Compliance with pension-related mandatory disclosures and debt financing

Khadija S. Almaghrabi*

Kwaku Opong

Ioannis Tsalavoutas

*Forthcoming in the **Journal of Business Finance and Accounting***

04 July 2020

Acknowledgements

We gratefully acknowledge helpful comments received from Andrew Stark (Editor), an anonymous referee, Paul André, Raluca Chiorean, Mark Clatworthy, Dionysia Dionysiou, Juan Manuel García-Lara, Brigitte Eierle, Alessandro Ghio, Philip Joos, Minjoo Kim, Ken Klassen, Andreas Kreß, Stephani Mason, Francesco Mazzi, Antonios Siganos, Theodore Sougiannis, Fanis Tsoligkas, Pauline Weetman and Xiu-Ye Zhang. Additionally, we thank delegates and participants of the European Accounting Association (EAA) annual congress (Paphos, May 2019), the 1st Financial Management & Accounting Research (FMRC) conference (Limassol, April 2019), the 14th European Financial Reporting (EUFIN) workshop (Stockholm, August 2018), the BAFA Scottish Area Group (SAG) annual conference (Dundee, August 2018), the 22nd Financial Reporting and Business Communication (FRBC) conference (Bristol, July 2018), the BAFA (Doctoral Masterclasses) annual conference (London, April 2018), the 13th European Financial Reporting (EUFIN) workshop (Florence, August 2017), and the 21st Financial Reporting and Business Communication (FRBC) conference (Durham, July 2017).

*** Corresponding author**

Khadija S. Almaghrabi is at King AbdulAziz University (Faculty of Applied Studies, Jeddah, 21589, Saudi Arabia, Email: ksalmagrabi@kau.edu.sa).

Kwaku Opong is at the University of Glasgow (Adam Smith Business School, University of Glasgow, Main Building, Room 540, West Quadrangle, University Avenue, Glasgow, G12 8QQ, Scotland, UK. E-mail: Kwaku.Opong@Glasgow.ac.uk).

Ioannis Tsalavoutas is at the University of Glasgow (Adam Smith Business School, West Quadrangle, Main Building, Room 683, University Avenue, Glasgow, G12 8QQ, Scotland, UK. E-mail: Ioannis.Tsalavoutas@glasgow.ac.uk).

Compliance with pension-related mandatory disclosures and debt financing

Abstract

Using hand-collected data on the level of pension-related mandatory disclosures required by International Accounting Standard 19 *Employee Benefits*, we test whether compliance levels with these disclosures convey information that affects firms' access to the public instead of the private debt market, as well as the cost of their new debt issues. We document a higher tendency to access the public debt market for firms with higher levels of pension-related disclosure. Furthermore, we find that firms with higher levels of pension-related disclosure enjoy a lower cost in terms of issuance of public debt, but not a lower cost for private debt issues. Thus, the benefits of disclosure in reducing information risk are only realisable when creditors rely heavily on financial statements in their decision making, due to the limited access to private information. Additional tests reveal that high compliance levels effectively mitigate the negative effect of pension deficits on the cost of public debt. These findings provide novel evidence in the extant literature on the role of mandatory (and, in particular, pension-related) disclosures on firms' debt financing. They also have important policy implications.

Keywords: Pension-related mandatory disclosure; Compliance; Public and private debt markets; Cost of debt; IFRS

JEL Classifications: G10; G14; M41; M48.

1. Introduction

In this study, we test whether higher levels of compliance with pension-related mandatory disclosures convey information that affects firms' access to public instead of private debt markets, as well as the cost of their new debt issues.

Pension schemes and their accounting are complex. Pension obligations are affected by several financial and demographic assumptions, such as interest rates, salary increases, inflation rates, and mortality rates (Bauman & Shaw, 2014; Goto & Yanase, 2016). Importantly, due to their long-term nature, pension obligations are highly sensitive to changes in these assumptions. As a result of this complexity and opaqueness of pension schemes and related obligations, firms tend to have information advantages over market participants in relation to the true value of their pension plans.

Furthermore, pension liabilities account for a large proportion of firms' book values (Shivdasani & Stefanescu, 2010),[1] and firms may or may not fund these liabilities. If firms do not fully fund pension obligations, they may have to divert significant future cash flow from operating activities to finance future pension obligations as they become due (Chaudhry, Yong, & Veld, 2017; Glaum, 2009; Wang & Zhang, 2014). This reduces sponsoring firms' capacity to repay debtholders and increases their probability of default (Chaudhry et al., 2017; Rauh, 2006; Wang & Zhang, 2014). Even when sponsoring firms fully fund pension obligations, they may become liable for financing future obligations if plan assets are insufficient to cover pension liabilities (Chaudhry et al., 2017; Shivdasani & Stefanescu, 2010). In line with this, a number of studies have linked pension obligations with firm risk, including systematic (Dhaliwal, 1986), operating, financial and informational risks (Chen, 2015). Other studies have

[1] For example, on average, these liabilities account for 25% of our sample firms' total assets.

linked unfunded pension obligations with firm creditworthiness (e.g. Carroll & Niehaus, 1998; Wang & Zhang, 2014) and cost of debt (Balachandran, Duong, & Vu, 2019; Cardinale, 2007).[2]

To mitigate such inefficiencies and to increase transparency, International Accounting Standard (IAS) 19 *Employee Benefits* requires firms to disclose managerial assumptions and information that aims to better explain the characteristics and risk of their defined benefit plans and the effect of pension plans on the amount, timing and uncertainty of their future cash flow (IAS 19, paragraph 135). These assumptions and information include discount rates, price inflation, salary inflation and the mortality/life expectancy of plan members/beneficiaries. While firms are expected to comply with these disclosures, prior studies document a substantial variation between firms in the level of compliance with mandatory disclosures, including those related to pensions obligations (see Tsalavoutas, Tsoligkas, & Evans, 2020 for a review). There is also evidence of selective management of relevant key assumptions when these are disclosed (Billings, O'Brien, Woods, & Vencappa, 2017).

Despite this evidence, the risk and complexity introduced by pension obligations and the fact that accounting information (particularly that affecting a firm's downside risk) is priced efficiently by bondholders (Chuluun, Prevost, & Puthenpurackal, 2014), there is a lack of evidence on the impact of the variant levels of compliance with pension-related mandatory disclosures on debt financing (Tsalavoutas et al., 2020). In this study, we fill this void.

Theory suggests that increased disclosure can reduce information risk (i.e. information uncertainty and information asymmetry) and, hence, affect debt financing (Duffie & Lando, 2001; Leland & Pyle, 1977; Taylor & Verrecchia, 2015; Yu, 2005). This is particularly relevant in our setting because mandatory IFRS disclosures provide a standardised framework that

[2] The importance of estimating the true economic value of pension obligations is further highlighted by recent cases where growing pension obligations have contributed to corporate failures. For example, the case of BHS Group Ltd. in the UK, where the large underfunded pension plans and the growth of the deficit in these plans were identified as reasons for the failure of the Group (The Pensions Regulator, 2017). Similarly, Tata Steel UK Ltd. had a huge deficit in its pension schemes in 2017 and restructuring the pension schemes was the only way to prevent the company's insolvency (The Pensions Regulator, 2018).

enables users of financial statements to obtain comparable information and, hence, identify firms that withhold certain information (Abdullah, Evans, Fraser, & Tsalavoutas, 2015; Mazzi, André, Dionysiou, & Tsalavoutas, 2017).

The disclosures required by IAS 19 have the potential to reduce information risk by enhancing creditors' ability to assess the risk of pension liabilities, thereby helping them estimate the attributes of a sponsoring firm's future cash flow. For example, disclosing information about funding arrangements, future contributions to and the maturity profile of pension plans is expected to reduce the effort required to assess the earnings implication of changing pension plan parameters and help predict when the liability is likely to materialise in terms of cash outflow (Financial Reporting Council (FRC), 2017, p. 8; Picconi, 2006). We expect that the relevance of these disclosures will be prevalent for public debt markets, as it is harder for public lenders to establish the creditworthiness of borrowers prior to the initiation of debt contracts and to monitor borrowers *ex-post* the initiation of debt contracts (Boyd & Prescott, 1986; Fama, 1985; Gorton & Winton, 2003). Moreover, unlike private lenders, public lenders have limited access to the details of special pension arrangements and inside information pertaining to pension plans (Anantharaman, Fang, & Gong, 2014).

Consistent with the differences between public and private lenders and the evidence in prior studies that companies with high information asymmetries face high contracting costs in the public debt market, we hypothesise that firms with low levels of pension-related mandatory disclosure are more inclined to access the private debt market. We subsequently hypothesise that the cost of debt should be lower for firms with high levels of pension-related mandatory disclosure. The differences between public and private lenders may, however, mean that the effect of pension-related disclosures on the cost of debt may be confined to public debt.

To test these hypotheses, since the revised IAS 19 was effective for periods beginning on or after January 2013 and our measure of disclosure needs to be hand-collected prior to debt

issuance, we rely on public and private debt issued between 2014 and 2016 by public Canadian, German, French and UK firms with material pension obligations. The choice of these countries is motivated by the fact that they are IFRS adopting countries with the highest debt issuance by public firms. Further, prior literature indicates variant levels of compliance with IFRS mandatory disclosure requirements in these countries (Kumar & Saini, 2016; Verriest, Gaeremynck, & Thornton, 2013). We hand collect the level of pension-related disclosure for 661 firm-year observations and for which pension obligations and/or assets and/or expenses are material, using a self-constructed disclosure index that contains 36 disclosure items required by IAS 19.

We first document a high variation in compliance with pension-related mandatory disclosures across firms, suggesting that not all sponsoring firms provide the same level of pension information. Second, we find a higher likelihood of sponsoring firms with higher levels of pension-related mandatory disclosure accessing the public rather than the private debt market. Third, we find that the level of pension-related disclosure is negatively associated with the cost of public debt. This effect is also economically significant. However, we find no association between the level of pension-related disclosure and the cost of private debt. These findings are robust to a series of sensitivity tests.

In additional analyses, first, we test whether the effect of pension deficits on the cost of debt (documented in Balachandran et al., 2019; Cardinale, 2007) is moderated by firms' level of compliance with pension-related mandatory disclosures. We find that the size of pension deficits is positively associated with the cost of bond debt only for the sub-sample of firms with a low level of disclosure. This suggests that increased pension-related disclosure levels enable debt providers to assess the riskiness of pension plan deficits. Second, we investigate whether our measure of pension-related disclosure reflects a sponsoring firm's information environment or acts as a proxy for compliance with mandatory disclosures in general. We find that the effect

documented in the main analysis is related to pension-specific disclosures. Third, we apply a dictionary-based automated analysis and find that voluntary pension-related disclosures have no substitution effect for, or incremental effect over, mandatory pension-related disclosures.

Our paper contributes to the extant accounting and debt markets literature as follows. First, a stream of literature has argued that there is a link between corporate disclosure policy and debt financing (e.g. Dhaliwal, Khurana, & Pereira, 2011; Sengupta, 1998). Studies in this stream of literature rely on general disclosure indices (e.g. AIMR index), which are based on general information (Paugam & Ramond, 2015) and are voluntary in nature (Mazzi et al., 2017). Our analyses depart from this prior work by focusing on mandatory disclosures, which are subject to different considerations by both reporting entities and market participants (see Abdullah et al., 2015 for a detailed discussion). Specifically, we present novel evidence suggesting that pension-related disclosures (required by IAS 19) have an effect on debt financing and that the effect varies across the public and private debt markets. Thus, we directly respond to the call of Tsalavoutas et al. (2020, p.35) for future research providing evidence on "potential associations between compliance levels and … variables relating to debt markets". Second, a recent strand of the literature provides evidence that variant levels of mandatory disclosure influence firms' implied cost of equity capital (Mazzi et al., 2017; Paugam & Ramond, 2015), equity market value (André, Dionysiou, & Tsalavoutas, 2018; Tsalavoutas & Dionysiou, 2014), and analysts' forecasts (André et al., 2018; Hodgdon, Tondkar, Harless, & Adhikari, 2008). As these studies are confined to the equity market, they provide partial evidence on the market consequences of compliance with IFRS mandatory disclosures. In fact, prior research suggests that firms rely more heavily on the debt market than they do on the equity market and that, given the differences in the claims held by equity holders and debtholders, the findings of IFRS studies on the equity market may not be translated to the debt

market (see e.g. Florou & Kosi, 2015).[3] Importantly, unlike equity holders, debtholders hold claims that are sensitive to downside risk, which makes the riskiness of pension plans more severe for debtholders. This implies that the debt market provides a better setting than the equity market to examine the effect of pension-related mandatory disclosures.

This study should also be of interest to standard-setters, including the International Accounting Standards Board (IASB) who call for studies to support the setting of more evidence-informed accounting standards (Teixeira, 2014). Examining the needs of debtholders would be useful in setting accounting standards, since the IASB makes numerous trade-offs in the demand for financial information by users and the cost of financial information from the perspective of those who prepare financial statements. In practice, these trade-offs tend to rely mainly on shareholders' demands (Armstrong, Guay, & Weber, 2010; Shivakumar, 2013). The examination also provides a ground for the suggestion in the IASB's recent 'Disclosure Initiative: Principles of Disclosure' project, which addresses the issue of disclosure in the notes of financial statements. In the final stage of this initiative, the IASB decided to prioritise the targeted standards-level review of disclosures, under which, inter alia, they chose IAS 19 to test the new disclosure guidance.[4] This selection further highlights the complexity of the disclosures required by IAS 19, as well as their importance. Moreover, our findings provide insights to regulators who are increasingly concerned about companies' pension liabilities and the related disclosures (see for, example, the recent thematic reviews to encourage firms to improve their pension-related disclosures conducted by the FRC in the UK (FRC, 2017, 2018)). Finally, the findings should appeal to reporting entities in getting more insight about the trade-off between the costs and benefits of their disclosure choices.

[3] The cost of debt is also directly observable, while the implied cost of equity is subject to estimation error (Florou & Kosi, 2015).

[4] An Exposure Draft of amendments to the disclosure sections of IAS 19 is estimated for March 2021. https://www.ifrs.org/projects/work-plan/standards-level-review-of-disclosures/

The remainder of this paper proceeds as follows. Section 2 reviews the related literature and develops testable hypotheses. Section 3 describes the research design. Section 4 presents the main results and a series of additional tests. Section 5 provides the sensitivity analyses. Finally, Section 6 concludes the study.

2. Related literature and hypotheses development

2.1 Information risk theory

Theory suggests that public disclosures could influence the cost of capital through two mechanisms: information uncertainty and information asymmetry. Both are often referred to as "information risk" (De George, Li, & Shivakumar, 2016). Within the context of external financing, debt providers are concerned about a firm's default risk, which is triggered if a firm's value falls below a specific threshold. If debt providers face uncertainty in estimating the true value of a borrowing firm or its cash flow, it will become difficult for them to estimate its real default risk (Duffie & Lando, 2001; Lu, Chen, & Liao, 2010). Such difficulty is reflected on a wider estimate of a firm's range of default risk (Livingston & Zhou, 2010; Yu, 2005) and, hence, cost of debt.

Similarly, Taylor and Verrecchia (2015) show that two forces drive the uncertainty about a firm's future cash flows. These are the real volatility of future cash flows (fundamental uncertainty) and the common knowledge about that cash flow (information uncertainty). An increase in either of these forces increases the total uncertainty about future cash flows (Taylor & Verrecchia, 2015). In relation to our setting, while pension-sponsoring firms may not be able to directly affect the fundamental uncertainty associated with pension obligations,[5] increased pension-related disclosure may reduce the information uncertainty.

[5] See Jin, Merton, and Bodie (2006), Picconi (2006) and Franzoni and Marín (2006) for empirical evidence.

Moreover, within the context of external financing, there exists information asymmetry because managers have superior information about firms' current and future economic performance compared to debt providers. This, in turn, increases the information risk that the latter face in providing capital and introduces adverse selection and moral hazard problems (Armstrong et al., 2010; Leland & Pyle, 1977; Liao, Chen, & Lu, 2009). However, recent mandatory disclosures literature conjectures that the standardised framework through which mandatory disclosures are expected to be disclosed should enable users of financial statements to alleviate information risks by increasing comparability across firms and identifying non-compliant firms (e.g. Abdullah et al., 2015; Mazzi et al., 2017).

2.2 Pension-related disclosures required by IAS 19 and information risk

IAS 19 (paragraphs 135-150) requires firms to disclose specific information regarding pension plans risk, re-measurement of net defined benefit liability (asset), the allocation of pension plan assets into classes according to their nature and risk, the significant actuarial assumptions made as well as a sensitivity analysis for each of these actuarial assumptions, a maturity profile of the defined benefit obligations and various disclosures regarding multi-employer pension plans. Although these disclosures are required in the notes accompanying financial statements, prior compliance literature provides evidence that firms do not fully comply with them.[6]

The above theoretical discussion implies that pension-related mandatory disclosures, which are provided by managers who have an information advantage, should be valuable to debt providers, as they could reduce information risk and help in estimating the true value of pension obligations. As pension-related disclosures contain firm-specific assumptions and estimations that are unknown to outsiders unless they are disclosed, the disclosure could lead

[6] A review of IFRS compliance literature by Tsalavoutas et al. (2020) shows that, even though the sample firms in most of compliance studies tend to be large listed firms in developed stock markets and economies, the mean compliance with IAS 19 mandated disclosures ranges between 49% to 75% and a large variation in compliance levels across companies is documented.

debt providers to revise their estimations. For example, as noted above, pension liabilities are sensitive to the assumptions made by sponsoring firms, and knowledge of these assumptions is important for evaluating the status of these plans (Scott, 1991, 1994). As such, lack of disclosure about the actuarial assumptions made in estimating pension liabilities and the sensitivity of pension liabilities to changes in these assumptions could hinder debt providers' ability to accurately estimate a firm's future cash flow.

Moreover, as pension parameters can predict future earnings (Picconi, 2006), failing to incorporate these parameters (or any related changes to them) in earnings forecasts, due to lack of relevant disclosures might result in forecast errors (FRC, 2017, p. 8; Picconi, 2006). This would further hinder debt providers' ability to evaluate borrowers' capacity to meet debt repayments in the long-term. Furthermore, increased pension-related disclosure may draw attention to risky plan assets or the inability of pension funds to generate future cash flows (Chen, 2015; Jin, Merton, & Bodie, 2006) and, thus, lack of disclosure could affect debt providers' ability to correctly evaluate sponsoring firms' prospects. Additionally, since a firm's share of underfunding in multi-employer plans is credit relevant (i.e. it is useful in predicting a firms' probability of default) (Chen, Martin, Mashruwala, & Mashruwala, 2015), relevant required disclosures could also affect a firm's credit assessment. Finally, a reduction in information risk (or information uncertainty), due to increased pension-related disclosure could mitigate the negative effect of pension deficits (Chen, 2015).

However, increased levels of pension-related mandatory disclosure could exacerbate firms' proprietary costs (see e.g. Klumpes, 2000; Scott, 1994). This is because pension obligations represent an important part of the labour contract and, hence, could be used by competitors and regulators or could affect sponsoring firms' relationships with their employees (Klumpes, 2000; Scott, 1994). In fact, concerns over revealing proprietary information are frequently raised by preparers of financial statements when it comes to disclosing pension

information (Scott, 1994). Moreover, creditors could infer from some required disclosures (e.g. future contributions to plan assets) that future investment opportunities are constrained or that there will be a reduction in internal cash resources. In the US setting, for example, Rauh (2006) and Campbell, Dhaliwal, and Schwartz (2012) demonstrate that contributions to pension plans, which are required by US law when firms have underfunded plans, are negatively associated with future investments in the form of capital expenditure and positively associated with the cost of debt for financially constrained firms. This negative effect is attributed to the reduction in the cash flow available for investing in profitable investments following the contribution to pension plans. These considerations may explain companies' relatively low levels of compliance with pension-related mandatory disclosures and also suggest that the effect of pension-related disclosures on debt markets is an open empirical question.

2.3 Hypotheses development

In obtaining external debt, firms can either issue bonds or obtain loans, i.e. they can access either the public or the private debt market. While from a financial perspective, the two markets could be equally substituted, they differ in terms of needs and availability of information (Altunbaş, Kara, & Marques-Ibanez, 2010; Bharath, Sunder, & Sunder, 2008). Public lenders have less *ex-ante* capability to gather and process information compared with private lenders (Boyd & Prescott, 1986; Fama, 1985; Gorton & Winton, 2003).[7] This increases public lenders' reliance on information published in financial statements when assessing the default risk of borrowing firms (Bharath et al., 2008; Dhaliwal et al., 2011; Florou & Kosi, 2015). Moreover, while both public and private lenders engage in *ex-post* monitoring activities, public lenders incur doubled monitoring costs and are exposed to free-rider problems (e.g. Diamond, 1984;

[7] The information advantage of private lenders is explained, in part, by the fact that while firms establish business relationships with private lenders and communicate non-public proprietary information with them, e.g. detailed financial data and forecasting (Bharath et al., 2008; Marshall et al., 2016; Mazumdar & Sengupta, 2005), firms are reluctant to disclose their specific information to diffused public lenders.

Gorton & Winton, 2003). Furthermore, the high monitoring capability of private lenders enables them to renegotiate debt contracts, while the diffusion and poor monitoring capability of public lenders make it hard for them to renegotiate debt contracts (Bharath et al., 2008).[8] This leads the setting of initial contracts within the public debt market to largely reflect a firm's information environment (Bharath et al., 2008; Florou & Kosi, 2015). Considering these differences, prior studies have linked access to the public and private debt markets to the information asymmetries between firms and debt providers in the two markets (e.g. Altunbaş et al., 2010; Dhaliwal et al., 2011; Marshall, Mccann, & Mccolgan, 2016).

Access to the public debt market, therefore, provides a setting that allows us to directly examine the role of pension-related disclosures in reducing information risk. Hence, as compared to private lenders, public lenders have limited access to inside information, including that related to pension plans' special arrangements (Anantharaman et al., 2014), public lenders are exposed to higher information risk and, arguably, require higher levels of publicly available pension disclosure. As a result, sponsoring firms that provide a low level of pension-related disclosure will be inclined to access the private debt market to avoid high costs of debt in the public debt market.[9] Likewise, if pension-related disclosures reduce information risk and help debt providers better assess the risk of pension obligations in their future cash flow, we expect sponsoring firms that borrow publicly to disclose a high level of pension-related disclosure. Thus, we develop the first hypothesis in an alternative form as follows:

Hypothesis 1: *There is a positive association between the level of pension-related disclosure and access to the public debt market.*

[8] While theory suggests that private debt is optimal for firms with a poor information environment, private debt could be more expensive because private lenders incur high intermediation and monitoring costs, which they transfer to borrowing firms (Chemmanur & Fulghieri, 1994). Moreover, private lenders could extract rent from borrowing firms, due to their information monopoly (Dhaliwal et al., 2011).

[9] The expected increase in the cost of debt for firms with a low level of pension-related disclosures is based on the premise that public debt providers compensate for the risk of high information asymmetry by requiring high price protection (e.g. Dhaliwal et al., 2011; Sengupta, 1998).

We subsequently posit that, if pension-related disclosures reduce public debt providers' information risk by enhancing their ability to assess the risk of pension liabilities, thereby helping them estimate the attributes of a sponsoring firm's future cash flow, then a high level of pension-related disclosure may lead public lenders to adjust yield spreads downwards. In contrast, a low level of pension-related disclosure will potentially induce public lenders' uncertainty regarding the timing and amount of the future cash flow of sponsoring firms. Thus, to account for the high information risk, public lenders would adjust yield spreads upwards.

In light of this conjecture and the above discussion, we develop the second testable hypothesis in an alternative form as follows:

Hypothesis 2: There is a negative association between the level of pension-related disclosure and the cost of public debt.

While the arguments that associate pension-related disclosures with the cost of public debt are straightforward (given the characteristics of public lenders), the association between pension-related disclosures and the cost of private debt is not clear. Private lenders rely on financial statements for contracting purposes (Ball, Li, & Shivakumar, 2015; Shivakumar, 2013). However, they can obtain detailed pension information through private communications with firms (Anantharaman et al., 2014). This could, arguably, make pension-related disclosures in the notes of financial statements less important for them. In fact, since private lenders obtain pension information directly through private communications, then for firms that borrow privately, the proprietary costs associated with publicly disclosing pension information (as discussed above) could exceed the benefit of reducing information risk.

Consequently, we do not have an expectation on the direction of the impact of mandatory pension-related disclosures on the cost of private debt, and we develop our third hypothesis in the null form as follows:

Hypothesis 3: *There is no association between the level of pension-related disclosure and the cost of private debt.*

3. Research design

3.1 Sample and data

As the current version of IAS 19 (issued in 2011) was effective for the periods beginning on or after January 2013, and our measure of disclosure is hand-collected from firms' annual reports prior to debt issuance, our debt issuance sample begins in 2014. Further, it ends in 2016, due to loan data availability in DealScan at the time of our data collection and subsequent analysis.

The sample covers debt issued by non-financial firms in four IFRS-adopting countries, with the highest value of credit and debt securities (France, the UK, Germany and Canada), over the three years of focus. According to the International Bank of Settlements (2017), the total outstanding amount of credit to non-financial firms in US dollars (billions) between 2014 and 2016 was $38,275.7, $25,035.7, $22,464.5 and $21,375 in these countries, respectively.[10]

We obtain public debt data from the Thomson ONE Banker database and private debt data from the DealScan database. In line with prior studies, we restrict our sample to non-financial[11] and public firms. We also exclude convertible bonds (due to their more complex valuation), perpetual bonds, zero coupon bonds and bonds with floating rates (as these three types are more similar to equity), as well as non-senior and short-term debt issues (with a maturity of less than 12 months)[12] (Florou & Kosi, 2015; Ge & Liu, 2015; Kreß, Eierle, & Tsalavoutas, 2019). Our initial sample comprises 2,526 debt issues, of which 1,032 are bonds and 1,494 are loans.

We then match our bond and loan sample with the Worldscope/Datastream dataset to obtain accounting and other firm level data. The data obtained from Worldscope/Datastream

[10] Further, these countries dominate the samples in debt-financing related studies that cover many more IFRS adopting countries (e.g. Anagnostopoulou, 2017; Brown, 2016; Florou & Kosi, 2015; Kreß et al., 2019); hence, this sample selection makes our results relevant to prior studies.

[11] Financial firms are subject to higher and different regulations and their disclosure requirements are sector-specific (Paugam & Ramond, 2015). They also tend to issue debt in order to finance their off-balance-sheet activities; hence, they rely heavily on debt financing compared to other firms (Franco et al., 2016).

[12] The latter are mainly short-term notes, standby letters of credit and short-term bridge loans.

excludes non-IFRS adopting firms and firms with separate financial statements in countries that do not permit (or permit but do not require) the application of IFRS for non-consolidated financial statements. In line with Anagnostopoulou (2017) and Florou and Kosi (2015), we use the ticker symbol alongside the company name to match bond and loan issues with the Worldscope/Datastream sample. We then apply a manual check to ensure correct matching. Based on this matching process between Thomson ONE Banker and Worldscope/Datastream and between DealScan and Worldscope/Datastream, we successfully match 1,962 debt issues, of which 729 are bonds and 1,233 are loans.

We exclude issues for which firm- and issue-specific control variables are missing, as well as issues by firms that did not have an annual report available in English. Lastly, we exclude issues for which firm-year pension obligations are immaterial (the issue of materiality is discussed in more detail below). This sample selection process yields 1,315 issues (593 bonds and 722 loans), by 661 firm-year observations. We use this total sample to examine the impact of pension-related disclosures on access to the public debt market when we run the analysis at a firm level (explained under Eq. (2) below). When we examine the impact of pension-related disclosures on access to the public debt market based on an issue level (explained under Eq. (3) below), we follow Kreß et al. (2019) and exclude issues that are obtained in combination with other issues by firms in the same year (i.e. multiple debt issues by the same firm within the same year) and run the analyses on 761 issues.

To examine the impact of pension-related disclosures on the cost of public and private debt, we exclude debt issues with missing cost of debt variables and bond issues with a negative risk premium.[13] Debt issues have different contractual terms, e.g. different prices, borrowed amounts, maturities and other special features. Thus, we follow De Franco, Hope, and Lu,

[13] A large number of issues are excluded from the cost of private debt analysis, as pricing information for a large number of issues is not available in DealScan. This is similar to Kim et al. (2011), who note that the coverage of the drawn all-in spread in DealScan is limited for international (non-US) loans.

(2017) and Kreß et al., (2019) and estimate our regressions on an issue level. This analysis involves 558 (220) bond (loan) issues. Table 1 illustrates the sample selection process.

INSERT TABLE 1 ABOUT HERE

Pension liabilities and the market value of pension plan assets used to calculate pension deficit are hand-collected from firms' financial statements prior to debt issuance. We obtain financial statements from the Perfect Information database, and for firms that do not have annual reports available on this database, we download the annual reports from the firm website. Country probability of default is obtained from the Research Risk Management Institute at the National University of Singapore.

3.2 Measuring compliance with pension-related mandatory disclosures

We construct a checklist to quantify the level of compliance with pension-related mandatory disclosures (Abdullah et al., 2015; Mazzi et al., 2017). The initial disclosure checklist included all the disclosure items required by IAS 19, disaggregated to the last level of required information where applicable (Mazzi et al., 2017). This checklist contained 41 items. We then ensured its content validity by comparing it with those used by Deloitte and PwC, and as in Abdullah et al. (2015) and Mazzi et al. (2017), by having it reviewed by an independent IFRS expert.[14] By applying amendments/changes to the list in agreement with this expert, the final checklist that we used for scoring all companies in the sample contains 36 disclosure items.[15]

The process of calculating pension-related disclosure levels for firms is as follows. If an item is disclosed, we give it a score of 1, and if it is not, we score it as 0. If an item is not applicable to a firm, we score it as N/A (Cooke, 1992). To avoid penalising a firm for not disclosing an item that is not applicable, we read the entire annual report before scoring any

[14] The expert is a chartered accountant with more than 20 years' relevant practical experience working in a variety of roles in practice, including auditing, preparing and analysing financial statements for a number of UK listed companies in a variety of sectors.
[15] The disclosure checklist is available from the authors upon request.

item. We combine this with a scan of the electronic version of the annual reports while searching for keywords (e.g. 'defined benefit', 'pension', 'retirement' and 'employee'). We then compute the disclosure levels, in line with prior studies (see Tsalavoutas et al., 2020), as follows:

$$Pension\_Actu.\_Disc._{i,t} = \frac{\sum_{j=1}^{n} d_{j,i,t}\, r_{j,i,t}}{\sum_{j=1}^{n} r_{j,i,t}} \quad (1)$$

Where $Pension\_Actu.\_Disc._{i,t}$ is the level of compliance with pension-related mandatory disclosures by firm *i* in year *t*. $d_{j,i,t}$ is the disclosure of an item *j* by firm *i* in year *t*, and it equals 1 if the item is disclosed by the firm in year *t* and 0 if it is not disclosed, *j*=1,…., *n* (number of items). $r_{j,i,t}$ is a dummy variable that equals 1 if the item *j* is required to be disclosed by firm *i* in year *t*, and 0 otherwise.

We then follow Mazzi et al. (2017) and derive an additional disclosure measure that is adjusted to a country's disclosure level, by subtracting the country's minimum pension score from a firm's score (*Pension_Adj._Disc.*). This transformation is based on the argument that enforcement and country-specific characteristics affect the variation in compliance with mandatory disclosures across countries. As such, it accounts for firms' trade-offs between the costs associated with non-compliance with pension-related disclosures (e.g. litigation costs) and the cost of compliance with pension-related disclosures (i.e. disclosing proprietary information) within any particular country (see e.g. Mazzi et al., 2017).

As firms are only required to disclose material information, the applicability of the IAS 19 mandatory disclosures for each firm might be an issue of concern. This is because when scoring compliance, the researcher needs to decide whether (1) a standard/item is applicable or not to a particular firm and (2) the applicable standards/items are material to the firm. If this is not considered, the researcher may score the disclosure items as not being complied with when the information is not disclosed because the issue is not material to warrant separate disclosure (Mazzi et al., 2017). To deal with the materiality issue, we rely on profit before tax as a

benchmark and set the threshold to 5%.[16] If a firm's pension expenses or net pension liabilities/assets account for 5% of profit before tax (or 1% of revenues in case of negative profit before tax), we consider pension obligations as material for that firm and score the firm's level of pension-related disclosure. Otherwise, we exclude the firm from the sample (see Table 1).

Finally, we take different steps to ensure the reliability of the scoring process and research instrument. First, the researcher responsible for scoring all sample observations and the IFRS expert independently scored ten randomly selected firms. We then used the Wilcoxon signed-rank test to check that any differences between scorers are not statistically significant. The results of the test confirm that the differences between scorers are not statistically significant (Z-stat= 0.205; p= 0.837). Second, we check the correlation between the disclosure scores obtained by the researcher and the IFRS expert for the ten randomly chosen firms. The correlation coefficient is 84% ($p<0.01$). This high correlation indicates that the computation of the disclosure scores does not involve a considerable degree of author subjectivity. This allowed the researcher to continue scoring all remaining sample observations with the same process. Lastly, in line with Mazzi et al. (2017), we check whether our compliance scores are determined by the variables that prior studies suggest to be associated with compliance with mandatory disclosures. The results of the regression show that the measure of disclosure is indeed explained by several common determinants of mandatory disclosures (see Columns 1 and 2 in Supplementary_Table_I in the Online Appendix).[17]

[16] Using 5% of profit before tax as a materiality benchmark is frequently used in the literature when deciding the materiality of various standards (e.g. Mazzi et al., 2017). This benchmark is also widely applied in practice by audit firms and reporting entities (Eilifsen & Messier, 2015; FRC, 2013).

[17] Relying on textual analysis would arguably allow us to extend the sample to cover a large number of firms. However, such an approach is not appropriate within the mandatory disclosure context (Florio, Lionzo, & Corbella, 2018). In measuring compliance with mandatory disclosures, the researcher needs to evaluate the sentences to measure whether an item that is required by IFRS is applicable or not and then whether it is disclosed or not. Moreover, an automated measure will capture both voluntary and mandatory items; hence, not necessarily the degree of compliance with pension-related mandatory disclosures. This explains the reason for relying on manual collection of data by prior compliance studies (e.g. Abdullah et al., 2015; Cascino & Gassen, 2015; Glaum et al., 2013; Mazzi et al., 2017). Nevertheless, to provide assurance that the hand collection of data is the most appropriate approach within the context of pension-related mandatory disclosures, as an alternative, we use a dictionary-based automated textual analysis to capture the extent of disclosure (See Supplementary_Table_II, in

3.3 Multivariate analyses

3.3.1 Hypothesis 1: Pension-related disclosures and access to the public debt market

The first hypothesis predicts that there is a positive association between the level of pension-related disclosure and access to the public debt market. To test this, in line with Altunbaş et al. (2010), Dhaliwal et al. (2011), Florou and Kosi (2015), Kreß et al. (2019) and Marshall et al. (2016), we estimate the following two models:

$$\%\ of\ public\ debt_{i,t} = \alpha_o + a_1\ Disclosure_{i,t-1} + \alpha_2\ Firm_{Specific}Controls_{i,t-1} + \alpha_3\ Issue_{Specific}Controls_{i,t} + \alpha_4\ Country_{Specific}Controls_{i,t} + (Year,\ Industry,\ Country\ fixed\ effect) + \varepsilon_{i,t} \quad (2)$$

$$P\left[Public\ debt\ issue_{j,i,t} = 1\right] = \alpha_o + a_1\ Disclosure_{i,t-1} + \alpha_2\ Firm_{Specific}Controls_{i,t-1} + \alpha_3\ Issue_{Specific}Controls_{j,i,t} + \alpha_4\ Country_{Specific}Controls_{i,t} + (Year, Industry,\ Country\ fixed\ effect) + \varepsilon_{j,i,t} \quad (3)[18]$$

First, we perform the analysis at the firm level using Eq. (2). *% of public debt* represents the proportion of new public debt to total debt obtained in a given year and ranges from 0, for firms that only borrowed privately in a given year, to 1, for firms that only borrowed publicly in that year. This continuous variable captures the combined impact of accessing both public and private debt, within a single model (Florou & Kosi, 2015). In this case, we use an OLS regression on a sample of 661 firm-year observations. Next, we perform the analysis at the issue

the Online Appendix for the development of this score and Column 5 in Supplementary_Table_I for its validation). If the correlation between the automated score of mandatory disclosure and our hand-collected score is high and significant, then the automated score of disclosure captures the same information and could be a substitute for the hand collection of data. We find that the correlation coefficient between the automated and the hand-collected scores is around 0.30% ($p<0.01$). This low correlation implies that the automated score might either not precisely capture the level of mandatory disclosure or, as prior studies suggest, it captures both mandatory and voluntary disclosure. As such, we continue relying on the hand-collected disclosure score.

[18]The subscript j, i, t indicates bond/loan j for firm i in year t.

level using Eq. (3). $P\left[Public\ debt\ issue\ _{i,t} = 1\right]$ denotes the probability of issuing public debt: it is 1 if the issue is public debt and 0 if the issue is private debt. We use a probit regression to estimate the model on 761 public and private debt issues, after excluding multiple debts issued by the same firm within the same year (Dhaliwal et al., 2011; Florou & Kosi, 2015).[19]

The variable $Disclosure_{i,t-1}$ represents the level of compliance with pension-related disclosures, i.e. either *Pension_Actu._Disc.* or *Pension_Adj._Disc.*, as defined in sub-section 3.2 above. If an increased pension-related disclosure is associated with a higher proportion of public debt or the propensity to access the public debt market, we expect the coefficient of α_1 to be positive and significantly different from zero in both regressions.

We control for several firm characteristics that affect the choice of debt source. To control for a firm's information asymmetry, ability to provide collateral, liquidation value, growth opportunity, profitability and financial constraints, we include firm *log(Size)*, *Tangibility*, *MTB*, *ROA* and *Leverage*, respectively. Moreover, we control for the availability of credit ratings by adding a *Rated dummy*, for the issuance of public and private debt during the same year (*Issue both*) and for prior access to the public debt market (*Debt market access*), as these variables are positively associated with access to the public debt market. Furthermore, to capture a firm's other disclosures and its information environment, we control for the *Readability* of the firm's annual reports (Paugam & Ramond, 2015). Lastly, we control for the unfunded pension-related obligations, as this variable has an impact on firms' creditworthiness and risk (*Pension deficit*) (Chen, 2015; Wang & Zhang, 2014).

We follow Marshall et al. (2016) and Kreß et al. (2019) and control for issue-specific variables that might explain the choice of debt source (*log(Debt amount)* and *log(Maturity)*).

[19] When a firm issues both public and private debt in the same year, we follow Florou and Kosi (2015) and Kreß et al. (2019) and include the firm twice. As such, we once code the variable *Public debt issue* as one for the firm's public debt, and once as zero for the firm's private debt.

We also control for a country's macroeconomic conditions (*GDP growth*) and for a country's probability of default (*Country prob. of default*) (Altunbaş et al., 2010; Florou & Kosi, 2015).

The level of compliance with pension-related disclosures and all firm-specific variables are measured in the year preceding the debt issuance date, while all issue- and country-specific variables are measured at the debt issuance date (Florou & Kosi, 2015; Kreß et al., 2019; Marshall et al., 2016), to alleviate potential concern over reverse causality between the dependent and independent variables (Dhaliwal et al., 2011).

3.3.2 Hypotheses 2 and 3: Pension-related disclosures and the cost of public and private debt

To test the second and third hypotheses, which examine the relationship between the level of pension-related disclosure and the cost of public and private debt, we estimate the following model:

$$Cost\ of\ debt_{j,i,t} = b_o + b_1\ Disclosure_{i,t-1} + b_2\ Firm_{Specific}Controls_{i,t-1} +$$

$$b_3\ Issue_{Specific}Controls_{j,i,t} + b_4 Country_{Specific}Controls_{i,t} +$$

$$(year, industry, Country\ fixed\ effect) + \varepsilon_{j,i,t} \quad (4)$$

We follow prior studies and use direct measures of the cost of debt (e.g. Anagnostopoulou, 2017; Brown, 2016; Kreß et al., 2019; Liu & Magnan, 2016). We measure the cost of public debt (i.e. bond spread) as the basis points spread over the benchmark treasury bond.[20] We measure the cost of private debt (i.e. loan spread) as the basis points spread over LIBOR or its equivalent for each dollar drawn down (including any annual fee paid). $Disclosure_{i,t-1}$ is

[20] We obtain the spread over the benchmark treasury bond directly from Thomson ONE Banker. However, when it is missing from the database, we follow Florou and Kosi (2015) and Ge and Liu (2015) and estimate it as the basis point spread over a benchmark government bond issued by the same country matched by currency and comparable duration. Where a benchmark treasury bond yield with a certain maturity is not available, we follow Ge and Liu (2015) and Kreß et al. (2019) and use an interpolation approach to construct it. As such, if the data is only available for two maturities around the debt issues' maturity, we calculate the cost of debt based on the average cost of the nearest two maturities or based on the nearest maturity if only one treasury bill is available. We have 24 issues with negative yield spreads, which we exclude from the analyses. These negative spreads could be due to the issue having puttable or other features that are favourable to debt providers (see e.g. Ge & Liu, 2015). Our results, however, are qualitatively similar if we include these 24 issues.

defined in sub-section 3.2 above.[21] If the level of pension-related disclosure reduces the cost of public and/or private debt, we expect b_1 to be negative and significantly different from zero.

We control for firm characteristics that explain differences in the yield spread. To control for a firm's information asymmetry, ability to provide collateral, liquidation value, growth opportunity, profitability and financial constraints, we include firm *log(Size)*, *Tangibility*, *MTB*, *ROA*, *Returns* and *Leverage*, respectively (e.g. Anagnostopoulou, 2017; Brown, 2016; Kreß et al., 2019; Liu & Magnan, 2016). We also control for a firm's credit rating using the *Investment grade* dummy variable (Florou & Kosi, 2015). To capture a firm's other disclosures and its information environment, we again control for the *Readability* of the firm's annual reports and for whether it is *Cross listed* or not (Glaum, Schmidt, Street, & Vogel, 2013; Paugam & Ramond, 2015). Lastly, we control for unfunded pension obligations (*Pension deficit*), as this variable affects the probability of defaulting on debt and the cost of debt financing (Chen, 2015; Wang & Zhang, 2014).

We control for issue-specific characteristics that are systematically associated with debt pricing. These variables are *log(Debt amount)* and *log(Maturity)* (Florou & Kosi, 2015; Liu & Magnan, 2016). For bond issues, we also control for the presence of a call option (*Callable*) and for whether the debt is obtained through a private placement or not (*Private placement*) (Chuluun et al., 2014; Franco, Urcan, & Vasvari, 2016), while for loan issues, we also control for the type of loan (*Loan type dummies*) (Brown, 2016; Kim et al., 2011). Lastly, we control for country-specific characteristics that may influence debt pricing. These are a country's *Economic development* and *Term spread* (Anagnostopoulou, 2017; Florou & Kosi, 2015).

Supplementary_Table_III in the Online Appendix reports the detailed definitions and sources of all variables used in all regressions. In all estimated models, we include country,

[21] As in the previous models and for the same reason, we measure $Disclosure_{i,t-1}$ and all firm-specific variables in the year preceding the debt issuance date (i.e. at *t-1*), while all issue- and country-specific variables are measured in the debt issuance year (i.e. at *t*).

industry and year fixed effects to account for time-invariant country effect, industry-specific effect and shifts in debt financing over time caused by changes in general capital market conditions. We winsorise continuous variables at the 1st and 99th percentiles to reduce the effect of outliers. Furthermore, all models are estimated using heteroskedasticity robust standard errors, adjusted to account for correlations within firms' clusters (Petersen, 2009).

3.4 Potential endogeneity in relation to the levels of pension-related disclosure

Sponsoring firms could increase their disclosure prior to debt issuance, to access the public debt market or obtain favourable terms of debt contracts. Additionally, sponsoring firms with a high cost of debt might choose to disclose more information in order to reduce the cost of their new debt issues. The discretionary choice of the level of compliance and the simultaneity between the disclosure variable and debt financing can cause an endogeneity problem, which might bias the association between pension-related disclosures and debt financing.

To deal with this possible endogeneity, we also apply an instrumental variable (IV) approach using two-stage least squares (2SLS). We use country-industry average pension disclosure (*Ind. Average Disclosure*) as an instrument for the actual level of pension-related disclosure. Characteristics of peer firms, either aggregated or averaged, are frequently used in the literature when individual firm characteristics are potentially endogenous with the dependent variable (e.g. Ferrell, Liang, & Renneboog, 2016; Vergauwe & Gaeremynck, 2019).

In addition to the prevalent use of this instrument in the literature, country-industry average pension disclosure satisfies both the relevance and exclusion conditions. On the one hand, firms from similar industries tend to follow a similar disclosure pattern, which suggests that an industry's average level of pension-related disclosure is positively related to a firm's level of such disclosures. On the other hand, it is unlikely that a firm's cost of debt will be affected by the disclosure pattern of other firms in the industry (i.e. country-industry average level of

disclosure is an exogenous variable) (Vergauwe & Gaeremynck, 2019). The results from these two-stage regressions are presented along with the results of the one-stage regressions.

4. Results

4.1 Descriptive statistics

Table 2 reports the descriptive statistics for the dependent and independent variables (Panel A), as well as the level of compliance across countries (Panel B) for the full sample. The mean (median) proportion of public debt obtained by the sample firms is 32% (0%). Moreover, 35% of the sample firms have issued at least one public debt during the sample period (based on the variable *Public debt issue*). Further, the actual level of disclosure has a mean (median) of 77% (80%), and the adjusted level of disclosure has a mean (median) of 45% (42%). These and the standard deviations of 0.17 and 0.22 for *Pension_Actu._Disc.* and *Pension_Adj._Disc.*, respectively, suggest a large variation between firms in the level of pension-related disclosure, which is in line with prior studies (e.g. Abdullah et al., 2015; Mazzi et al., 2017; Tsalavoutas, 2011). In line with our expectations that form the basis for our hypotheses, this evidence indicates that debt providers are faced with variant levels of pension-related disclosure. This could affect the risk assessment they make.

Panel B shows that German firms have the highest average level of compliance in our sample, followed by UK and Canadian firms, while French firms have the lowest level of compliance. This variation across countries can be attributed to differences in country characteristics, including enforcement (Brown, Preiato, & Tarca, 2014), and justifies the use of the country-adjusted disclosure score (i.e., *Pension_Adj._Disc.*) as in Mazzi et al., (2017).

INSERT TABLE 2 ABOUT HERE

Table 3 shows the descriptive statistics across public and private borrowers and also reports the two-sample t-test and Wilcoxon rank-sum test (Mann-Whitney), which are used to test whether the differences in the mean and median values between the two groups are significant.

INSERT TABLE 3 ABOUT HERE

The mean (median) values of the level of pension-related disclosure are smaller for firms that borrow privately than for firms that borrow publicly. The mean (median) *Pension_Actu._Disc.* for firms that borrow privately is 76% (80%), while for firms that borrow publicly is 80% (83%). The mean (median) *Pension_Adj._Disc.* for firms that borrow privately is 44% (42%), while for firms that borrow publicly is 49% (46%). These differences are statistically significant at the 1% level, providing initial support for the first hypothesis: firms with a high level of pension-related disclosure are more likely to rely on the public debt market.

The tests of differences also show other significant differences between public and private borrowers. For example, public debt borrowers are larger and have larger values of tangible assets, higher growth opportunities, available credit rating and prior access to the public debt market. These findings are consistent with Kreß et al. (2019) and Florou and Kosi (2015) and reinforce the premise that the effect of disclosure may vary between the public and the private debt market (*Hypotheses 2* and *3*). Lastly, untabulated correlation matrices show no significant high correlations between the independent variables used in all analyses.[22]

Table 4 presents information on the specific disclosure items required by IAS 19 that are applicable to more than 20% of the sample firms and disclosed by less than 90% of these firms. As the table shows, firms tend to not comply with items that could reveal proprietary information. For example, a large number of firms do not disclose the risks introduced by pension plans, the fair value of their shares or properties held as plan assets, the assumptions

[22] Furthermore, we confirm that the maximum VIF values for firm- and issue-specific variables in all regressions are below the critical value of 10 (see e.g. Gujarati, 2003, p. 262).

used to prepare the sensitivity analyses, any changes in these assumptions from the previous year and the expected contribution to and maturity profile of the pension obligation. As this list contains firm-specific information and assumptions, such variation in disclosure could be critical to debt providers in their lending decisions.

INSERT TABLE 4 ABOUT HERE

4.2 Multivariate analyses

4.2.1 Hypothesis 1: Pension-related disclosures and access to the public debt market

Table 5 reports the results for testing the impact of mandatory pension-related disclosures on access to the public debt market. Columns 1 and 2 report the analyses for Eq. (2), with the percentage of new public debt to total debt obtained (i.e. the variable *% of public debt*) as a dependent variable and using the *Pension_Actu._Disc.* and *Pension_Adj._Disc.* measures, respectively, as the main independent variable. We adopt a firm-level approach in estimating the results in these two columns. Columns 4 and 5 report the analyses for Eq. (3) with the public debt dummy (i.e. the variable *Public debt issue)* as a dependent variable and using the *Pension_Actu._Disc.* and *Pension_Adj._Disc.* measures, respectively, as the main independent variable. We adopt an issue-level approach in estimating the results in these two columns.

INSERT TABLE 5 ABOUT HERE

The results reported in Columns 1 and 2 suggest a positive and significant association between the measures of pension-related disclosure and access to the public debt market (the corresponding coefficients for *Pension_Actu._Disc.* and *Pension_Adj._Disc.* are 0.30 and 0.24, respectively, both statistically significant at the 1% level). To demonstrate the economic significance of this finding, on average, a one standard deviation increase in pension-related mandatory disclosure induces a 5.1% increase in the proportion of public debt ($0.30^{*}0.17=0.051$, see Tables 2 and 5). Similarly, a one standard deviation increase in pension-

related disclosure, over the country's minimum disclosure, induces a 5.3% increase in the proportion of public debt (0.24*0.22=0.053, see Tables 2 and 5).

The results reported in Columns 4 and 5 also suggest a positive and significant association between the level of pension-related disclosure and the likelihood of issuing public debt (the corresponding coefficients for *Pension_Actu._Disc.* and *Pension_Adj._Disc.* are 1.41 and 1.04, respectively, and are statistically significant at the 1% and 5% levels, respectively). The marginal effects calculated for the mean values of all variables (not reported for the sake of brevity) indicate a 7.2% increase in the likelihood of issuing bonds for a one standard deviation increase in the level of pension-related disclosure, and a 7.3% increase in the likelihood of issuing bonds for a one standard deviation increase in the level of pension-related disclosure above the country's minimum score. This demonstrates that firms with a higher level of pension-related disclosure have a higher probability of accessing the public debt market (as opposed to the private debt market), which provides support for the first hypothesis.

The remaining variables load as expected (see in Bharath et al., 2008; Dhaliwal et al., 2011; Florou & Kosi, 2015; Kreß et al., 2019; Marshall et al., 2016): large firms, firms with prior access to the public debt market, firms with an available credit rating and firms obtaining debt with longer maturity are more likely to access the public debt market (i.e. *log(Size)*, *Debt market access*, *Rated dummy* and *log(Maturity)* have positive and statistically significant coefficients), while firms obtaining larger amounts of debt are less likely to access the public debt market (i.e. *log(Debt amount)* has a negative and statistically significant coefficient).

Columns 3 and 6 in Table 5 present the results for the IV estimation to address the potential endogeneity. Panel A of the table reports the second-stage results. In Column 3, we report the analyses for the variable *% of public debt* as a dependent variable (Eq. (2)), using a two-stage least squares model, while in Column 6 we report the analyses for the variable *Public debt issue* as a dependent variable (Eq. (3)), using an IV probit model. As Panel A shows, the level of

pension-related disclosure is positively and significantly associated with the propensity to access the public debt market (the corresponding coefficient for the instrumented *Pension_Actu._Disc.* variable is 0.70 under Eq. (2) and 3.46 under Eq. (3), and is statistically significant at the 5% and 1% levels, respectively), which is consistent with the results obtained using the OLS and probit estimations. As for the control variables, the results are similar to those under the OLS and probit estimations. Panel B presents the results for the instrumental variable in the first stage regression as well as various tests to confirm the strength and relevance of our instrument. In all regressions, the coefficient of our instrument, *Ind. Average Disclosure*, is positive and significant at the 1% level. This suggests that firm-level disclosure is positively affected by peer firms' disclosure patterns, which supports the relevance assumption.[23] Overall, the findings from the IV estimation also provide support for the first hypothesis.

4.2.2 Hypotheses 2 and 3: Pension-related disclosures and the cost of public and private debt

Table 6 reports the results for the impact of mandatory pension-related disclosures on the cost of newly issued debt. Columns 1 and 2 report the results with the cost of public debt as a dependent variable, using the *Pension_Actu._Disc.* and *Pension_Adj._Disc.* measures, respectively, as the main independent variable, while Columns 4 and 5 report the results with the cost of private debt as a dependent variable, using the *Pension_Actu._Disc.* and *Pension_Adj._Disc.* measures, respectively, as the main independent variable.

INSERT TABLE 6 ABOUT HERE

As reported in Table 6, there is a negative association between the measures of disclosure and the cost of rising public debt (the corresponding coefficients for *Pension_Actu._Disc.* and *Pension_Adj._Disc.* are -151.22 and -95.74 and are statistically significant at the 1% and 5% levels, respectively). The effect of pension-related disclosures on the cost of public debt is also

[23] The complete first stage results are provided in Panel A of Supplementary_Table_IV in the Online Appendix.

economically significant. A one standard deviation increase in the level of pension-related disclosure (over the country's minimum disclosure) corresponds to around a 25.7 (21.1) basis point reduction in the cost public of debt. Based on the mean bond issuer in the sample ($1,223.95, see Table 2), this increase corresponds to a $3.1 ($2.6) million reduction in annual interest on a typical bond.[24] However, we find no association between the level of pension-related disclosure and the cost of private debt (the corresponding coefficients for *Pension_Actu._Disc.* and *Pension_Adj._Disc.* are -42.12 and -9.16, respectively, and are not statistically significant).

Firm- and issue-specific variables load as expected (Florou & Kosi, 2015; Kreß et al., 2019; Liu & Magnan, 2016). In particular, large firms, firms with higher growth opportunities and profitability, and firms with investment grade ratings pay a lower cost of public and private debt (i.e. the coefficients of *log(Size), MTB, (ROA/Returns)* and *Investment grade* are negative and statistically significant in Columns 1, 2, 4 and 5). Moreover, firms with a greater ability to provide collateral and with a high liquidation value pay a lower cost of public debt (i.e. the coefficient of *Tangibility* is negative and significant in Columns 1 and 2). Lastly, the maturity of debt is positively associated with the cost of private debt (i.e. the coefficient of *log(Maturity)* is positive and significant in Columns 4 and 5).

Columns 3 and 6 in Table 6 report the results for the IV estimation to address the potential endogeneity issue using 2SLS. Panel A reports the second-stage results and shows that the level of pension-related disclosure is negatively associated with the cost of public debt (the corresponding coefficient for the instrumented *Pension_Actu._Disc.* variable is -261.71 and is statistically significant at the 5% level), but is not associated with the cost of private debt (the corresponding coefficient for the instrumented *Pension_Actu._Disc.* variable is -75.45 and is not statistically significant), which is consistent with the results obtained using the OLS

[24] ([25.7*$1,223.95]/10,000=$3.2 or [21.1*$1,223.95]/10,000=$2.6); refer to Tables 2 and 6.

estimations.[25] As for the other control variables, the results are similar to the OLS estimations. Panel B presents the results for the instrumental variable in the first stage regression, as well as various tests to confirm the strength and relevance of our instrument. In all regressions, the coefficient of our instrument, *Ind. Average Disclosure*, is positive and significant at the 1% level, which again supports the relevance assumption.[26]

Overall, the findings are consistent with the second hypothesis, i.e. the level of pension-related disclosure reduces the cost of publicly obtained debt. These findings highlight that the benefits of pension-related disclosures (i.e. enhancing debt providers' ability to assess the underlying risk and complexity of pension plans) outweigh their potential agency and proprietary costs when obtaining public debt. In addition, the findings suggest no association between the level of disclosure and the cost of privately obtained debt, which does not provide support for the third hypothesis. This latter finding highlights that the benefits of pension-related disclosures are only realisable when creditors rely heavily on financial statements for decision making, due to the limited access to private information. While private lenders also rely on financial statements to enforce debt contracts (Shivakumar, 2013), private communications with firms can serve as substitutes for pension public disclosures.

4.3 Additional tests

4.3.1 Pension funding status and the cost of public debt: the role of pension-related disclosures

Prior studies have documented that the size of pension deficits is positively associated with the cost of debt. The interpretation of this relationship is that the deficit in pension plans constitutes

[25] Tables 5 and 6 report the tests used to establish the strength of our instruments. The Kleibergen-Paap Wald F-statistic exceeds Stock and Yogo's (2005) critical value in all models, except for the cost of private debt, which suggests that the instrument is not weak. The Kleibergen-Paap rk LM statistic is significant in all models, which suggests that the instrument is relevant and that the models are not under-identified. As we are using one instrumental variable (exactly identified equation), we are unable to test whether the instrument is partially endogenous using the Hansen J test.

[26] The complete first stage results are provided in Panel B of Supplementary_Table_IV within the Online Appendix.

an inside debt that competes with external debt over the same cash flows and assets during adverse events (Balachandran et al., 2019; Cardinale, 2007). Reflecting on these findings, we examine whether the size of pension deficits is less positively associated with the cost of public debt for firms with high levels of pension-related disclosure, i.e. whether the level of disclosure affects bondholders' perceptions of pensions' risk. We split our sample into firms with high and low levels of pension-related disclosure, based on the median level of disclosure (using both *Pension_Actu._Disc.* and *Pension_Adj._Disc.*). We then regress the cost of public debt on the size of pension deficits, after excluding the disclosure variable. Table 7 reports the results for this test. For the sake of brevity, the Table shows only the coefficient of pension deficit.

INSERT TABLE 7 ABOUT HERE

Column 1 shows that, for the full sample, the amount of pension deficit is not associated with the cost of public debt. Columns 2, 3, 4 and 5 show that the size of pension deficits is positively associated with the cost of public debt only for the sub-sample of firms with low levels of pension-related mandatory disclosure. These results suggest that a high level of pension-related disclosure can act as a mechanism to reduce information risk for pension plans' sponsoring firms and that bondholders, in anticipation of that, require price protection only when the level of pension-related disclosure is low. This reinforces Chen (2015) and Balachandran et al.'s (2019) argument that better information environments could mitigate the negative effect of pension deficits, due to the reduction in information risk.

4.3.2 Is the effect confined to pension-related disclosures?

There is always the question of whether our measure of pension-related mandatory disclosure acts as a proxy for mandatory disclosures in general and whether variation in pension-related mandatory disclosure affects debt financing after controlling for other non-pension (and, hence, less complex) mandatory disclosures. As such, we identified a non-pension topic that is less

complex and for which the required disclosures could be important to debt providers. Specifically, we consider provisions, contingent liabilities and contingent assets (required by IAS 37 *Provisions, Contingent Liabilities and Contingent Assets*; hereafter 'provisions-related mandatory disclosures') as a proxy for other mandatory disclosures. We then manually collected the necessary data, computed a provisions-related mandatory disclosures score and included the level of compliance for this type of disclosure as an additional variable in our main analyses.[27] In this way, we test if pension-related mandatory disclosures matter for debt financing after controlling for other, albeit important, mandatory disclosures. As an alternative, we run a falsification test, under which we replace our measure of pension-related mandatory disclosure with provisions-related disclosures. In this way, if our measure of pension-related disclosure merely reflects a sponsoring firm's information environment or acts as a proxy for compliance with mandatory disclosures in general, then replacing it with a proxy of compliance with other non-pension disclosures would still reveal a debt financing effect.

Table 8 presents the results of these tests. Columns 1, 2, 3 and 4 in Panels A and B show that sponsoring firms with higher levels of provisions-related mandatory disclosure (i.e. the proxy of non-pension mandatory disclosures) do not exhibit any higher probability of accessing the public debt market or any reductions in the cost of either public or private debt over the effect of pension-related mandatory disclosures. Moreover, Columns 5, 6, 7 and 8 in Panels A and B show that, under the falsification test, the level of compliance with the provisions-related disclosures is not associated with debt financing. The coefficients of the variables *Provision_Actu._Disc.* and *Provision_Adj._Disc.* are not significant in any regression.

[27] In developing the provisions-related mandatory disclosures index and confirming its validity and reliability, we follow the same procedures followed in developing and establishing the validity and reliability of the pension-related disclosures index in the main analyses. Columns 3 and 4 in Supplementary_Table_I, in the Online Appendix, present an additional reliability test that regresses this measure of disclosure on common determinants of disclosure. The provisions-related mandatory disclosures checklist is available from the authors upon request.

The results from these sets of analyses indicate that, given the complexity of pension obligations, it appears that sponsoring firms benefit mainly from disclosing pension-specific information and that other mandatory disclosures do not appear to substitute the need for pension-specific disclosures.

4.3.3 The role of pension-related voluntary disclosures in addition to relevant mandatory disclosures

In the main analyses, we control for overall disclosure levels by using a variable that captures the readability of firms' annual reports. However, this variable may not capture the specific effect of pension-related voluntary disclosures on debt financing. As such, using a dictionary-based automated textual analysis of the narrative section of firms' annual reports (i.e. the front-end of the reports), we quantify the level of voluntary pension-related disclosure.[28] We first repeat the analyses by adding the level of voluntary pension-related disclosure (*log(1+Vol._Disc._Narratives)*) as an additional variable in our regressions. This allows us to examine the incremental effect of voluntary pension-related disclosures over mandatory disclosures. Second, to rule out the possibility that the measure of voluntary disclosure may capture some mandatory disclosures that firms decided to provide in the front-end of their annual reports, we run the results after excluding the measure of mandatory disclosure.

Columns 9, 10, 11 and 12 in Panels A and B of Table 8 present the results of these tests. These results reveal that the level of voluntary disclosure has no effect on debt financing and that the results with regard to mandatory disclosures remain the same. Moreover, replacing the measure of mandatory disclosure with voluntary disclosure shows that (1) the measure of voluntary disclosure does not capture a significant/material level of mandatory information that

[28] Refer to Supplementary_Table_II in the Online Appendix for a detailed discussion on the development of the voluntary disclosure measure and Supplementary_Table_I (Column 6) in the Online Appendix for its validation.

firms decided to provide in the front-end of their annual reports and (2) pension-related voluntary disclosures are not associated with debt financing.

INSERT TABLE 8 ABOUT HERE

These results support the argument of Gietzmann and Trombetta (2003) that it is not always optimal for firms to provide voluntary disclosures over mandated disclosures, and that voluntary disclosures may not result in a reduction in the cost of raising outside capital. Hence, these findings are not surprising. In fact, they highlight the importance of considering the level of mandatory disclosure when examining the market consequences of voluntary disclosures.

5. Sensitivity analyses

In order to ensure the robustness of our findings, we perform a series of sensitivity analyses. The results for the sensitivity tests discussed in this section can be accessed in the Online Appendix (Supplementary_Tables_V and VI).[29]

First, to provide assurance that our results are not driven by the funding status of pension plans, we manually collect firms' pension deficits also for the year t-2, in order to identify firms with a significant change in pension deficit from the previous year (i.e. firms with at least a 20% increase or decrease in pension deficit from t-2 to t-1).[30] Based on this, we add a dummy variable that captures the significant change in the funding status of pension plans.

Second, the datasets used for analysing the effect of pension-related disclosures on access to the public debt market (Eq. (3)) and the cost of public and private debt (Eq. (4)) contain multiple debt issues for a single firm during the same year. Multilevel observations violate the assumption of residual independence at lower debt issue-level, which might bias the standard

[29] For brevity, we present only the results for our main variables *Pension_Actu._Disc.* and *Pension_Adj._Disc.* in these Tables.

[30] The results are qualitatively similar if we define significant change based on a 25%, 15% or 10% increase or decrease in pension deficit from the prior year.

errors from the OLS regression. Thus, we follow Ge and Liu (2015) and Liu and Magnan (2016) and test the robustness of the result using a Hierarchical Linear Model (HLM) regression.

Third, to provide assurance that our results are not driven by omitted variables, we re-estimate our main models (Eqs. (2), (3) and (4)) after adding additional and/or substituting various firm-, issue- and country-specific controls identified in prior studies (e.g. Altunbaş et al., 2010; Anagnostopoulou, 2017; Bharath et al., 2008; Brown, 2016; Chuluun et al., 2014; Florou & Kosi, 2015; Ge & Liu, 2015; Liu & Magnan, 2016; Marshall et al., 2016). Specifically, we test the sensitivity to the inclusion of different firm-specific controls as follows: (a) adding each of the following variables separately: *Cash flow*, *Current ratio, Credit rating, Rated dummy, Returns variability,* Ohlson's score (*O-Score*), *Interest coverage*, *Sales growth over 5 years* and *No. of analysts*, and (b) substituting the *Readability* variable with *Readability words*, which is measured as the negative logarithm of the number of words in the annual report. We also test the sensitivity to the inclusion of different issue-specific controls, as follows: *Bond investment grade* in the public debt analyses, and the dummy *Secured* in the public and private debt analyses. We also check the sensitivity of our results to the control for *Country law* (civil law and common law), *Inflation rate* or country probability of default (*Country prob. of default*) in all analyses, and country *Banking development* in the cost of private debt analysis.

Fourth, we calculate an alternative disclosure metric, under which we transform the disclosure score to the log odds ratio (see Al-Shammari, 2011; Tsalavoutas, 2011).

Fifth, relying on pension expense as one of the factors to determine pension materiality could have resulted in including firms with material defined contribution schemes (i.e. firms with non-material defined benefit pension obligations, but for which some disclosure items in IAS 19 are relevant because of material defined contribution schemes); hence, we check the sensitivity of the results for the exclusion of firms with only material defined contribution plans. In this case, we re-estimate our tests after excluding 43 firm-year observations.

Sixth, as an alternative to applying two-stage least squares to deal with concern over the simultaneity between the level of disclosure and the *ex-ante* decision to issue public debt (or the cost of public and private debt), we apply a simultaneous equation model using a country-industry average level of pension-related disclosure as an instrument.[31]

Seventh, when testing the first hypothesis, in Eq. (2), we use a dependent variable *% of public debt,* which has a lower value of 0 and a maximum value of 1. As this variable is bounded, OLS estimation could produce inconsistent results (as it may produce probabilities greater than one). Additionally, in Eq. (3), we use the dependent variable *Public debt issue,* which has a value of either 1 or 0. Considering this, we re-estimate Eq. (2) and Eq. (3) by applying a double-censored Tobit and a Logit model, respectively, to test the robustness of our results to the use of alternative estimation methods.

Lastly, as an alternative approach to examine firms access to the public debt market, we exclude firms that accessed the public and private debt markets in the same year (Dhaliwal et al., 2011; Florou & Kosi, 2015). We then use a dummy variable that equals 1 if the firm issued public debt, and 0 if the firm issued private debt in a given year, as a dependent variable. In this case, we use a Probit regression on a sample of 566 firm-year observations.

As reported in the relevant Supplementary_Tables_V and VI in the Online Appendix, the inferences are similar if we apply all these different sensitivity checks.

6. Conclusion

Prior research has consistently shown that the complexity of, and exposure to, pension obligations increase information and default risk, particularly for firms with underfunded pension plans. This increases sponsoring firms' cost of financing and reduces their

[31] Since under Eq. (3) the dependent variable (*Public debt issue*) is a binary variable and the model estimates the probability of accessing the public debt market, we do not apply the simultaneous equation for that model.

creditworthiness. We address whether increased transparency in relation to pension obligations of sponsoring firms affects debt providers' assessments of pension plan risk. Specifically, we test whether the level of mandatory pension-related disclosure is associated with access to the public debt market and, subsequently, with the cost of public and private debt.

We find that firms with higher levels of pension-related disclosure are more likely to borrow publicly. This evidence can be explained by the differences between public and private lenders in terms of information needs and availability, and by the importance of revealing public pension-related disclosures within the context of the public debt market. Furthermore, we document that the level of pension-related disclosure is negatively associated with bond spreads but has no effect on loan spreads. These results demonstrate that debt providers benefit from and respond positively to higher transparency, but only when financial-statement information is crucial to decision making, due to limited access to non-public information. This provides support for the argument that the presence of alternative channels for obtaining information reduces the importance of accounting information in financing decisions. Additional analyses indicate that non-pension mandatory disclosures and pension-related voluntary disclosures provided over pension-related mandatory disclosures have no debt market effect. Hence, the documented debt market effect is confined to mandatory pension-related disclosures.

To the best of our knowledge, the study is the first to directly examine the effect of mandatory disclosures on debt financing. From a standard-setting perspective, the findings highlight a potential positive effect for firms fulfilling the disclosure requirements of IAS 19. In fact, the findings demonstrate that IFRS mandatory disclosures are not only relevant to equity holders in terms of assessing a firm's prospect – as reflected in the implied cost of equity capital (Mazzi et al., 2017) – but also to public lenders, who face high information costs.

Naturally, our study is subject to several caveats. First, the measure of pension-related disclosure may have introduced some subjectivity in the disclosure scores, as the measure is

subject to some judgments in terms of whether an item is not complied with, or it is not applicable. Nevertheless, the different tests conducted to check the reliability of the measure reduces the concerns over subjectivity. Second, deciding on the materiality level of pension obligations requires some accounting information (i.e. net pension liabilities/assets and pension expenses). If a non-compliant firm does not disclose this information in the first place and does not provide any information in its annual report regarding pension obligations, this will lead us to exclude the firm from the sample and consider the standard as non-applicable when the firm is, in fact, non-complaint. Third, when examining the effect of non-pension disclosures on sponsoring firms' debt financing, we focus on provisions-related disclosures, and we find that it has no substitution or incremental effect on debt financing. We acknowledge that other types of mandatory disclosure might have a debt market effect for sponsoring firms. However, we take this finding as first-level evidence that given the complexity of and risk introduced by pension plans, firms with material pension plans benefit primarily from disclosing pension-specific mandatory information. Fourth, as with many other studies with non-US samples (e.g. Anagnostopoulou, 2017; Florou & Kosi, 2015), we are unable to test the effect of pension-related disclosures on debt covenants. This is mainly because such data is limited for firms outside the US (Ball et al., 2015; Brown, 2016), which is not due to the fact that such debt issues are written without covenants, but rather due to the failure of data providers to collect covenant data for debt securities issued outside the US (Ball et al., 2015). Future research could confine the sample to issues for which covenant data is available and test the impact of the level of pension-related disclosure on the restrictiveness of debt covenants.

References

Abdullah, M., Evans, L., Fraser, I., & Tsalavoutas, I. (2015). IFRS mandatory disclosures in Malaysia: The influence of family control and the value (ir)relevance of compliance levels. *Accounting Forum*, *39*(4), 328–348. https://doi.org/10.1016/j.accfor.2015.05.003

Al-Shammari, B. (2011). Factors influencing the extent of mandatory compliance with international financial reporting standards: The case of Kuwaiti listed companies. *Journal of International Business and Economics*, *11*(4), 11–31.

Altunbaş, Y., Kara, A., & Marques-Ibanez, D. (2010). Large debt financing: Syndicated loans versus corporate bonds. *European Journal of Finance*, *16*(5), 437–458. https://doi.org/10.1080/13518470903314394

Anagnostopoulou, S. C. (2017). Accounting quality and loan pricing: The effect of cross-country differences in legal enforcement. *International Journal of Accounting*, *52*(2), 178–200. https://doi.org/10.1016/j.intacc.2016.11.001

Anantharaman, D., Fang, V. W., & Gong, G. (2014). Inside debt and the design of corporate debt contracts. *Management Science*, *60*(5), 1260–1280. https://doi.org/10.2139/ssrn.1697855

André, P., Dionysiou, D., & Tsalavoutas, I. (2018). Mandated disclosures under IAS 36 impairment of assets and IAS 38 intangible assets: Value relevance and impact on analysts' forecasts. *Applied Economics*, *50*(7), 707–725. https://doi.org/10.1080/00036846.2017.1340570

Armstrong, C. S., Guay, W. R., & Weber, J. P. (2010). The role of information and financial reporting in corporate governance and debt contracting. *Journal of Accounting and Economics*, *50*(2–3), 179–234. https://doi.org/10.1016/j.jacceco.2010.10.001

Balachandran, B., Duong, H. N., & Vu, V. H. (2019). Pension deficits and the design of private debt contracts. *Journal of Financial and Quantitative Analysis*, *54*(4), 1821–1854. https://doi.org/10.1017/S0022109018000935

Ball, R., Li, X., & Shivakumar, L. (2015). Contractibility and transparency of financial statement information prepared under IFRS: Evidence from debt contracts around IFRS adoption. *Journal of Accounting Research*, *53*(5), 915–963. https://doi.org/10.1111/1475-679X.12095

Bauman, M. P., & Shaw, K. W. (2014). An analysis of critical accounting estimate disclosures of pension assumptions. *Accounting Horizons*, *28*(4), 819–845. https://doi.org/10.2308/acch-50823

Bharath, S. T., Sunder, J., & Sunder, S. V. (2008). Accounting quality and debt contracting. *Accounting Review*, *83*(1), 1–28. https://doi.org/10.2308/accr.2008.83.1.1

Billings, M., O'Brien, C., Woods, M., & Vencappa, D. (2017). Discretion in accounting for pensions under IAS 19: using the 'magic telescope'? *Accounting and Business Research*, *47*(2), 123–143. https://doi.org/10.1080/00014788.2016.1205967

Boyd, J. H., & Prescott, E. C. (1986). Financial intermediary-coalitions. *Journal of Economic Theory*, *38*(2), 211–232. https://doi.org/10.1016/0022-0531(86)90115-8

Brown, A. (2016). Institutional differences and international private debt markets: A test using mandatory IFRS adoption. *Journal of Accounting Research*, *54*(3), 679–723. https://doi.org/10.1111/1475-679X.12111

Brown, P., Preiato, J., & Tarca, A. (2014). Measuring country differences in enforcement of accounting standards: An audit and enforcement proxy. *Journal of Business Finance and Accounting*, *41*(1–2), 1–52. https://doi.org/10.1111/jbfa.12066

Campbell, J. L., Dhaliwal, D. S., & Schwartz, W. C. (2012). Financing constraints and the cost of capital: Evidence from the funding of corporate pension plans. *Review of Financial Studies*, *25*(3), 868–912. https://doi.org/10.1093/rfs/hhr119

Cardinale, M. (2007). Corporate pension funding and credit spreads. *Financial Analysts Journal*, *63*(5), 82–101. https://doi.org/10.2469/faj.v63.n5.4842

Carroll, T. J., & Niehaus, G. (1998). Pension plan funding and corporate debt ratings. *Journal of Risk and Insurance*, *65*(3), 427–443. https://doi.org/10.2307/253658

Cascino, S., & Gassen, J. (2015). What drives the comparability effect of mandatory IFRS adoption? *Review of Accounting Studies*, *20*(1), 242–282. https://doi.org/10.1007/s11142-014-9296-5

Chaudhry, N., Yong, H. H., & Veld, C. (2017). How does the funding status of defined benefit pension plans affect investment decisions of firms in the United States? *Journal of Business Finance and Accounting*, *44*(1–2), 196–235. https://doi.org/10.1111/jbfa.12219

Chemmanur, T. J., & Fulghieri, P. (1994). Reputation, renegotiation, and the choice between bank loans and publicly traded debt. *The Review of Financial Studies*, *7*(3), 475–506.

Chen, T., Martin, X., Mashruwala, C. A., & Mashruwala, S. D. (2015). The value and credit relevance of multiemployer pension plan obligations. *Accounting Review*, *90*(5), 1907–1938. https://doi.org/10.2308/accr-51010

Chen, Y. (2015). Funding status of defined benefit pension plans and idiosyncratic return volatility. *Journal of Financial Research*, *38*(1), 35–57. https://doi.org/10.1111/jfir.12049

Chuluun, T., Prevost, A., & Puthenpurackal, J. (2014). Board ties and the cost of corporate debt. *Financial Management*, *43*(3), 533–568. https://doi.org/10.1111/fima.12047

Cooke, T. E. (1992). The impact of size, stock market listing and industry type on disclosure in the annual reports of Japanese listed corporations. *Accounting and Business Research*, *22*(87), 229–237. https://doi.org/10.1080/00014788.1992.9729440

De Franco, G., Hope, O. K., & Lu, H. (2017). Managerial ability and bank-loan pricing. *Journal of Business Finance and Accounting*, *44*(9–10), 1315–1337. https://doi.org/10.1111/jbfa.12267

De George, E. T., Li, X., & Shivakumar, L. (2016). A review of the IFRS adoption literature. *Review of Accounting Studies*, *21*(3), 898–1004. https://doi.org/10.1007/s11142-016-9363-1

Dhaliwal, D. S. (1986). Measurement of financial leverage in the presence of unfunded pension obligations. *Accounting Review*, *61*(4), 651–661. https://doi.org/10.2307/247362

Dhaliwal, D. S., Khurana, I. K., & Pereira, R. (2011). Firm disclosure policy and the choice between private and public debt. *Contemporary Accounting Research*, *28*(1), 293–330. https://doi.org/10.1111/j.1911-3846.2010.01039.x

Diamond, D. (1984). Financial intermediation and delegated monitoring. *Review of Economic Studies*, *51*(3), 393–414. https://doi.org/10.2307/2297430

Duffie, D., & Lando, D. (2001). Term structures of credit spreads with incomplete accounting information. *Econometrica*, *69*(3), 633–664.

Eilifsen, A., & Messier, W. F. (2015). Materiality guidance of the major public accounting firms. *Auditing: A Journal of Practice & Theory*, *34*(2), 3–26. https://doi.org/10.2308/ajpt-50882

Fama, E. F. (1985). What's different about banks? *Journal of Monetary Economics*, *15*(1), 29–39. https://doi.org/10.1016/0304-3932(85)90051-0

Ferrell, A., Liang, H., & Renneboog, L. (2016). Socially responsible firms. *Journal of Financial Economics*, *122*(3), 585–606. https://doi.org/10.1016/j.jfineco.2015.12.003

Florio, C., Lionzo, A., & Corbella, S. (2018). Beyond firm-level determinants: The effect of M&A features on the extent of M&A disclosure. *Journal of International Accounting Research*, *17*(3), 87–113. https://doi.org/10.2308/jiar-52226

Florou, A., & Kosi, U. (2015). Does mandatory IFRS adoption facilitate debt financing? *Review of Accounting Studies*, *20*(4), 1407–1456. https://doi.org/10.1007/s11142-015-9325-z

Franco, F., Urcan, O., & Vasvari, F. P. (2016). Corporate diversification and the cost of debt: The role of segment disclosures. *Accounting Review*, *91*(4), 1139–1165. https://doi.org/10.2308/accr-51325

Franzoni, F., & Marín, J. (2006). Pension plan funding and stock market efficiency. *Journal of Finance*, *61*(2), 25–27. https://doi.org/10.1111/j.1540-6261.2006.00859.x

FRC. (2013). *Audit Quality Thematic Review: Materiality*. Retrieved from https://www.frc.org.uk/getattachment/e8f4d3ae-92ea-4d62-a997-2c670454d8ab/FRC-AQTR_Materiality-Dec-2013.pdf (Accessed: 10 September 2017)

FRC. (2017). *Corporate Reporting Thematic Review: Pension Disclosures*. Retrieved from https://www.frc.org.uk/getattachment/538ec144-05a0-499c-99b4-3f93bd21ad0b/091117-Pension-Disclosures-CRR-thematic-review.pdf (Accessed: 10 May 2019)

FRC. (2018). *Corporate Reporting Thematic Review: Reporting by Smaller Listed and AIM Quoted Companies*. Retrieved from https://www.frc.org.uk/getattachment/a6d7ef32-1564-4fe1-9fcc-b050f58ba098/Small-Listed-and-AIM-Quoted-Companies.pdf (Accessed: 10 May 2019)

Ge, W., & Liu, M. (2015). Corporate social responsibility and the cost of corporate bonds. *Journal of Accounting and Public Policy*, *34*(6), 597–624. https://doi.org/10.1016/j.jaccpubpol.2015.05.008

Gietzmann, M. B., & Trombetta, M. (2003). Disclosure interactions: Accounting policy choice and voluntary disclosure effects on the cost of raising outside capital. *Accounting and Business Research*, *33*(3), 187–205. https://doi.org/10.1080/00014788.2003.9729646

Glaum, M. (2009). Pension accounting and research: A review. *Accounting and Business Research*, *39*(3), 273–311. https://doi.org/10.1080/00014788.2009.9663367

Glaum, M., Schmidt, P., Street, D. L., & Vogel, S. (2013). Compliance with IFRS 3-and IAS 36-required disclosures across 17 European countries: Company-and country-level determinants. *Accounting and Business Research*, *43*(3), 163–204. https://doi.org/10.1080/00014788.2012.711131

Gorton, G., & Winton, A. (2003). Financial intermediation. In G. M. Constantinides, M. Harris, & R. M. Stulz (Eds.), *Handbook of the Economics of Finance* (1st ed., pp. 432–552). Amsterdam: Elsevier. https://doi.org/10.1016/S1574-0102(03)01012-4

Goto, S., & Yanase, N. (2016). The information content of corporate pension funding status in Japan. *Journal of Business Finance and Accounting*, *43*(7–8), 903–949. https://doi.org/10.1111/jbfa.12197

Gujarati, D. (2003). *Basic Econometrics*. New York: McGraw-Hill.

Hodgdon, C., Tondkar, R. H., Harless, D. W., & Adhikari, A. (2008). Compliance with IFRS disclosure requirements and individual analysts' forecast errors. *Journal of International Accounting, Auditing and Taxation*, *17*(1), 1–13. https://doi.org/10.1016/j.intaccaudtax.2008.01.002

Jin, L., Merton, R. C., & Bodie, Z. (2006). Do a firm's equity returns reflect the risk of its pension plan? *Journal of Financial Economics*, *81*(1), 1–26. https://doi.org/10.1016/j.jfineco.2005.06.005

Kim, J. B., Tsui, J. S. L., & Yi, C. H. (2011). The voluntary adoption of International Financial Reporting Standards and loan contracting around the world. *Review of Accounting Studies*, *16*(4), 779–811. https://doi.org/10.1007/s11142-011-9148-5

Klumpes, P. J. (2000). Incentives and disincentives for voluntary disclosure by pension funds: International evidence. *Accounting and Business Research*, *30*(4), 287–298. https://doi.org/10.1080/00014788.2000.9728946

Kreß, A., Eierle, B., & Tsalavoutas, I. (2019). Development costs capitalization and debt financing. *Journal of Business Finance and Accounting*, *46*, 636–685.

https://doi.org/10.1111/jbfa.12370
Kumar, G., & Saini, J. (2016). Determinants of IFRS compliance by Canadian companies. *International Journal of Corporate Finance and Accounting*, *3*(2), 42–57. https://doi.org/10.4018/IJCFA.2016070103
Leland, H. E., & Pyle, D. H. (1977). Informational asymmetries, financial structure, and financial intermediation. *The Journal of Finance*, *32*(2), 371–387.
Liao, H. H., Chen, T. K., & Lu, C. W. (2009). Bank credit risk and structural credit models: Agency and information asymmetry perspectives. *Journal of Banking and Finance*, *33*(8), 1520–1530. https://doi.org/10.1016/j.jbankfin.2009.02.016
Liu, M., & Magnan, M. (2016). Conditional conservatism and the yield spread of corporate bond issues. *Review of Quantitative Finance and Accounting*, *46*(4), 847–879. https://doi.org/10.1007/s11156-014-0489-6
Livingston, M., & Zhou, L. (2010). Split bond ratings and information opacity premiums. *Financial Management*, *39*(2), 515–532. https://doi.org/10.1111/j.1755-053X.2010.01082.x
Lu, C. W., Chen, T. K., & Liao, H. H. (2010). Information uncertainty, information asymmetry and corporate bond yield spreads. *Journal of Banking and Finance*, *34*(9), 2265–2279. https://doi.org/10.1016/j.jbankfin.2010.02.013
Marshall, A., Mccann, L., & Mccolgan, P. (2016). The choice of debt source by UK firms. *Journal of Business Finance and Accounting*, *43*(5–6), 729–764. https://doi.org/10.1111/jbfa.12194
Mazumdar, S. C., & Sengupta, P. (2005). Disclosure and the loan spread on private debt. *Financial Analysts Journal*, *61*(3), 83–95. https://doi.org/10.2469/faj.v61.n3.2731
Mazzi, F., André, P., Dionysiou, D., & Tsalavoutas, I. (2017). Compliance with goodwill related mandatory disclosure requirements and the cost of equity capital. *Accounting and Business Research*, *47*(3), 268–312. https://doi.org/10.1177/0312896213481367
Paugam, L., & Ramond, O. (2015). Effect of impairment-testing disclosures on the cost of equity capital. *Journal of Business Finance and Accounting*, *42*(5–6), 583–618. https://doi.org/10.1111/jbfa.12113
Petersen, M. A. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies*, *22*(1), 435–480. https://doi.org/10.1093/rfs/hhn053
Picconi, M. (2006). The perils of pensions: Does pension accounting lead investors and analysts astray? *Accounting Review*, *81*(4), 925–955. https://doi.org/10.2308/accr.2006.81.4.925
Rauh, J. D. (2006). Investment and financing constraints: Evidence from the funding of corporate pension plans. *The Journal of Finance*, *61*(1), 33–71. https://doi.org/10.1111/j.1540-6261.2006.00829.x
Scott, T. W. (1991). Pension disclosures under SFAS No. 87: Theory and evidence. *Contemporary Accounting Research*, *8*(1), 62–81. https://doi.org/10.1111/j.1911-3846.1991.tb00834.x
Scott, T. W. (1994). Incentives and disincentives for financial disclosure: Voluntary disclosure of defined benefit pension plan information by Canadian firms. *Accounting Review*, *69*(1), 26–43. https://doi.org/10.2307/248259
Sengupta, P. (1998). Corporate disclosure quality and the cost of debt. *The Accounting Review*, *73*(4), 459–474. https://doi.org/10.2307/248186
Shivakumar, L. (2013). The role of financial reporting in debt contracting and in stewardship. *Accounting and Business Research*, *43*(4), 362–383. https://doi.org/10.1080/00014788.2013.785683
Shivdasani, A., & Stefanescu, I. (2010). How do pensions affect corporate capital structure

decisions? *Review of Financial Studies*, *23*(3), 1287–1323. https://doi.org/10.1093/rfs/hhp094

Stock, J. H., & Yogo, M. (2005). Testing for weak instruments in linear IV regression. In *Andrews DWK Identification and Inference for Econometric Models.* (pp. 80–108). New York: Cambridge University Press.

Taylor, D. J., & Verrecchia, R. E. (2015). Delegated trade and the pricing of public and private information. *Journal of Accounting and Economics*, *60*(2–3), 8–32. https://doi.org/10.1016/j.jacceco.2015.07.002

Teixeira, A. (2014). The international accounting standards board and evidence-informed standard-setting. *Accounting in Europe*, *11*(1), 5–12. https://doi.org/10.1080/17449480.2014.900269

The Pensions Regulator. (2017). *Regulatory Intervention Report Issued Under Section 89 of the Pensions Act 2004 in Relation to the BHS Pension Schemes*. Retrieved from https://www.thepensionsregulator.gov.uk/-/media/thepensionsregulator/files/import/pdf/regulatory-intervention-section-89-bhs.ashx (Accessed: 02 December 2018)

The Pensions Regulator. (2018). Regulatory Intervention Report Issued Under Section 89 of the Pensions Act 2004 in Relation to the British Steel Pension Scheme. Retrieved from https://www.thepensionsregulator.gov.uk/-/media/thepensionsregulator/files/import/pdf/regulatory-intervention-section-89-british-steel.ashx (Accessed: 02 December 2018)

Tsalavoutas, I. (2011). Transition to IFRS and compliance with mandatory disclosure requirements: What is the signal? *Advances in Accounting*, *27*(2), 390–405. https://doi.org/10.1016/j.adiac.2011.08.006

Tsalavoutas, I., & Dionysiou, D. (2014). Value relevance of IFRS mandatory disclosure requirements. *Journal of Applied Accounting Research*, *15*(1), 22–42. https://doi.org/10.1108/JAAR-03-2013-0021

Tsalavoutas, I., Tsoligkas, F., & Evans, L. (2020). Compliance with IFRS mandatory disclosure requirements: A structured literature review. *Journal of International Accounting, Auditing and Taxation, Forthcoming*. https://doi.org/10.2139/ssrn.3513301

Vergauwe, S., & Gaeremynck, A. (2019). Do measurement-related fair value disclosures affect information asymmetry? *Accounting and Business Research*, *49*(1), 68–94. https://doi.org/10.1080/00014788.2018.1434608

Verriest, A., Gaeremynck, A., & Thornton, D. B. (2013). The impact of corporate governance on IFRS adoption choices. *European Accounting Review*, *22*(1), 39–77. https://doi.org/10.1080/09638180.2011.644699

Wang, F. A., & Zhang, T. (2014). The effect of unfunded pension liabilities on corporate bond ratings, default risk, and recovery rate. *Review of Quantitative Finance and Accounting*, *43*(4), 781–802. https://doi.org/10.1007/s11156-013-0392-6

Yu, F. (2005). Accounting transparency and the term structure of credit spreads. *Journal of Financial Economics*, *75*(1), 53–84. https://doi.org/10.1016/j.jfineco.2004.07.002

Table 1: Sample selection

	Bond issues	Loan issues	Total issues
Panel A: Access to the debt market analysis − Public debt market vs. Private debt market			
Bonds/Loans issued by UK, German, French and Canadian firms between 2014 and 2016. Convertible bonds, perpetual bonds, zero coupon bonds, bonds with floating rates, non-senior and short-term bond/loans are excluded (e.g. Bharath et al., 2008; Dhaliwal et al., 2011; Florou & Kosi, 2015; Ge & Liu, 2015; Kreß et al., 2019; Liu & Magnan, 2016).	1,032	1,494	2,526
Matched with Worldscope/Datastream database	729	1233	1,962
Missing data on firm-specific variables	-13	-94	-107
Missing annual reports with English text	-18	-40	-58
Missing data on issue-specific variables	-1	-22	-23
Pension obligations are not material	-104	-355	-459
Total Sample	***593***	***722***	***1,315***
Multiple debt issues of the same type within one year	-324	-230	-554
Final sample for Eq. (3)	***269***	***492***	***761***
Panel B: cost of public debt analysis−Eq. (4)			
Total Sample	593		
Missing data on the cost of debt	-11		
Negative debt risk premium	-24		
Final Sample	***558***		
Panel C: cost of private debt analysis−Eq. (4)			
Total Sample		722	
Missing data on the cost of debt		-502	
Final Sample		***220***	

The table presents the sample selection process. Panel A presents the sample selection for access to the public debt market. The total sample represents 1,315 bonds and loans issued by 661 firm-year observations between 2014 and 2016. This sample is used for access to the public debt market analyses at a firm level under Eq. (2). In line with Dhaliwal et al. (2011) and Florou and Kosi (2015), we exclude multiple issues of the same type and run the analyses for Eq. (3) on 761 debt issues. Panels B and C present the sample selection process for the cost of public and private debt, respectively, under Eq. (4). We match bond (loan) issues from Thomson ONE Banker (DealScan) to Worldscope/Datastream using multiple firm identifiers (i.e. ticker symbol and company name).

Table 2: Summary Statistics –Full sample

Panel A: Descriptive statistics for dependent and independent variables

	N	Sd.	Mean	Min	Median	Max
Access to debt market variables						
% of public debt	661	0.43	0.32	0.00	0.00	1.00
Public debt issue	761	0.48	0.35	0.00	0.00	1.00
Bond-specific variables						
Cost of debt (in basis points)	558	131.99	159.14	7.83	120.00	720.00
Maturity (in months)	558	72.43	110.81	22.65	96.16	480.82
Debt amount (in mil. US$)	558	1387.41	1223.95	4.16	682.22	6750.87
Callable	558	0.50	0.52	0.00	1.00	1.00
Private placement	558	0.46	0.30	0.00	0.00	1.00
Loan-specific variables						
Cost of debt (in basis points)	220	116.97	177.56	20.00	150.00	600.00
Maturity (in months)	220	15.97	52.92	12.00	60.00	120.00
Debt amount (in mil. US$)	220	2195.43	1300.36	3.89	468.33	22518.67
Firm- and country-specific variables						
Pension_Actu._Disc.	661	0.17	0.77	0.00	0.80	1.00
Pension_Adj._Disc.	661	0.22	0.45	0.00	0.42	1.00
log(Size)	661	1.64	15.27	11.21	15.09	19.79
Tangibility	661	0.21	0.26	0.00	0.22	0.97
MTB	661	0.67	1.56	0.65	1.38	4.54
ROA	661	0.06	0.04	-0.24	0.03	0.21
Returns	661	0.34	0.08	-2.01	0.11	1.42
Leverage	661	0.13	0.21	0.00	0.19	0.59
Page count	661	92.81	189.37	44.00	168.00	555.00
Cross listed	661	0.45	0.28	0.00	0.00	1.00
Rated dummy	661	0.50	0.53	0.00	1.00	1.00
Investment grade	661	0.36	0.85	0.00	1.00	1.00
Pension deficit	661	0.06	0.04	-0.05	0.02	0.28
Debt market access	661	0.47	0.67	0.00	1.00	1.00
Issue both	661	0.36	0.16	0.00	0.00	1.00
Term spread	661	0.41	1.19	0.47	1.16	2.24
Economic development	661	0.10	9.29	9.11	9.29	9.47
GDP growth	661	0.74	1.81	0.94	1.72	3.07
Country prob. of default	661	0.00	0.01	0.01	0.01	0.02

Panel B: Compliance across countries

	Canada				France				Germany				UK			
	Mean	Min	Med	Max	Mean	Min	Med	Max	Mean	Min	Med	Max	Mean	Min	Med	Max
Pension_ Actu._Disc.	0.77	0.00	0.81	1.00	0.67	0.11	0.67	1.00	0.85	0.38	0.87	1.00	0.83	0.45	0.86	1.00
Pension_ Adj._Disc.	0.64	0.00	0.67	1.00	0.47	0.00	0.48	0.85	0.34	0.00	0.36	0.62	0.34	0.00	0.36	0.55

% of public debt is the proportion of public debt to the total debt obtained by a firm in a given year. *Public debt issue* is a dummy variable that equals 1 if the issue is a bond issue, and 0 if it is a loan issue. It is presented after excluding multiple issues of the same type by a firm during a given year. *Cost of debt* is the basis point spread over a benchmark government bond, in the case of bonds, and the basis points spread over LIBOR or its equivalent for each dollar drawn down (including any annual fee paid), in the case of loans. *Maturity* is the number of months to final maturity. *Debt amount* is the amount of Bond/Loan issue in millions of US$. *Callable* is a dummy variable that equals 1 if the bond has a callable feature, and 0 otherwise. *Private placement* is a dummy variable that equals 1 if the debt is obtained through private placements, and 0 otherwise. *Pension_Actu._Disc.* is the actual level of compliance with pension-related disclosures. It represents the total number of pension items disclosed by the firm to the total number of applicable items. *Pension_Adj._Disc.* is the level of compliance with pension-related disclosures adjusted to the country disclosure level. It represents a firm's score over and above the country minimum score. *log(Size)* is the natural logarithm of sales/revenues. *Tangibility* is the ratio of PPE to total assets. *MTB* is the market capitalization divided by common shareholders' equity. *ROA* is the net income divided by total assets. *Returns* is the natural log of (RIt/RIt-12), where RI is the Datastream Monthly Return Index on the first

day of the month. *Leverage* is long-term debt to total assets. *Page count* is the number of pages of each annual report. This variable is used for computing the *Readability* measure employed in subsequent analyses (-log(PageCount)). *Cross listed* is a dummy variable that equals 1 if the firm is cross listed, and 0 otherwise. *Rated dummy* is a dummy variable that equals 1 if the firm is rated, and 0 otherwise. *Investment grade* is a dummy variable that equals 1 if the firm's Standard & Poor's or estimated credit rating (Rating) is investment grade (i.e. BBB- or higher), and 0 otherwise. *Pension deficit* is the difference between the present value of pension liabilities and the market value of pension plan assets scaled by total assets. *Debt market access* is a dummy variable that takes the value of 1, if the firm has had prior access to the public debt market, and 0 otherwise. *Issue both* is a dummy variable that equals 1 if the firm issued in a particular year at least one bond and one loan, and 0 otherwise. *Term spread* is the difference between 10-year and two-year government bond rates calculated at a country-month level. *Economic development* is the natural log of the per capita GDP. *GDP growth* is the annual percentage growth rate of GDP at market prices based on constant local currency. *Country prob. of default* is the probability of default of the firm's country of domicile in the year the debt is issued. Supplementary_Table_III in the Online Appendix reports the detailed definitions and sources of all variables.

Table 3: Descriptive statistics across public and private borrowers

	(1) Public borrowers – Bond market					(2) Private borrowers – Loan market					(3) Test for Difference in	
	N	Mean	Min	Median	Max	N	Mean	Min	Median	Max	Mean	Median
Panel A: Bond and loan-specific variables												
Cost of debt	558	159.14	7.83	120.00	720.00	220	177.56	20.00	150.00	600.00	(-1.91)*	(-3.22)***
Maturity (in months)	558	110.81	22.65	96.16	480.82	220	52.92	12.00	60.00	120.00	(17.81)***	(17.86)***
Debt amount (in mil. US$)	558	1223.95	4.16	682.22	6750.87	220	1300.36	3.89	468.33	22518.67	(-0.48)	(2.24)***
Callable	558	0.52	0.00	1.00	1.00							
Private placement	558	0.30	0.00	0.00	1.00							
Panel B: Firm- and country-specific variables												
Pension_Actu._Disc.	269	0.80	0.11	0.83	1.00	492	0.76	0.00	0.80	1.00	(3.18)***	(3.09)***
Pension_Adj._Disc.	269	0.49	0.00	0.46	1.00	492	0.44	0.00	0.42	1.00	(3.24)***	(3.23)***
log(Size)	269	16.12	11.49	16.24	19.79	492	14.99	11.21	14.91	19.79	(9.90)***	(9.10)***
Tangibility	269	0.29	0.01	0.24	0.97	492	0.26	0.00	0.22	0.97	(1.53)	(2.01)**
MTB	269	1.59	0.65	1.42	4.54	492	1.54	0.65	1.36	4.54	(1.02)	(1.86)*
ROA	269	0.04	-0.24	0.03	0.21	492	0.03	-0.24	0.03	0.21	(0.62)	(0.22)
Returns	269	0.09	-1.31	0.10	1.42	492	0.09	-2.01	0.11	1.42	(0.25)	(-0.43)
Leverage	269	0.23	0.00	0.21	0.59	492	0.20	0.00	0.19	0.59	(3.17)***	(3.16)***
Page count	269	228.52	44.00	216.00	555.00	492	171.38	44.00	152.00	437.00	(8.18)***	(8.29)***
Cross listed	269	0.34	0.00	0.00	1.00	492	0.28	0.00	0.00	1.00	(1.86)*	(1.89)*
Rated dummy	269	0.74	0.00	1.00	1.00	492	0.45	0.00	0.00	1.00	(8.24)***	(7.65)***
Investment grade	269	0.86	0.00	1.00	1.00	492	0.84	0.00	1.00	1.00	(0.50)	(0.50)
Pension deficit	269	0.04	-0.05	0.02	0.28	492	0.04	-0.05	0.02	0.28	(0.54)	(2.18)**
Debt market access	269	0.87	0.00	1.00	1.00	492	0.61	0.00	1.00	1.00	(8.81)***	(7.61)***
Issue both	269	0.38	0.00	0.00	1.00	492	0.21	0.00	0.00	1.00	(4.97)***	(5.14)***
Term spread	269	1.18	0.47	1.14	2.24	492	1.22	0.47	1.17	2.24	(-1.21)	(-0.98)
Economic development	269	9.28	9.11	9.29	9.47	492	9.30	9.11	9.31	9.47	(-3.36)***	(-2.93)***
GDP growth	269	1.71	0.94	1.60	3.07	492	1.87	0.94	1.81	3.07	(-2.79)***	(-2.15)**
Country prob. of default	269	0.01	0.01	0.01	0.02	492	0.01	0.01	0.01	0.02	(-1.44)	(-2.12)**

This table presents the descriptive statistics across public and private borrowers. Differences in means are tested for significance using a two-tailed t-test, while differences in medians are tested for significance using a Wilcoxon rank-sum test (Mann-Whitney). *Cost of debt* is the basis point spread over a benchmark government bond, in the case of bonds, and the basis points spread over the LIBOR or its equivalent for each dollar drawn down (including any annual fee paid), in the case of loans. *Maturity* is the number of months to final maturity. *Debt amount* is the amount of Bond/Loan issue in millions of US$. *Callable* is a dummy variable that equals 1 if the bond has a callable feature, and 0 otherwise. *Private placement* is a dummy variable that equals 1 if the debt is obtained through private placements, and 0 otherwise. *Pension_Actu._Disc.* is the actual level of compliance with pension-related disclosures. It represents the total number of pension items

disclosed by the firm to the total number of applicable items. *Pension_Adj._Disc.* is the level of compliance with pension-related disclosures adjusted to the country disclosure level. It represents a firm's score over and above the country minimum score. *log(Size)* is the natural logarithm of sales/revenues. *Tangibility* is the ratio of PPE to total assets. *MTB* is the market capitalization divided by common shareholders' equity. *ROA* is the net income divided by total assets. *Returns* is the natural log of (RIt/RIt-12), where RI is the Datastream Monthly Return Index on the first day of the month. *Leverage* is long-term debt to total assets. *Page count* is the number of pages of each annual report. This variable is used for computing the *Readability* measure employed in the subsequent analyses (- log(PageCount)). *Cross listed* is a dummy variable that equals 1 if the firm is cross listed, and 0 otherwise. *Rated dummy* is a dummy variable that equals 1 if the firm is rated, and 0 otherwise. *Investment grade* is a dummy variable that equals 1 if the firm's Standard & Poor's or estimated credit rating (Rating) is investment grade (i.e. BBB- or higher), and 0 otherwise. *Pension deficit* is the difference between the present value of pension liabilities and the market value of pension plan assets scaled by total assets. *Debt market access* is a dummy variable that takes the value of 1 if the firm has had prior access to the public debt market and 0 otherwise. *Issue both* is a dummy variable that equals 1 if the firm issued in a particular year at least one bond and one loan, and 0 otherwise. *Term spread* is the difference between 10-year and two-year government bond rates calculated at a country-month level. *GDP growth* is the annual percentage growth rate of GDP at market prices based on constant local currency. *Economic development* is the natural log of the per capita GDP. *Country prob. of default* is the probability of default of the firm's country of domicile in the year the debt is issued. ***, ** and * denote significance at the 1%, 5% and 10% level, respectively, using a two-tailed t-test (mean) and Wilcoxon rank-sum test (median). Supplementary_Table_III in the Online Appendix reports the detailed definitions and sources of all variables.

Table 4: Items with a low level of compliance

Item #	*IAS 19-Paragraph*	*Sub-paragraph*	*Items*	*Number of firms*	*% of firms complied*
	139		[to explain the characteristics of defined benefit plans and risks associated with them- Paragraph 135 (a)], an entity shall disclose:		
		(a)	information about the characteristics of its defined benefit plans, including:		
2		(a) i	The nature of the benefits provided by the plan (eg final salary defined benefit plan or contribution-based plan with guarantee).	618	0.77
3		(a) ii	a description of the regulatory framework in which the plan operates, for example the level of any minimum funding requirements, and any effect of the regulatory framework on the plan, such as the asset ceiling (see paragraph 64).	618	0.56
4		(a) iii	A description of any other entity's responsibilities for the governance of the plan, for example responsibilities of trustees or of board members of the plan.	618	0.68
5		(b)	A description of the risks to which the plan exposes the entity, focused on any unusual, entity-specific or plan-specific risks, and of any significant concentrations of risk. For example, if plan assets are invested primarily in one class of investments, eg property, the plan may expose the entity to a concentration of property market risk.	618	0.54
6		(c)	a description of any plan amendments, curtailments and settlements	304	0.64
	141		Each reconciliation listed in paragraph 140 shall show each of the following, if applicable:		
16		(h)	The effects of business combinations and disposals.	321	0.73
18	143		An entity shall disclose the fair value of the entity's own transferable financial instruments held as plan assets, and the fair value of plan assets that are property occupied by, or other assets used by, the entity.	618	0.17
	145		[to describe how defined benefit plans may affect the amount, timing and uncertainty of the entity's future cash flows- Paragraph 135 (c)], an entity shall disclose:		
21		(b)	The methods and assumptions used in preparing the sensitivity analyses required by (a) and the limitations of those methods.	618	0.49
22		(c)	Changes from the previous period in the methods and assumptions used in preparing the sensitivity analyses, and the reasons for such changes.	618	0.24
23	146		An entity shall disclose a description of any asset-liability matching strategies used by the plan or the entity, including the use of annuities and other techniques, such as longevity swaps, to manage risk.	618	0.48
	147		To provide an indication of the effect of the defined benefit plan on the entity's future cash flows, an entity shall disclose:		
25		(b)	The expected contributions to the plan for the next annual reporting period.	618	0.85
26		(c)	Information about the maturity profile of the defined benefit obligation. This will include the weighted average duration of the defined benefit obligation and may include other information about the distribution of the timing of benefit payments, such as a maturity analysis of the benefit payments.	618	0.68

The table shows the pension-related disclosure items that are applicable to more than 20% of the sample firms and disclosed by less than 90% of these firms.

Table 5: Access to the public debt market (Hypothesis 1)

	(1)	(2)	(3)	(4)	(5)	(6)
	% of public debt			*Public debt issue*		
Variables	OLS	OLS	2SLS	Probit	Probit	IV Probit
Panel A: OLS/probit results and Second stage results of the 2SLS/IV probit						
Pension_Actu._Disc.	0.30***		0.70**	1.41***		3.46***
	(3.30)		(1.99)	(2.77)		(2.94)
Pension_Adj._Disc.		0.24***			1.04**	
		(3.06)			(2.43)	
log(Size)	0.05***	0.05***	0.04**	0.24***	0.25***	0.20**
	(3.59)	(3.67)	(2.39)	(2.92)	(2.98)	(2.14)
Tangibility	0.03	0.03	0.02	0.26	0.25	0.27
	(0.35)	(0.34)	(0.26)	(0.72)	(0.69)	(0.72)
MTB	0.03	0.02	0.02	0.14	0.14	0.12
	(1.13)	(1.09)	(0.87)	(1.42)	(1.34)	(1.13)
Debt market access	0.12***	0.12***	0.12***	0.52***	0.53***	0.48***
	(3.29)	(3.35)	(3.20)	(2.98)	(3.04)	(2.72)
Rated dummy	0.12***	0.12***	0.11***	0.35**	0.36**	0.30*
	(3.26)	(3.24)	(3.05)	(2.28)	(2.32)	(1.87)
ROA	-0.33	-0.30	-0.40	-1.72	-1.64	-2.14
	(-1.19)	(-1.08)	(-1.36)	(-1.30)	(-1.25)	(-1.58)
Leverage	0.17	0.18	0.15	0.61	0.63	0.43
	(1.32)	(1.41)	(1.15)	(1.08)	(1.11)	(0.76)
Issue both	0.16***	0.16***	0.16***	0.11	0.10	0.08
	(4.25)	(4.28)	(4.24)	(0.68)	(0.62)	(0.53)
Readability	-0.07	-0.08	-0.05	-0.39*	-0.41*	-0.29
	(-1.49)	(-1.60)	(-1.06)	(-1.68)	(-1.79)	(-1.18)
Pension deficit	-0.03	-0.04	-0.05	0.31	0.35	0.15
	(-0.13)	(-0.16)	(-0.18)	(0.27)	(0.30)	(0.13)
log(Debt amount)	-0.10***	-0.10***	-0.09***	-0.37***	-0.38***	-0.35***
	(-5.66)	(-5.72)	(-5.24)	(-3.30)	(-3.38)	(-3.11)
log(Maturity)	0.41***	0.41***	0.41***	2.90***	2.91***	2.77***
	(9.96)	(9.98)	(10.19)	(6.21)	(6.40)	(5.54)
GDP growth	0.04	0.06*	0.04	0.32**	0.42***	0.31**
	(1.15)	(1.75)	(1.23)	(2.09)	(2.64)	(2.06)
Country prob. of default	-6.33	-1.40	-9.00	-55.25	-40.27	-70.08
	(-0.66)	(-0.15)	(-0.87)	(-1.24)	(-0.92)	(-1.56)
Constant	-1.05***	-1.13***	-1.14***	-13.16***	-13.40***	-13.00***
	(-2.76)	(-2.96)	(-2.88)	(-5.76)	(-5.95)	(-5.52)
Country dummies	Included	Included	Included	Included	Included	Included
Year dummies	Included	Included	Included	Included	Included	Included
Industry dummies	Included	Included	Included	Included	Included	Included
Observations	661	661	661	761	761	761
Adjusted R^2/ Pseudo R^2	0.433	0.432	0.416	0.522	0.521	0.460
F / chi2	20.19	19.88	18.40	226.21	236.15	254.88

Table 5 continued

	(1)	(2)	(3)	(4)	(5)	(6)
	% of public debt			*Public debt issue*		
Variables	OLS	OLS	2SLS	Probit	Probit	IV Probit
Panel B: First-stage results of the 2SLS and IV probit						
Ind. Average Disclosure			0.72***			0.69***
			(7.57)			(7.54)
Controlling for						
Firm-specific variables			Yes			Yes
Issue-specific variables			Yes			Yes
Country-specific variables			Yes			Yes
Country dummies			Included			Included
Year dummies			Included			Included
Industry dummies			Included			Included
Weak instrument						
Kleibergen-Paap F-stat			57.28			54.72
Critical value			16.38			16.38
Relevant instrument						
Kleibergen-Paap rk LM			34.60			34.67
p-value			0.00			0.00
Endogeneity test						
Durbin-Wu-Hausman test			1.48			0.32
p-value			0.22			0.57

The results presented in Columns 1, 2 and 3 are based on a firm-level analysis, using the ratio of public debt to total debt obtained in a given year (*% of public debt*) as a dependent variable (Eq. (2)), while the results in Columns 4, 5 and 6 are based on an issue-level analysis, using the access to the public debt market dummy (*Public debt issue*) as a dependent variable after excluding multiple issues of the same type by a firm during a given year (Eq. (3)). Columns 1, 2, 4 and 5 present the main analyses using OLS and Probit regressions, respectively, while Columns 3 and 6 present the analyses using an instrumental variable approach (using the fitted values of *Pension_Actu._Disc*.). The instrumental variable is *Ind. Average Disclosure*, which represents a country-industry average level of compliance with pension disclosures. Columns 1, 3, 4 and 6 present the analyses for *Pension_Actu._Disc.*, and Columns 2 and 4 for *Pension_Adj._Disc.* as the main independent variable. *Pension_Actu._Disc.* is the actual level of compliance with pension-related disclosures. *Pension_Adj._Disc.* is the level of compliance with pension-related disclosures adjusted to the country disclosure level. It represents a firm's score over and above the country minimum score. Panel A presents the results for the main analyses using OLS/probit regressions as well as the results for the second stage of the 2SLS/IV probit, while Panel B presents the results for the first stage of the 2SLS/IV probit as well as various tests to confirm the strength and relevance of the instrumental variable. *log(Size)* is the natural logarithm of sales/revenues. *Tangibility* is the ratio of PPE to total assets. *MTB* is the market capitalization divided by common shareholders' equity. *Debt market access* is a dummy variable that takes the value of 1 if the firm has had prior access to the public debt market and 0 otherwise. *Rated dummy* is a dummy variable that equals 1 if the firm is rated, and 0 otherwise. *ROA* is the net income divided by total assets. *Leverage* is long-term debt to total assets. *Issue both* is a dummy variable that equals 1 if the firm issued in a particular year at least one bond and one loan, and 0 otherwise. *Readability* is the natural logarithm of the number of pages in the annual report (*Page count*) multiplied by -1. *Pension deficit* is the difference between the present value of pension liabilities and the market value of pension plan assets scaled by total assets. *log(Debt amount)* is the natural logarithm of the amount of Bond/Loan issue in US$. *log(Maturity)* is the natural logarithm of the number of months to final maturity. *GDP growth* is the annual percentage growth rate of GDP at market

prices based on constant local currency. *Country prob. of default* is the probability of default of the firm's country of domicile in the year the debt is issued. Supplementary_Table_III in the Online Appendix reports the detailed definitions and sources of all variables. All continuous variables are winsorised at the 1st and 99th percentiles. In parentheses, we report the t-statistics based on firm clusters and heteroskedasticity-corrected standard errors. ***, ** and * denote significance at the1%, 5% and 10% level, respectively.

Table 6: The impact on the cost of debt (Hypotheses 2 and 3)

	(1)	(2)	(3)	(4)	(5)	(6)
	Cost of public debt			Cost of private debt		
Variables	OLS	OLS	2SLS	OLS	OLS	2SLS
Panel A: OLS results and Second stage results of the 2SLS						
Pension_Actu._Disc.	-151.22***		-261.71**	-42.12		-75.45
	(-2.80)		(-2.08)	(-0.81)		(-0.59)
Pension_Adj._Disc.		-95.74**			-9.16	
		(-2.40)			(-0.23)	
log(Size)	-18.70***	-19.74***	-16.02**	-15.67***	-16.73***	-14.60**
	(-2.90)	(-3.03)	(-2.21)	(-2.99)	(-3.10)	(-2.08)
Tangibility	-85.12*	-88.74**	-81.12*	-29.61	-31.95	-27.31
	(-1.91)	(-1.98)	(-1.87)	(-0.75)	(-0.83)	(-0.71)
MTB	-40.81**	-40.48**	-39.46***	-24.80**	-23.75**	-25.77**
	(-2.52)	(-2.41)	(-2.59)	(-2.33)	(-2.25)	(-2.52)
ROA	-351.16*	-384.49*	-321.25*	-334.97**	-343.59**	-328.78**
	(-1.69)	(-1.81)	(-1.66)	(-2.23)	(-2.30)	(-2.42)
Leverage	97.01*	98.21*	99.38*	-47.58	-50.06	-44.73
	(1.78)	(1.80)	(1.84)	(-0.74)	(-0.79)	(-0.76)
Returns	-56.11**	-54.55*	-54.67**	20.71	22.13	19.91
	(-2.04)	(-1.95)	(-2.03)	(0.64)	(0.68)	(0.65)
Readability	-8.44	-2.45	-12.70	17.53	19.81	15.61
	(-0.29)	(-0.08)	(-0.45)	(0.70)	(0.83)	(0.66)
Cross listed	6.96	11.95	0.47	10.53	11.09	10.48
	(0.37)	(0.64)	(0.02)	(0.63)	(0.67)	(0.67)
Investment grade	-132.17***	-132.89***	-134.32***	-60.70***	-60.29***	-60.85***
	(-4.78)	(-4.79)	(-5.15)	(-3.06)	(-3.06)	(-3.31)
Pension deficit	172.37	173.38	175.47	273.37**	272.44**	271.40**
	(1.44)	(1.43)	(1.54)	(2.07)	(2.15)	(2.16)
log(Debt amount)	-9.67	-8.50	-9.58	-9.45*	-8.94*	-10.02*
	(-1.41)	(-1.22)	(-1.41)	(-1.83)	(-1.71)	(-1.71)
log(Maturity)	-0.85	-1.02	-0.25	37.01**	37.08**	36.85***
	(-0.06)	(-0.07)	(-0.02)	(2.56)	(2.59)	(2.73)
Callable	12.94	9.33	15.63			
	(1.08)	(0.79)	(1.25)			
Private placement	23.38	24.55*	22.88			
	(1.60)	(1.73)	(1.60)			
Term spread	-3.22	-4.92	-2.14	-10.46	-8.86	-12.05
	(-0.14)	(-0.21)	(-0.09)	(-0.59)	(-0.50)	(-0.72)
Economic development	132.42	178.40	120.73	202.94	214.29*	194.28*
	(0.96)	(1.29)	(0.88)	(1.59)	(1.66)	(1.65)
Constant	-235.04	-697.68	-112.47	-1037.03	-1156.75	-941.06
	(-0.18)	(-0.54)	(-0.09)	(-0.88)	(-0.97)	(-0.85)
Loan type dummies				Included	Included	Included
Country dummies	Included	Included	Included	Included	Included	Included
Year dummies	Included	Included	Included	Included	Included	Included
Industry dummies	Included	Included	Included	Included	Included	Included
Observations	558	558	558	220	220	220

Table 6 continued

	(1)	(2)	(3)	(4)	(5)	(6)
	Cost of public debt			Cost of private debt		
Variables	OLS	OLS	2SLS	OLS	OLS	2SLS
Adjusted R^2	0.534	0.531	0.527	0.690	0.688	0.688
F	10.40	10.26	10.26	17.24	21.14	16.69
Panel B: First-stage results of the 2SLS						
Ind. Average Disclosure			0.75***			0.58***
			(5.99)			(3.34)
Controlling for						
Firm-specific variables			Yes			Yes
Issue-specific variables			Yes			Yes
Country-specific variables			Yes			Yes
Country dummies			Included			Included
Year dummies			Included			Included
Industry dummies			Included			Included
Weak instrument test						
Kleibergen-Paap F-stat			35.89			11.13
Critical value			16.38			16.38
Relevant instrument						
Kleibergen-Paap rk LM			23.13			11.22
p-value			0.00			0.00
Endogeneity test						
Durbin-Wu-Hausman test			0.81			0.06
p-value			0.37			0.80

The models are estimated for Eq. (4). All results are based on issue-level analyses. The dependent variable in Columns 1, 2 and 3 is the cost of public debt, while the dependent variable in Columns 4, 5 and 6 is the cost of private debt. Columns 1, 2, 4 and 5 present the main analyses using OLS regressions, while Columns 3 and 6 present the analyses using an instrumental variable approach (using the fitted values of *Pension_Actu._Disc*.). The instrumental variable is *Ind. Average Disclosure*, which represents a country-industry average level of compliance. Columns 1, 3, 4 and 6 present the analyses for *Pension_Actu._Disc.*, and Columns 2 and 4 for *Pension_Adj._Disc.* as the main independent variable. *Pension_Actu._Disc.* is the actual level of compliance with pension-related disclosures. *Pension_Adj._Disc.* is the level of compliance with pension-related disclosures adjusted to the country disclosure level. It represents a firm's score over and above the country minimum score. Panel A presents the results for the main analyses using OLS regressions as well as the results for the second stage of the 2SLS, while Panel B presents the results for the first stage of the 2SLS as well as various tests to confirm the strength and relevance of the instrumental variable. *log(Size)* is the natural logarithm of sales/revenues. *Tangibility* is the ratio of PPE to total assets. *MTB* is the market capitalization divided by common shareholders' equity. *ROA* is the net income divided by the total assets. *Leverage* is long-term debt to total assets. *Returns* is the natural log of (RIt/RIt-12), where RI is the Datastream Monthly Return Index on the first day of the month. *Readability* is the natural logarithm of the number of pages in the annual report (*Page count*) multiplied by -1. *Cross listed* is a dummy variable that equals 1 if the firm is cross listed, and 0 otherwise. *Investment grade* is a dummy variable that equals 1 if the firm's Standard & Poor's or estimated credit rating is investment grade (i.e. BBB- or higher), and 0 otherwise. *Pension deficit* is the difference between the present value of pension liabilities and the market value of pension plan assets scaled by total assets. *log(Debt amount)* is the natural logarithm of the amount of Bond/Loan issue in US$. *log(Maturity)* is the natural logarithm of the number of months to final maturity. *Callable* is a dummy variable that equals 1 if the bond has a callable feature, and 0 otherwise. *Private placement* is dummy variable that equals 1 if the debt is obtained through private placements, and 0 otherwise. *Term spread* is the difference between 10-year and two-year government bond rates calculated at a country-month level. *Economic development* is the natural log of the per capita GDP. Supplementary_Table_III in the Online Appendix reports the detailed definitions and sources of all variables. All continuous variables are winsorised at the 1st and 99th percentiles. In parentheses, we report the t-statistics based on firm clusters and heteroskedasticity-corrected standard errors. ***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

Table 7: Additional test: Pension funding status and the cost of public debt – the role of pension-related disclosures

	(1)	(2)	(3)	(4)	(5)
		Low level of		High level of	
Variables	Full sample	Pension_Actu._Disc.	Pension_Adj._Disc.	Pension_Actu._Disc.	Pension_Adj._Disc.
Pension deficit	**168.13**	**416.24****	**312.27****	**93.37**	**171.33**
	(1.32)	**(2.10)**	**(2.41)**	**(0.53)**	**(0.95)**
Firm, issue and country-specific variables	Included	Included	Included	Included	Included
Country dummies	Included	Included	Included	Included	Included
Year dummies	Included	Included	Included	Included	Included
Industry dummies	Included	Included	Included	Included	Included
Observations	558	286	278	272	280
Adjusted R^2	0.521	0.539	0.549	0.581	0.536
F	9.20	13.53	8.53	17.19	13.37

The table presents the results after splitting the sample into firms with high and low levels of pension-related disclosure (based on the median level of pension-related disclosure). The dependent variable is the cost of public debt. Column 1 presents the results for *Pension deficit* for the full sample (i.e. without splitting the sample into high and low levels of disclosure) and without including the measure of disclosure. Columns 2 and 3 (4 and 5) present the analyses for the sub-sample of firms with a low (high) level of pension-related disclosure based on the *Pension_Actu._Disc.* and *Pension_Adj._Disc.* median values, respectively. *Pension deficit* is the difference between the present value of pension liabilities and the market value of pension plan assets scaled by total assets. We exclude the disclosure variables from all regressions. All other variables are the same as in the main tests. Supplementary_Table_III in the Online Appendix reports the detailed definitions and sources of all variables. All continuous variables are winsorised at the 1st and 99th percentiles. In parentheses, we report the t-statistics based on firm clusters and heteroskedasticity-corrected standard errors. ***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

Table 8: Additional test: Provisions-related disclosures' effect on and the role of pension-related voluntary disclosure

Panel A: Access to public debt markets (Hypothesis 1)

	Adding provisions-related disclosures				Falsification test				Adding voluntary disclosure		Voluntary disclosure only	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	*% of public debt*		*Public debt issue*		*% of public debt*		*Public debt issue*		*% of public debt*	*Public debt issue*	*% of public debt*	*Public debt issue*
Pension_Actu._Disc.	**0.31*****		**1.52*****						**0.30*****	**1.39*****		
	(3.30)		**(2.82)**						**(3.25)**	**(2.71)**		
Provision_Actu._Disc.	**0.12**		**0.05**		**0.10**		**0.00**					
	(1.15)		**(0.11)**		**(0.98)**		**(0.01)**					
Pension_Adj._Disc.		**0.25*****		**1.22*****								
		(3.01)		**(2.81)**								
Provision_Adj._Disc.		**0.02**		**-0.61**		**0.03**		**-0.47**				
		(0.20)		**(-1.62)**		**(0.36)**		**(-1.29)**				
log(1+Vol._Disc._Narratives)									**0.01**	**0.05**	**0.01**	**0.07**
									(0.62)	**(0.70)**	**(0.72)**	**(0.86)**
Firm, issue and country-specific variables	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Country dummies	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Year dummies	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Industry dummies	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Observations	589	589	677	677	589	589	677	677	661	761	661	761
Adjusted R^2/ Pseudo R^2	0.453	0.452	0.526	0.527	0.444	0.443	0.518	0.519	0.432	0.522	0.424	0.516
F/ chi2	19.25	18.63	204.26	165.65	19.75	19.57	197.39	145.87	20.20	227.45	20.61	220.32

Panel B: Cost of debt (Hypotheses 2 & 3)

	Adding provisions-related disclosures				Falsification test				Adding voluntary disclosure		Voluntary disclosure only	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	*Cost of public debt*		*Cost of private debt*		*Cost of public debt*		*Cost of private debt*		*Cost of public debt*	*Cost of private debt*	*Cost of public debt*	*Cost of private debt*
Pension_Actu._Disc.	**-141.70*****		**-32.13**						**-149.24*****	**-41.77**		
	(-2.64)		**(-0.58)**						**(-2.72)**	**(-0.86)**		
Provision_Actu._Disc.	**-82.93**		**-24.34**		**-84.12**		**-25.58**					
	(-1.42)		**(-0.46)**		**(-1.38)**		**(-0.49)**					
Pension_Adj._Disc.		**-100.57****		**-9.43**								
		(-2.46)		**(-0.23)**								

Table 8 continued

	Adding provisions-related disclosures				Falsification test				Adding voluntary disclosure		Voluntary disclosure only	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	*Cost of public debt*		*Cost of private debt*		*Cost of public debt*		*Cost of private debt*		*Cost of public debt*	*Cost of private debt*	*Cost of public debt*	*Cost of private debt*
Provision_Adj._Disc.		**-17.85**		**-0.48**		**-7.96**		**-2.33**				
		(-1.35)		**(-0.01)**		**(-0.57)**		**(-0.06)**				
log(1+Vol._Disc._Narratives)									**-1.79**	**-0.47**	**-6.18**	**-1.45**
									(-0.23)	**(-0.05)**	**(-0.74)**	**(-0.15)**
Firm, issue and country-specific variables	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Loan type dummies			Included	Included			Included	Included		Included		Included
Country dummies	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Year dummies	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Industry dummies	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Observations	527	527	196	196	527	527	196	196	558	220	558	220
Adjusted R^2	0.557	0.554	0.702	0.701	0.546	0.543	0.703	0.702	0.533	0.688	0.521	0.688
F	11.43	11.00	24.54	27.43	9.75	9.62	25.74	25.15	10.29	17.24	9.45	19.33

The table presents the results for the measure of compliance with non-pension mandatory disclosures and for pension-related voluntary disclosure. Columns 1 and 3 present the results after including the level of compliance with non-pension mandatory disclosures, using the actual measures of disclosure as the main variables, while Columns 2 and 4 present the results after including the level of compliance with non-pension mandatory disclosures, using the adjusted measures of disclosure as the main variables. Columns 5 and 7 present the results for the falsification test, when the actual level of compliance with pension-related mandatory disclosures is replaced with the actual level of compliance with non-pension mandatory disclosures, while Columns 6 and 8 present the results for the falsification test, when the adjusted level of compliance with pension-related mandatory disclosures is replaced with the adjusted level of compliance with non-pension mandatory disclosures. Columns 9 and 10 present the results for examining the effect of voluntary pension-related disclosures over mandatory disclosure, while Columns 11 and 12 present the results for examining the effect of voluntary disclosure after excluding the mandatory one. Panel A presents the results for access to the public debt market analyses, while Panel B presents the results for the cost of debt. The analyses presented in Columns 1, 2, 5, 6, 9, and 11 in Panel A are based on a firm-level analysis, using the ratio of public debt to total debt obtained in a given year as a dependent variable (Eq. (2)), while the analyses in Columns 3, 4, 7, 8, 10, and 12 in Panel A are based on an issue-level analysis using the access to the public debt market dummy as a dependent variable after excluding multiple issues with of the same type by a firm during a given year (Eq. (3)). The analyses presented in Columns 1, 2, 5, 6, 9 and 11 in Panel B are estimated using the cost of public debt as a dependent variable, while the analyses presented in Columns 3, 4, 7, 8, 10 and 12 are estimated using the cost of private debt as a dependent variable. *Pension_Actu._Disc.* is the actual level of compliance with pension-related disclosures. *Provision_Actu._Disc.* is the actual level of compliance with provisions-related disclosures. *Pension_Adj._Disc.* is the level of compliance with pension-related disclosures adjusted to the country disclosure level. *Provision_Adj._Disc.* is the level of compliance with provisions-related disclosures adjusted to the country disclosure level. *log(1+Vol._Disc._Narratives)* is the natural logarithm of the number of times the firm uses pension-related terms in the narrative section (front-end) of its annual report. All other variables are the same as in the main tests. Supplementary_Table_III in the Online Appendix reports the detailed definitions and sources of all variables. All continuous variables are winsorised at the 1st and 99th percentiles. In parentheses, we report the t-statistics based on firm clusters and heteroskedasticity-corrected standard errors. ***, ** and * denote significance at the 1%, 5% and 10% level, respectively.