and the promised redemption of the issue. Debt ratio is the ratio of book debt to total assets at the end of year preceding the issue. Standard deviation of EBIT by total assets is over a 5 year period. Year and industry dummies are included but not reported.

Table 7 shows that the higher fees for keiretsu issues are not offset by lower yields. In fact, keiretsu firms experience both higher fees and higher yields in the since-1999 period. In additional regressions with yearly keiretsu interaction terms (not reported) we find that only in 1995 do keiretsu firms obtain significantly lower yields on their bond issues. From 1997 on, affiliated firms have higher yields than non-affiliated firms. In 1999 (the year of the bank merger wave), yields are even significantly higher for keiretsu issues. This again indicates that 1999 was a particularly difficult year for keiretsu firms. Model 2 also includes fees and shows that fees and yield spreads are positively related. The other results stay the same. In both models, Big Four investment banks achieve significantly lower yields (better pricing) for their clients, with yield spreads over 4 basis points lower. For our Japanese sample, we confirm Fang's (2002) US findings, in that here too, high reputation underwriters achieve lower yields for their customers. In Model 3 we again replace the Big Four dummy with a commercial bank dummy. This dummy is positive and significant at 3.9 basis points. So, firms that hire commercial banks benefit from lower fees, but have to pay higher yield spreads. This trade-off between yields and fees seems unique for underwriter choice. In general there is no trade-off between fees and yield spreads: firms with higher fees also have higher yields, ceteris paribus. This also applies to keiretsu firms.

3.6 Summary and conclusions

Over the past two decades, Japan has witnessed deregulation, increased access to public finance, and weaker banks. These events have weakened the keiretsu. In this paper we relate underwriting fees to keiretsu affiliation, while controlling for risk. As in previous US research on fees (e.g. Kim *et al.*, 2003), we find that fees increase in issue risk at the individual issue level. Increased competition among underwriters resulted in fees remaining stable over the sample period, in spite of rising issue risk. Thus, fees relatively declined, from which independent firms benefited. Affiliated firms however, had to pay an increasing premium, which was not compensated by lower yields. We interpret this finding as an indication that keiretsu membership turned from a benefit into a disadvantage. Bank-lead corporate groups may have been an efficient solution to missing markets for public finance, but they suffered when markets were deregulated. When the real estate and stock market bubble burst, the banks ran into trouble and they could no longer guarantee bail-out to its member firms. Moreover, their problems spilled over to the firms in their keiretsu. This happened in several ways, such as the substantial placements of subordinated debt with affiliated firms (Horiuchi and Shimizu, 1998), and higher costs of capital (Weinstein and Yafeh, 1998). Our results show that these spillovers also included higher fees on bond issues.

Chapter 4 Issue frequency and corporate bond yields*

4.1 Introduction

Bond issuing activity widely exceeds equity issuing[23] and many large corporations tap the public debt markets several times per year. According to common wisdom, it is important for firms' reputations to regularly go to the bond market[24]. Some very large players, such as General Electric, even issue bonds each month and are known for obtaining favorable pricing thanks to their market literacy. In this paper, we hypothesize that market literacy and reputation acquisition should help frequent bond issuers in obtaining yield spread discounts vis à vis infrequent issuers. Given the large amounts of debt issued, even small discounts in yields can have immense economic impact.

A rapidly evolving literature has examined bond issues and issuing behavior. Recent findings include that firms time their debt issues to get the best deals in terms of interests rates (Barry *et al.*, 2004; Henderson *et al.*, 2006) and maturity (Baker *et al.*, 2003); that they alter the currency composition of their bonds to exploit differences across currencies (McBrady and Schill, 2005; Henderson *et al.*, 2006); that firms and underwriters choose each other (Fernando *et al.*, 2005); and that underwriter loyalty is not as valuable in bond issues as it is in equity issues (Burch *et al.*, 2005). Yet, we know of no paper that investigates bond issue frequency, while only two papers use plain measures of issue frequency. Cai *et al.* (2005) use dummies for issues in the past 3, 6, 12 and 24 months and find these to be negatively related to underpricing in US corporate bond markets. Santos (2006) employs two proxies for rating agencies' familiarity with firms: the number of bond issues by the firm since 1970, and the length of time since the firm's last issue. In explaining yield spreads, the latter is insignificant, but the number of issues since 1970 has a significantly negative impact on yields. This result suggests issue frequency is worthwhile to explore further. However, we will need more refined proxies to capture reputation and market literacy effects. The number of issues since 1970 goes

*This paper is based on Schramade, De Jong and Roosenboom (2006). We thank seminar participants at RSM Erasmus University for their comments. Of course, all errors remain ours.

[23] In 2003, worldwide equity issuance amounted to US$ 268 billion versus US$ 2460 billion in bonds (Thomson ONE Banker Volume Analysis).

[24] When British firm Diageo placed a US$ issue in 2002, Euromoney magazine (15 November 2002) wrote: "Diageo does not have an inordinate need for debt, but felt that being out of the market for so long was not in its best interests."

back too far to measure recent experience (which is likely to be most relevant) and does not distinguish between windows. The length of time since the previous issue does not capture the issues before the previous one and is meaningless if there are no previous issues at all. We circumvent this problem by measuring issue frequency over various windows. A priori, it seems quite likely that frequent issuers are better at timing their issues and at picking currencies and underwriters. However, to our knowledge, there is no study that provides systematic evidence on how often firms of various sizes issue bonds over several windows. Another gap in the literature relates to the nature and magnitude of potential cost advantages and disadvantages of issue frequency. This paper fills these gaps.

Frequent issuers are by definition in frequent contact with the market, which should be valuable in two ways. First, frequent issuers will have better knowledge of bankers, bond buyers, and market conditions, which might allow them to become better at timing and placing their issues. For example, General Electric (GE) is known for creating a scarcity value for its debt in spite of borrowing needs in excess of US$ 50 billion a year. GE has achieved this, says one debt capital market banker "by being very disciplined in its approach. They're not saturating any one market with paper. Instead they have spread it out across currencies, markets, and even within them" (Euromoney, 1 June 2004). General Motors is praised for its "skill at spotting an issuance window and immediately acting upon it." (Euroweek, 27 September 2002). Thus, we expect frequent issuers to obtain yield discounts through superior market knowledge. We call this the market literacy hypothesis.

Second, as the firm issues more frequently, it will be better known in the market. Information asymmetries will decrease and the firm acquires a reputation (Diamond, 1989), from which it might benefit in the form of lower yields in comparison to firms without a reputation. We call this the reputation acquisition hypothesis. We note that it is in advance not clear whether reputation should in this context be regarded in a continuous way (i.e., a better reputation will result in a lower yield, even if the initial reputation was already good), in a discrete way (i.e., you either have it or you do not have it), or a combination of both. This has important implications for modeling the relation between issue frequency and yields, which could be monotonic or non-monotonic in the continuous interpretation of reputation. In the discrete case however, having a certain threshold of issue frequency would be decisive for obtaining a yield discount. Furthermore, if this threshold were one, it would simply distinguish active issuers from first-time-ever bond issuers, who are known for incurring significant premiums (Fenn, 2000; Santos, 2006).

Both the market literacy and the reputation acquisition hypothesis predict a negative relation between issue frequency and bond yield spreads. However, the impact of issue frequency is probably not uniform across all firms, nor is the relevance of both hypotheses. Size is likely to matter. Very large firms generally have higher financing needs and will thus issue more often. Moreover, very large firms have the added advantage that they already have a reputation. Thus, the market literacy hypothesis seems more relevant for very large firms than the reputation acquisition hypothesis.

Regular firms might benefit both from reputation acquisition and from increasing market literacy as they issue more often. If reputation acquisition works in a continuous way[25], we should find a negative relation between issue frequency and yields across all levels of issue frequency. If, however, reputation works in a discrete way and the effect of increased market knowledge is weak, then the frequent issuer effect will be reduced to a bond IPO effect for smaller firms.

For a sample of 1569 straight domestic US bond issues by 592 firms in the 2001-2003 period, we explore past issuing frequency and estimate its impact on yield spreads. We start out by asking how often firms issue bonds over various windows. It turns out that the median bond issuing firm issues bonds once every three years and that one in five firms issue every six months. Subsequently, we investigate whether firms with a high issue frequency enjoy cost advantages or disadvantages. An obvious subsequent question is: at which number of issues and for what windows do cost (dis)advantages appear? In our analysis, we split the sample by firm size, since we expect the frequent issuer effect to be different for larger firms and because larger firms are more likely to be frequent issuers. We find that there is indeed an economically significant yield spread discount for frequent issuers, which can amount to over half of the average yield spread. Thus, a firm generally enjoys yield spread discounts from issuing several smaller issues rather than one very large one[26]. The effect is not monotonic, however. First, more is not always better. When a firm issues bonds too often, it looses its yield spread discount and might actually start paying a premium. Second, there is indeed a difference between regular (sales below US$ 15 billion) and very large firms. For very large firms, only issues during the last year really matter, consistent with the idea that (transitory) market literacy yields discounts to frequent issuers. That is, market literacy relates to knowledge of market conditions in a specific period and is thus likely to evaporate quickly. The frequency effect lasts much longer for regular firms, exactly because they do not do that many issues. For them reputation acquisition weighs more heavily and it is important not to be a bond IPO over the past three years, since that saves them at least 20 basis points. Previous research (Fenn, 2000; Santos, 2006) finds that first-time-ever issuers incur higher yield spreads. Our results suggest that it is more useful to distinguish between issuers and non-issuers over a certain time period rather than between first-time-ever issuers and all others, which wrongly classifies many non-active firms as bond issuers.

In the next section we will discuss data and methodology. The third section describes results. Section four concludes and summarizes.

[25] Or in a discrete way but complemented by increased market knowledge.

[26] This will probably not hold if the total sum borrowed is very small. Moreover, the lower yield spreads of the multiple issues do not necessarily mean that they are cheaper than a single issue of their combined size: the yield cost advantage might be offset by higher fees, since there are economies of scale in fees (e.g., Altinkiliç and Hansen, 2000).

4.2 Data and methodology

4.2.1 Sample formation

We start out by taking all non-convertible corporate debt issues from the SDC new issues database, amounting to 145,940 issues for the 1995-2003 period. For all the issuing firms we search their Thomson ONE Entity Keys, to be able to identify issues by the same firm under different names (e.g., issues by Ford Motor Credit Australia and by Ford Credit Canada Ltd are considered issues by Ford). With these data we construct two datasets: one for which we measure yields and issue frequency; and an auxiliary one in which we measure issue frequency. Our first dataset consists of all straight fixed rate bonds by US firms in the US domestic market in US$ in the 2001-2003 period. Floating rate bonds are excluded because they cannot be reliably compared in terms of yield spreads. The same applies to bonds with special features such as warrants attached. We focus on the US market since it is the largest bond market in the world and we consider domestic firms only because of comparability of financial statements. Even though sample firms issue in other currencies as well, we only consider US$ issues because yield spreads are hard to compare across currencies in a meaningful way. To construct our second dataset, we take all firms from the first dataset and track all their issues in all markets (except convertibles), back until 1995, to measure issue frequency up to six years back. In measuring issue frequency, it is important to distinguish between issues and tranches. Issues are often composed of several tranches with different characteristics, such as variation in maturities and currencies. SDC reports tranches, not issues. In our regressions we cannot pool the tranches, since yield spreads also vary across tranches, exactly because of these varying characteristics. However, when calculating the number of issues, we do pool all tranches of one issue to count the number of issues. This is possible since we do not measure yield spreads there and thus do not have to consider differences in characteristics. In the remainder of this paper, we will refer to both issues and tranches as issues. The resulting auxiliary sample consists of 6074 issues by 592 firms over 1995-2003, while the primary sample consists of 1569 straight domestic US$ issues by those same 592 firms over 2001-2003; along with, per issue, information on the amount of issues done by that same firm up until the day before the particular issue.

4.2.2 Methodology

For all 1569 issues, we measure the firm's past issuing activity by taking the number of straight bond issues by the same firm in all bond markets (including foreign markets and foreign currencies) for 12 windows ending the day before the present issue. These windows are: one week, two weeks, one month, two months, three months, six months, one year, two years, three years, four years, five years and six years. Whereas an issue in the past week might indicate either a firm that issues extremely often or a firm that has temporarily high financing needs, the absence of an issue in the past six years almost pertains to being a bond IPO. The interpretation of issue frequency numbers will vary per window and probably also with firm characteristics, notably size. That is, a certain number of issues in a certain window might be too few for a large firm, just right for a median firm, and too many for a small firm. In the latter case, the firm might be considered to be over-issuing and end up paying yield spread premiums. Increased financing needs are a plausible explanation for such over-issuing. Alternatively, low

yields might tempt firms to over-issue. However, we do not consider this potential endogeneity to be problematic for our analysis. Since the market is likely to recognize over-issuing behavior, the culprit would see its yield discount disappear or even turn into a premium. Still, it seems very hard to measure over-issuing, since it is firm-specific and we do not have a benchmark 'normal issuing amount'. The fact that over-issuing is hard to measure is illustrated by the fact that firms can even be considered to be over-issuing in a certain maturity segment: "Lafarge was another casualty in the sterling market, blaming market conditions as it postponed plans for a L200m 15 year bond. With outstanding 2012 and 2013 sterling issues, the company was criticized for targeting the same part of the yield curve too heavily." (Euroweek, 27 September 2002).

Our hypotheses suggest that the impact of issue frequency is probably different for very large firms than for regular firms. We therefore split the sample by the firms' sales. Splitting by sales allows us to test the hypotheses for both groups separately while controlling for the probably high correlation between issue frequency and firm size[27].

Yield spreads are calculated by matching the bonds on maturity with US Treasury bond indices which we obtained from Bloomberg. In case no exact match can be found, a weighted average of the two nearest maturities is taken (as in Hamao and Hoshi, 2000). For example, where the bond has a maturity of 4.1 years, we take the weighted average of the yields on the 4 and 5 year Treasury bond indices. In all our regressions on yield spreads we use the same basic model, combined with discrete or continuous frequent issuer variables. The model is as follows:

$$Spread_i = \beta_0 + \beta_1 frequency_i + \beta_2 Log(principal)_i + \beta_3 Log(sales)_i + \beta_4 maturity_i$$
$$+ \beta_5 debt - to - assets_i + \beta_6 st.dev(EBIT / sales)_i + \beta_7 fixedassets_i + \beta_8 CR_i + \beta_9 ROA_i$$
$$+ \beta_{10} MTB_i + \beta_{11} BULGE_i + \beta_{12} private_i + \beta_{13} senior_i + \beta_{14} rating_i + \varepsilon_i$$

Other studies that regress on the yield over benchmark use similar explanatory variables (e.g., Fang, 2002; Fenn, 2000; Gande *et al.*, 1999; Livingston and Miller, 2000; Santos, 2006) and find that yield spreads tend to increase in the risk of the issue. That is, a positive relation is generally found between yields and issue size (log of principal amount), the debt ratio (debt-to-assets), and operating risk (standard deviation of EBIT/Sales), while a negative relation is expected with firm size (log of sales), fixed assets, current ratio, rating, underwriter reputation and seniority. For rating, we construct an ordinal variable that reflects the major ratings agencies' classification[28]. For underwriter reputation, we use a dummy that equals one if the underwriter is a so-called Bulge bracket[29] underwriter, and zero otherwise. In addition, there are some variables that

[27] Moreover, by not splitting by issue frequency itself, firms stay within the same group regardless of the issue or window considered. In addition, we keep low and high values for issue frequency in both groups.
[28] These rating agencies are: Fitch, Moody's, and Standard & Poor's. We assign a rating score according to the rankings of these agencies: 1 if the rating is C or D, 2 if B or BB, 3 if BBB, 4 if A and 5 if AA or AAA. We also use a stricter classification, resulting in 15 categories, but this does not change our results.
[29] Bulge bracket underwriters include Goldman Sachs, Merrill Lynch, and Morgan Stanley (the traditional top three) and Bear Stearns, Citigroup/Salomon Smith Barney, Credit Suisse First Boston, Deutsche Bank, JP Morgan Chase, Lehman Brothers, and UBS Warburg, as well these firms' legal predecessors.

should be controlled for, although their impact is hard to predict a priori since they have multiple interpretations. These include profitability (ROA), and market-to-book ratios. Table 1 gives variable definitions.

Table 1. Variable definitions

Variable	Definition
Number of issues in the past week, 2 weeks, 1 month, etc.	Number of bond issues in all markets (except convertibles) by the same firm over the specified window up to and including the day before the current issue. Source is the auxiliary dataset with all the 1995-2003 issues.
Yield spread over benchmark	The difference between the bond's yield and the yield on a Treasury bond of the same maturity.
Log of principal amount	The log of the bond's issue size in US$ millions.
Log of sales	The log of the firm's sales in US$ millions, measured in the book year prior to the issue.
Maturity	The bond's time to maturity in years
Debt-to-assets	The ratio of the firm's debt value and total assets, both measured in the previous book year.
Standard deviation of EBIT/sales	Standard deviation of the firm's EBIT divided by sales, measured over the 5 book years prior to the issue.
Fixed assets as a percentage of assets	The ratio of the firm's fixed assets and total assets, measured over the book year prior to the issue.
Current ratio	The ratio of the firm's current assets and current debt, both measured in the previous book year.
Return on assets	The ratio of the firm's operating income and sales, both measured in the previous book year.
Market-to-book	The ratio of the firm's equity market value and book market equity, both measured in the previous book year.
Bulge bracket underwriter	A dummy that equals 1 if one of the lead managers belongs to the club of Bulge bracket underwriters: Goldman Sachs, Merrill Lynch, Morgan Stanley, Bear Stearns, Citigroup/Salomon Smith Barney, Credit Suisse First Boston, Deutsche Bank, JP Morgan Chase, Lehman Brothers, and UBS Warburg, as well these firms' legal predecessors.
Private issue	A dummy that equals 1 if the bond is placed privately.
Rule 144A	A dummy that equals 1 if the bond is issued under Rule 144A
Subordinated issue	A dummy that equals 1 if the bond is assigned a lower priority than existing debt.
Senior issue	A dummy that equals 1 if the bond is assigned priority over existing debt.
Rating	A rating score that follows the bond's at-issue ratings by the major agencies (Fitch, Moody's, and Standard & Poor's) on a scale of 1 to 5; the score is 1 if the rating is C or D, 2 if B or BB, 3 if BBB, 4 if A and 5 if AA or AAA.
Split rating	A dummy that equals 1 if the bond's rating differs at least one notch (e.g., BBB versus BBB-) among the three aforementioned rating agencies.

4.3 Results

In this section we start by describing the characteristics of the firms in our sample and answer the question of how often firms actually issue over various windows. In 3.2 we proceed with univariate and multivariate analyses to explore the nature and magnitude of the cost (dis)advantages of issue frequency. Robustness tests are discussed in 3.3.

4.3.1 Descriptive statistics

Table 2 shows firm characteristics per year for the 592 firms in our sample.

Table 2. Firm characteristics

	Period	Mean	Median	Std. Dev.	Minimum	Maximum	Observations
Total assets	2001-2003	14244	3505	42644	107	575244	867
	2001	14193	4090	38767	107	437006	311
	2002	15016	3725	44687	137	495023	262
	2003	13606	3068	44664	128	575244	294
Sales	2001-2003	9628	2761	21920	19	217799	867
	2001	10215	2919	22365	83	191329	311
	2002	10771	3364	24473	77	217799	262
	2003	7975	2498	18681	19	186163	294
Debt/ Total assets	2001-2003	39.8%	39.2%	17.7%	0.0%	174.3%	867
	2001	39.1%	38.8%	16.9%	0.0%	88.8%	311
	2002	39.4%	40.1%	16.1%	0.0%	96.9%	262
	2003	41.0%	39.0%	19.8%	0.3%	174.3%	294
Current ratio	2001-2003	1.45	1.19	1.07	0.08	14.22	867
	2001	1.39	1.13	0.99	0.08	9.04	311
	2002	1.41	1.17	1.08	0.15	13.05	262
	2003	1.55	1.29	1.13	0.09	14.22	294
Standard deviation of EBIT/Sales	2001-2003	0.084	0.036	0.194	0.001	2.857	867
	2001	0.082	0.034	0.184	0.002	1.911	311
	2002	0.076	0.036	0.143	0.002	1.193	262
	2003	0.094	0.037	0.240	0.001	2.857	294
Fixed assets/ Total assets	2001-2003	41%	38%	25%	0%	96%	867
	2001	40%	39%	23%	0%	96%	311
	2002	42%	39%	25%	0%	94%	262
	2003	41%	38%	26%	0%	91%	294
Market-to-book	2001-2003	2.7	1.9	4.2	-29.4	37.8	867
	2001	3.1	2.2	4.3	-16.9	30.0	311
	2002	2.9	1.9	4.3	-14.2	34.7	262
	2003	2.3	1.7	4.3	-29.4	41.0	294
Return on assets	2001-2003	5.6	5.8	9.4	-67.6	106.6	867
	2001	7.3	6.7	8.3	-60.5	61.0	311
	2002	6.4	5.9	8.9	-37.0	106.6	262
	2003	3.0	4.7	10.3	-67.6	40.5	294

Figures are for the firms that issued in that particular year. See Table 1 for variable definitions.

The total number of firm years is 867, since the majority of firms issued only once in those three years. The median issuer had US$ 3.5 billion in total assets and US$ 2.8 billion in sales. Average values for total assets (US$ 14.2 billion) and sales (US$ 9.6 billion) are much higher, reflecting the skewed nature of the sample, ranging from a large number of relatively small firms to some very large firms that have sales and total assets in the hundreds of billions of dollars. Both mean and median book debt ratios are around 40%, and current ratios are generally well over one. Still, the outliers show that some issuers had problematic financials with very low current ratios; one firm even had a negative book value of debt. The fact that this kind of risky firm can also issue, illustrates the depth of the US bond market with its large junk bond segment.

Issue frequency per firm is shown in Table 3 (next two pages). Panel A gives the number of issues that firms placed over several windows and Panel B shows the number of issues per firm in the primary sample.

Reported numbers are firm level descriptive statistics, which are in turn based on the 1569 issue level observations. This implies that, if a firm placed six issues in the 2001-2003 period, the number of previous issues is measured at six points in time and the firm level frequency is the average of those six observations. Hence, the number of previous issues by the firm is not a discrete number. We choose to measure these rolling windows for comparability with the issue level statistics (see Table 5), where a rolling window is a necessity to capture the frequent issuer effect, especially for the shorter windows.

The first rows of Panel A show that the average firm placed one issue in the past year and 6.6 issues in the past six years, while the median firm made one issue in the past three years and two issues in the past six years. Perhaps more interestingly, the bottom part of the table shows how many firms fell within a certain range, again for each window. Starting from the northwestern part of the table, one can read that 568 firms had no issues in the week before the current issue. Moving to the right of the table along the same row, the number of firms that had no preceding issue diminishes as the window widens. 117 firms had no issues over the preceding six years. The other firms had more than zero preceding issues on average[30], and these observations move down the rows rather than only to the right. Numbers generally increase smoothly from the southwestern to the northeastern part of the table, indicating that more firms record more previous issues as windows widen. Some 1 in 50 firms issue every month, about 1 in 5 firms issue every six months and about half the firms issue every one or two years. The pattern is illustrated graphically in Graph 1.

[30] For the shorter windows, more than zero can still be well under one, since the firm average is measured over all of the firm's issues; thus, if a firm has four issues in the sample period, and only one of those four has an issue in the past six months, then the firm's average is 0.25 for the six month window.

Table 3. Number of previous issues measured per firm

Panel A. Firm averages of previous issues

	Past week	Past 2 weeks	Past month	Past 2 months	Past 3 months	Past 6 months	Past year	Past 2 years	Past 3 years	Past 4 years	Past 5 years	Past 6 years
Mean	0.02	0.03	0.08	0.16	0.25	0.5	1.0	2.2	3.3	4.5	5.6	6.6
Median	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.0	1.0	1.5	2.0
Maximum	1.7	3.7	6.8	13.2	22.3	48.0	90.0	170.9	264.8	360.5	457.7	548.3
Minimum	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Std. Dev.	0.1	0.2	0.4	0.8	1.3	2.5	4.8	9.7	15.1	20.7	26.3	31.0
Observations in range:												
Obs=0	568	568	538	509	476	407	334	260	212	167	136	117
0<obs<=1	23	17	44	70	95	144	158	157	157	161	146	138
1<obs<=2	1	6	3	3	9	19	57	64	76	81	100	90
2<obs<=3	0	0	4	1	2	8	11	38	36	43	37	55
3<obs<=4	0	1	2	4	1	3	10	27	25	26	35	35
4<obs<=5	0	0	0	1	0	2	3	9	12	26	24	27
5<obs<=6	0	0	0	1	4	0	3	6	18	10	28	24
6<obs<=7	0	0	1	1	2	1	5	3	15	14	11	20
7<obs<=8	0	0	0	1	0	1	0	5	7	8	10	9
8<obs<=9	0	0	0	0	0	0	3	2	5	9	6	5
9<obs<=10	0	0	0	0	1	2	0	3	2	3	7	9
10<obs<=20	0	0	0	1	1	3	3	12	14	27	29	39
20<obs<=30	0	0	0	0	1	1	1	1	7	7	10	7
30<obs<=40	0	0	0	0	0	0	2	0	1	2	4	7
40<obs<=50	0	0	0	0	0	1	1	0	0	3	2	0
50<obs<=100	0	0	0	0	0	0	1	3	2	1	3	6
Obs>100	0	0	0	0	0	0	0	2	3	4	4	4

Average values found for the 592 firms over their 1569 domestic USD tranches, 2001-2003. See Table 1 for variable definitions.

Table 3. Number of previous issues measured per firm (continued)

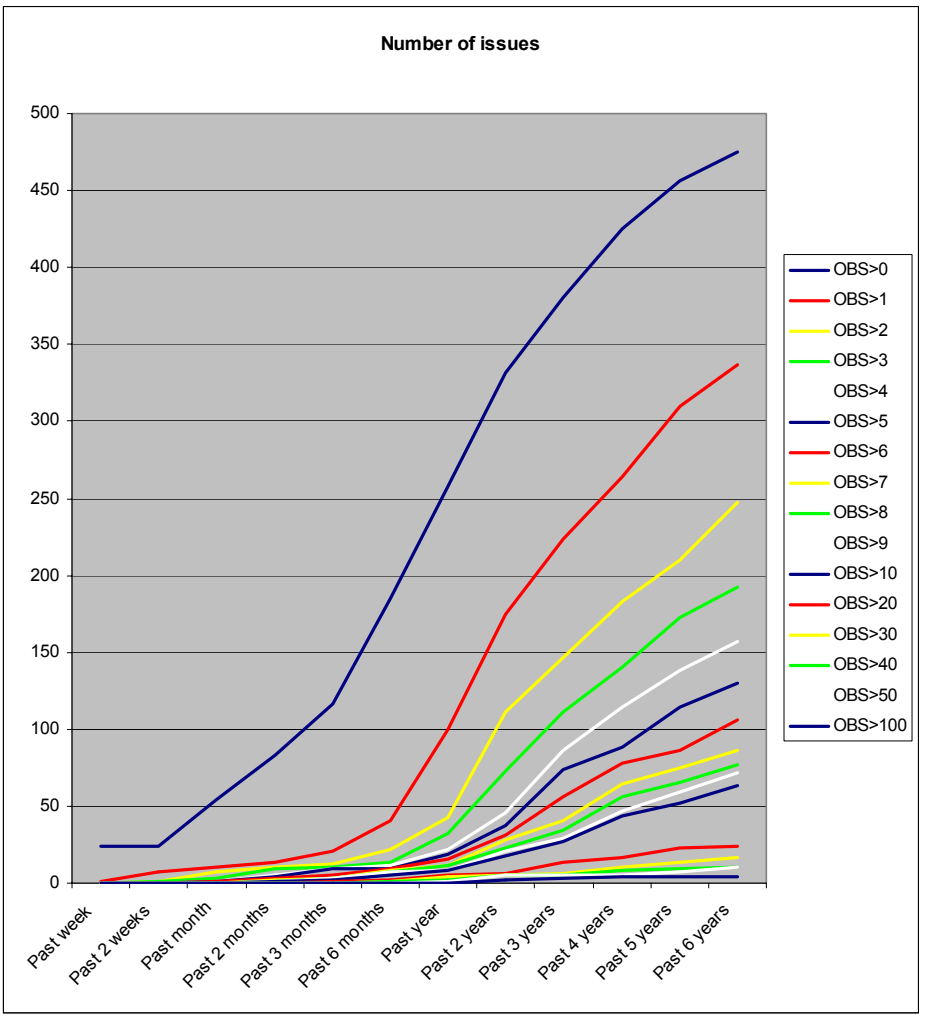
Panel B. Firm averages of issues in the sample period

	Number of USD issues 2001-2003
Mean	2.7
Median	2
Maximum	60
Minimum	1
Std. Dev.	4.1
Total	1569
0 issues	NA
1 issue	291
2 issues	133
3 issues	55
4 issues	35
5 issues	24
6 issues	15
7 issues	14
8 issues	2
9 issues	6
10 issues	4
11-20 issues	10
21-30 issues	0
31-40 issues	1
41-50 issues	1
51-100 issues	1
>100 issues	0

Number of domestic, US$ issues by sample firms in the 2001-2003 sample period.

Panel B of Table 3 shows the number of issues per firm in the sample. By definition, each firm issued at least once during the sample period. Since the sample spans only three years and is restricted to domestic fixed rate US$ issues, amounts per firm are lower than in Panel A. We note that no firm issued more than 60 issues and that only 13 firms (2.2%) issued more than 10 times in 2001-2003. Hence, the presence of very frequent issuers does not disturb our findings.

Graph 1. Number of issues per firm over time



Each line shows the number of firms that exceed the specified threshold (more than 0 issues, more than 1 issue, etc.) for the specified window (past week, past 2 weeks, etc.).

The features of the 1569 issues themselves are given in Table 4. Mean and median issue sizes are at US$ 377 million and US$ 250 million respectively (Panel A), which is slightly higher than what Barry *et al.* (2004) find for domestic US issues in 2000 and 2001. The average spread over benchmark is 144 basis points, which is much lower than in Santos (2006), who finds average spreads of over 200 basis points in his 1982-2002 sample. Panel B shows that a third of the bonds are private placements. In the vast majority of issues, a Bulge bracket underwriter is involved.

Table 4. Issue characteristics

Panel A. Main issue characteristics

	Spread over benchmark	Principal amount	Maturity
Mean	1.442	377	9.7
Median	1.082	250	10.0
Maximum	7.505	5000	48.4
Minimum	0.002	1	1.0
Std. Dev.	1.204	438	6.9
Observations	1569	1569	1569

Panel B. Dummy values

	Percentage of bonds
Senior bonds	43.3%
Subordinated bonds	10.8%
Rule 144A	3.4%
Private bonds	35.7%
Bulge bracket underwriter	79.2%

Panel C. Maturity distribution

Maturity class	Percentage of bonds
<1.5 years	0.2%
1.5-2.5 years	3.9%
2.5-3.5 years	5.7%
3.5-4.5 years	1.0%
4.5-5.5 years	17.0%
5.5-6.5 years	1.1%
6.5-7.5 years	11.2%
7.5-8.5 years	5.2%
8.5-9.5 years	1.9%
9.5-10.5 years	39.7%
10.5-12.5 years	3.2%
12.5-17.5 years	1.2%
17.5-22.5 years	0.7%
22.5-27.5 years	0.1%
>27.5 years	8.0%

Panel D. Rating distribution

S&P's/Fitch equivalent	Moody's equivalent	Percentage of bonds	
AAA	Aaa	2.9%	
AA+	Aa1	0.3%	
AA	Aa2	1.6%	
AA-	Aa3	2.8%	
A+	A1	9.3%	**Investment grade**
A	A2	12.2%	
A-	A3	8.2%	
BBB+	Baa1	12.2%	
BBB	Baa2	13.0%	
BBB-	Baa3	7.6%	
BB+	Ba1	3.0%	
BB	Ba2	4.5%	
BB-	Ba3	6.0%	**Speculative grade**
B+. B. B-	B1. B2. B3	15.3%	
<=CCC	<=Caa1	0.5%	
No rating	0.6%		
Split rating	46.7%		

See Table 1 for variable definitions.

Panel C splits bonds by rating and maturity. Maturities vary widely, but some maturities are particularly popular, such as 5 years (17%), 7 years (17%) and notably 10 years (40%). Ratings are concentrated in the A (30%) and BBB (32%) categories. Ranging

from CCC to BB, speculative grade bonds still account for 29% of issues. In almost half of the issues, the Moody's, Fitch and S&P ratings differ at least one notch from each other.

Table 5 has the same structure as Panel A of Table 3, but now shows the numbers of past issues as measured at issue level rather than at firm level. As a consequence, firms that issued more often in the 2001-2003 period weigh more heavily. The upper part of the table shows that the average issue was preceded by one issue in the past two months, 6.6 issues in the past year and 43.7 issues in the past six years. Medians are markedly lower at one issue in the past year and five in the past six years. The bottom part follows the same pattern as its equivalent in Table 3. Again the numbers generally increase smoothly from the southwestern to the northeastern part of the table. However, the numbers are higher here, both because the number of observations is higher (1569 versus 592) and because frequent issuers weigh more heavily.

Table 5. Number of previous issues measured per issue

	Past week	Past 2 weeks	Past month	Past 2 months	Past 3 months	Past 6 months	Past year	Past 2 years	Past 3 years	Past 4 years	Past 5 years	Past 6 years
Mean	0.14	0.3	0.6	1.1	1.7	3.4	6.6	13.8	21.8	30.1	37.6	43.7
Median	0.00	0.0	0.0	0.0	0.0	0.0	1.0	2.0	2.0	3.0	4.0	5.0
Maximum	4.00	9.0	16.0	24.0	37.0	61.0	108.0	193.0	314.0	384.0	478.0	589.0
Minimum	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Std. Dev.	0.47	1.0	1.7	3.1	4.7	9.1	17.4	35.2	56.1	77.4	97.7	114.6
Observations in range:												
0	1421	1404	1311	1217	1122	906	664	436	327	244	196	170
1 issue	102	57	89	151	192	288	327	307	276	269	237	211
2 issues	31	32	52	27	46	103	159	182	196	178	169	159
3 issues	12	34	34	21	17	32	83	112	106	111	112	126
4 issues	3	24	17	24	26	25	47	99	77	95	102	96
5 issues	0	7	12	14	13	13	33	44	65	67	82	85
6 issues	0	5	11	28	26	5	18	34	69	40	66	59
7 issues	0	2	23	7	10	8	16	31	40	57	42	59
8 issues	0	3	1	9	8	13	11	20	31	48	42	43
9 issues	0	1	5	12	5	16	9	20	25	25	26	30
10 issues	0	0	3	7	13	12	10	15	20	22	41	30
11-20 issues	0	0	11	48	59	67	39	92	105	136	145	169
21-30 issues	0	0	0	4	27	35	31	17	57	65	77	86
31-40 issues	0	0	0	0	5	12	33	1	11	37	41	44
41-50 issues	0	0	0	0	0	17	27	6	9	9	13	15
51-100 issues	0	0	0	0	0	17	50	86	3	12	24	29
>100 issues	0	0	0	0	0	0	12	67	152	154	154	158

Average values found for the 1569 domestic USD tranches, 2001-2003. See Table 1 for variable definitions.

4.3.2 Does issue frequency affect yield spreads?

This subsection explores both in a univariate and in a multivariate way whether frequent issuers enjoy yield spread discounts. Table 6 shows univariate analyses for the variables to be used in the regressions. Panel A compares spreads for issues that were and that were not preceded by another issue in the past period, for several windows. For each window, spreads are significantly lower for those issues that did have a previous issue in that particular period. Cost advantages range from 62 basis points in the one week window to 90 basis points (i.e, 63% of the average spread) in the 5 year window. The former gap indicates a cost advantage for very frequent issuers over all other, whereas the latter gap (5 year window) suggests a cost disadvantage for bond IPOs versus all others. These gaps are not only statistically, but also economically significant. Even at the median issue size, a seasoned issuer enjoys an annual cost saving of US$ 2.25 million[31] versus a bond IPO (5 year window). Absolute gains are even higher for larger bond issues.

Table 6. Univariate analyses

Panel A. Spread differences per window between issuers and non-issuers

	0 issues		at least 1 issue		Difference	
Window	**Average spread over benchmark**	**N**	**Average spread over benchmark**	**N**	**In average spread over benchmark**	***t*-values**
Past week	1.500	1421	0.885	148	0.615	5.98***
Past 2 weeks	1.506	1404	0.900	165	0.606	6.19***
Past month	1.537	1311	0.960	258	0.578	7.16***
Past 2 months	1.583	1217	0.956	352	0.628	8.82***
Past 3 months	1.627	1122	0.979	447	0.648	9.91***
Past 6 months	1.747	906	1.026	663	0.722	12.28***
Past year	1.873	664	1.126	905	0.747	12.75***
Past 2 years	1.983	436	1.234	1133	0.749	11.49***
Past 3 years	2.075	327	1.276	1242	0.799	11.08***
Past 4 years	2.159	244	1.311	1325	0.848	10.45***
Past 5 years	2.227	196	1.330	1373	0.897	10.07***
Past 6 years	2.195	170	1.351	1399	0.844	8.84***

See Table 1 for variable definitions.

Since our research questions suggest the impact of issue frequency to be distinct for regular and large firms, we split the sample by sales. Univariate analyses of sales split by issue frequency (not reported in the tables) show that firms that do issue in a particular window are much larger than firms that do not. They have significantly higher median sales over all windows: US$ 20.5 billion versus US$ 4.1 billion over the 1 month window, 12.5 versus 2.6 (6 months), 10.5 versus 2.1 (1 year), etc. We choose sales of US$ 15 billion as a cut-off point. This leaves 407 issues and 76 firms above the cut-off

[31] At the median issue size of US$ 250 million, a 90 basis points yield reduction entails an annual cost saving of 0.9% over US$ 250 million, which is US$ 2.25 million.

point and 1162 issues and 516 firms below the cut-off. We note that the US$ 2.1 billion in median sales of the regular firms is still considerably higher than median sales for NYSE firms[32]. It therefore seems inappropriate to refer to these firms as 'small'.

Panel B shows the split by sales for the variables that are to be used in the regressions. Apart from the return on assets, all variables are significantly different for both groups. Regular firms pay on average 61 basis points higher spreads over benchmark than large firms. They also issue smaller amounts and they have higher operating risk and lower ratings. In addition, their bonds are more often private and senior. These significant differences suggest that regression coefficients and even signs might also differ for both groups.

Table 6. Univariate analyses (continued)

Panel B. Means of regression variables split by sales

Variable	Sales below US$ 15 billion	Sales over US$ 15 billion	difference	*t*-values
Spread over benchmark	1.60	0.99	-0.61	-9.04***
Sales	4655	69396	64741	NA
Number of issues in the past year	1.4	21.5	20.0	23.08***
Principal amount	296	609	313.5	13.07***
Maturity	9.9	9.3	-0.7	-1.65*
Debt-to-assets	0.41	0.39	-0.02	-1.88*
Standard deviation of EBIT/Sales	0.086	0.032	-0.054	-5.33***
Fixed assets as a percentage of assets	0.44	0.30	-0.14	-10.55***
Current ratio	1.35	1.04	-0.31	-6.02***
Return on assets	5.6	5.0	-0.6	-1.22
Market-to-book	2.9	3.59	0.7	2.76***
Bulge bracket underwriter	0.78	0.83	0.05	1.93*
Private issue	0.43	0.16	-0.27	-10.08***
Senior issue	0.53	0.15	-0.38	-13.97***
Rating (scale 1-5)	2.7	3.8	1.1	16.58***
Observations	**1162**	**407**		
0 issues in the past year	609	55		
1 issue in the past year	269	58		
2-5 issues in the past year	213	109		
6-10 issues in the past year	36	28		
More than 10 issues in the past year	35	157		

See Table 1 for variable definitions. N is the number of observations within that category.

In Table 7 we present the basic model as described in the methodology section, which we combine with either continuous or discrete proxies for issue frequency.

[32] Authors' calculations: 2005 median sales of NYSE firms amount to US$ 1.38 billion.

Table 7. Modeling yield spreads

Model	**1**	**2**	**3**	**4**	**5**
Subset	All	Sales below US$ 15 billion	Sales below US$ 15 billion	Sales over US$ 15 billion	Sales over US$ 15 billion
Number of issues in the past year	0.001	0.006		-0.001***	
	(0.44)	(0.71)		(-4.50)	
Exactly 1 issue in the past year			-0.190**		-0.354**
			(-2.34)		(-2.27)
2-5 issues in the past year			-0.263***		-0.379***
			(-3.48)		(-2.87)
6-10 issues in the past year			-0.148		-0.501***
			(-1.30)		(-3.07)
more than 10 issues in the past year			0.115		-0.738***
			(0.78)		(-3.21)
Log of principal amount	0.037*	0.050**	0.038	-0.016	-0.035
	(1.88)	(2.08)	(1.59)	(-0.53)	(-1.12)
Log of sales	-0.028	-0.111***	-0.082**	0.249***	0.268***
	(-1.24)	(-3.47)	(-2.45)	(4.10)	(4.39)
Maturity	-0.003	-0.004	-0.004	-0.005	-0.004
	(-1.16)	(-1.15)	(-1.04)	(-1.05)	(-0.87)
Debt-to-assets	0.367*	0.108	0.214	1.168***	1.275**
	(1.78)	(0.48)	(0.94)	(2.89)	(2.29)
Standard deviation of EBIT/sales	-0.099	-0.190	-0.152	1.360	2.629**
	(-0.74)	(-1.42)	(-1.13)	(1.09)	(2.17)
Fixed assets as a percentage of assets	-0.002	-0.002	-0.001	-0.009***	-0.005
	(-1.60)	(-1.14)	(-0.51)	(-2.64)	(-1.55)
Current ratio	0.024	0.028	0.028	-0.316*	-0.282*
	(0.75)	(0.84)	(0.84)	(-1.79)	(-1.77)
Return on assets	-0.009**	-0.008**	-0.008**	-0.001	0.007
	(-2.46)	(-2.07)	(-1.99)	(-0.08)	(0.58)
Market-to-book	0.0004***	0.0004*	0.0004*	-0.019	-0.033**
	(3.48)	(3.34)	(3.23)	(-1.25)	(-2.16)
Bulge bracket underwriter	-0.145**	-0.184**	-0.180**	0.115	0.153
	(-2.15)	(-2.31)	(-2.28)	(1.05)	(1.36)
Private issue	0.239***	0.225***	0.202***	0.216	0.113
	(3.59)	(2.92)	(2.59)	(1.48)	(0.77)
Senior issue	0.205***	0.217***	0.214***	0.170	0.183
	(3.36)	(3.11)	(3.07)	(1.28)	(1.37)
Rating	-0.481***	-0.475***	-0.467***	-0.418***	-0.434***
	(-14.12)	(-12.14)	(-12.05)	(-5.96)	(-6.64)
R-squared	0.44	0.43	0.44	0.46	0.45
Adjusted R-squared	0.43	0.42	0.43	0.43	0.41
N	1569	1162	1162	407	407

Dependent variable is spread over benchmark Method is OLS corrected for White (1980) standard errors. Quarter dummies are included but not reported. See Table 1 for variable definitions.

In the first model we pool all observations and include the number of issues in the past year as a continuous variable. We choose the one year window since it had the highest *t*-value in the univariate analyses (Table 5). However, the coefficient turns out to be insignificant. The other coefficients are generally as expected, with for example larger issues and private issues resulting in higher yields, while high reputation underwriters reduce yields (e.g., Fang, 2002). The only counterintuitive sign is for seniority which turns out to be positively related to yields. Given the univariate analysis from Table 6, this is probably due to the high proportion of senior bonds among firms below the US$ 15 billion sales threshold.

We also run this regression for alternative frequency windows (not in the tables) and obtain similar results. We therefore reject the combined hypothesis that yield spreads both 1) have the same determinants for regular and very large firms, and 2) decrease linearly in issue frequency along all issues. Subsequently, we split the sample in large and regular firms and rerun the model for both subsets, first with the same continuous measure for issue frequency and then with the discrete measure.

Model 2 shows the same regression as in Model 1, but now limited to the 1162 issues by firms with sales below US$ 15 billion. Results are nearly the same as in Model 1, except that the debt ratio is no longer significant and that log sales is now significantly negative. Thus, within the set of regular firms, size matters and larger firms enjoy a discount. The number of issues in the past year remains insignificant and we reject linearity for the subsample of regular firms. To test for the possibility of a non-linear relation between issue frequency and yields in the regular firm subsample, we run Model 3, which includes dummies for 1, 2-5, 6-10 and more than 10 issues respectively. The former two dummies turn out to be negative and significant, whereas the latter two are positive and insignificant. Regular firms that issued once in the year before the issue enjoy a 19 basis points discount, and 2-5 issues previous issues in the past year result in a discount of 26 basis points versus non-issuers. In contrast, regular firms with more than five issues do not enjoy a discount versus non-issuers, which suggests that they have been over-issuing, and that there is an optimal issue frequency. Models 4 and 5 repeat Models 2 and 3 for large firms. Model 4 shows that the determinants of the yield spread are very different for large firms. First, some variables, such as profitability, market-to-book and seniority are no longer relevant, and the significance of ratings diminishes. Second, previously insignificant variables such as the leverage proxies are now significant. The Bulge bracket underwriter dummy also looses its significance. Apparently, a high reputation underwriter does not add the kind of value to a large firm that it does to a regular firm. Log of sales is now significant with the opposite sign: larger firms pay a premium[33]. Most importantly in our analysis, the number of issues is now found to be highly significant and negative. As with the regular sub-sample, we run the model with issue frequency as a discrete variable. Model 5 shows that the dummies for issue frequency are increasingly negative and significant, ranging from a 35 basis points discount for firms with one previous issue to 74 basis points lower yield spreads for firms with over 10 issues.

[33] This is not due to multicollinearity with issue frequency, since the effect is also present when excluding issue frequency from the model.

The results so far indicate that the impact of issue frequency is not linear. We will therefore explore the effect of issue frequency for various ranges of issue frequency and across all windows of past issue frequency. Table 8 (next two pages) shows grids of regressions on yield spreads per window (rows) with issue frequency included in a discrete way (columns). Apart from issue frequency, the model is the same each time, and equals the one used in Table 7. Panel A shows results for the 76 firms with more than US$ 15 billion in sales (407 issues). Panel B includes regressions for the 1162 issues by the 516 firms with less than US$ 15 billion in sales.

Very distinct patterns emerge from both panels. Panel A shows the grid of regressions for the regular firms. Here, the effect of issue frequency is very distinct from the one encountered with very large firms. For these smaller firms, very recent issues often result in higher rather than lower yield spreads, which suggests they are over-issuing. For example, issues by small firms that had an issue in the past week result in statistically significant yield spread premiums of 33 basis points. As the window lengthens, this premium shifts towards the categories with larger numbers of recent issues. That is, premiums are paid for 2-5 issues in the past two weeks (52 basis points), for 6-10 issues in the past month (117 basis points) and for more than 10 issues in the past two, three and six months (premiums of 111, 73 and 44 basis points).

The premiums increase in the number of issues given the window; they decrease in the amount of time given the number of issues. These results are consistent with some firms issuing too often in too short a time. From the three month window onward, an issue frequency discount starts to emerge. Firms that issued once in the past six months to two years enjoy a significant cost advantage over non-issuers of around 20 basis points. Similar discounts are reported for firms that issued 2-5 times over all the windows from six months to six years. However, apart from the four and six year windows, this discount does not extend to firms issuing more than five times, which might be considered to be over-issuing. These results suggest that it is not increasing issue frequency per se that matters. Rather, it seems optimal: 1) not to have issued too often too recently, and 2) to have issued at least once somewhat recently, or, for that matter, not to be a bond IPO for that window. This confirms the results from Table 7 that the relation between issue frequency and yield spreads is not linearly negative. Instead, the relation between the number of issues and yield spreads seems to be a curvilinear one: negative (i.e. an increasing discount) for the first issue(s) and then positive (i.e., a decreasing discount or increasing premium) for subsequent issues. Moreover, the results indicate that the slope and inflection point of this curve vary per window and per firm. Therefore, we do not deign it feasible to explicitly model this curvilinear relation in our regressions.

Table 8. Grids of OLS results on issue frequency

Panel A. Results for firms with sales below US$ 15 billion

Period		1 issue	2-5 issues	6-10 issues	11-30 issues	> 30 issues
1 week	Coefficient	*0.331*	0.033	NA	NA	NA
	t-Statistic	*2.30*	0.15	NA	NA	NA
	N	*28*	4	NA	NA	NA
2 weeks	Coefficient	-0.038	*0.518*	NA	NA	NA
	t-Statistic	-0.18	*2.26*	NA	NA	NA
	N	17	*13*	NA	NA	NA
1 month	Coefficient	0.060	*0.255*	*1.172*	NA	NA
	t-Statistic	0.50	*1.72*	*9.25*	NA	NA
	N	58	*33*	*2*	NA	NA
2 months	Coefficient	-0.060	0.127	-0.066	*1.112*	NA
	t-Statistic	-0.62	1.15	-0.30	*10.28*	NA
	N	94	39	9	*3*	NA
3 months	Coefficient	-0.109	**-0.215**	*0.334*	*0.726*	NA
	t-Statistic	-1.29	**-2.31**	*1.77*	*2.68*	NA
	N	137	**46**	*22*	*5*	NA
6 months	Coefficient	**-0.203**	**-0.163**	-0.121	*0.439*	NA
	t-Statistic	**-2.73**	**-2.14**	-0.96	*1.99*	NA
	N	**212**	**107**	26	*16*	NA
1 year	Coefficient	**-0.190**	**-0.263**	-0.148	0.115	NA
	t-Statistic	**-2.34**	**-3.48**	-1.30	0.78	NA
	N	**269**	**213**	36	35	NA
2 years	Coefficient	**-0.178**	**-0.162**	-0.119	0.099	-0.030
	t-Statistic	**-2.03**	**-1.80**	-1.03	0.76	-0.19
	N	**272**	**331**	72	68	5
3 years	Coefficient	-0.142	**-0.276**	-0.157	-0.134	0.264
	t-Statistic	-1.47	**-2.90**	-1.29	-1.08	1.37
	N	255	**370**	105	109	11
4 years	Coefficient	-0.098	**-0.270**	**-0.259**	-0.165	0.185
	t-Statistic	-0.93	**-2.61**	**-2.22**	-1.25	1.08
	N	249	**398**	**121**	130	33
5 years	Coefficient	-0.110	**-0.293**	-0.177	-0.171	-0.028
	t-Statistic	-0.98	**-2.63**	-1.36	-1.26	-0.17
	N	222	**414**	145	139	51
6 years	Coefficient	-0.098	**-0.266**	**-0.242**	**-0.249**	-0.086
	t-Statistic	-0.82	**-2.36**	**-1.84**	**-1.90**	-0.55
	N	196	**424**	**150**	**168**	57

Each row shows the coefficients, *t*-statistics and number of observations for issue frequency dummies used in OLS regressions on the yield spread over benchmark. In each case, results are for the regular firm subsample only (1162 observations) and the rest of the model equals the basic model mentioned in the methodology section and used in Table 7.

Table 8. Grids of OLS results on issue frequency (continued)

Panel B. Results for firms with sales over US$ 15 billion

Period		1 issue	2-5 issues	6-10 issues	11-30 issues	> 30 issues
1 week	Coefficient	**-0.220**	-0.124	NA	NA	NA
	t-Statistic	**-2.20**	-0.87	NA	NA	NA
	N	**74**	42	NA	NA	NA
2 weeks	Coefficient	**-0.454**	**-0.283**	**-0.700**	NA	NA
	t-Statistic	**-3.14**	**-2.18**	**-3.65**	NA	NA
	N	**40**	**84**	**11**	NA	NA
1 month	Coefficient	**-0.465**	**-0.458**	**-0.552**	**-0.881**	NA
	t-Statistic	**-3.12**	**-2.95**	**-3.39**	**-3.90**	NA
	N	**31**	**82**	**41**	**11**	NA
2 months	Coefficient	-0.125	**-0.422**	**-0.515**	**-0.670**	NA
	t-Statistic	-1.09	**-2.69**	**-3.19**	**-4.06**	NA
	N	57	**47**	**54**	**49**	NA
3 months	Coefficient	**-0.281**	**-0.355**	**-0.298**	**-0.663**	**-0.94**
	t-Statistic	**-2.42**	**-2.67**	**-1.71**	**-3.90**	**-2.82**
	N	**55**	**56**	**40**	**81**	**5**
6 months	Coefficient	-0.132	**-0.263**	0.195	**-0.582**	**-0.681**
	t-Statistic	-0.95	**-2.05**	0.70	**-2.52**	**-3.06**
	N	76	**66**	28	**86**	**46**
1 year	Coefficient	**-0.370**	**-0.407**	**-0.505**	-0.016	**-0.961**
	t-Statistic	**-2.38**	**-3.09**	**-3.09**	-0.06	**-4.24**
	N	**58**	**109**	**28**	35	**122**
2 years	Coefficient	0.156	-0.113	-0.309	-0.095	**-0.627**
	t-Statistic	0.80	-0.62	-1.53	-0.44	**-2.40**
	N	35	106	48	41	**155**
3 years	Coefficient	0.236	-0.086	-0.321	-0.161	-0.407
	t-Statistic	0.84	-0.34	-1.30	-0.59	-1.31
	N	21	74	80	53	164
4 years	Coefficient	-0.393	-0.270	-0.413	-0.365	-0.493
	t-Statistic	-1.02	-0.74	-1.13	-0.97	-1.27
	N	20	57	71	71	179
5 years	Coefficient	-0.466	-0.342	-0.414	-0.543	-0.657
	t-Statistic	-0.83	-0.63	-0.76	-0.99	-1.16
	N	15	51	72	83	181
6 years	Coefficient	0.661	0.607	0.469	0.299	0.449
	t-Statistic	1.35	1.34	1.04	0.67	0.94
	N	15	42	71	87	189

Each row shows the coefficients, *t*-statistics and number of observations for issue frequency dummies used in OLS regressions on the yield spread over benchmark. In each case, results are for the very large firm subsample only (407 observations) and the rest of the model equals the basic model mentioned in the methodology section and used in Table 7.

Within the group of large firms (Panel B), we find a strong frequent issuer effect from the shortest (one week) window up to and including the one year window. For these

windows, 23 out of 27 issue frequency dummies are significantly negative, i.e. imply a cost advantage over non-issuers. At the 1 week window, firms that issued once in the preceding week enjoy a statistically significant cost advantage of 22 basis points over firms that did not issue. This advantage is reduced to 12 basis points (and no longer statistically significant) for firms that issue more than once in the preceding week, suggesting that some of these firms have been relatively over-issuing. In the two week, one month and three month windows, all frequent issuer dummies are statistically significant and generally increasing in the number of issues. In the one month window, one previous issue yields a 47 basis point cost advantage; having more than 10 previous issues reduces the spread by 88 basis points. In the two year window, the only statistically significant cost advantage is for those firms issuing at least 30 times. Still, this result might be caused by the more recent issues within the two year window. For longer windows, signs generally remain negative but are all insignificant. These results suggest that for very large firms, issues beyond the one year window are irrelevant and that issue activity in the past year is decisive for cost advantages. This is consistent with benefits from market literacy, which are perishable since market conditions are in permanent flux.

4.3.3 Robustness discussion

In the previous subsection we showed that issue frequency has an impact on yield spreads. To see whether our results might be driven by spurious relations, we will now discuss some robustness tests.

The market literacy hypothesis says that frequent issuers benefit from superior market knowledge to obtain lower yields, for example by better timing. We therefore test whether the frequency effect keeps its significance when three timing proxies are added to Model 4. The first proxy we employ is the 10 year Treasury rate minus the 3 month Treasury rate, which is in effect a proxy for the flatness of the yield curve. This proxy turns out to be significantly negative, i.e. yields spreads are higher when the yield curve is flatter. Our second proxy is the average of the 3 month rate over the past 6 months minus the current 3 month rate. This proxy is significantly positive, which means that spreads are higher when interest rates have recently dropped. Perhaps falling interest rates tempt firms to over-issue. Our third proxy is the amount of issues in the bond's maturity class in the surrounding 2 weeks relative to the amounts in the maturity class over the whole year. This is a proxy for yield curve targeting, i.e. many firms issuing in the same maturity class over a short period of time, supposedly because of a window of opportunity. The effect turns out to be insignificant, which is not surprising since it could have gone either way: positive for firms that are in time to benefit from the window of opportunity and negative for firms that are late. These timing proxies seem important to control for, but their inclusion hardly changes the frequent issuer effect: the *t*-value of issue frequency goes from -4.50 to -4.24. Thus, they seem to capture only a small component of the frequent issuer effect.

The split of our sample by size is an important part of the analysis. So far, we have made the split at sales of US$ 15 billion, since it roughly corresponds with the median firm that has a previous issue over the 6 month window. Moreover, it conveniently splits the sample in large versus regular firms in a ratio of 1:3.5. But alternative cut-off points

might also be used, such as (approximate large-to-regular ratios in parentheses): US$ 25 billion (1:6), US$ 20 billion (1:5), US$ 10 billion (1:3), and US$ 5 billion (1:1). When we rerun the large firm OLS with continuous frequency (Model 4 from Table 7) for these alternative cut-off points, we obtain similar results, with increasing significance of frequency as the cut-off goes up: its *t*-value is -3.76 at the US$ 5 billion cut-off and -5.20 at the US$ 25 billion cut-off[34]. Results are also robust to changing the cut-off points for the models with discrete issue frequency and/or for the regular firms. The only surprising result appears when running the model with continuous issue frequency for firms with sales below US$ 5 billion: issue frequency is now again significantly negative, which is probably due to the limited number of observations with issue frequency over five (5% versus 16% for the whole sample). In sum, changing the cut-off points hardly affects results and confirms the notion that there is a large and smooth continuum between very infrequent and very frequent issuers.

The univariate analysis (Table 6) showed that regular and large firms not only differed in their issue frequency and yields, but also in other respects. Notably, regular firms did almost three times as many private issues. We therefore check whether this affects the analysis by running Model 3 of Table 7 both for private issues only and for public issues only. The signs stay the same, but significance is lower for the private issues subsample, which is probably due to the lower past issue frequency for private issues (0.62 on average for regular firms over the past year, versus 2.05 for public issues). We also do similar tests for junk bonds and split ratings, but find that the results are not affected.

Reputation acquisition assumes that firms acquire a good reputation, but of course firms can also acquire a bad reputation. We cannot really control this possibility (although extreme cases are probably captured in ratings), but if bad reputations were prolific, this would bias us against finding significant results.

Our sample concerns issues in the 2001-2003 period, which was largely a time of recession and low interest rates. One could therefore ask how representative our results are for 'normal' or booming times. The low interest rates should not be a problem, since these actually bias us against finding results as they offer less scope for discounts. Still, bond issuers in recessions might differ from the firms that issue bonds in booming times. However, the results in Santos (2006) suggest that is not the case. He finds that firms of all risk categories placed issues during expansions as well as recessions. Nevertheless, the frequency effect might differ across the business cycle. We therefore run separate regressions for the first three quarters of 2001 (i.e., before the 911 terrorist attacks) when the economy was still booming. We find that *t*-values are lower now (as well as the number of observations) but that the frequency effect remains highly significant.

[34] Non-tabulated results are available from the authors upon request.

4.4 Conclusions

Bond issue volumes are so large that even small yield discounts can save millions of dollars. This paper examines a potential source of such cost advantage: issue frequency. We hypothesize that more frequent bond issuers obtain lower yields for two reasons: because they better know the market (market literacy) and because the market knows them better (reputation acquisition).

This paper is the first to systematically document bond issue frequency for several windows, and relate them to yield spreads. It turns out that the median bond issuing firm issues bonds once every three years and that 20% of issuing firms issue a bond every six months. We find that there is an economically significant yield spread discount for frequent issuers, which can amount to over half of the average yield spread.

However, the impact of issue frequency is not linear. For very large firms, only issues during the last year really matter, consistent with the idea that market literacy yields transitory discounts to frequent issuers. Since market conditions change, market literacy has a short half-life. The frequency effect lasts much longer for regular firms, exactly because they do not do that many issues. Here, reputation acquisition weighs more heavily and it pays off to be known in the market for a previous issue.

Furthermore, if firms issue too often given their risk or size, they might be considered over-issuing. As a result, their discount disappears and may turn into a premium. These results suggest that there is in fact a firm-specific optimal issue frequency.

Our results show that issue frequency has a major impact on yield spreads. Still, some unsolved issues remain. For example, we do not have a benchmark for over-issuing. And it remains to be seen what the impact of issue frequency is in the less developed bond markets of Asia and Europe. Finally, it is likely that issue frequency also affects fees paid to underwriters.

Chapter 5 Who benefits from bond tender offers in Europe?*

5.1 Introduction

In recent years, many European firms have made tender offers for their bonds. While only € 3 billion in bonds were tendered over the 1996-1999 period, the amount tendered surpassed € 70 billion over the period from January 2000 to October 2005. The surge in bond tender offers raises several questions. Why would firms want to buy their own bonds? Who benefits from tender offers: shareholders, bondholders or both? In this paper we take a closer look at the recent wave of European bond tender offers and try to reconcile them with financial theory.

The contribution of our study is twofold. First, we investigate wealth effects to both bondholders and stockholders, while prior research on bond tenders has focused exclusively on either shareholders (Wingler and Jud, 1990; Chatterjee *et al.*, 1995; Kruse *et al.*, 2005) or bondholders (Mann and Powers, 2005). This is surprising, since both groups of financiers are involved in bond tenders, with different interests at stake. While bondholders benefit from high premiums for tendering their bonds, shareholders are at the paying end and will prefer low premiums. Shareholders may still win if the loss in premiums is less than the gains from having a better financial structure. However, the conflict of interest between shareholders and bondholders is a permanent one and may actually be a motivation for the tender offer. When a firm issues long-term debt, it effectively starts an ongoing valuation side game between bondholders and shareholders: if interest rates fall, bond prices will go up and the bondholders' stake in the firm will rise. Conversely, if interest rates rise, bond prices will go down and shareholders will be at the losing side. Managers acting in the interests of shareholders thus have incentives to issue at times of low interest rates and they might be tempted to time their tenders accordingly (Mauer and Lewellen, 1987). Especially in the past years of low interest rates, this might have been appealing. Alternatively, the firm might make a bond tender offer to rebalance its capital structure (Leary and Roberts, 2005), which should be beneficial to both groups of financiers. Thus, these motives could differ in their effects on

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shareholders and bondholders. By investigating the wealth effects for both bondholders and shareholders, we present a more comprehensive overview of the consequences of bond tenders.

Second, we are the first to study tenders in a European setting, which is important since the motives for European tenders are likely to differ from those in the US. In contrast to the US, bond markets in Europe are relatively small and, more specifically, lack a large junk segment (e.g., BIS, 2001), which limits bond market access for small firms (Schramade, 2006). Thus, European firms that tap the bond market are typically large, mature and financially healthy firms. As a result, the most important motive in prior US research (distress relief) is less relevant in Europe and tenders are likely to have different drivers and consequences. Unlike the previous papers on US offers, we identify three distinct types of bond tender offers: (i) debt-reducing tenders, (ii) refinancing tender offers, and (iii) tenders triggered by a control change. The first type of tender offers is made by firms that aim to reduce their debt ratios, usually after a period of bad performance in which their market debt-to-equity ratio has risen. The second type of tender offer concerns firms that tender their bonds while at the same time issuing new securities. These firms seek to benefit from low interest rates, tax advantages or, in some cases, have other reasons to change the structure of their debt. Although other authors assume that a bond tender is a debt decreasing event (e.g., Kruse *et al.*, 2005), the amount of debt actually increases in the median refinancing tender. The third type of offer concerns firms that announce a drastic change in their ownership structure accompanied by a tender offer for their bonds. These changes typically include equity IPOs and M&A activity, either friendly or hostile in nature. They trigger bond tender offers if covenants specify that management needs bondholders' consent to execute the proposed changes. By distinguishing between these three types, we can present a more complete picture of the causes and consequences of bond tender offers.

Our sample consists of 109 tender offers made by European firms in the period 1996 to 2005. The bond tenders are widespread over Europe, although the UK accounts for one third of the offers. In addition, most tender offers are made after 1998. We analyze tender premiums and abnormal stock price returns as well as the determinants of these wealth effects. We find that the firm usually pays a tender premium over the bond's market price to induce bondholders to tender. In our sample, the average tender premium is 3.9%. We explain the size of the tender premium by several variables and find significant effects for the presence of consent solicitations, takeover activity and the bond's remaining maturity. Because covenants often require the firm to seek consent from bondholders, 27% of the cases involve consent solicitation. Our regression results show that this sub-sample has a 3%-point higher premium. In case the firm is a takeover target, the bondholder receives a 2.8%-point lower premium, other things equal. Finally, bondholders receive higher premiums when remaining maturity is higher. Unlike tender premiums, stock price reactions to bond tender offers do not significantly differ from zero and have a high standard deviation. Interestingly, we find no relation between the bond premiums and the stock price reactions. Thus, in spite of the payment of tender premiums, tender offers do not make shareholders worse off. Rather, both types of financiers benefit from higher remaining maturities and to the same degree (both see their returns increase by 0.2% per

additional year). This finding implies that shareholders benefit from an early termination of inefficient financial conditions and that they compensate bondholders accordingly.

The remainder of the paper is structured as follows. In Section 2 we review the literature and define hypotheses. Section 3 describes the data. The results are presented in Section 4. Section 5 concludes.

5.2 Literature review and hypotheses

In this section we will sketch the theoretical background behind bond tenders, discuss alternatives and establish hypotheses regarding bondholder and shareholder wealth effects.

5.2.1 Literature review on tender offers

The existing literature investigates several methods that firms could employ to reduce or replace their bonds outstanding as an alternative to bond tender offers. First, companies could buy their bonds in the open market, which may save costs, since it does not require the assistance of an investment bank. However, open market repurchases are not very effective when large amounts are outstanding with many market participants. Moreover, if the firm wants to achieve consent from bondholders, an open market repurchase is not the way to do it. Consent can be obtained by either mailing a consent solicitation to all bondholders or by combining it with an exchange or tender offer (Kahan and Tuckman, 1993). Second, firms can make an exchange offer, i.e. swap bonds for new bonds, convertibles or equity. Of these three types of exchange offers, a debt-for-equity exchange is the most drastic way to rebalance the capital structure, since the reduction in debt is accompanied by an increase in equity. It can be the only way out for a distressed, highly levered firm. Lie *et al.* (2001) find that exchange offers result in dilution of shareholder value and are associated with negative stock price reactions. These exchange offers are a means of relief for distressed highly levered firms, but for most firms they are not an attractive option. The third alternative to a bond tender offer is calling the bonds. A bond's covenant may give the firm the possibility to call their bonds at a pre-specified price. Since Bowlin (1966), several papers have appeared that deal with optimal call policy (e.g., King and Mauer, 2000). However, these call provisions, if present at all, are only valid at pre-specified times. Moreover, there might be a non-refundability covenant, which implies that carrying out the call with funds from newly issued securities with lower interest rates is prohibited.

Given the difficulties associated with the three alternative methods, bond tender offers may have an appeal to a larger group of firms. However, existing studies have mainly examined bond tender offers in specific industries or in the context of highly distressed firms. Wingler and Jud (1990) study shareholder wealth effects for 26 US utilities that make a tender offer. The average abnormal return is negative, where a significant effect is found in case a utility index is used to calculate the normal returns. The authors find that these offers enhance shareholder wealth if the firm is able to take advantage of tax-timing options. The investment prospects of the firm are found to have a positive effect on the

announcement return. Chatterjee *et al.* (1995) study a very specific sample of distressed high-yield debt buybacks and compare 16 bond tender offers with 30 exchange offers. The results show that tendering firms are less distressed than firms making an exchange offer. The authors find that tender offers result in positive stock and bond price reactions. Coercion appears to play an important role in the offers in distressed firms, a result that is specific to the sample chosen. Dhillon *et al.* (2001) provide a clinical analysis of 4 cases in which firms simultaneously make tender and call offers, i.e. STACs. Kruse *et al.* (2005) investigate a broader sample of 208 US tender offers and find that the most common motives are to reduce debt or interest expenses. Their event study yields non-significant equity returns, except for those offers financed with asset sales.

To our knowledge there is only one paper that examines the premiums paid to bondholders. Mann and Powers (2005) investigate and explain the premiums that US firms pay on 943 bond tender offers in the period 1997-2003. The total amount tendered in these offerings is US$ 155 billion and the average premium is 4.75%. The authors find that premiums increase when the firms solicit consent to change restrictive covenants, when risk-free yields are low and in the case of flat yield curves. In this paper we extend their findings and examine both the bondholder and shareholder wealth effect associated with bond tender offers in Europe during the years 1996-2005. In the next sections we develop our hypotheses.

5.2.2 Tender premium hypotheses

Tender premiums are paid to compensate bondholders for giving up their securities at a time they did not plan to. As far as we know, Mann and Powers (2005) is the only paper that analyzes tender premiums. One of the major factors they find to be affecting the size of the tender premium is the consent solicitation. When a firm intends to change its covenants, is taken over, or wants to go public, it often needs to seek consent from its bondholders. The firm then makes a consent solicitation, either separately or combined with a tender, to obtain the required consent (Kahan and Tuckman, 1993). This puts bondholders in a strong bargaining position and tender premiums are necessary to induce the bondholders to give their consent.

Hypothesis 1: Tender premiums are higher when consent is solicited.

Not all consent solicitations are the same. Unlike Mann and Powers (2005), we explicitly control for firms being taken over. In the case of a takeover, or any other control change, the tender cannot be seen separately from the change in ownership. The offer is then triggered by the need to get consent for the ownership change. Since a takeover of the firm strengthens the position of bondholders due to the coinsurance effect[35] (Levy and Sarnat, 1970), bond prices will already be inflated in expectation of the takeover. Even though many bondholders will not be bondholders anymore after a successful tender, they still have an interest in giving consent, since they will loose their initial price increase if the takeover does not happen after all. Thus, the premium over the current market price will be lower.

[35] Coinsurance refers to the increased value of bondholder claims because the cash flows of the combination are less risky than the cash flows of the individual firms.

Hypothesis 2: Compared to other consent solicitations, tender premiums will be lower in case the firm is taken over.

Maturity is another factor that might be important in explaining tender premiums. With a longer remaining maturity of the bonds, waiting might become a very expensive option for the firm. Bondholders know this and will have a stronger bargaining position against the rest of the firm. In addition, bondholders will need to be compensated for giving up cash flows over a longer planned holding period. We therefore expect tender premiums to be higher when the remaining maturity is higher.

Hypothesis 3: Tender premiums increase in the remaining time to maturity.

5.2.3 Stock price reaction hypotheses

High tender premiums are beneficial for bondholders, but they reduce the cash flows available to shareholders. Shareholders will react negatively to tender offers if they foresee a wealth transfer to bondholders in the form of high tender premiums.

Hypothesis 4: Stockholder wealth effects to tender offers are more negative when tender premiums are high.

Shareholders will also react negatively to tender offers if the payment of dividends is potentially reduced. In other words, shareholders may anticipate a wealth transfer to bondholders, because the offer reduces the firm's ability to pay future dividends, which is most likely when dividends are high.

Hypothesis 5: Stockholder wealth effects to tender offers are more negative when dividends are high.

However, a bond refinancing might be a value-enhancing activity because, as Emery and Lewellen (1984) show, firm value can rise because of the tax deduction of the bond retirement premium. By buying back the bonds above par and issuing new bonds with the same future cash flows, they recognize their loss in the valuation side game and receive a commensurate tax reduction. Obviously, this tax advantage increases as the gap between the tender price and par value widens.

Hypothesis 6: Stockholder wealth effects to tender offers increase in the tender price.

However, it is not clear whether this tax advantage can actually be obtained in all European countries, since tax codes are generally silent or ambiguous[36] on the matter. Still, even if there is a potential tax advantage, its effect might be offset by transaction costs, which are incurred in all tender offers. The effect is aggravated in the case of

[36] For example, the Dutch tax code (in Note 156 to the 1969 corporate tax law) says that a debt should be valued at its present value if there is a significant gap with its book value. However, it is not specified what is considered significant. Moreover, it also says that one has to discount at the historical interest rate, i.e. the rate at the time of issuing.

refinancing offers, since the new issue involves additional transaction costs. Santos and Tsatsaronis (2003) find that Eurobond issuers pay on average 0.7% of the principal amount in fees. Moreover, fees are relatively high for small issues and the same may apply to transaction costs in general.

Hypothesis 7: Stockholder wealth effects to tender offers increase in the offer size.

Regardless of expectations of future interest rates, waiting for the bonds to mature might be costly due to the continuation of an inefficient capital structure. The longer the remaining maturity of the bonds, the more expensive waiting might become. Therefore, shareholders share an interest with bondholders (Hypothesis 3) in being more likely to appreciate the tender when the remaining maturity is high.

Hypothesis 8: Stockholder wealth effects to tender offers are more positive when the remaining maturity of the bonds is high.

Consent solicitations are generally made to make changes within the firm (covenants, ownership structure) to the benefit of shareholders. Therefore, tender offers with consents are most likely to be the ones that create value for shareholders.

Hypothesis 9: Stockholder wealth effects to tender offers are more positive when there is a consent solicitation.

5.3 Data

From Bloomberg we downloaded the bond tender offers for all available European countries for the period January 1996 to October 2005. This resulted in a list of 1161 bonds that were supposedly tendered by European entities. We then excluded all bonds by (semi-) governments (309 observations), by financials (416) and by non-European firms (20). For the remaining bonds, we searched announcements of the tender offer and other relevant information around the time of the offer, in LexisNexis, Factiva and Bloomberg. Upon closer inspection, 26 bonds appeared to concern a different kind of offer than a tender. And 74 of the offers proved not to concern bonds, but other securities like preferred shares, convertibles, or asset-backed securities. We removed all of these and double counts (16) to arrive at a sample of 300 tendered corporate bonds. Table 1 gives an overview of the sample selection process. The 300 bonds were tendered in 109 separate tender offers, by 96 firms (13 firms made 2 tender offers). On average, 2.75 bonds were tendered per offer.

Table 1. Bond tenders sample selection

Number of tendered bonds reported in Bloomberg	1161
(Semi-) Government bonds	309
Financials	416
Non-European	20
Double counts	16
Securities other than straight bonds	74
Other type of offer than tender	26
Number of tendered corporate bonds	**300**
Number of events (tenders made)	**109**
Average number of bonds per tender	2.75
Median number of bonds per tender	2.00
Number of firms	**96**
Average number of tenders per firm	1.15

Bond tender offers made by European entities from January 1996 to October 2005. We exclude (semi-) government bonds and bonds issued by financial or non-European firms. Other bonds are excluded because they do not concern non-straight bonds, such as mortgage backed securities or convertibles, or because they are not bought back through a tender offer but by other methods. Offers for several bonds of the same firm on the same date are considered to be one single event.

A close investigation of individual cases reveals that the European bond tender offers are a heterogeneous set. The offers differ over various dimensions, such as the extent to which they reduce debt, the way they are financed, and the reasons why they are executed. On the basis of these differences, we group the offers into three distinct categories: (i) tenders triggered by a change in ownership, (ii) refinancing tenders, and (iii) debt-reducing tenders. Category (i) consists of 27 offers (25%) that are strongly related to a change in ownership structure, such as an equity IPO, or the firm being taken over. Such changes typically require bondholder consent, which the firm can solve by making a successful tender offer. In these cases the firm does not seem intrinsically motivated to adjust the debt structure, but is triggered into doing so by a previous decision. Of the remaining offers, 38 are refinancing offers. These are financed from issuing new debt, typically bonds, but sometimes bank loans and in four cases convertibles. Finally, we find 44 purely debt-reducing offers. These are tenders unrelated to control change activity and without immediate external refinancing. Rather, they are aimed at reducing the debt burden of the firm and are financed from operating cash flows.

Table 2 shows the distribution of the offers both over time (Panel A) and geographically (Panel B). As Panel A shows, the number of offers grows from only 1 in both 1996 and 1997 to 7 and 9 in 1999 and 2000, reaching steady double digits for each of the years from 2001 onwards. The total amounts tendered are relatively small at first, but after 2000 they amount to over € 10 billion per year. Average offer sizes follow a similar pattern, starting out modestly in the early years and reaching an average size of over € 700 million in 2001 and later. In total, our 109 offers are for € 73.3 billion in bonds.

Table 2. Bond tenders sample distribution

Panel A. Tenders and tender amounts per year

Year		Debt-reducing tenders	Refinancing tenders	Ownership change tenders	Total	Average offer size
1996	Amount	0	30	0	30	30
	Number	0	1	0	1	
1997	Amount	0	0	72	72	72
	Number	0	0	1	1	
1998	Amount	70	1,148	0	1,218	609
	Number	1	1	0	2	
1999	Amount	100	0	1,589	1,689	241
	Number	3	0	4	7	
2000	Amount	202	1,998	665	2,865	318
	Number	2	3	4	9	
2001	Amount	5,973	2,920	3,043	11,935	702
	Number	9	4	4	17	
2002	Amount	5,652	24	3,659	9,334	718
	Number	5	2	6	13	
2003	Amount	9,324	5,651	0	14,975	1,152
	Number	5	8	0	13	
2004	Amount	9,895	4,339	1,812	16,046	698
	Number	10	9	4	23	
2005	Amount	6,011	4,985	4,094	15,090	656
	Number	9	10	4	23	
Total	Amount	**37,227**	**21,094**	**14,933**	**73,254**	**672**
	Number	**44**	**38**	**27**	**109**	

Panel B. Tenders and tender amounts per country

Country		Debt-reducing tenders	Refinancing tenders	Ownership change tenders	Total	Average offer size
France	Amount	5,560	3,375	330	9,265	1,029
	Number	4	4	1	9	
Germany	Amount	5,219	3,124	2,427	10,770	769
	Number	6	5	3	14	
The Netherlands	Amount	10,953	1,483	450	12,887	1,611
	Number	5	2	1	8	
Nordic countries	Amount	1,485	1,732	1,445	4,662	245
	Number	8	7	4	19	
Switzerland	Amount	122	1,720	387	2,229	371
	Number	1	3	2	6	
UK	Amount	12,542	3,824	6,676	23,042	678
	Number	13	8	13	34	
Other Countries	Amount	1,345	5,836	3,219	10,400	547
	Number	7	9	3	19	
Total	Amount	**37,227**	**21,094**	**14,933**	**73,254**	**672**
	Number	**44**	**38**	**27**	**109**	

Amounts are in € millions. Debt-reducing offers are those offers without simultaneous issue of new securities or a change in ownership. Refinancing tenders are those where the tenderer simultaneously made a new debt issue. Ownership change tenders are

those tenders where there was simultaneously an equity IPO or a takeover of the firm that originally issued the bonds. The Nordic countries are Denmark (2 offers), Finland (1), Norway (6) and Sweden (10). The other countries include Austria (2 bond tender offers), Czech Republic (1), Greece (2), Italy (2), Luxemburg (3), Poland (2), Portugal (2) and Spain (2).

Debt-reducing tenders account for just over half of that amount, reflecting their larger average size (at € 846 million) versus both other types of tenders (at around € 550 million). Still, all three types are much larger than the average of US$ 287 million that Kruse *et al.* (2005) find for the US. The geographical distribution of the numbers and sizes of offers are given in Panel B of Table 2. Offers by British firms account for almost a third of all bond tenders, both in value and in numbers. This reflects the importance of UK capital markets within Europe. At a distance follow The Netherlands (€ 12.9 billion in offer value), Germany (€ 10.8 billion) and France (€ 9.3 billion). The surprisingly large value of Dutch bonds tendered is reached in the course of only 8 deals by large firms with an average offer size of € 1.6 billion. French, German and UK deals are smaller, but still larger than those from the other countries included[37]. The Nordic countries (mainly Sweden) account for 19 relatively small deals.

5.4 Empirical results

5.4.1 Descriptive statistics

Table 3 shows offer characteristics (Panel A) and firm characteristics for the three types of offers. The average size of the debt-reducing offers is € 846 million, but its median is much lower at € 320 million. The offers generally concern a large part of the firm's debt. Offer sizes as a percentage of total debt are largest for ownership change tenders (mean and median around 60%). A plausible explanation is that this type of offer more often requires consent. For debt-reducing tenders, the mean (22%) is again much higher than the median (11%). Refinancing offers concern on average 30% of total debt (median 21%). The offers affect firms' debt loads to varying degrees. For debt-reducing tenders, the amount of debt generally decreases substantially. In contrast, the amount of debt increases on average for refinancing offers, which indicates that the size of the new issue is often larger than the amount tendered. The remaining maturity of bonds tendered is lowest for refinancing offers. For debt-reducing and refinancing offers, average tender prices are hardly above par, which is due to some bonds that trade well below par due to reduced ability to pay. In contrast, control change offers are generally well above par, which might reflect both the low level of interest rates and the absence of a need for restructuring. As expected, consent solicitations are much more prevalent for control change offers (in 52% of offers) than for the other types (around 20%).

[37] These other countries (number of offers per country in parentheses) are Austria (2), Czech Republic (1), Greece (2), Italy (2), Luxemburg (3), Poland (2), Portugal (2) and Spain (2). In three cases, we cannot specify the country because the parent is from a different country than the subsidiary.

Table 3. Descriptive statistics

Panel A. Offer characteristics

		Debt-reducing	Refinancing	Ownership change
Offer size	Mean	846	542	553
	Median	320	403	382
	Number of observations	44	39	27
Offer size/debt	Mean	22.2%	30.4%	55.7%
	Median	11.1%	20.8%	61.1%
	Number of observations	26	26	14
At offer change in debt	Mean	-22.2%	2.1%	NA
	Median	-11.1%	0.4%	NA
	Number of observations	26	28	NA
At offer change in debt-to-total assets	Mean	-13.2%	-12.2%	NA
	Median	-4.5%	0.2%	NA
	Number of observations	26	28	NA
At offer change in debt-to-market value	Mean	-31.0%	-14.3%	NA
	Median	-9.3%	0.2%	NA
	Number of observations	26	24	NA
Remaining maturity of the bonds tendered	Mean	5.6	4.2	6.5
	Median	4.0	3.0	7.1
	Number of observations	38	29	24
Tender price	Mean	100.8	100.4	108.5
	Median	106.5	103.5	108.9
	Number of observations	34	28	23
Tender premium	Mean	5.4%	3.2%	2.6%
	Median	1.5%	0.7%	4.0%
	Number of observations	31	27	19
Percentage with consent solicitation	Mean	20.5%	18.4%	51.9%
	Number of observations	44	38	27
Target	Mean	20%	8%	74%
	Number of observations	44	38	27
Motives mentioned				
- Lengthen maturity	Mean	0%	32%	0%
- Reduce interest burden	Mean	23%	21%	0%
- Centralize debt	Mean	9%	0%	0%
- Restructuring program	Mean	5%	5%	7%
- Other motives	Mean	9%	21%	15%

Table 3. Descriptive statistics (continued)

Panel B. Firm characteristics

		Debt-reducing	Refinancing	Ownership change
Market value	Mean	23039	4627	6694
	Median	7811	2056	1176
	Number of observations	24	25	5
Total assets	Mean	44818	8934	1685
	Median	12993	5665	944
	Number of observations	26	26	14
Sales	Mean	20884	8601	1523
	Median	11734	3979	689
	Number of observations	26	26	14
Debt-to-assets	Mean	32.6%	41.1%	68.0%
	Median	29.1%	42.4%	54.8%
	Number of observations	26	26	14
Short term debt-to-total debt	Mean	17.7%	19.3%	10.9%
	Median	15.9%	17.4%	5.7%
	Number of observations	26	26	14
Current ratio	Mean	1.34	1.25	1.07
	Median	1.21	1.12	0.89
	Number of observations	25	30	14
Return on assets	Mean	-0.6%	1.6%	1.3%
	Median	3.2%	2.4%	3.4%
	Number of observations	26	26	10
Market-to-book	Mean	1.77	2.11	11.46
	Median	1.30	1.36	1.60
	Number of observations	24	25	5
Dividend payout	Mean	24.4%	20.7%	11.0%
	Median	24.6%	4.3%	0.0%
	Number of observations	19	21	13

Panel C. CARs

Window	**(-1,+1)**	**(-2,+2)**	**(-3,+3)**	**(-10,-3)**	**(+3,+10)**	**(-30,+30)**
Mean	-0.61%	-0.37%	-0.64%	-0.45%	-0.50%	2.52%
Median	-0.39%	-0.27%	-0.17%	-0.09%	-0.51%	-1.08%
Maximum	13.57%	10.38%	13.21%	16.44%	10.36%	97.99%
Minimum	-15.58%	-10.34%	-16.23%	-15.64%	-17.88%	-47.92%
Std. Dev.	3.67%	3.31%	4.94%	4.97%	4.79%	24.08%
Observations	56	56	56	56	56	56

Amounts are in € millions. Debt-reducing offers are those offers without simultaneous issue of new securities or a change in ownership. Refinancing tenders are those where the tenderer simultaneously made a new debt issue. Ownership change tenders are those tenders where there was simultaneously an equity IPO or a takeover of the firm that originally issued the bonds. Offer size is the total amount of bonds tendered for in the event. The at offer change in debt equals (size of the new issue replacing the tendered bonds -/- offer)/beginning of year debt. Remaining maturity of the bonds tendered is the weighted-average time until maturity of the bonds tendered at the time of the offering. Tender price is the weighted average of the prices paid for the tendered bonds and is expressed as a percentage of the par value. Tender premium is the tender price minus market price as a percentage of the market price of the bond one day before the announcement of the tender offer. Percentage with consent solicitation is the percentage of offers in which a consent solicitation is part of the offer. Motives mentioned are motives for the offers retrieved from press releases and news messages. Centralize debt means that the firm wants to reduce the number of names under which it has bonds outstanding (for example due to name changes and past M&A activity). Other motives that were found less than four times include: to improve

the firm's rating, increase financial flexibility, to facilitate a hostile bid, current market conditions, not wanting to have junk bonds outstanding, asset sales, excess cash and to avoid ceding control to bondholders. Cumulative Abnormal Returns (CARs) are measured by estimating the market model during an estimation period beginning 250 trading days before and ending 5 trading days before the announcement of the bond tender offer.

Tender premiums are calculated by taking the difference between the tender price and the bond's price on the day before the announcement, as a percentage of the latter. Tender premiums amount to 3.9% on average. Three firms have very high tender premiums of over 20%. All three concern offers on bonds that trade at less than half of par value. However, the fact that we have only three such observations probably explains why we find lower tender premiums than Mann and Powers (2005), who report a 4.8% average tender premium. For some firms we report negative tender premiums, which might be due to unreliable bond prices (infrequent trading) or tender price setting well beyond the announcement date of the tender. Due to the three outliers, means are less telling than medians. Median tender premiums are highest for control change tenders, which might be due to the higher proportion of consent solicitations in that group. We explore this further in the next sub-section.

For half of the tender offers we are able to find motives explicitly mentioned by the firm in press releases or news messages. These motives are presented in the bottom lines of Panel A of Table 3. The most frequently mentioned motives are to lengthen maturity (12 times) and to reduce the interest burden (18 times). Lengthening maturity is the most important motive for refinancing tenders, but is not found for the other two types. Reducing the interest burden is frequently found both in debt-reducing offers and in refinancing offers. In four cases, the firm aims to centralize its debt, i.e. to have bonds outstanding under a reduced number of names. For example, Vodafone buys the bonds it has still outstanding under the Mannesmann name. Six times it is said that the tender is part of a restructuring program. Other motives that are found less than four times are: to improve the firm's rating, increase financial flexibility, making a hostile bid, current market conditions, not wanting to have junk bonds outstanding, asset sales, excess cash, and avoid ceding control to bondholders. As expected, the stated motives in debt-reducing tenders are often consistent with active rebalancing as in Leary and Roberts (2005). For example, Independent News & Media states that "the tender offer is being made as part of the issuer's commitment to active management of its balance sheet and to assist it in meeting its objective to reduce current debt liabilities and net interest expense" (press release, 18 November 2004). Vivendi claims that its tender "demonstrates Vivendi Universal's continued commitment toward the efficient use of funding sources and active debt management. It is a further step in Vivendi Universal's financial restructuring that substantially lowers the future cost of its debt" (Business Wire, 25 May 2004).

For several reasons, the above mentioned motives have become increasingly relevant over the past decade. First of all, the amount of European bonds outstanding is larger than ever before. Especially since the introduction of the Euro, there has been an impressive growth in the amount of bonds outstanding: the amount of debt securities outstanding by European non-financial corporations almost doubled from € 319 billion in December

1999 to € 612 billion in December 2005.[38] Second, there are explanations that seem a priori specific to the three types of tender offers. Low interest rates have made refinancing tenders especially appealing. Increased M&A activity has contributed to the number of control change tenders. Perhaps most importantly, the economic recession has resulted in lower equity market valuations and hence higher debt ratios, raising firms' incentives to rebalance their balance sheets by means of a debt-reducing tender offer. It is thus hardly surprising that this type of offer accounts for half of the total amount tendered.

Panel B of Table 3 provides firm characteristics for the sample. Firms engaging in debt-reducing offers are much larger than both other types of tenderers, in terms of market value, sales, and total assets. Debt-reducing tenderers have lower book value debt ratios than refinancing tenderers. However, market value debt ratios are much closer to each other, due to the slightly lower market-to-book ratios for debt-reducing firms. Still, mean and median market-to-book ratios are well over 1 for all types of firms, indicating that these are not typically distressed firms. Again, this confirms the impression that active balance sheet management, rather than distress relief is the main reason for European bond tenders. Profitability is relatively low for the firms in our sample, with Return on Assets (ROA, defined as EBIT/Total Assets) in the low single digits. Debt-reducing tenderers pay slightly higher dividends than refinancing tenderers and have more cash on hand (10.7% of total assets versus 10.0% for debt reducing tenderers), indicating that they have both the incentives and the means to reduce debt. However, these differences are not significant.

To assess the shareholder wealth effects of bond tender offers, we conduct an event study on the announcement of debt-reducing and refinancing tender offers. The estimation period runs from 250 to 50 days before the announcement. Ownership change offers are excluded because of contamination by the concurrent ownership change. Refinancing tenders where the straight bonds were replaced with convertibles are also excluded because of their equity issue component. This leaves us with 30 debt-reducing offers and 26 refinancing offers. Panel C of Table 3 shows event study results per window for the total of both types of offers. Average cumulative abnormal returns over the (-1,+1) are negative but not significant, at -0.61%. This result mirrors previous research (e.g. Eckbo, 1986) that finds insignificant stock price reactions to bond issues. The CARs we find for larger windows are even less different from zero, although they turn positive for the (-30,+30) window. There is no clear pattern in the daily returns either (not reported in tables). We also check whether debt-reducing tenders and refinancing tenders differ in their abnormal returns. If debt-reducing offers were indeed conducted to avoid distress relief, higher abnormal returns as in Chatterjee *et al.* (1995) would be expected. For the (-1,+1) window we find that mean abnormal returns are slightly (and not significantly) lower for debt-reducing offers (-0.68%) than for refinancing offers (-0.51%). For medians, it is the other way around: +0.20% for debt-reducing offers and -0.97% for refinancing offers, but the difference is not significant. These results again suggest that even the debt-reducing offers are seldom conducted to avoid distress.

[38] Euro Area Securities Issues Statistics, ECB (December 2000, December 2005).

5.4.2 Determinants of tender premiums

Table 4 shows the results of OLS regressions on tender premiums. Models 1 and 2 show results for the 72 offers for which we have all offer information. Model 1 includes the log of offer size, remaining maturity, and dummies for consent solicitation and the firm being a takeover target. Consistent with Hypothesis 1, we find that tender premiums are significantly higher (at 1% significance level) in case of consent solicitations. Tenders with consent solicitation have a 3%-points higher tender premium than tenders without consent solicitation[39]. We also find that firms that are taken over have a 2.8%-points lower tender premium, which is in line with Hypothesis 2. This coefficient is significantly different from zero at the 1% level.

Table 4. OLS on tender premiums

	Model 1	Model 2	Model 3	Model 4
Consent solicitation	0.0303***	0.0275***	0.0361***	0.0344**
	(3.07)	(2.82)	(2.80)	(2.61)
Target	-0.0282***	-0.0311***	-0.0404**	-0.0404***
	(-2.73)	(-2.95)	(-2.64)	(-2.61)
Remaining maturity	0.0023**	0.0022**	0.0025**	0.0024*
	(2.36)	(2.36)	(1.93)	(1.76)
Log Offer size	-0.0043	-0.0040	-0.0029	0.0012
	(0.91)	(0.83)	(0.44)	(0.17)
UK		0.0199*	0.0154	0.0175
		(1.87)	(1.00)	(1.10)
France		-0.0024	0.0033	0.0069
		(-0.16)	(0.17)	(0.33)
Germany		-0.0022	0.0041	0.0008
		(-0.17)	(0.25)	(0.04)
Netherlands		0.0252	0.0270	0.0306
		(1.39)	(1.34)	(1.48)
Debt ratio				-0.0219
				(-0.66)
Return on assets				0.0004
				(0.54)
Constant	0.0339	0.0251	-0.0264	-0.0074
	(1.15)	(0.83)	(-0.69)	(-0.16)
R-squared	0.19	0.27	0.30	0.32
Adjusted R-squared	0.14	0.18	0.14	0.11
N	72	72	44	44

Dependent variable is the tender premium as a percentage of the market price of the bond. Consent solicitation is a dummy that equals 1 if the offer includes a consent solicitation, 0 otherwise. Target is a dummy that equals 1 if the firm is taken over. Remaining maturity is the number of years until final maturity at the time of the tender offer. Log offer size is the natural logarithm of the tender amount in €. Debt ratio and Return on assets are for the book year preceding the tender offer. ***=significant at the 1% level of significance. **=significant at the 5% level of significance. *=significant at the 10% level of significance.

[39] Since takeovers may require consent, this raises the question to what extent the consent dummy and the target dummy are related. In fact, in 14 cases both dummies score 1, and in 52 cases both score 0. A score of 1 for the consent dummy and 0 for the target dummy is found 9 times, while the reverse (consent=0 and target=1) is also found 9 times.

The remaining maturity of the bond has a significantly (at 5% level) positive impact on tender premiums, which corroborates Hypothesis 3. For every extra year of remaining maturity, the tender premium is 0.2% points higher. We find no significant effect of offer size on the tender premium.

In Model 2 we add country dummies to Model 1. The country dummies in Model 2 reveal that UK firms pay higher tender premiums than other firms. In Model 4 we add the debt ratio and return on assets. For these variables we have only 44 instead of 72 observations. We therefore include Model 3, which replicates Model 2 with the 44 observations for which we have the debt ratio and return on assets. The effect for UK firms disappears in Model 3. While all other coefficients keep the same levels of significance, the debt ratio and return on assets do not yield significant effects. To their own surprise, Mann and Powers (2005) find a significantly negative relation between tender premiums and return on assets. They do not offer an explanation for this result.

We also check whether debt-reducing or refinancing offers differ in the tender premiums they command (not in Table 4), but this proves not to be the case. The refinancing dummy takes a coefficient of -0.005 and has a p-value of 0.64, while R^2 is unaffected and adjusted R^2 falls. Similar insignificant results are found for issue motives and the change in debt caused by the tender.

5.4.3 Determinants of abnormal announcement returns

Table 5 shows the results of OLS regressions on abnormal stock returns. The number of observations is limited since we cannot include control change tenders because of contamination issues. Moreover, for quite some firms we either do not have stock data or tender premiums, which are essential in ascertaining whether wealth transfers occur. Model 1 includes tender premiums only, while we add other explanatory variables in Models 2 and 3. The most important result is that tender premiums do not negatively affect abnormal returns[40]. We therefore find no support for Hypothesis 4. Thus, tender premiums do not seem to be at the expense of shareholders.

Emery and Lewellen (1984) argue that a bond refinancing might be value enhancing because of the tax deductibility of the difference between tender price and par. However, we do not find a positive relation between the tender price (measured as a percentage of the par value of the bond) and abnormal returns. Our results stand in contrast to Hypothesis 6 and earlier findings by Wingler and Jud (1990) for a 1980s sample of tender offers by US utilities. This is not really surprising given the ambiguity of European tax code on this matter. There is no effect from offer size either (Hypothesis 7). We do find a significantly positive relation between remaining maturity and abnormal returns in all models. This is consistent with Hypothesis 8. For every extra year of remaining maturity, the abnormal return is 0.2% points higher. The longer the firm has to wait for the bonds

[40] From a shareholder's perspective, tender premiums are probably most relevant in relation to shareholder cash flows, rather than in relation to the tender offer (which is most relevant to bondholders). We therefore also calculate tender premiums as a percentage of equity value, instead of as a percentage of tender offer size. However, the tender premium as a percentage of equity value also fails to be a significant variable in regressions on CARs.

to mature, and for the inefficient current situation to endure, the more beneficial it appears for shareholders to tender. Moreover, since bondholder premiums also increase by 0.2%- points for each additional year, the benefits of fixing the inefficient situation are shared evenly over both types of financiers. This is consistent with valuable balance sheet management.

Table 5. OLS on abnormal returns

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Tender premium	0.1497	0.1100	0.0330			
	(0.94)	(0.54)	(0.16)			
Tender price		-0.0008	-0.0009	-0.0009	-0.0009	-0.0009
		(-1.16)	(-1.27)	(-1.49)	(-1.42)	(-1.32)
Log Offer size		-0.0024	-0.0013			
		(-0.34)	(-0.17)			
Remaining		0.0015*	0.0022*	0.0021*	0.0025**	0.0024**
maturity		(1.88)	(1.95)	(2.11)	(2.37)	(2.00)
Consent		-0.0045	-0.0044			
solicitation		(-0.44)	(-0.44)			
Debt ratio			0.0022			
			(0.09)			
Return on assets			-0.0018**	-0.0019**	-0.0037**	-0.0035**
			(-2.36)	(-2.54)	(-2.40)	(-2.19)
Dividends						-0.0001
						(-0.37)
Constant	-0.1529	0.0940	0.0914	0.0855	0.0916	0.0891
	(-0.15)	(1.36)	(1.38)	(1.41)	(1.40)	(1.36)
R-squared	0.01	0.08	0.09	0.19	0.29	0.30
Adjusted R-squared	-0.01	-0.06	-0.01	0.11	0.21	0.18
N	39	38	36	36	29	29

Dependent variable is the abnormal announcement return over the (-1,+1) window. Tender premium is tender price minus market price as a percentage of the market price of the bond one day before the announcement of the bond tender offer. Tender price is the price paid relative to par value. Consent solicitation is a dummy that equals 1 if the offer includes a consent solicitation, 0 otherwise. Target is a dummy that equals 1 if the firm is taken over. Remaining maturity is the number of years until final maturity. Log offer size is the natural logarithm of the tender amount in €. Debt ratio, Return on assets, and Dividends are for the book year preceding the tender offer. ***=significant at the 1% level of significance. **=significant at the 5% level of significance. *=significant at the 10% level of significance.

Consent solicitations do not affect abnormal returns, so our data does not support Hypothesis 9. Nor do we find a relation between abnormal returns and debt levels. The other proxy for the firm's financial health, profitability, does turn out to be significantly negative. Thus, bond tenders are good news for less profitable firms. A potential explanation is that a bond tender shows that the firm is actually in better financial health than hitherto perceived by the market. It that case, the profitability is likely to be driven mainly by firms with low or even negative profitability. To test this, we split the sample by median ROA and run separate regressions (not reported in tables). Not surprisingly, these regressions on only 18 observations result in losses of statistical significance. Still,

the higher (i.e., more negative) *t*-values for the sub-sample with low profitability do suggest that bond tenders are good news for troubled firms.

In Model 4 we only include those variables that had *t*-values greater than 1 in the previous models. In Model 5 we run the variables from Model 4 for the fewer observations for which we have dividend data. Finally, we add dividends in Model 6. Remaining maturity and profitability keep their significance, but we do not find a relation between abnormal stock returns and dividends (Hypothesis 5). In unreported regressions we also check for changes in debt, offer motives, investor protection, and the type of offer, but their coefficients are not significant. Nor do we find a significant coefficient for firm size, which stands in contrast to Kruse *et al.* (2005), who find a negative relation between firm size and announcement returns, which they cannot explain.

5.5 Conclusions

This paper examines recent bond tender activity by European firms, amounting to over € 70 billion in 10 years. In contrast to earlier US evidence, European tenders seem part of active balance sheet management and are rarely aimed at distress relief. We identify three distinct types of bond tender offers: (i) refinancing tender offers (ii) debt-reducing tenders, and (iii) tenders triggered by a control change. The most frequent motives for a bond tender offer are: reducing the firm's interest burden, lengthening maturity, and takeover activity.

Bondholders benefit from the tender offer as firms pay substantial premiums on the tendered bonds. The average tender price is 3.9% over the market price one day before the announcement of the tender offer. Premiums are even higher when a consent solicitation is made and for longer remaining maturities. They are lower when the firm is taken over. Tender premiums are not affected by offer size, profitability, debt ratio levels or country of the firm.

Stock price reactions to bond tender offers are not significantly different from zero, which mirrors previous findings on bond issues (e.g. Eckbo, 1986). In spite of the substantial size of tender premiums, which go at the expense of shareholders, tender premiums do not negatively affect abnormal stock returns. Thus, on a net basis the premiums paid to bondholders seem to be offset by the benefits to shareholders. We find that less profitable firms have higher abnormal announcement returns. Moreover, abnormal announcement returns increase in the bond's remaining maturity.

Since bondholders obtain a premium on tender offers without adversely affecting share prices, bond tender offers seem to be beneficial for the firm. Apparently, the firm creates value by reducing its amount of bonds outstanding. This especially applies to long maturity bonds. For each additional year of remaining maturity, both bondholders and shareholders enjoy 0.2%-point higher returns. Shareholders benefit from an early end to an inefficient situation and they share these benefits with bondholders by paying a higher premium. Bond tender offers are not a zero-sum-game.

Chapter 6 Conclusions

Bond finance by corporations is the thread of this thesis. We follow the lifecycle of bond issuing firms. The lifecycle usually starts when the firm is ready to partly shed its bank ties and large enough to warrant the issue costs (fees paid to underwriters). As the firm starts issuing more often, its reputation strengthens and its dependence on banks further diminishes, unless banks are also shareholders in the firm. Moreover, when the firm issues even more frequently, it learns to spot opportunities in the market and obtains better pricing in the form of lower yields. At some stage however, the market may consider the firm to be over-issuing and will adapt pricing to reflect increased risk. Finally, firm management might think for some reason that the firm's mix of outstanding bonds is suboptimal and may therefore engage in buying back its bonds. Still, as long as there are bonds outstanding, conflicts of interest between stockholders and bondholders lie at bay. In Chapter 1 we start by briefly discussing previous research on the role of bonds in financing corporations, as well as identifying some research gaps, such as the disciplining role of bonds and the relation between bond issue frequency and yield spreads. Chapters 2 through 5 present the four research projects.

Chapter 2 examines bond market entry (bond IPOs) to ascertain whether bonds discipline managers. Previous research on bond IPOs has focused on underpricing (e.g., Cai *et al.*, 2005, Datta *et al.*, 1997, Helwege and Kleiman, 1998) and the role of banks (Datta *et al.*, 2000), exclusively for US firms. However, bond market entry provides an excellent setting for studying the impact of public debt on agency costs, since the firm introduces a new and large class of debtholders into its capital structure. Furthermore, this impact may differ across countries due to institutional variation. Thus, for a sample of 225 firms from 37 countries, we relate stock price reactions to agency cost proxies, to test whether bonds discipline management. We find evidence both of increased discipline and of discipline avoidance, depending on the firm's characteristics. That is, bond market entry is received unfavorably when the debt issue is motivated by keeping a lock on control (discipline avoidance). In contrast, when pre-IPO managerial discretion is high (high free cash flow and low dividends), discipline is expected to increase due to bond market entry, and stock price reactions are more positive. Moreover, the strength of these relations is found to be affected by worldwide differences in shareholder protection. The impact of free cash flow is larger when investor protection is stronger, whereas dividends and control locks play a more important role in countries with weaker shareholder protection. Furthermore, firms in countries with weaker shareholder protection stay longer in the bank phase and are thus typically much larger when (and if) they enter the bond market than US firms.

In Chapter 3, we focus on firms that have already entered the bond market, but have to adapt to a changing environment in terms of bond market access and bank ties. Yasuda (2005) documents underwriting fee discounts for bond issuers with bank ties. In contrast, we consider the possibility of the opposite to happen: higher fees for firms with bank ties if banks are weak. Our sample consists of bonds issued by Japanese corporations in the years 1994-2002, a period of deregulation beneficial to bond markets and detrimental to banks. We find a trend of falling fees for firms that do not belong to keiretsu, as these firms benefited from increased underwriter competition. In contrast, for firms with equity links to bank-led (financial) keiretsu, fees are found to have been rising over time, in parallel movement to the weakening of the core banks. In addition, we find that the higher fees for keiretsu firms were not offset by lower yields. Thus, the problems of the banks spilled over to the firms in their corporate group, which was priced in higher fees. Apparently, even firms that are at a stage in their lifecycle where they issue regularly can face restraints from bank ties. It remains to be seen however, if this could also happen in the absence of equity links.

Chapter 4 asks whether firms obtain better pricing when they reach a stage where they issue bonds more often. Anecdotal evidence from practitioners suggests this is the case, but academically this is unexplored territory. We hypothesize that firms could reap benefits from reputation acquisition (being known in the market) and from increased market literacy (knowing the market well). To test this, we first document bond issue frequency for windows from one week to six years for a sample of US issuers. We then investigate whether firms with higher issue frequencies also obtain lower yield spreads than infrequent issuers. We find that frequent issuers do indeed get economically significant discounts ranging from 20 to 117 basis points. Furthermore, we find that it is important to distinguish between regular (less than US$ 15 billion in sales) and very large firms, since issue frequency reflects different potential gains. For large firms, issue frequency in windows up to one year matter most, which is consistent with benefits through increasing market literacy. That is, as firms issue more often, they benefit from being better informed about market participants and market opportunities. Since this kind of knowledge is soon obsolete if not maintained, its benefits are also transitory. For regular firms that are smaller and less advanced in the bond issuing firm lifecycle, much longer frequency windows matter, which indicates that gaining a reputation is more relevant here than market literacy. For these firms, it is beneficial to be known as a recent issuer so as to avoid paying significant premiums. However, firms that issue too often given their size are punished with higher premiums. These results suggest that there is a firm-specific optimal issue frequency that depends on the stage of the bond issuing firm lifecycle.

Chapter 5 considers stockholder-bondholder conflict at the stage where firms want to reduce or even terminate the amount of bonds they have outstanding. The few previous studies on bond tender offers are limited in their scope in the sense that they investigate either tender premiums (gains to bondholders) or stock price reactions, but not both. Moreover, they only consider US tenders, which are largely done by distressed firms. Alternatively, we study European tender offers and investigate both bond premiums and stock price reactions. Our sample consists of the € 73 billion in bond tender offers by

European firms over the period 1996 to 2005. In contrast to the US, European tenders are made by larger, more mature firms and the offers seem aimed at active balance sheet management rather than distress relief. Bondholders receive on average a 3.9% premium over the bond's market price. Still, we find no evidence of wealth transfers from stockholders, since the average shareholder wealth effect does not differ significantly from zero and is not affected by tender premiums. Moreover, wealth effects for both bondholders and shareholders increase in the remaining time to maturity. Tendering the bonds, rather than waiting for them to mature, appears to be a valuable option for both types of financiers of the firm.

A recurring theme in this thesis concerns the relations between the various stakeholders in the firm. These relations typically change during the bond issuing firm lifecycle, since both the presence of bonds and changes in amounts of bonds affect relations between bondholders, shareholders, banks and managers (Chapters 2 and 5). Conversely, these relations affect the direct costs of bond finance, their yields and fees, as shown in Chapters 3 and 4. As expected, both yields and fees are found to increase in risk. We empirically identify additional sources of risk priced in bond issues: dependence on weak banks and suboptimal amounts of recent issues (i.e., none or too many). Moreover, Chapter 3 shows that the determinants of yield spreads are largely the same as the determinants of fees. This suggests that issue frequency might also affect fees. However, we leave that for future research.

Bond market development is also a factor in the interplay between bonds and intra-firm relations. Chapter 2 shows that bond market access is limited in most countries outside the US. That is, firms that could have entered the bond market in the US often do not do so outside the US; and the firms that do enter are larger and more mature. Thus, bank finance plays an even more important role than in the US and also continues to play a more important role during a longer part of the lifecycle of a bond issuer. In addition, the nature of agency problems is often different outside the US, with usually less investor protection, and a different impact of disciplining mechanisms. This is reflected by the finding in Chapter 3 that banks can both mitigate monitoring problems for bondholders and aggravate them, especially in case banks have equity stakes in the firm, which is common in Japan, Germany and several other countries.

Event study methodology is used in Chapters 2 and 5 to measure stockholder wealth effects from changes in the amount of bonds outstanding. In both cases, the average stock price reaction is close to zero, but with a large variation due to firm and bond characteristics. In both chapters, we find that stock price reactions are more favorable when the new situation is closer to optimal contracting. Hence, the mere fact of changing the amount of bonds matters less than the conditions in which this happens. Moreover, as Chapter 4 shows, some firms issue very often and account for a large amount of bonds while their individual bonds have little weight in firm value. Thus, doing an event study on large amounts of bond issues seems likely to yield insignificant results, unless it mainly concerns bond issuers in the early stage of the bond issuing firm lifecycle. This insignificant impact is in fact what early studies find (Eckbo, 1986; Mikkelson and Partch, 1986). Event studies on bond issues seem only interesting in those cases (such as

bond market entry, Chapter 2) where the impact of a single bond issue is likely to be big. Other such cases include emerging market bonds (where the impact of agency costs is likely to be larger, see Chapter 2) and the very large so-called 'milestone' bonds. For example, the US$ 2 billion bond by Hutchinson Whampoa was hailed as being "the largest ever by a non-US issuer in any currency", and providing "an overwhelming vote of confidence in Hong Kong's future under mainland China"[41]. It is not clear, however, how bonds become milestone bonds, and what their consequences are.

More questions remain. The results in Chapter 4 suggest that there is a firm-specific optimal amount of issues, which should be related to firm risk. That is, issuing more will result in better pricing through reputation acquisition and market literacy. But at some point, this advantage disappears as the firm issues too much given its ability to pay. Thus, the firm has an optimal issue amount that increases in the amount and safety of its cash flows. However, we do not have a benchmark for a 'normal' issue amount, which probably not only depends on the firm but also on market conditions.

The impact of market conditions also requires further research. Anecdotal evidence suggests that firms sometimes benefit from favorable market conditions. Conversely, issues are sometimes pulled as market sentiment turns against them. More specifically, firms can be criticized for targeting a specific part of the yield curve too heavily[42]. In addition, market conditions may be particularly harsh or favorable for specific industries. In emerging markets, corporate bonds sometimes replace sovereigns as benchmarks[43], which raises at least two more questions. First, what impact does such a benchmark role have on the firm itself? Second, will this happen in developed countries as well? Given the decline in sovereign borrowing (e.g., BIS, 2001), this is not unlikely. In fact, it has been suggested that the market might begin using the yield curves created by the biggest corporate borrowers as benchmarks[44]. Liquidity is not always an advantage, however. A Euroweek article[45] reports that the automobile and telecom industries have been pointed out as cyclical sectors with an abundance of highly liquid bonds, which make them investor favorites for shorting the corporate bond market as a whole. This is likely to affect the cost of finance of firms within that industry and the choices they have regarding their sources of finance. It might also affect their bond issuing strategies.

Both Chapters 4 and 5 point to the existence of distinct bond issuing strategies, which reflect both firms' views on the market and the way they prefer to be seen by the market. For example, in Chapter 5 we find that some firms bought back their own bonds because they did not want to have junk outstanding or preferred not to have bonds in subsidiaries' names. Visibility seems key, but more issues need not always be better. Especially among firms that are very advanced in the bond issuing lifecycle, issuing strategies seem to differ markedly. Consider the contrast between GM's strategy of issuing many relatively

[41] "An amazing debut by Hutchison", Corporate Finance, December 1997, Issue 157, p.42
[42] "Corporates suffer equity woes but bond pipeline builds", Euroweek, 27 September 2002.
[43] "Petrobras redefines the yield curve", Corporate Finance, December 1996, Issue 145, p.68; "Reliance creates a yield curve", Corporate Finance, September 1996, Issue 142, p.35.
[44] "Long-dated bonds: not dead yet", The Financial Times, 2 April 2005.
[45] "Big three adapt to brave new world", Euroweek, 20 September 2002.

small bonds ("tailoring bond issuance to hit pockets of investor demand as they arise") and Ford's GloBLS programme (Global Landmark Benchmark Securities) for issuing few but very large and liquid bonds that are meant to be benchmarks[46]. It is hard to say a priori which one is better. The results from Chapter 4 suggest that Ford may trade-off increased liquidity and reputation against a reduction in benefits from smartly playing the market with smaller well-placed issues. Thus, the question remains: is big better? Or is small beautiful?

[46] "Big three adapt to brave new world", Euroweek, 20 September 2002.

Samenvatting (Summary in Dutch)

De hoeveelheid uitstaande bedrijfsobligaties is het afgelopen decennium spectaculair gegroeid. Weinigen beseffen dat er jaarlijks vele malen meer obligaties worden uitgegeven dan aandelen. Het belang van obligatiefinanciering voor ondernemingen kan dan ook nauwelijks onderschat worden. Toch krijgen obligaties traditioneel veel minder aandacht dan aandelen. Daar begint langzaam verandering in te komen. Dit proefschrift draagt daaraan bij door ondernemingsfinanciering met obligaties centraal te stellen. In vier achtereenvolgende onderzoeksprojecten volgen we de levenscyclus van bedrijven die obligaties emitteren. We onderzoeken hoe de aanwezigheid van obligaties de waarde van de onderneming beïnvloedt en welke factoren van belang zijn voor de kosten van obligatiefinanciering.

Hoofdstuk 2 gaat over ondernemingen die voor de eerste keer de obligatiemarkt betreden. De centrale vraag is of obligaties een disciplinerende werking hebben op het management van de onderneming. Voor een dataset van 225 ondernemingen uit 37 landen meten we de aandelenkoersreacties op de aankondiging van hun eerste obligatie. Deze koersreacties zijn een indicatie van de waardecreatie voor aandeelhouders. Vervolgens onderzoeken we in hoeverre die koersreacties afhangen van de kenmerken van de obligatie, de uitgevende onderneming en het land waar de onderneming actief is. Uit die analyse blijkt dat koersreacties negatiever zijn als de emissie gemotiveerd wordt door het vasthouden aan een controlerend belang binnen de onderneming, waardoor disciplinering vermeden kan worden. Koersreacties zijn daarentegen positiever als de obligatie resulteert in meer disciplinering, omdat de obligatie de voorheen hoge vrije kasstromen vermindert. Ook landenverschillen doen ertoe. Zo is de rol van vrije kasstromen belangrijker in landen met goede bescherming van investeerders, terwijl controlerende belangen meer van invloed zijn in landen met weinig bescherming. In laatstgenoemde landen blijven ondernemingen doorgaans ook langer in de bankfase en zijn ze groter op het moment dat ze alsnog de obligatiemarkt betreden.

In hoofdstuk 3 onderzoeken we hoe Japanse ondernemingen, hoewel ze al wel toegang hebben tot obligatiemarkten, last kunnen hebben van al te nauwe banden met banken die in problemen verkeren. In Japan behoort een groot aantal bedrijven tot zogenaamde keiretsu (ondernemingsgroepen), wat inhoudt dat banken (en in minder mate andere groepsondernemingen) aandelenpakketten in deze ondernemingen bezitten en er bestuursleden kunnen benoemen. Onze dataset beslaat emissies in de jaren 1994-2002, een periode van zowel deregulering van obligatiemarkten als toenemende problemen bij banken. We constateren dat de commissies voor emissiebegeleiding over deze periode

daalden voor onafhankelijke bedrijven, omdat ze profiteerden van toenemende concurrentie in de markt voor emissiebegeleiding. Maar tegelijkertijd stegen deze commissies voor bedrijven die lid waren van de keiretsu. Blijkbaar misbruikten de banken hun macht om hun problemen deels over te hevelen naar de aan hen verbonden ondernemingen.

Verkrijgen ondernemingen gunstigere financieringsvoorwaarden naarmate ze vaker obligaties emitteren? Die vraag staat centraal in hoofdstuk 4. We hypothetiseren dat frequente emittenten zullen profiteren van een betere reputatie (de markt kent hen beter) en van betere marktkennis (zij kennen de markt beter en zijn in staat marktkansen te herkennen en te benutten). Daarom documenteren we de frequentie waarmee ondernemingen emitteren over verschillende periodes, variërend van 1 week tot 6 jaar. Vervolgens onderzoeken we of ondernemingen met hogere emissiefrequenties ook lagere interestkosten weten te verkrijgen. Dat blijkt inderdaad het geval te zijn. Bovendien blijkt het belangrijk om te een onderscheid te maken tussen normale en erg grote ondernemingen. Voor erg grote ondernemingen zijn vooral de frequenties in periodes tot 1 jaar van belang, wat duidt op het belang van marktkennis, die immers maar kort haar waarde behoudt. Voor kleine ondernemingen doet de frequentie over veel langere periodes ertoe, omdat het verkrijgen van een reputatie voor hen van groter belang is dan marktkennis, die pas echt goed opgedaan wordt als er zeer regelmatig geëmitteerd wordt. Meer is overigens niet altijd beter: ondernemingen die teveel obligaties uitgeven worden bestraft met hogere interestkosten. De resultaten suggereren dat er een optimale emissiefrequentie is, die ondernemingsspecifiek is.

Hoofdstuk 5 beschouwt de inkoop door ondernemingen van hun eigen obligaties. Ondernemingen gaan hiertoe over om hun vermogensstructuur aan te passen aan gewijzigde omstandigheden, of bijvoorbeeld om toestemming van de obligatiehouders te krijgen voor bepaalde activiteiten. De belangen van aandeelhouders en obligatiehouders kunnen hierbij strijdig zijn. Wij onderzoeken daarom de waarde-effecten van inkoopacties voor beide groepen, maar vinden geen bewijs voor waardeverschuivingen tussen beide groepen. Obligatiehouders ontvangen weliswaar een premie van 3,9% bovenop de waarde van hun obligaties, maar dit blijkt niet ten koste te gaan van aandeelhouders. Blijkbaar hebben aandeelhouders baat bij de nieuwe financiële structuur. Sterker nog, beide partijen gaan er meer op vooruit naarmate de ingekochte obligaties een langere looptijd voor de boeg hadden. Het is in beider voordeel om de obligaties in te kopen en de inefficiënte situatie te beëindigen, in plaats van te wachten totdat ze aflopen.

Een terugkerend thema in dit proefschrift is de relatie tussen de verschillende belanghebbenden in de onderneming. Deze relaties veranderen gedurende de levenscyclus van de onderneming, waarbij bijvoorbeeld het belang van banken doorgaans afneemt. Bovendien beïnvloeden die relaties de kosten van obligatiefinanciering in de vorm van interestkosten en emissiebegeleidingscommissies (hoofdstuk 3 en 4). Ook is opgevallen dat deze relaties variëren met de institutionele omgeving (hoofdstuk 2). In veel landen is de toegang tot obligatiemarkten beperkt en treden alleen erg grote bedrijven toe. Banken blijven dan een belangrijkere rol spelen in latere stadia, zoals we in het Japanse geval (hoofdstuk 3) gezien hebben.

De onderzoeken in dit proefschrift roepen ook allerlei vragen op. Zo suggereren de resultaten van hoofdstuk 4 dat er een ondernemingsspecifieke optimale emissiefrequentie bestaat. We hebben hier echter nog geen concrete maatstaf voor. Ook het belang van marktomstandigheden vraagt om vervolgonderzoek. Zo lijkt het erop dat ondernemingen kunnen profiteren van gunstige omstandigheden, maar ook het slachtoffer kunnen worden van marktsentimenten tegen hun bedrijfstak. De hoofdstukken 4 en 5 wijzen daarnaast op het bestaan van emissiestrategieën. Zo geven sommige ondernemingen, zoals GM, veel relatief kleine obligaties uit om te snel te kunnen profiteren van opkomende marktkansen. Terwijl anderen, zoals concurrent Ford, ervoor kiezen om erg grote en liquide emissies te doen die als maatstaf voor de markt kunnen dienen. Wat is wijs?

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Biography

Willem Schramade was born in Woerden (Utrecht) on October 11, 1975 and grew up in Bodegraven, Rijen and Vlierden. In 1994 he obtained his Gymnasium diploma from the St. Willibrord Gymnasium in Deurne. Willem holds an MSc in Business Economics from Tilburg University, where he graduated in 2000 with a thesis on French IPOs, which ultimately (2006) resulted in a publication in the *Journal of Corporate Finance*. After brief spells at CPS in London and GE in Munich/Bergen op Zoom, Willem decided to go for the challenge of doing a PhD, and joined the ERIM PhD program in September 2002. He presented parts of his research at venues in Belgium, Denmark, Finland, Japan, the Netherlands, the UK and the US. The article version of Chapter 3 of his dissertation has been accepted for publication in the *Pacific-Basin Finance Journal* and he has several papers under review at academic journals. Willem's teaching experience includes Corporate Finance and Financial Processes in the bachelor program of RSM Erasmus University as well as bachelor and master thesis supervision. Currently, Willem holds a dual position as a consultant for the Valuation & Strategy practice of PricewaterhouseCoopers in Amsterdam and as an assistant professor of Corporate Finance at the Erasmus School of Economics.

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Corporate Bond Issuers

What are the mechanisms behind corporate bond finance? Whereas a lot of corporate finance research is focused on stocks, corporate bond finance is relatively unknown territory. In this thesis, we present four articles in which we study the costs and effects of financing with bonds. We follow corporate bond issuers from market entry, through subsequent issues to the stage where they repurchase their bonds. In addition to the firms themselves, important players are bondholders, shareholders, management and intermediaries (banks). In the first paper, bond market entry is studied and related to agency costs of equity. Central is the question whether shareholders benefit from the presence of bonds in the firm's capital structure. The second paper investigates the costs of issuing bonds (in terms of yields to maturity and fees paid to underwriters) in a bank-oriented system faced with deregulation. Are bond issues by firms with strong bank ties affected differently by regulation than those by independent firms? Whether frequent bond issuers enjoy lower yields is the subject of the third paper. Do firms benefit from enhanced reputations and better market literacy when doing repeat issues? Finally, the fourth article studies firms that repurchase their bonds, with a special focus on possible wealth transfers between bondholders and shareholders.

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