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The benefits of structured data across the information supply chain: Initial evidence on XBRL adoption and loan contracting of private firms



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A B S T R A C T

A growing body of literature documents how different parties benefit from structured data across the information supply chain. The purpose of this study is to examine the effect of voluntary adoption of the eXtensible Business Reporting Language (XBRL) on price and non-price terms of loan contracting. Using a sample of Belgian private firms, the analyses provide evidence that banks charge lower interest rate spreads to voluntary adopters as compared to non-adopters. The results also show that loan sizes are larger in comparison for voluntary adopters of XBRL. Further, the effect of XBRL adoption is stronger for opaque firms. The results are robust to using different estimation approaches as well as additional tests. The findings are in line with the view that XBRL data filings reduce information processing costs, and contribute to our understanding of the impact of structured data on loan contracting – an implication that may be of interest to regulators and other parties interested in the benefits of structured data across the information supply chain.

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1. Introduction

The eXtensible Business Reporting Language (XBRL) is a standard to convert financial information to structured data so that it can be exchanged and processed electronically. Across the information supply chain, structured data in a machine-readable format is likely to result in nontrivial time and cost savings for different parties such as investors, analysts and banks because the automated use of data reduces manual processing of information (Baldwin et al., 2006; Bovee et al., 2002; Debreceny and Farewell, 2010; Debreceny et al., 2005; Kim et al., 2012; Wagenhofer, 2003).

We examine the effect of voluntary adoption of XBRL on price and non-price terms of loan contracts in a private firm setting. In particular, we investigate whether and how voluntary XBRL adoption affects interest rate spreads and loan size rationing.¹ Regulators and banks argue that XBRL data filings reduce the costs of information processing. Lower information processing costs facilitate efficient analyses and comparisons across firms and improve the ability of quick intervention and monitoring in business lending.² To the extent XBRL filings are likely to significantly reduce banks' information processing costs,³ we should observe that time and cost savings are reflected in more favorable loan contracting conditions for adopters compared to non-adopters. Consequently, lenders are likely to impose lower interest rate spreads and/or approve greater credit availability to firms which adopt XBRL. Our predictions are in line with prior literature that argues that advances in information technology decrease extensive underwriting due to time and cost-efficient information processing and alter small-business lending in two main areas: lower loan pricing and greater credit availability (e.g., Feldman, 1997; Frame et al., 2001).

There is also anecdotal evidence for our conjecture that XBRL data submitted to banks substantially enhances automated information processing and affects price and non-price terms in loan contracting. For instance, Arnold Esser (Program Director at ING Bank) states: "If companies provide their annual reports to ING using XBRL, ING guarantees that for each credit application up to €500,000, the company will receive an answer from the bank within four working days" (Esser, 2012, p. 14). Further, ING Bank, a major player in the European banking industry, recently announced loan discounts and loan size increases for XBRL filers.⁴

On the other hand, prior literature in the private firm setting emphasizes the personal contact between borrowers and lenders (relationship-lending). As personal contact may reveal proprietary information to lenders, soft information may be more valuable in assessing information about the creditworthiness of private firms than hard information (Berger and Udell, 1995; Petersen and Rajan, 2002, 1994). In addition, financial statements are generally considered to be retrospective and to present aggregated information (Bernard et al., 2014). Following this vein, we should not find evidence that banks charge lower interest rate spreads and approve higher credits to XBRL adopters.

Given these competing arguments, studying the economic consequences of XBRL adoption on loan contracting conditions is important, since banks are the main external users of the financial statements of private firms. Further, banks are generally considered to be sophisticated information processors (Baldwin et al., 2006) and bank loans are the major source of external financing for private firms (Dedman and Lennox, 2009; Dedman et al., 2014; Kaya and Koch, 2015). To date, the empirical evidence has been entirely limited to public firms and the economic consequences of XBRL adoption on equity markets (e.g., Blankespoor et al., 2014; Liu et al., 2014; Premuroso and Bhattacharya, 2008; Wang et al., 2014).⁵

¹ Our focus in this study is on private firms whose external finance is almost entirely limited to private debt markets. We do not examine economic consequences of XBRL adoption on private equity markets.

² We follow Blankespoor (2014, p. 1) and use the term "information processing costs" to refer to both information acquisition and information integration costs.

³ Baldwin et al. (2006, p. 106) state: "Using XBRL reports from commercial clients can reduce the time to enter data into credit and lending analysis systems from several days to minutes."

⁴ See https://www.ing.nl/nieuws/nieuws_en_persberichten/2014/10/Digitaal_aanleveren_jaarcijfers_mkb_ook_bij_ing_de_norm.html; for a brief discussion of the ING discount program in English, see <http://certent.com/2015/02/a-new-advantage-for-xbrl-filers/>.

⁵ In our setting, capital market forces are minimal and filing in XBRL provides private firms no (future) equity market benefits.

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