

Internet Bondholder Relations: Explaining Differences in Transparency Among German Issuers of Corporate Bonds

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I. Introduction

Disclosing investor-related information on corporate websites is, as research has shown, common practice for stock-listed firms. Considering the enormously increased importance of Germany's market for corporate bonds¹, we devote particular attention to the communication policy of German bond issuers. Beyond the immense increase in outstanding securities that has already induced research interest in the field of German corporate bonds (e.g. *Horsch/Sturm* (2007) or *Rottmann/Seitz* (2008)), there were two further important reasons for us to focus on this market. Firstly, the current developments are particularly notable considering that the German market for debt capital has been traditionally dominated by close lending relationships between banks and corporations (*Kaufmann/Valderrama* (2008)). Secondly, German bond issuers increasingly focus on selling their bonds to private investors. This aspect adds to the significance of transparency issues as covered in this paper. We base our analysis on implications derived from the information, agency and related frameworks, which suggest a debtor's managers to engage in a behavior possibly detrimental to creditors when information on the debtor's characteristics and creditworthiness is asymmetrically distributed. By disseminating private information to their creditors, debtors may improve their funding opportunities and conditions.

Even though some researchers point at the importance of Internet disclosure for all kinds of stakeholders (*Bollen et al.* (2006)), previous studies predominantly focused on information releases to shareholders only.

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¹ Between 2000 and 2010, the volume of bonds issued by domestic non-financial corporations increased from € 13.6bn to € 250.8bn (*Deutsche Bundesbank* (2011)).

Beyond the fact that bondholder relations seem to be an under-researched area, we think this topic is worth being examined for the following reasons. Firstly, one has to distinguish between public and private debt when it comes to evaluating information barriers. Bond markets, as documented by *Begley/Freeman* (2004), are characterized by dispersed investors and a rare use of covenants. Bond investors usually do not have control rights or access to private information. Not all issuers opt for the service of rating agencies pooling private information into objective credit ratings publicly available. Yet, investors strive to gather as much public information as possible to evaluate an issuer's risk of default (*Sengupta* (1998)). Secondly, after observing developments in the market, our strong impression is that issuers interpret the need for disclosure very differently. Against the background of bilateral relationships that are dominating debt financing in Germany, some issuers still refrain from extensive public disclosure, while others invest a good deal of efforts in keeping their bondholders informed. We intend to interpret this heterogeneity, taking into account that it may partly be attributable to regulatory provisions. As a matter of fact, most German exchanges that maintain one of the new trading segments targeted at small to medium-sized bond issuers strive to set transparency requirements low enough to motivate firms without capital market experience but high enough to provide a transparency level that is appropriate for non-institutional investors.

The object of our research is to explain differences in web-based dissemination practices of German bond issuers, defined in this context as Internet bondholder relations (IBR). This approach appears reasonable since the Internet has become a dominant publication channel, just as predicted by *Deller et al.* (1999) and *Kuperman* (2001). Due to its flexible character, we assume IBR to be well suitable to keep anonymous bondholders informed. Recognizing the Internet's highly competitive and cost-efficient nature (*Pang et al.* (2009)), it remains unclear why bond issuing firms do not maintain a more or less identical level of IBR.

Marston (1996) defines investor relations as "the link between a company and the financial community, providing information to help the financial community and investing public evaluate a company" (p. 477). Following this definition, previous studies considered Internet investor relations or financial reporting as alternative publication channels rather than as media for information that is not yet published (e.g. *Bollen et al.* (2006)). In the context of this study, we use IBR as a proxy for the is-

suers' overall disclosure, differentiating between mandatory or recommended disclosures on one side and voluntary disclosures on the other. We base our methodological approach on studies such as *Marston/Polei* (2004), who analyze the Internet financial reporting behavior of large stock-listed firms from Germany, or *Bollen et al.* (2006), who examine 270 stock-listed firms from six countries, one of which is Germany.² We contribute to this stream of research by focusing on more heterogeneous firms. The firms we analyze do not share the common feature of being listed in a stock index but of having issued mid-term to long-term debt securities on the bond market.

The paper is organized as follows. In the next section, we reflect on the determinants of voluntary Internet disclosure and develop hypotheses. Our research design and sample selection criteria are described in the third section, before we present and discuss the results of our analysis. Finally, the paper draws to its completion with a section devoted to concluding remarks.

II. Theoretical Background and Hypotheses

1. *Voluntary Disclosure in Debtor-Creditor-Relationships*

Jensen/Meckling (1976) are among the first to address agency issues in debtor-creditor relationships arising from informational asymmetry between the contracting parties. They argue that in their role as agents, owner-managers have certain incentives to act for their own benefit at the expense of outside creditors. The latter in turn react to this behavior by writing covenants and monitoring managerial decisions. These costly measures are taken in order to deter agents from transferring wealth from creditors to themselves (*Aghion/Bolton* (1992)). This may be done either by increasing dividend payments to the shareholders (*Smith/Warner* (1979)), thus reducing the liable reserves, or by substituting low-risk assets for riskier investments, in whose potential surplus the creditors do not participate (*Jensen/Meckling* (1976)). In order to increase the benefits from leveraging, agents might borrow more debt capital and reduce the existing creditors' share in the firm's assets. Finally, in crisis situations, creditors face an increasing risk of underinvestment. This is the

² Other recent studies: *Bonsón/Escobar* (2006); *Abdesalam/Street* (2007); *Álvarez et al.* (2008); *Gandía* (2008); *Kelton/Yang* (2008); *Arussi et al.* (2009); *Aly et al.* (2010).

case when managers decide to forgo profitable projects whose benefits would go to the creditors in the case of default (*Myers (1977)*). Besides these ex-post dilemmas of hidden action, creditors also have to evaluate the debtor's ability to meet future obligations, both before and after the granting of credits. Lack of information impedes the evaluation and induces adverse selection problems. Bondholders therefore demand a premium to be compensated for their information risk. Disclosure of private information in turn helps reduce these asymmetries.

Introduced by *Spence (1973)*, the signaling theory is concerned with reactions arising from information asymmetries in various markets. Applied to voluntary disclosure towards capital providers, the theory postulates that firms being of higher quality seek to stand out from the rest. However, signaling does not work without credibility. Once a signal proved wrong, future attempts to communicate a superior firm quality may be mistrusted by the capital markets. *Morris (1987)* finds that agency and signaling theory are both consistent and may be used as complements in explaining accounting policy choices since they are overlapping but not fully equivalent.

The decision to publish corporate information follows a trade-off between its benefits and the evolving costs. Providing outside investors with valuable information in a timely and convenient manner reduces information asymmetry and hence the costs of capital (*Verrecchia (2001)*). More specifically, *Sengupta (1998)* shows that bond issuers doing well in financial analyst rankings tend to enjoy lower yield spreads and interest costs. By refining *Sengupta's* model, *Nikolaev/van Lent (2005)* are able to find an even stronger negative association. *Francis et al. (2005)* set up an international panel to analyze the connection between disclosure incentives and the costs of debt capital, among others. They report a negative correlation between disclosure and average interest rates on debt.³

On the other hand, publishing sensitive information entails direct and indirect costs (*Verrecchia (1983)*). Polling 400 executives, *Graham et al. (2005)* find that potential benefits are carefully weighed against the costs of disclosure. Setting precedents that may be unrealizable in future and provide competitors and other non-addressees with proprietary information are cited as the most important reasons for non-disclosure. Unlike most of the information that private debt holders base their decisions on,

³ Further studies dealing with the impact of disclosure or accounting quality on the costs of debt: *Ahmed et al. (2002)*; *Bharath et al. (2008)*; *Kiefer/Schorn (2009)*; *Orens et al. (2010)*.

information directed at the bond market is mostly open to the public (Armstrong et al. (2010)). Accordingly, Dhaliwal et al. (2011) find that firms with poor accounting quality or low public disclosure prefer to borrow private debt rather than to issue bonds. In the following, we formulate several hypotheses on constructs potentially affecting the level of disclosure.

2. Hypotheses

a) Bond Market Orientation

Due to information asymmetry between management and public creditors, bond issuance costs increase by the level of agency costs (Myers/Majluf (1984)). The management may be assumed to voluntarily disclose in order to keep information risk premiums low when anticipating or already preparing a bond offer (Healy/Palepu (2001)). Lang/Lundholm (1993) observe that firms opening themselves to the stock market tend to disclose more information. Ettredge et al. (2002) test this hypothesis by applying it to Internet financial reporting, confirming a positive relationship. They argue that managers may even have an incentive to disclose both favorable and unfavorable information before issuing new securities. Unlike shares, non-perpetual bonds expire after a few years and are often refinanced by the issue of new debt securities. As a consequence, the universe of bond-issuing firms is divided into issuers frequently accessing the bond market on one side and occasional issuers on the other. Particularly the former have to build a sustainable relationship with their investors to keep refinancing costs low.

While frequent issuers may reduce agency costs by constantly increasing their credibility, new bond issuers face a certain lack of investor confidence. Issuing a credit rating is a common way to gain access to the bond market. Therefore, especially first-time issuers may be assumed to rely on the signaling function of a credit rating until their reputation values are raised over time (Diamond (1989)). Consequently, Faulkender/Petersen (2006) use credit ratings as proxies for a firm's access to the public bond markets. Boot et al. (2006) add that "ratings may help in disseminating information to relatively uninformed investors" (p. 84) and Sufi (2009) finds that opaque firms may improve their access to uninformed investors when issuing ratings for syndicated bank loans. Boot et al. (2006) further suggest that credit ratings do not provide new information unless a firm is about to be downgraded. One major reason for

this stems from the credit watch procedure, during which firms and rating agencies are implicitly contracting on giving the firm time to take corrective measures. Rating agencies thus promote the dissemination of information to the public debt market without substituting other information channels. We therefore interpret credit ratings as proxies for issuers' intention to (re-)enter the public debt market and/or expand their investor base. In this context, we assume firms having deliberately decided not to issue a credit rating to be less open towards the bond market. Taken together, we conclude:

H1: The amount of IBR disclosure is positively related to the degree of bond market orientation.

b) Stock Listing

Bondholder relations may be considered as a rather new task for German firms in contrast to shareholder relations. *Ettredge et al. (2002)* maintain that debtor-creditor relationships are of secondary importance as "information asymmetry is generally greater between managers and equity (versus debt) investors" (p. 362). *Debreceeny et al. (2002)*, by referring to the considerations of *Ball (1995)*, argue that creditors bear less investment risk than shareholders as they are given priority in the case of default. They also put that, due to rule-based governance mechanisms (*Williamson (1988)*), creditors may be deemed less reliant on voluntary disclosure from their debtors. Consequently, *Dang et al. (2010)* deduce that debt capital is less sensitive to information than equity. Beyond that, stock-listed firms have to maintain large resources to fulfill transparency requirements. They may be considered to make better use of economies of scale when introducing bondholder relations. It is therefore reasonable to assume stock-listed bond issuers to be more transparent than privately held ones.

H2: The amount of IBR disclosure is higher for firms whose stock is traded on an exchange.

c) Investors' Informational Needs

Up until now, we have not taken into consideration the demand side of the market for information. It appears useful to distinguish between institutional and retail investors as one may assume their demand for information access to diverge. Although the presence of institutional equity

investors is found to have a positive influence on disclosure and governance proxies (*Ajinkya et al. (2005)*), this may not hold for debt investors and Internet disclosure. Institutional bond investors do not enjoy the same statutory rights as large-block shareholders so as to influence a firm's governance. It is moreover reasonable to assume that issuers experience less pressure from bond than from equity analysts as there are fewer of them in the market.

Secondly, institutional bond investors typically possess in-depth knowledge about market mechanisms and may easily gain access to corporate information either by participating in roadshows and conferences, or by maintaining permanent contact with investor relations representatives. Private investors, on the other hand, are more likely to base their decisions on information that is freely available. That is why several legal disclosure requirements have been supplemented by an exception for firms offering their securities to qualified investors only. Referring to these thoughts, *Laskin (2009)* tests in how far the importance of different public targets, as perceived by investor relations officers in Fortune 500 firms, correlates with a commitment in various investor relations activities. He reports, among other things, a positive correlation between the importance of institutional investors and an involvement in roadshows. Moreover, though to a statistically insignificant degree, firms seem to engage less in controlled media communications when institutional investors gain importance.

H3: The amount of IBR disclosure is negatively related to the proportion of institutional investors in the bonds.

d) Firm Complexity

Under the positive accounting theory, *Watts/Zimmerman (1978)* suggest that firms with more diversified business operations suffer higher information asymmetries than those focusing on fewer lines of business. The rationale behind this assumption is that capital providers and analysts face greater difficulties when assessing more diversified firms. This ultimately leads to mispricing (*Bassen et al. (2010)*). Issuers may actively work against this by disclosing detailed information about their fields of business. This argumentation is closely connected with the assumption of larger firms suffering from higher agency costs as they are usually more complex in structures and procedures. Beyond that, large firms are in the public eye and therefore more likely to face higher political costs, as

Watts/Zimmerman (1978) point out. Voluntarily disclosing better, large firms may further use economies of scale (*Ashbaugh et al.* (1999)) and thereby lower the marginal costs of disclosure. Accordingly, several scholars have been able to find evidence for a positive correlation between firm size and Internet disclosure for Germany (*Marston/Polei* (2004)) and other countries (e.g. *Bollen et al.* (2006); *Bonsón/Escobar* (2006); *Álvarez et al.* (2008); *Kelton/Yang* (2008)).

H4: The amount of IBR disclosure is positively related to the degree of firm complexity.

e) Default Risk

Creditors' main concern is the risk of not being refunded their investment. Voluntary Internet disclosure allows public creditors to constantly monitor a firm's performance, actions, and intentions. There are two lines of reasoning based on this fact. Lower-performing firms have a higher risk of failure and suffer from higher refinancing costs. This mechanism creates an incentive to disclose more in order to reduce investors' estimation risk. However, based on the signaling theory, investors may be thought to associate a lack of information with bad news about the business development. Therefore, also average-to-better performing firms may seek to stand out by disclosing more information (*Verrecchia* (1983); *Chambers/Penman* (1984); *Lev/Penman* (1990)). The motivation to send positive signals towards bondholders is offset by proprietary costs of disclosure. The more successful firms reveal about their business the more they risk losing the chance of standing out in the future. *Bollen et al.* (2006) outline that, even though they could afford it, successful firms may consciously not use all functions offered by the Internet in order not to endanger their competitive advantage.

As would be expected, the empirical evidence has been mixed so far. *Ettredge et al.* (2002); *Marston/Polei* (2004); *Bollen et al.* (2006); and *Kelton/Yang* (2008) do not find any or hardly any significant relationship between firm performance and Internet disclosure of stock-listed firms. On the contrary, *Richardson/Welker* (2001); *Aly et al.* (2010); *Lang/Lundholm* (1993) are able to provide evidence for a positive relationship. Some studies additionally use leverage as a proxy for firms' default risk. However, prior findings are not supporting the hypothesis of a positive relationship between leverage and level of Internet disclosure for stock-listed firms (*Debreceeny et al.* (2002); *Oyelere et al.* (2003); *Bollen et al.*

(2006); *Aly et al.* (2010)). Without tying us down to a certain prediction, we assume:

H5: The amount of IBR disclosure is related to the risk of default.

f) Family Ownership

Considerations on wealth transfer incentives in debtor-creditor relationships are far from complete without having analyzed the influence of inside or concentrated ownership. The less atomistic an ownership structure is the more shareholders may be able to control the management and influence business decisions. This phenomenon might especially appear in firms controlled by their founding owners since their relationship with the firm is extraordinarily strong. In many cases, the founding family provides a portion of, if not the entire, top management or supervisory board, and family owners are able to exercise their rights at annual meetings. Accordingly, agency problems between ownership and management are likely to be mitigated so that family owners may content themselves with a lower level of disclosure (*Bushman et al.* (2004)). However, the influential power held by controlling family members may inspire them or their management representatives to secure private benefits on the expense of minority shareholders (*DeAngelo/DeAngelo* (2000); *Anderson et al.* (2003); *Chan et al.* (2009)). *Filatotchev/Mickiewicz* (2001) argue that this expropriation may in fact collude with the interests of outside creditors and be tolerated by them.

Contrarily, the stewardship theory maintains that managers may well be motivated to serve an organization's objectives instead of acting in a self-serving manner. *Miller/Le Breton-Miller* (2006) expand this view to family firms suggesting that their executives are "either family members or emotionally linked to the family" (p. 74). There are two related ways in which these firms constitute an exception to the ordinary view on debt-related agency issues. Firstly, researchers regularly underline the long-term involvement of family owners (*Villalonga/Amit* (2006); *Ali et al.* (2007); *Cascino et al.* (2010)). Shares are often passed from one generation to the next. Looking back at their own dedication to the firm's success, family owners are interested in passing on a thriving business rather than just wealth (*Casson* (1999)). This shifts the focus from shareholder value to firm value maximization allowing the goals of founding family and bondholders to converge. This effect is expected to significantly reduce agency costs of debt for family firms. Secondly, founding

families have, as *Anderson et al. (2003)* point out, a strong incentive to preserve their firm's reputation. This is not only justified by the fact that their personal image is inextricably connected to the corporate reputation, but also by the long-lasting relationships that evolve between the firm's key personalities and external parties such as bondholders. Once the latter perceive a certain behavior from the firm officials, they might assume this pattern to be perpetuated in the future. Negative associations may be much more to the detriment of the firm's value than in a non-family firm, whose management and ownership change more frequently. *Anderson et al. (2003)* are able to show that family firms tend to enjoy lower agency costs of debt, as measured by bond yield spreads. *Ellul et al. (2007)* further differentiate between firms from different investor protection environments, finding that family firms enjoy lower agency costs of debt than non-family firms in a reliable legal system with high creditor rights such as Germany.

H6: The amount of IBR disclosure is lower for family firms.

III. Research Design

1. Sample Description

We examine all German non-financial firms having issued any type of mid-term to long-term public debt traded on the public capital market. We manually searched for quotations on all German exchanges. Since many German firms have issued their debt securities via foreign finance subsidiaries, we had to extend our data collection to these markets. We included the exchanges in Dublin, Luxembourg, and Zurich as well as the Euronext. These are the most important markets for German bond issuers. We examined the firms' websites between April 10 and April 30, 2011. On April 30, the population of non-financial corporate bond issuers consisted of 173 firms.

2. Firm-specific and Financial Data

Data for the subsequent multivariate analysis were collected from various sources. Information on the bonds was extracted from the Onvista online database, a web-based provider for detailed information on a wide range of traded securities, and the exchanges' websites. Data on the issuers were taken from the Hoppenstedt database, which comprises de-

tailed profiles of more than 300,000 German firms. Financial data were collected from annual reports, which were either available on their websites or in the Electronic Federal Gazette. Firm-specific data were collected on the group level.

3. Description of Dependent Variables

Our evaluation approach follows previous work on Internet financial reporting. The checklist criteria are taken in large parts from *Bollen et al. (2006)* as well as *Marston/Polei (2004)*, who on their part refer to descriptive studies (*Geerings et al. (2003)*; *Pirchegger/Wagenhofer (1999)*). We exclude predominantly technological features. Our final checklist concentrates on the content, timeliness, presentation, and usability dimensions of Internet financial reporting. As we focus on bondholder relations, we adapted the checklist after having pre-analyzed the websites of bond issuers without outstanding shares and that we considered fulfilling a benchmark function. Our final checklist includes 50 items, all of which are measured dichotomously. They are assigned to seven categories: Access to IR, Corporate information, Financial reporting, Corporate governance, Communication, Bond data, and Presentation. We are aware that any item selection process suffers from subjectivity, which is never fully avoidable in the composition of ranking scales (*Marston/Polei (2004)*).

Following *Ettredge et al. (2002)*, we differentiate between publications required by capital market regulations and voluntary items. This is necessary as some firms are more affected by regulatory provisions than others. First of all, there are several legal norms and best practice advices that refer to the disclosure of firms whose securities are admitted to trading on the regulated market. A large proportion of bonds have been issued to market segments that are regulated either by legislative authority or the exchanges themselves. Beyond that, the German Corporate Governance Code (GCGC) contains the most important provisions with respect to Internet disclosure. Sections 6.4 and 6.8 of the code recommend the use of modern media such as the Internet and corporate websites for the dissemination of information. Additionally, Section 6.7 requires using an online financial calendar for the announcement of important events. According to Article 161 in conjunction with Article 3 of the German Stock Companies Act, firms whose securities are admitted to trading on the regulated stock market have to disclose any deviation

from these recommendations. To all other firms, the authors of the code solely recommend to follow this comply-or-explain principle.

To account for these differences, we calculate a modified ranking score excluding items that are required or recommended by legislative or exchange regulation. Those are publications that we assume not to be published by a large part of firms without being obliged by regulation, neither via Internet nor conventional media. This includes financial reporting, a security prospectus, a detailed factsheet, a financial calendar, conference recordings or presentations, ad hoc announcements, credit rating reports, and an English translation of the website as it is required by the GCGC. Moreover, we define another scale that solely contains the category Bond data. It focuses on information that would not be disclosed by stock-listed firms without debt securities. By including this category, we intend to focus on information directed primarily to bondholders only, as opposed to the other two ranking variations. The total and modified ranking scores are then used as dependent variables for estimations within the subsequent analyses.

4. Regression Model and Variables

a) Regression Model

In order to test our hypotheses on the determinants of IBR quality, we define a set of independent variables proxying for the constructs we considered above. We test for their correlation with the individual IBR scores by applying the following multivariate model:

$$(1) \quad \begin{aligned} \text{Ranking}_i = & \beta_0 + \beta_1 \text{Regulated}_i + \beta_2 \text{Frequency}_i + \beta_3 \text{Rating}_i + \beta_4 \text{Stock listed}_i \\ & + \beta_5 \text{Lot size}_i + \beta_6 \ln(\text{Firm size})_i + \beta_7 \text{Diversification}_i \\ & + \beta_8 \text{Altman}_i + \beta_9 \text{Family}_i + \beta_{10} \text{Subordinated}_i + \varepsilon_i. \end{aligned}$$

Ranking is the dependent variable represented by one of the three ranking scores, as measured by applying the item checklist.

b) Bond Market Orientation

Regulated is a dummy variable proxying for openness towards the bond market. It is coded as 1 if at least one bond is listed in an (exchange-)regulated segment instead of the open market that requires a

lower degree of transparency. *Frequency* is a dummy variable, coded as 1 if the firm has issued bonds since 2008. It helps distinguish between regular and occasional bond issuers as we assume the former to be more affected by agency costs of debt and, thus, to be more inclined to disclose better. *Rating* indicates whether a firm has issued a credit rating or not. We include ratings from both international and domestic agencies.

c) Stock Listing

Stock-listed is a dummy variable, coded as 1 if the firm is listed on the stock market.

d) Investors' Informational Needs

Since the actual proportion of institutional investors is unknown even to the issuers themselves, we use a proxy. *Lot size* is a dummy variable indicating whether a firm has issued bonds with lot sizes higher than € 50,000 only. This is the threshold above which German regulatory provisions assume investors to be qualified. High lot sizes are sold almost exclusively to institutional investors such as banks, pension funds, and insurance firms.

e) Firm Complexity

Firm size is measured by the log number of group employees (FY 2009) and represents the first measure of firm complexity. *Diversification*, as the second one, stands for the number of industries to which a firm belongs. We employ the two-digit system used by the German Federal Statistical Office, which classifies firms into 21 main industry categories.

f) Default Risk

Altman is based on the Altman *Z*-score as revisited in 2002 (*Altman* (2002)). The score is calculated following the formula suited for both non-manufacturing industrials and private firms:

$$(2) \quad Z = 6.56 \cdot \text{Working Capital/Total Assets} \\ + 3.26 \cdot \text{Retained Earnings/Total Assets} \\ + 6.72 \cdot \text{Earnings Before Interest and Taxes/Total Assets} \\ + 1.05 \cdot \text{Book Value of Equity/Book Value of Total Liabilities.}$$

We calculated the score using data from 2009 annual reports. Firms with a score higher than 2.6 are considered to be in the safe zone and thus assigned a value of 1. Firms that fall below a score value of 1.1 are assigned a 0. Firms that lie between these thresholds are assigned a Z-score that has been transformed to a scale between 0 and 1 by applying this formula:

$$(3) \quad Z' = (Z - 1.09)/(2.61 - 1.09).$$

g) Family Ownership

Family is a dummy variable, coded as 1 if the firm is predominantly under the control of its founding owners or their descendants. We apply a modified form of the Substantial Family Influence Index (*SFI*), as developed by *Klein* (2000). It measures the degree of family influence by taking into account the three governance components of ownership, management, and supervision. The sum of the founding family's percentage shares in each of these categories must be at least 1 in order to be considered as relevant. *Achleitner* et al. (2009) reduce the threshold from 1 to 0.5 for listed firms, which are characterized by a less concentrated ownership structure. We regard original founders, their relatives, and descendants as family members when applying the following conditions to identify founding family firms:

$$(4) \quad \text{Listed: If } S_{Fam} > 0, \text{ } SFI: (S_{Fam} + SB_{Fam} + MB_{Fam}) \geq 0.5;$$

$$(5) \quad \text{Non-Listed: If } S_{Fam} > 0, \text{ } SFI: (S_{Fam} + SB_{Fam} + MB_{Fam}) \geq 1;$$

where S_{Fam} equals the equity stake held by founding family members, SB_{Fam} and MB_{Fam} equal their percentages in the supervisory board and top management team, respectively.

h) Control Variables

As indicated above, our sample of bonds is not restricted to standard bonds. It is reasonable to include a variable that separates the effect of non-standard bonds in a firm's public debt portfolio. Therefore, *Subordinated* serves as a variable controlling for the influence of subordinated and similar claims. It is a dummy variable, coded as 1 if the respective firm has issued subordinated, convertible, or other hybrid bonds. Beyond

obvious structural characteristics, we also considered bonds with maturities of 30 years and more as hybrid. Moreover, we include dummy variables for all first-level industries with at least five firms in the sample in order to control for potential industry-specific effects on IBR disclosure.

IV. Results

1. Descriptive Statistics

Table 1 displays the mean ranking scores per checklist category and in total. Moreover, it helps understand how we assigned checklist items to the three ranking scores. These scores may be understood as aggregated values of the checklist items. We observe that all 173 bond issuers have a corporate website, on which 62% have set up a separate bondholder relations section.

Table 1
Disclosure Items

<i>N</i> = 173	Checklist items	Mean	Rank.		
			1	2	3
Access to IR	Bondholder relations website	0.62	×	×	
	IR contact opportunity	0.68	×	×	
	Individual contact details	0.50	×	×	
	FAQ	0.32	×	×	
	Order service	0.38	×	×	
	Mailing list	0.36	×	×	
	Use of RSS feeds	0.38	×	×	
	Use of social media	0.06	×	×	
	Partly translated into English	0.71	×		
Fully translated into English	0.64	×			
Corporate information	Group portrait	0.88	×	×	
	Group structure with key data	0.26	×	×	
	Group strategy	0.50	×	×	
	Group strategy with details	0.19	×	×	
	Factsheet	0.39	×		

(Continue next page)

Table 1: Continued

N = 173	Checklist items	Mean	Rank.		
			1	2	3
Financial reporting	Current annual report	0.75	×		
	Online version of annual report	0.34	×		
	Interim reports	0.63	×		
	Online version of interim reports	0.20	×		
	Time series of annual reports (2–4 years)	0.71	×		
	Time series of annual reports (≥ 4 years)	0.57	×		
	Business outlook	0.17	×	×	
Corporate governance	Corporate governance category	0.52	×		
	Management details	0.83	×		
	Management details incl. CV	0.58	×		
	Ownership structure	0.35	×		
Communication	Press release category	0.89	×	×	
	IR news category	0.58	×	×	
	Between 1 and 6 IR news statements within last 2 months	0.69	×	×	
	More than 6 IR news statements within last 2 months	0.23	×	×	
	Financial calendar	0.66	×		
	AGM and/or conference recordings/presentations	0.34	×		
	Ad hoc announcement category	0.54	×		
Bond data	Data on bond issues	0.58	×	×	×
	Maturity profile	0.09	×	×	×
	Finance structure	0.20	×	×	×
	Finance structure with key data	0.09	×	×	×
	Credit rating	0.35	×		×
	Credit rating with credit report	0.13	×		×
	Historical bond prices	0.12	×	×	×
	Yield spreads/CDS rates	0.04	×	×	×
	List of credit analysts	0.19	×	×	×
	List of credit analysts includes credit opinions	0.08	×	×	×
Security prospectus	0.51	×		×	

N = 173	Checklist items	Mean	Rank.		
			1	2	3
Presentation	Update status	0.06	×	×	
	Referral feature	0.29	×	×	
	PDF download	0.09	×	×	
	1 click to IR contents	0.64	×	×	
	1 click to financial news	0.21	×	×	
	Print version of website	0.32	×	×	

Due to missing data, the sample is reduced to 152 firms. The median firm employs 5,605 people and has issued 1.5 bonds with a volume of € 273m. The total volume of all bonds included amounts up to € 298bn. 64% have their stock listed and 51% have issued at least one bond to a premium market. The ranking scores are spread in a large range across the sample: the maximum score equals 46 and the minimum is 1.

Table 2
Descriptive Statistics on Ranking Scores and Independent Variables

N = 152	Mean	Median	Standard deviation	Min.	Max.
Ranking scores					
<i>Ranking 1</i>	22.29	22.00	10.73	1.00	46.00
<i>Ranking 2</i>	11.57	11.00	6.13	1.00	27.00
<i>Ranking 3</i>	2.57	2.00	2.36	0.00	10.00
Independent variables					
<i>Regulated</i>	0.51	1.00	0.50	0.00	1.00
<i>Frequency</i>	0.78	1.00	0.42	0.00	1.00
<i>Rating</i>	0.58	1.00	0.50	0.00	1.00
<i>Stock listed</i>	0.64	1.00	0.48	0.00	1.00
<i>Lot size</i>	0.22	0.00	0.42	0.00	1.00
<i>Firm size (ln)</i>	8.00	8.63	2.98	1.10	13.10
<i>Diversification</i>	1.84	2.00	0.83	1.00	5.00
<i>Altman</i>	0.39	0.12	0.43	0.00	1.00
<i>Family</i>	0.32	0.00	0.47	0.00	1.00
<i>Subordinated</i>	0.46	0.00	0.50	0.00	1.00

2. Multivariate Analysis

We test our hypotheses by running an OLS regression analysis based on the above derived model. The sample sizes are further reduced after applying Cook's distance measure for detection of outliers. We define the cut-off value for the distance measure as $D_i > 4/N$. We carry out the analysis on variables both as observed and after having been z -transformed. This standardization allows us to compare the variables on their relative significance in explaining IBR. We calculate variance inflation factors to test for inter-correlations between the independent variables. We set the cut-off value to 2.50, which means that the coefficients' standard errors are inflated by less than 1.58 times compared to the uncorrelated state. We thus allow for a very low level of multicollinearity. Table 3 indicates that our results are not likely to be much influenced by inter-correlations.

Table 3
Variance Inflation Factors (VIF) of Independent Variables

	$VIF_{\text{Rank.1}}$ $N = 149$	$VIF_{\text{Rank.2}}$ $N = 147$	$VIF_{\text{Rank.3}}$ $N = 144$
<i>Regulated</i>	1.86	1.95	1.73
<i>Frequency</i>	1.23	1.23	1.30
<i>Rating</i>	1.45	1.49	1.48
<i>Stock listed</i>	1.35	1.40	1.45
<i>Lot size</i>	1.76	1.79	1.65
<i>Firm size</i>	1.60	1.62	1.58
<i>Diversification</i>	1.06	1.06	1.07
<i>Family</i>	1.20	1.22	1.20
<i>Altman</i>	1.04	1.04	1.04
<i>Subordinated</i>	1.23	1.27	1.23
Mean VIF	1.38	1.41	1.37

Table 4 shows the results of our three multivariate regressions. The first main column contains the coefficient values for the total ranking, the remaining two refer to the modified ranking scores as described above. We observe that all statistically significant estimators have predicted signs. Although most predictions are of directional nature, we decided to use more conservative two-tailed tests of statistical significance.

Table 4
Overall Regression Results⁴

	Expected sign	Ranking 1		Ranking 2		Ranking 3	
		β	<i>B</i>	β	<i>B</i>	β	<i>B</i>
<i>Regulated</i>	H1: +	3.114 (2.63)***	0.146	1.738 (2.09)**	0.143	0.961 (2.87)***	0.223
<i>Frequency</i>	H1: +	3.913 (3.30)***	0.151	2.717 (3.31)***	0.183	0.941 (2.64)***	0.180
<i>Rating</i>	H1: +	3.221 (3.04)***	0.149	1.421 (1.92)*	0.115	1.330 (4.27)***	0.307
<i>Stock listed</i>	H2: +	12.20 (11.24)***	0.548	6.105 (7.90)***	0.477	1.170 (3.57)***	0.264
<i>Lot size</i>	H3: -	-1.880 (-1.31)	-0.072	-1.137 (-1.17)	-0.078	-0.729 (-1.78)*	-0.138
<i>Firm size</i>	H4: +	1.186 (5.83)***	0.330	0.631 (4.54)***	0.304	0.088 (1.49)	0.122
<i>Diversification</i>	H4: +	1.721 (3.12)***	0.133	1.149 (3.04)***	0.156	0.429 (2.64)***	0.164
<i>Altman</i>	H5: ?	0.754 (0.71)	0.030	0.399 (0.54)	0.028	-0.397 (-1.27)	-0.079
<i>Family</i>	H6: -	-3.431 (-3.23)***	-0.151	-1.561 (-2.10)**	-0.120	-0.280 (-0.90)	-0.061
<i>Subordinated</i>		1.237 (1.25)	0.058	0.876 (1.29)	0.072	0.536 (1.85)*	0.124
<i>Constant</i>		-7.002 (-2.80)***		-5.223 (-3.01)***		-2.533 (-3.47)***	
<i>N</i>		149		147		144	
<i>R</i> ²		0.793		0.706		0.584	
adj. <i>R</i> ²		0.764		0.664		0.524	
<i>F</i> -statistics		27.68***		17.04***		9.74***	

⁴ We include dummy variables for all first-level industries with at least five firms in the sample. The table displays both standardized (*B*) and unstandardized (β) beta coefficients. *T*-statistics are displayed in parentheses. *, **, and *** denote significance at 10%, 5%, and 1% levels, respectively (two-tailed tests).

It is striking how significant the impact of a stock listing is on the IBR scores. Since many informational items from our checklist may be used for helping both equity and bond investors evaluate the firm, it is, however, not surprising that firms being listed on the stock market disclose more. Another reason may be seen in the fact that equity investors are more reliant on financial reporting as they are residual claim holders. Although this common argument is not irrational, we need to point out that there are firms without outstanding shares which are among the best performers in our ranking. It is nonetheless reasonable to analyze changes between the first and the remaining two regression estimations that focus on voluntary and bond-related disclosure, respectively. Variable *Stock-listed* remains highly significant when explaining the alternative ranking scores. However, it loses in impact in the third calculation, unlike other variables such as *Regulated*, *Frequency*, *Rating*, and *Diversification*. The standardized coefficients reveal that changing *Stock listed* by one standard deviation impacts the IBR score by more than half a standard deviation in the first calculation but only by 26.4% in the third.

The results suggest that the influence of a stock listing is partly replaced by the requirements and expectations associated with a listing in a regulated bond segment. *Regulated* is statistically significant in explaining total (*Ranking 1*) and bond-related disclosure (*Ranking 3*) as well as, however to a lesser extent, in explaining voluntary disclosure (*Ranking 2*). As another measure for capital market orientation, the frequency of bond issues shows a strong relationship to IBR. We can reject the null hypothesis of no difference between one-time/occasional and frequent/new issuers, suggesting that the latter tend to disclose more. The findings are consistent with the assumption of frequent issuers being more reliant on the bond market as a refinancing source. These firms seek to ensure investor confidence in order to avoid interest premiums for low transparency. The results further show a positive relationship between the issuance of an external credit rating and IBR disclosure, which is especially strong in the third calculation. We infer from these results that firms seeking a high capacity of (re-)entering the capital market tend to disclose, above all, more information concerning their debt issues.

As explained above, the need to publish private corporate information was supposed to largely depend on the target investors. We observe a latently negative relationship between the lot size dummy and the IBR scores, which, however, is statistically insignificant in all calculations ex-

cept for the last one. This would be consistent with the null hypothesis that IBR disclosure is not determined by the share of institutional bond investors. The relationship would be slightly significant in the first calculation if a one-tailed test was used. Turning to complexity determinants, both the diversification of the business model and the firm size are predictive. The number of group employees seems to be an economically stronger determinant than the number of major industries a firm operates in, except for the third ranking score. Considered together, this confirms our hypothesis on the influence of firm complexity. Our results further suggest that the extent of IBR is not associated with default risk. This refutes our fourth hypothesis but is in line with findings from previous studies.

The results show a negative relationship between the founding family ownership and IBR, which is decreasingly significant in the first two estimations. As our considerations have shown, it is impossible to draw exact conclusions from this finding. Family firms might well be assumed to be less affected by debt-related agency costs first of all. Beyond this, they are also likely to value the trade-off between the evolving costs and benefits of disclosure systematically differently from non-family firms. An unexplained combination of these presuppositions leads to the verifiably lower ranking performance as shown and predicted by the sixth hypothesis.

Concerning the bond-specific disclosure ranking, we can further reject the null hypothesis of no difference between issuers of standard bonds and those having issued subordinated debt. The results indicate a slightly positive correlation, which is in line with our prediction that creditors demand a better transparency when possessing subordinated claims.

Considered together, the disclosure we examined is driven to a large extent by stock market expectations, bond market orientation and firm complexity. The long-term experience of stock-listed firms with investor relations activities is well reflected in our rankings. However, the stock market variable loses in predictive value as we exclude non-voluntary items and eventually all items that do not directly refer to the bond issues. Stock-listed firms evidently follow a distinct trade-off pattern as they are capable to enjoy economies of scale when establishing a relationship to the bond market. While this reasoning appears impeccable, the reduction in the stock listing's influence suggests that most of the financial disclosure found on corporate websites is directed towards the

stock rather than the bond market. Conversely, other measures (slightly) increase in value or remain stable such as having at least one security listed in an official or exchange-regulated bond segment, the frequency of bond issues, the issue of ratings, and the business diversification.

3. *Estimation Quality and Restrictions*

The statistics indicate that all model modifications have a strong explanatory power and goodness-of-fit. Regressing the dependent variables on fitted and squared fitted values, we value the estimations to be well specified and not biased by omitted variables. We find the assumptions on the residuals' normal distribution and homoscedasticity to be fulfilled as we conduct the Shapiro-Wilk and White procedures. With respect to the external validity of our findings, we need to point out that, because of missing data, we have not been able to include all German bond issuers in the multivariate analysis. This fact might produce selection bias when we assume the excluded firms to systematically disclose less on their websites than the analyzed ones. However, we cannot resolve this issue since the applied measures were essential for our analysis.

The quality of our results further depends on the internal consistency of the disclosure measures expressed by the question whether the indices truly represent the underlying construct. As noted earlier, we chose our checklist items both by adopting from well-established studies on Internet financial reporting and by scanning through bond issuers' websites. After gaining a first overview, we had a closer look at issuers that were not stock-listed and that we assumed to outperform the rest of the sample. Following the composition of the scales, we calculated Cronbach's alpha in order to evaluate their internal consistency. Standardized alpha values of 0.94, 0.89, and 0.77 indicate that our scales are reliable instruments to measure the construct.

4. *Robustness Test*

Having noted the outstanding influence of a stock listing, it seems useful to control for the variable's influence on other coefficients. We therefore split the observations into subsamples, grouped by their listing status, and rerun the regression analysis without including industry dummies. Analyzing the differences in standardized beta coefficients, we find significant changes for most variables. As displayed in table 5, only the

diversification proxy remains largely significant for both subsamples, contrary even to the *Firm size*. The degree of business diversification influences non-listed firms' disclosure behavior to a greater extent than their reference group's.

Table 5
Regression Results for Subsamples⁵

	Ranking 1		Ranking 2		Ranking 3	
	L	NL	L	NL	L	NL
<i>Regulated</i>	0.111 (1.22)	0.099 (0.70)	0.034 (0.34)	0.172 (1.13)	0.192 (1.57)	0.126 (0.97)
<i>Frequency</i>	0.136 (2.02)**	0.245 (1.63)	0.088 (1.18)	0.316 (1.93)*	0.147 (1.65)	0.238 (1.63)
<i>Rating</i>	0.133 (1.89)*	0.296 (1.92)*	0.169 (2.15)**	0.131 (0.79)	0.381 (4.02)***	0.199 (1.38)
<i>Lot size</i>	-0.002 (-0.03)	-0.335 (-2.03)**	-0.034 (-0.42)	-0.235 (-1.32)	-0.075 (-0.82)	-0.203 (-1.42)
<i>Firm size</i>	0.541 (6.07)***	0.224 (1.78)*	0.528 (5.32)***	0.098 (0.72)	0.158 (1.29)	0.112 (0.95)
<i>Diversification</i>	0.112 (1.87)*	0.266 (2.11)**	0.153 (2.31)**	0.297 (2.18)**	0.078 (0.95)	0.509 (4.01)***
<i>Altman</i>	0.100 (1.65)	-0.121 (-0.99)	0.159 (2.34)**	-0.135 (-1.01)	-0.066 (-0.80)	-0.142 (-1.25)
<i>Family</i>	-0.149 (-2.40)**	-0.256 (-2.07)**	-0.123 (-1.78)*	-0.314 (-2.37)**	-0.086 (-0.98)	-0.228 (-1.97)*
<i>Subordinated</i>	0.016 (0.25)	0.401 (3.44)***	0.002 (0.03)	0.333 (2.68)**	0.134 (1.54)	0.221 (2.01)*
<i>N</i>	92	50	92	51	90	50
<i>R</i> ²	0.721	0.572	0.656	0.487	0.500	0.611
adj. <i>R</i> ²	0.691	0.476	0.618	0.374	0.444	0.524
<i>F</i> -statistics	23.59***	5.95***	17.37***	4.32***	8.90***	6.99***

⁵ The table displays standardized beta coefficients. *T*-statistics are displayed in parentheses. *, **, and *** denote significance at 10%, 5%, and 1% levels, respectively (two-tailed tests). *L* stands for the listed and *NL* for the non-listed subsample.

Listed firms' IBR disclosure is heavily influenced by the fact whether or not they have issued a credit rating. A listing in the regulated market turns out to be statistically insignificant after the sample split. With regard to the frequency of bond issues, the results are more ambivalent. Stock-listed frequent bond issuers are disclosing more when the first ranking scale is applied. On the contrary, non-listed issuers show a better voluntary disclosure behavior when issuing regularly.

The Altman Z-score remains insignificant except when explaining listed firms' voluntary disclosure. Better performing listed firms may therefore be associated with a greater incentive to disclose beyond regulatory requirements. Being a family firm turns out to be an economically stronger determinant for non-listed firms. This finding is in line with the assumption that family firms strictly adhere to a pecking order when choosing (re)financing sources. Family firms having taken the step to publicly offer their shares may therefore converge with non-family firms concerning their disclosure trade-off pattern. The split results further show that non-listed firms having issued hybrid forms of publicly traded debt may be considered as disclosing significantly more than issuers of standard bonds. One can reasonably point out that the degree of IBR disclosure depends on the fact whether a firm has shares outstanding, issued subordinated bonds, or has stayed private.

V. Conclusions and Implications

The objective of this paper is to explain heterogeneous disclosure of investor-related information among German non-financial bond issuers. To our knowledge, there have only been few studies examining the openness of firms towards their public creditors so far. Our means of research is the information disseminated via corporate websites. We measure the disclosure levels by applying a list of items accounting for both informational and presentational features. Our analysis is based on the assumption that Internet financial reporting potentially reduces information asymmetries and, consequently, debt-related agency costs. Following the trade-off perspective of voluntary disclosure, we further assume bond issuers to possess individual optimum disclosure levels leading to the observed heterogeneity.

We conduct a multivariate analysis to test various hypotheses linking the level of Internet disclosure with firm characteristics that might affect either the cost or the benefit side of the trade-off calculation. We investi-

gate all 173 German non-financial corporate bond issuers, of which 152 are included in our in-depth analysis. Our study yields several results suggesting the existence of factors that clearly determine IBR quality. It confirms that predominantly stock-listed firms tend to disclose information better, even after controlling for filings or features that are required or recommended by regulation. Regulatory aspects, nonetheless, turn out to be very influential. Accordingly, we observe that the disclosure of information related to bond issues is determined largely by the fact whether a firm has bonds listed on the (exchange-)regulated market or not. Applying other measures of bond market orientation, we observe frequent bond issuers and those having issued a credit rating to perform better in all our ranking. Variables proxying for the complexity of firm business also turn out to be consistent over the various calculations.

The findings we presented in the course of this study are valuable for both scholarly and practical work. Firstly, we show that it is reasonable to follow the implications of agency and voluntary disclosure theories when explaining heterogeneity in bondholder relationship management among firms. Secondly, we deliver evidence that helps evaluate the influence of transparency requirements set by regulators as we observe that the regulatory impact is reflected in the amount of information bond issuers provide on their website. Thirdly, we provide evidence that German firms may well be assumed to voluntarily disclose towards their public creditors. In contrast to research attempts examining firms that are listed on a stock index, we examine an exceedingly heterogeneous sample. This allows us to test a diverse set of hypotheses on voluntary disclosure and to observe that firm characteristics are strong determinants.

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Summary

Internet Bondholder Relations: Explaining Differences in Transparency among German Issuers of Corporate Bonds

Bondholder relations gains importance for German non-financial firms as the debt market environment is changing significantly. Beyond an unprecedented increase in the amount of outstanding securities, there are two other effects that we observe in the German market for corporate bonds: an increasing focus on retail investors and a growing number of small to medium-sized firms entering the market. Both developments underline the need to explore bondholder relations, its implementation and effectiveness. In the course of this study, we intend to promote the understanding of why some firms disclose more to their bondholders than others. Following the information, agency, and related frameworks, we assume that Internet financial reporting helps reduce information asymmetries between bond issuers and dispersed investors. We devote this study to identifying main factors that determine cross-sectional heterogeneity. Conducting a multivariate analysis, we test hypotheses on the influence of capital market orientation, investors' informational needs, firm complexity, default risk, and family ownership. We find that all constructs, except for the default risk, are at least partly relevant in explaining the extent of information that bond issuers disclose on their websites. (JEL D82)

Zusammenfassung

Anleihekommunikation über das Internet: Ansatz zur Deutung von Unterschieden zwischen deutschen Emittenten von Unternehmensanleihen

Das Thema der Anleihekommunikation ist für viele deutsche Nichtfinanzunternehmen eine Aufgabe, die infolge der gegenwärtigen Marktveränderungen stark an Bedeutung gewonnen hat. Neben einem ansteigenden Gesamtvolumen an Unternehmensanleihen können vor allem eine Integration von Privatinvestoren in den Kreis der Anlegerzielgruppe sowie eine verstärkte Kapitalorientierung mittelständischer Unternehmen beobachtet werden. Diese Entwicklungen unterstreichen den Bedarf, die Anleihekommunikation, ihre Umsetzung und Wirksamkeit zu untersuchen. Im Rahmen dieser Studie beabsichtigen wir, einen Erklärungsbeitrag zur grundlegenden Frage zu leisten, warum einige Unternehmen offener gegenüber dem Anleihenmarkt sind als andere. Den Implikationen der Prinzipal-Agenten- und angrenzenden Theorien folgend nehmen wir an, dass Onlinefinanzberichterstattung die Informationsasymmetrien zwischen Anleiheemittenten und anonymen Kapitalmarktteilnehmern zu verringern vermag. Wir führen diese Studie durch, um wesentliche Faktoren zu identifizieren, die Querschnittsvarianzen erklären können. Mittels einer multivariaten Analyse testen wir verschiedene Hypothesen zum Einfluss der Kapitalmarktorientierung, Informationsbedürfnisse von Investoren, Unternehmenskomplexität, des Bonitätsrisikos sowie der Familien-eigentümerschaft. Dabei stellen wir fest, dass – außer dem Bonitätsrisiko – sämtliche dieser Konstrukte zumindest teilweise einen signifikanten Einfluss haben.

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