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Foundation ownership and creditor governance: Evidence from publicly listed companies

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ABSTRACT

Foundation ownership represents an alternative corporate governance model to many conventional ownership structures. We examine the effect of foundation ownership on creditor governance. By utilizing an international sample of 411 publicly listed companies between 2003 and 2021, we document that foundation ownership leads to lower credit risk. This negative effect is robust across several different credit measures. Foundation-controlled companies also fare better than family-controlled and institutional investor-controlled companies. Specifically, foundation-controlled companies have better access to bank loans, with more favorable loan contracting conditions. Our results are supported by a series of robustness tests. The results also have policy implications as the European Commission recommends companies move away from a short-term focus.

> "Foundations with a strong governance and a clear mission can provide good guidance to businesses and contribute to a diverse capitalist ecosystem."
> Jordi Gual, Chairman of CaixaBank. Financial Times. Feb 2, 2020
> "The foundation-owned company is being considered as a corporate governance model."[1]
> Jared Lynch. The Australian. August 13, 2022

1. Introduction

Do creditors view the organizational structure of foundation-owned companies (FOCs) more favorably than conventionally owned and controlled companies? In this paper, we utilize an international sample of publicly owned companies and document that foundation ownership can have a non-trivial influence on credit ratings and credit risk. FOCs also have better credit ratings and lower credit risk than family-owned and institutional investor-owned companies. We find that relative to family-owned firms and retail institutional investor-owned firms, foundation ownership also tends to result in more favorable bank loan contracting conditions, such as

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[1] *Building a New Foundation and the Advisory Age*, Jared Lynch. The Australian. August 13, 2022.

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fewer covenants, less collateral, and better interest rates.

Foundations[2] are independent self-governing entities that own and control companies (Kronke, 1988; Thomsen, 1996, 1999, 2017; Thomsen et al., 2018; Thomsen and Kavadis, 2022). Although they are regarded as large blockholders, foundations do not necessarily own 100% of company shares. Foundations are characterized by having purposeful businesses, sustainable governance, relatively higher managerial distance,[3] and a long-term strategy (Mayer, 2021; Hansmann and Thomsen, 2021, 2013; Thomsen et al., 2018; Thomsen, 2017). Apart from running companies, foundations can be philanthropic in nature (Mayer, 2023, 2021).

The largest FOCs tend to be publicly listed firms. At the time of writing, Novo Nordisk, a foundation-owned healthcare company, is the most valuable European company.[4][5] Foundations are to be found mainly in Western Europe, although we find an increasing presence of FOCs in emerging markets. Bosch, Zeiss, Heineken, Rolex, Tata, and Ikea represent well-known global companies that are foundation owned. For example, Carlsberg Fondet, a commercial foundation, is the ultimate global owner of Carlsberg A/S. A Danish company founded in 1847, Carlsberg is the fourth largest brewery in the world, with over 200 subsidiaries. At the end of 2022, Carlsberg Fondet held 29% of Carlsberg A/S capital, but held 76% of the votes, making it the controlling owner. Another example is Mahle Metal Leve S.A, a Brazilian FOC. Mahle Metal Leve S.A. is one of the world's leading automotive supplier industrial groups. It is ultimately owned by Mahle-Stiftung Gesellschaft Mit BeschRankter Haftung (GmbH), with 99.91% ownership. Mahle GmbH is not publicly listed. Figure 1 illustrates these examples of foundation ownership.

When it comes to issues of strategy, performance, competence, and governance, owner identity matters (Foss et al., 2021). The traditional corporate governance view tends to focus on shareholders. However, firms endogenously substitute governance mechanisms, including creditor governance, as an external one (Bharath and Hertzel, 2019). Several studies link corporate governance, particularly ownership structure, to manager-shareholder agency problems (Jensen, 1986; Shleifer and Vishny, 1986; Morck et al., 1989; Walsh and Seward, 1990; Black, 1998; Fluck, 1999; Bebchuk, 2004). However, policies or mechanisms that benefit shareholders may not necessarily benefit creditors. Compared to the shareholder-manager conflict, there is a relative dearth of literature on the shareholder-creditor agency conflict and ownership structure. Shareholders may expropriate wealth from creditors and other debt holders by undertaking risky new projects that will allow shareholders to reap most of the gains. In contrast, creditors bear most of the costs (Jensen and Meckling, 1976). Diversified shareholders want firms within their investment portfolios to pursue risky, positive-NPV projects. On the other hand, creditors place pressure on firms to adopt less risky investment strategies (Myers, 1977).

Creditor governance is defined as "*the overall relationship between creditor and debtor, indicating creditors' exercise of contractual rights and legal rights with respect to firms and other borrowers*" (Hu and Black, 2008). Creditors provide funding, enforce contractual restrictions, and interact with management. If creditor governance deteriorates, then agency costs will increase along with debt and managerial opportunism.

Debt constitutes the main source of external financing (Cumming et al., 2020; Esty and Megginson, 2003). Although there is substantial theoretical discussion of governance by large creditors, there is a relative dearth of empirical evidence (Shleifer and Vishny, 1997; Baird and Rasmussen, 2006). The traditional view of creditor governance is that creditors are largely passive until a borrower payment defaults (Townsend, 1979; Gale and Hellwig, 1985; Gilson, 1989; Gilson and Vetsuypens, 1993). DeAngelo, DeAngelo, and Wruck (2002) find that covenants provide an important disciplining mechanism. Nini et al. (2012) find that creditors play an active role in corporate governance outside of a default scenario (e.g., a covenant violation). Jandik and McCumber (2018) find that creditor governance is a complement to that provided by large institutional shareholders.

For countries that do not have well-developed bond markets, bank loans often serve as a form of debt. Bank creditors have a more ubiquitous role in creditor governance than bondholders, who are usually dispersed (Diamond, 1984). Bank lending can improve corporate governance because if a loan syndicate has many creditors, banks can deter voluntary strategic defaults (Esty and Megginson, 2003). Banks monitor loan performance, and timely, effective intervention can be beneficial to creditors (Fields et al., 2012).

We focus on foundation ownership[6] as an alternative governance model to conventional structures (e.g., family, state, or institutional investor ownership). Not only does foundation ownership represent a unique governance structure (it has also been termed an "odd ownership[7]"), but it also presents an interesting paradox. Although FOCs do not have residual claimants or active owners (like institutions), FOCs are shown to perform at least as well as these other governance structures (Hansmann and Thomsen, 2014). These foundation ownership and control characteristics are factors that might mitigate debtholders' concerns from the agency theory perspective. These attributes could potentially ease the borrowing conditions and reduce the cost of debt for foundation-controlled companies.

[2] Foundations are also referred to as "enterprise foundations", "industrial foundations", or "corporate foundations". In this paper, we will simply use the term "foundations".

[3] Managerial distance is defined as the detachment of a foundation's board of directors from direct involvement in the affairs of the operating firm (foundation-controlled company). Managerial distance is the highest when the foundation and the foundation-controlled operating company have their own distinct board of directors. (Hansmann and Thomsen, 2021).

[4] "*Novo Nordisk briefly eclipses LVMH as Europe's most valuable company*", Euan Healy and Hannah Kutcher, Financial Times, Sept 1, 2023.

[5] Novo Nordisk Foundation is an independent foundation established in the 1920s with corporate interests supporting scientific, humanitarian, and social sciences. Under the Foundation's Articles of Association, the Foundation is obligated to maintain a controlling interest in Novo Nordisk A/S and Novozymes A/S, the Novo Group's two large publicly listed companies.

[6] A foundation will be termed an "enterprise foundation" whenever it owns a business no matter whether its purpose is wholly charitable or not (Thomsen and Kavadis, 2022).

[7] "*Odd Sort of Ownership*", The Economist October 25, 2001.

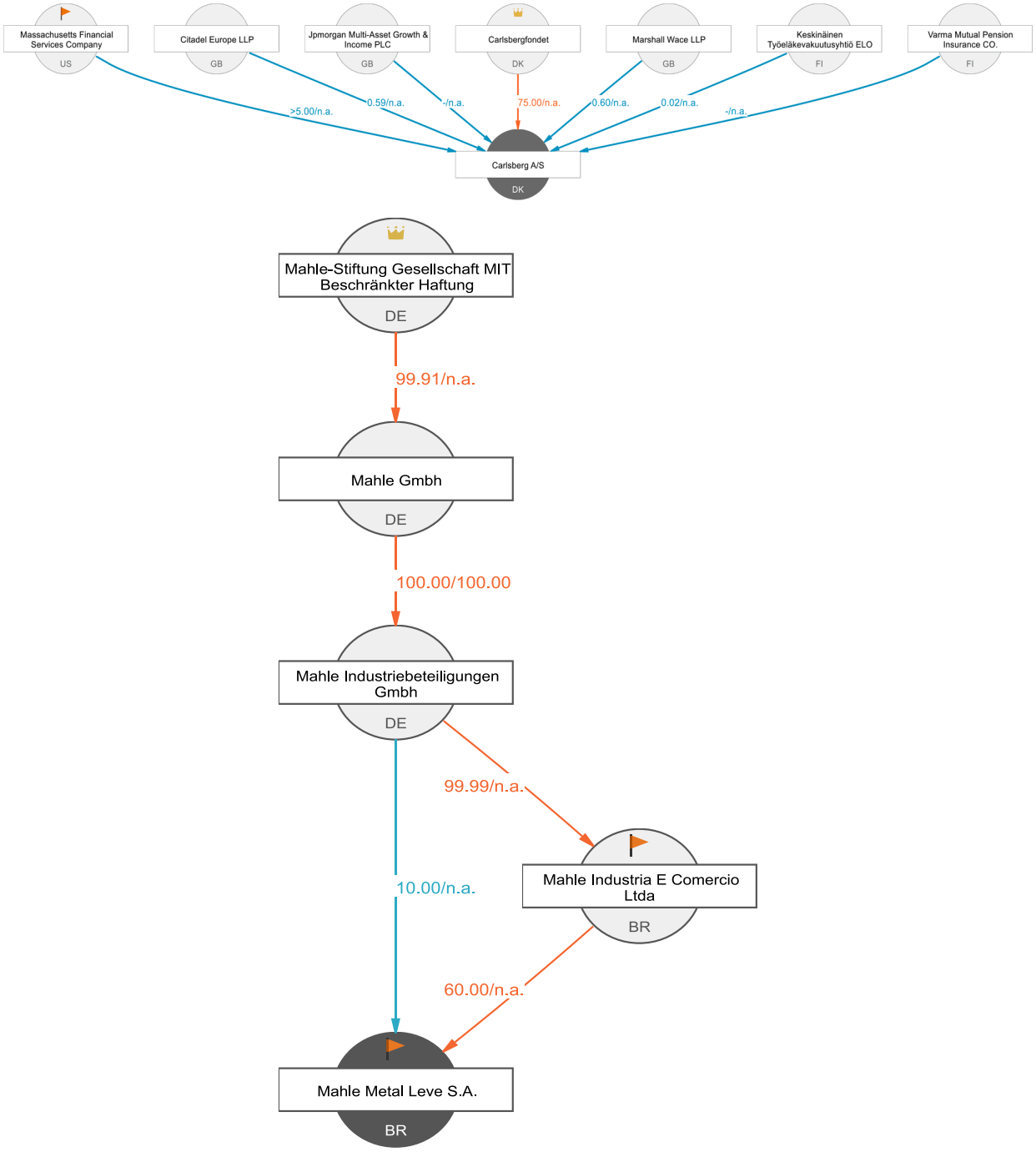

Fig. 1. Foundation Ownership Structure Examples (Source: BvD Orbis) Panel (a) – Carlsberg, Denmark. Panel (b) – Mahle Metal Leve S.A., Brazil.

FOCs also represent a solid challenge to standard agency theory. Foundations differentiate themselves from other types of shareholders with a fundamental characteristic: foundations do not have a profit maximization motive, unlike other forms of shareholder ownership (Thomsen, 2017; Thomsen and Kavadis, 2022). They are entities with no members, owners, or private stakeholders, so profit maximization is not the sole purpose (Thomsen and Kavadis, 2022). According to agency theory, this may be a crucial factor in reducing agency conflict between shareholders and creditors (Jensen and Meckling, 1976; Jensen, 1986; Grossman and Hart, 1988; and Shleifer and Vishny, 1997).

This paper examines the effects of different owner-control types in publicly listed companies on credit risk. Due to their distinct characteristics and corporate governance model, we focus specifically on ownership and control of foundations in public companies

compared to those of families and institutional investors in public companies. We hypothesize that foundation controlling ownership in public companies increases the creditworthiness of these companies by reducing the agency costs between shareholders and creditors.

Using a sample of 411 publicly listed companies between 2003 and 2021, we find evidence that the identity of the controlling owner has a statistically and economically significant impact on credit risk. Specifically, our analysis indicates that long-term-oriented foundation ownership leads to lower credit risk. Using four different credit risk measures (credit ratings, credit model score, the probability of default, and Altman Z-score), we find a negative association between foundation block ownership and firms' credit risk. That is, FOCs receive higher credit ratings/scores, have a lower probability of default, and have higher Z-scores. FOCs also have better credit risk measures than family-controlled and retail investor-controlled companies.

Next, we test the impact of foundation ownership on all credit measures with time- and industry-specific factors taken into consideration. We utilize syndicated bank loans to investigate the effect of foundation controlling ownership on credit risk for publicly listed companies. We empirically document that reduced credit risk due to the foundation's controlling ownership reflects positively on those companies' access to bank finance in the form of more favorable borrowing conditions. Specifically, FOCs borrow syndicated loans for longer terms, less collateral, and fewer covenants.

Our paper contributes to the relatively scarce literature on the link between foundation ownership's governance and credit risk. Our contributions to the literature are two-fold. First, we focus on the role that a controlling shareholder and its corresponding corporate governance model play in protecting the debtholder's interests by concentrating on a specific ownership type - foundation ownership. We are the first to document these relationships for FOCs. Second, we provide evidence that controlling ownership type matters in bank loan relationships. Compared to institutional investor-controlled and family-controlled firms, FOCs have more favorable conditions in their loan contracts. Our findings provide evidence that banks value the identity of controlling owners in publicly listed companies. The results are supported by a series of robustness tests, including country-specific legal frameworks and financial development indices.

Our findings complement several papers in the literature. First, we show that ownership identity matters, providing empirical support for Thomsen and Pedersen (2000) and Foss et al. (2021). Outside the U.S., ownership is highly concentrated (Denis and McConnell, 2003). Like Thomsen and Pedersen (2000), we investigate foundation ownership concentration. They use a sample of 435 large European companies to analyze ownership concentration and performance. Unlike Thomsen and Pedersen (2000), we use a sample drawn from developed and developing nations and focus on credit ratings and risk.

For other forms of blockholder ownership, Anderson et al. (2003) find that family ownership in large public companies lowers the cost of debt. Bhojraj and Sengupta (2003) find that firms with concentrated institutional ownership have an adverse effect on bond ratings and bond yields. Unlike Bhojraj and Sengupta (2003), we look at FOCs using an international sample and find a negative relation. Anderson et al. (2003) and Bhojraj and Sengupta (2003) all base their evidence on U.S. firms. Such evidence cannot necessarily be generalized to other countries. Boubakri and Ghouma (2010) use multinational data to examine the link between governance and bond ratings and yields. They find that family-owned firms have a negative effect on credit ratings, and state-owned enterprises have no effect. Unlike Boubakri and Ghouma (2010), we use FOCs and find that foundation ownership brings credibility to the firm by decreasing credit risk and increasing credit ratings.

The rest of the paper is organized as follows. In Section 2, we review the literature and establish our hypotheses. We also detail the theoretical foundation for the variables used in this paper. In Section 3, we describe our data and sample descriptive statistics, such as credit risk, bank loan measures, and firm characteristics. In Section 4, we empirically test how foundations, as the controlling owners, influence company creditworthiness and bank loan contracting conditions. Finally, we provide a discussion of our findings and directions for future research in Section 5.

2. Key variables and research focus

2.1. Main independent variable - foundation ownership

Previous studies indicate that creditors do not rely only on a company's past profitability, bond issue characteristics, or loan contractual terms to infer the expected cash flows and default probability. Lenders also evaluate the company's corporate governance structure (Sengupta, 1998; Anderson et al., 2003; Bhojraj and Sengupta, 2003; Cremers et al., 2007; Chuluun et al., 2014; Sandvik, 2020). Creditors facing the company management's opportunistic behavior will demand higher yields (Nini et al., 2012). They will require a higher premium (i.e., higher interest rate) from companies where they anticipate potential shareholder wealth expropriation, such as through overinvestment or selling the company for a high capital gain with a short-term mindset. Sandvik (2020) finds that companies with less effective board monitoring receive lower credit ratings and larger credit spreads.

The literature suggests that the identity of the companies' ultimate owners is crucial to both debtholders and rating agencies. Owner types differ in the perceptions of creditors and rating agencies regarding potential expropriation risk. Large shareholdings (block-holding) may represent a governance mechanism that is able to deliver effective monitoring for other stakeholders in the company, such as creditors (Shleifer and Vishny, 1986; Grossman and Hart, 1988).[8]

[8] In a study of ownership structures in large publicly listed corporations in 27 wealthy economies, La Porta et al. (1999) find that relatively very few large corporations are widely held, and the existence of controlling shareholders is common through pyramidal structures and participation in the management.

Moreover, foundation ownership offers a corporate governance mechanism providing an ownership commitment associated with long-termism (Thomsen et al., 2018). Enterprise foundations are very long-term owners whose companies are not for sale (Thomsen, 1999; 2017; Thomsen and Kavadis, 2022). At this point, creditors share the same concerns with foundations about the company's continuity and may appreciate long-termism in the company's management. On one hand, foundation ownership can be regarded as perpetual ownership, which abates the possibility of market control by deleting the option of the company's sales. On the other hand, foundation ownership ensures that creditors will meet the same controlling owners and possibly the same company management throughout the credit relationship while decreasing the potential wealth expropriation by shareholders. Borsting et al. (2014) find that Danish foundation-owned companies are characterized by lower volatility in their earnings. Thomsen and Kavadis (2022) show that foundation ownership is more stable and makes fewer firm transitions, such as mergers and acquisitions. Furthermore, foundation ownership is characterized by low management turnover, long-term-oriented financial decisions, and conservative capital structure in general (Thomsen, 1996; Thomsen et al., 2018; Thomsen and Kavadis, 2022).

Although enterprise foundation owners are not institutional investors, they are blockholders like institutional investors due to their concentrated ownership. Thus, evaluating foundation ownership correspondingly through the same framework may be beneficial. Enterprise foundation owners value the transparency of the information environment, and foundation-owned corporations tend to share more information with the public in line with their foundation's principles. Decreased information asymmetry leads to a reduced cost of debt.

Foundations are long-term owners, and it is less likely that foundations will sell their shares in the company during a financial crisis and might not observe a downward pressure on stock prices. Compared to profit-oriented institutional investors' short-term horizons, enterprise foundation owners' longer-term horizons in their firms can play a crucial monitoring role in decreasing managerial opportunistic behavior and agency conflicts between management and stakeholders.

On the other hand, enterprise foundation owners are long-term blockholders who are not subject to free-rider issues like small shareholders (Grossman and Hart, 1980; Shleifer and Vishny, 1986). Long-term ownership of enterprise foundations may cause possible agency costs of debt due to risk shifting or asset substitution (Jensen and Meckling, 1976), debt overhang (Myers, 1977), adverse payout policies, and restructuring risk (Bhojraj and Sengupta, 2003; Cremers et al., 2007). Therefore, one may expect a positive relationship between foundation ownership and credit risk under the wealth transfer hypothesis.

If we evaluate the impact of the controlling ownership on the firm's bank relations from the lender's perspective, the bank attributes positive credibility to the control of enterprise foundations in public firms due to the previous reasons. Banks are institutional lenders with substantial access to their obligors' financial and governance information compared to other investors. Especially in a long-term lending relationship, they might unavoidably value the identity of the controlling owners in publicly listed firms.

2.2. Control variables

To isolate the impact of foundation ownership on credit risk, we include several firm-level control variables based on previous literature (Merton, 1974; Bhojraj and Sengupta, 2003; Campbell and Taksler, 2003; Demirovic and Thomas, 2007; Alexander and Kaeck, 2008; Ericsson et al., 2009; Demirovic et al., 2015; Pires et al., 2015; and Crosbie and Bohn, 2019). As a structural credit risk model, the Merton model (1974) is the theoretical starting point to determine the control variables. Using a dataset from the U.K. and employing credit ratings as a proxy for credit risk, Demirovic and Thomas (2007) find that Merton's distance-to-default measure is the most significant variable in measuring credit risk. We categorize the control variables into two groups according to their data source. The first group is accounting-based control variables that are calculated based on financial statement data. The second group consists of market-based control variables that are calculated based on the stock market data. Demirovic et al. (2015) find that market-based determinants of credit risk, such as equity volatility and Merton's distance-to-default, outperform accounting variables in explaining variations in credit risk measured by credit spread on corporate bonds. However, the authors add that accounting variables are incrementally informative in explaining variations in credit risk in their study. We use both types of control variables to differentiate the effect of foundation ownership on credit risk from other credit risk determinants.

Firm-level accounting-based control variables include firm size, defined as the natural logarithmic value of the book value of total assets. Conducting an analysis of accounting variables based on a conditional logit model, Ohlson (1980) finds variables that significantly influence credit risk, such as firm size, leverage, profitability, and liquidity. The Merton Model (1974) also proposes that the higher the total asset value of a firm, the further away the firm is from the default point, implying a lower credit risk. The second accounting-based control variable is leverage, which is regarded as the central determinant of credit risk in all credit risk models (Ericsson et al., 2009). We define leverage as the ratio of the total book value of debt to the book value of equity. Finally, we also control for profitability, which is the ratio of earnings before interest, depreciation, tax, and amortization (EBITDA) to total sales. Following Altman (1968), Merton (1974), Ohlson (1980), and Demirovic et al. (2015), we posit the higher the profitability of a firm, the lower the credit risk.

Regarding market-based control variables, we include three variables that impact credit risk: non-floating shares, stock return, and equity volatility. Non-floating shares capture the effect of concentrated ownership on credit risk. We calculate the non-floating shares variables as one minus the percentage of floating shares to the total number of outstanding shares based on stock market data. A higher ratio for non-floating shares represents a higher concentration of main blockholder shares or at least main blockholder control. Theoretically, a higher concentration in ownership may bring a higher potential expropriation of creditors' rights. This implies higher credit risk due to potential tunneling and other moral hazard activities (Shleifer and Vishny, 1997). Based on international data, Lin et al. (2011) find that the presence of large shareholders with their excess control rights increases the monitoring costs and credit risk banks face. Villalonga and Amit (2006) state that if the larger shareholder is an individual or a family, there might be stronger

incentives for wealth expropriation from other investors, including debtholders. On the other hand, if the shareholder is an institution such as a bank, an investment fund, or a widely held corporation, the private benefits of control are diluted among many independent owners. We believe that foundation ownership in publicly listed companies might fit the second group, and their control of the firm creates a positive externality for other stakeholders, including creditors, due to their long-termism and tendency toward stable growth (Thomsen, 1996).

Another market-based control variable we include in our analyses is stock return, calculated based on the daily stock prices. The Merton Model (1974) consists of the stock return as a drift term in his structural model and states that a higher stock return increases a company's equity value, keeping a company far from the default threshold and, thereby, lowering the company's credit risk. Many studies assume that stock return is a reasonable proxy for future asset growth rate (Alexander and Kaeck, 2008; Ericsson et al., 2009; Pires et al., 2015).

The last market-based control variable that we analyze is equity volatility. It is a proxy for the volatility of the firm's asset value (Merton, 1974). One cannot observe the volatility of a firm's total assets since the value of a firm's debt cannot be known exactly and fully by the market. Higher firm-specific equity volatility suggests a higher probability that the firm's value will cross the threshold of default, hence increasing credit risk. Campbell and Taksler (2003) capture a robust positive relationship between equity volatility and corporate bond yields, more than what Merton's standard structural model (1974) proposes. Based on the literature, we measure firm-specific equity volatility with stock return volatility (Alexander and Kaeck, 2008; Ericsson et al., 2009; and Pires et al., 2015).

In our robustness analyses, we leverage country-level variables to explore how foundation ownership's impact on credit risk and firm-bank relationships varies across diverse legal and institutional contexts. To capture the nuances of each country's legal framework, we utilize the strength of the legal rights index obtained from the World Bank.[9] Additionally, we employ the financial development (FD) index from the International Monetary Fund[10] to assess the depth, access, and efficiency of each country's financial markets and institutions. This is particularly critical in evaluating foundation ownership's influence on a firm's access to bank finance.

2.3. Theoretical framework and research focus summary

In summary, foundation ownership possesses characteristics that may mitigate the agency conflict between shareholders and creditors. The theoretical framework can be summarized by four features: agency theory (or shared benefits hypothesis), stakeholder theory (price pressure hypothesis), information theory (improved information environment hypothesis), and resource dependency (wealth transfer hypothesis).[11]

Under the shared benefits hypothesis, foundation owners have long horizons, and their monitoring role decreases managerial opportunistic behavior, reducing agency conflicts between management and stakeholders, including creditors (Elyasiani et al., 2010). This should lead to a lower credit risk. Similarly, under the price pressure hypothesis, foundations are long-term owners who are unlikely to sell their shares during a financial crisis. Since there is not likely to be a downward pressure on stock prices, this should lead to lower credit risk. With their predilection for transparency, foundations possessing concentrated ownership in these listed companies can enhance monitoring efficacy and diminish incentives for financial misreporting. This reduction in information asymmetry is anticipated to lower credit risk and decrease the cost of debt, as perceived by creditors, contributing to an overall improved information environment.

Alternatively, under the wealth transfer hypothesis, long-term foundation controlling ownership could trigger some costs of debt or higher credit risk due to risk-shifting, asset substitution, debt overhang, restructuring risk, and potential expropriation of minority shareholders' interests (Bhojraj and Sengupta, 2003; Cremers et al., 2007; Klein and Zur, 2011; Aslan & Kumar, 2012; Switzer & Wang, 2017)).

Our central question is the effect of foundation ownership control on credit governance. Since foundation owners have similar incentive structures, they provide a clean and robust test of whether foundation ownership influences credit risk. To this end, we address two specific questions. First, does foundation controlling ownership in public companies increase creditworthiness and reduce credit risk? Second, do publicly listed foundation-controlled companies have better access to bank loans than other forms of blockholder ownership, such as family ownership and institutional investor ownership? After controlling for year and industry effects, we posit that foundation ownership structure incentive structures reduce agency conflicts between equity and debtholders, causing credit risk to decline. To the best of our knowledge, we are the first to investigate these questions in a foundation ownership context using international firm-level data on syndicated bank loans.

3. Data overview

3.1. Sample and data sources

The data used in this study can be divided into four categories: credit risk data measures, bank loan features, firm characteristics, and country-level financial development and legal rights indices. We use two sources to collect the information required for the credit

[9] https://databank.worldbank.org/metadataglossary/world-development-indicators/series/IC.LGL.CRED.XQ.

[10] https://data.imf.org/?sk=F8032E80-B36C-43B1-AC26-493C5B1CD33B&sId=1480712464593.

[11] Further literature can be found in Switzer and Wang (2017), McNulty et al. (2001), Petersen and Rajan (1994), Elyasiani et al. (2010) and Wang and Zhang (2009).

risk measure. First, we hand-collect the Standard & Poor's (S&P) long-term issuer credit ratings from 2003 to 2021, from ThomsonOne. To ensure a comprehensive coverage, we thoroughly search whether our sample firms were ever rated by S&P during this period. For those that were, we systematically record their alphabetical ratings for each respective ratings year. Second, we collect CreditModel 3.0 corporate scores from 2017 to 2021[12] (hereafter called CreditModel scores) from CapitalIQ. In addition, we also use default probabilities from the CapitalIQ dataset as a third credit risk measure calculated based on Probability of Default Model Fundamentals PDFN) 2.0.[13] S&P credit ratings are drawn from S&P Global Ratings, whereas CreditModel scores and probabilities of default are from S&P Global Market Intelligence.[14] In line with the methodology proposed by Almeida et al. (2017), we convert both the alphabetical S&P credit ratings and CreditModel scores into a numerical scale. This scale ranges from 22, representing the highest rating (AAA), down to 1, which corresponds to the lowest rating (default, D).[15]

Bank loan information comes from the Loan Pricing Corporation's (LPC) DealScan database (DealScan thereafter). It provides information primarily on syndicated bank loans made by commercial banks.[16] We collect individual loan contract information from the DealScan database for the period January 2003 through December 2016. For brevity, we refer to these syndicated bank loans as bank loans. We next obtain financial and other firm characteristics data from the Bloomberg and CapitalIQ databases for the period from 2003 to 2020. Based on financial and market data from these two sources, we calculate the Altman Z-score (Altman, 1968) as an additional measure of credit risk.[17] We draw the country-level legal rights index from the World Bank's Doing Business Project reports covering the years 2013 to 2019. Additionally, we acquire the financial development (FD) index from the International Monetary Fund (IMF), which is accessible for our period from 2003 to 2021.

Since we focus on foundation ownership, we structure the sample from publicly quoted international firms based on the number of foundation-owned companies. In a foundation-owned corporation, the principal controlling shareholder (and main blockholder) is the enterprise foundation. We utilize the list of foundation-owned companies (abbreviated to FOCs) from Schroder and Thomsen (2021).[18] La Porta et al. (1999) and Laeven and Levine (2008) define a shareholder as "large" if its direct and indirect voting rights sum to 10% or more. A publicly listed corporation is classified as a FOC if the largest shareholder (the main blockholder) is a foundation that owns at least 10% of the voting rights.[19] We apply a uniform threshold of 10% for classifying firms as either family- or investor-controlled publicly listed companies. This threshold is set higher than the SEC's 5% benchmark to provide a more rigorous criterion in categorizing companies, whether controlled by foundations, families, or investors. Information about ownership and voting rights is obtained from the registries and company regulatory filings provided in the 2020 annual reports. Ownership information is also verified with the BvD Orbis and CapitalIQ.[20] We focus on 137 FOCs as the treatment group of firms. Next, we structure a control group comprising publicly listed corporations in which the main blockholders are either families or retail investors. Retail investors include institutional investors, such as mutual funds, exchange-traded funds (ETFs), hedge funds, pension funds, and insurance companies.

When choosing these family- or investor-controlled publicly listed corporations, we adopt a one-to-one matching methodology based on two criteria. The criteria are firm size proxied by the book value of total assets and industry classification according to two-digit Standard Industrial Classification (SIC) codes. In matching, our focus on size and industry classification as primary criteria is a

[12] CreditModel scores are provided by a statistical model that belongs to S&P Global Market Intelligence. The model assesses the credit risk of numerous counterparties globally while considering the inherent differences between companies operating in developed, emerging, and frontier markets. This produces credit scores well beyond what is normally covered by major credit rating agencies.

[13] Probability of Default Model Fundamentals (PDFN) 2.0 – Public Corporates is developed by S&P Global Market Intelligence. It is a statistical model that produces probability of default (PD) values over both short and long-time horizons globally. PDFN model provides PD values using an enhanced structural Merton Model.

[14] S&P Global Ratings and S&P Global Market Intelligence work independently of each other. The former one does not contribute to or participate in the creation of credit scores generated by the latter. Lowercase nomenclature is used to differentiate S&P Global Market Intelligence PD mapped scores from the credit ratings issued by S&P Global Ratings, as seen in Appendix B.

[15] In converting credit ratings into a numerical scale, we draw not only upon Almeida et al. (2017) but also the earlier studies of Hand et al. (1992) and Becker & Milbourn (2011). These studies also assign distinct numerical values to each rating grade, with values increasing alongside the rating's quality, and utilize a 22-point scale for credit ratings. Different to Almeida et al. (2017), they allocate the midpoint of the three numerical values to ratings that are not further divided into sub-grades, such as the categories D, C, or AAA. Consequently, their scales start at 1 and, due to certain intervals or jumps, extend up to 28, rather than culminating at 22.

[16] DealScan collects mostly syndicated and some sole-lender loans from SEC filings, large loan syndicators, and a staff of reporters (Drucker & Puri, 2009). The majority of companies in the database are medium to large public firms. For each loan, LPC supplies the identities of the borrower and lenders, the borrower's industry through the Standard Industrial Classification (SIC) Code, and detailed loan contract terms, such as the loan origination date, maturity, size, type, purpose, loan covenant information, and some pricing terms.

[17] Altman (1968) develops his pioneering model called the Z-score model employing a multiple discriminant analysis of accounting ratios to measure financial distress and predict default. Altman includes five accounting variables out of his initial list of 22 variables in his final discriminant function: working capital, retained earnings, earnings before interest and taxes (EBIT), and market value of shareholders' equity and sales. The Altman Z-score model is one of the most common default prediction models.

[18] We thank Schroder and Thomsen for provision of the list.

[19] In the United States, the Securities and Exchange Commission (SEC) requires the disclosure of "control entities" that hold 5% or more of company equity. This blockholder ownership definition necessarily overlaps with other categories, as institutions, founders, families, and other entities may control more than 5% of equity. Boyd and Solarino (2016) state that many studies have focused on large block owners, using the SEC's 5% threshold.

[20] Sample firms' ownership structures are cross-checked through the CapitalIQ platform as of 2022, and most of the time, foundations own on average 40%-60% of companies.

decision driven by the availability of data and the need to maintain a feasible and robust matching process.[21] We have a final control group of 274 firms divided equally into the sub-groups of family-controlled and investor-controlled companies. We abbreviate the control group to non-FOCs. Variable definitions may be found in Appendix A.

3.2. Descriptive statistics

3.2.1. Summary statistics of full sample

In this section, we provide summary statistics for the entire sample (FOCs and non-FOCs). The oldest FOC in the sample is Husqvarna AB, which was founded in 1689. Husqvarna is a Swedish firm, and its biggest owner is Investor AB (17.01%), which is owned by the Knut and Alice Wallenberg Foundation.[22] The second largest owner is Robert Bosch GmbH (12.14%) which is owned by Robert Bosch Stiftung GmbH.[23] The youngest FOC is Bonava AB, which was established in 2013. Bonava's main owner is Nordstjernan AB, with 24.78% ownership. Nordstejrnan AB (founded in 1890) is a private equity and venture capital investment division of the Axel and Margaret Ax:son Johnson Foundation.

Panel A in Table 1 presents the geographical distribution and industrial classifications for the sample. Most foundation firms (42.3%) are based in the Nordic countries, followed by Germanic (21.2%) and Asian (21.2%) countries. Only 2.8% of FOCs come from North America, which is not surprising given the U.S. legislation that discouraged enterprise foundations (it changed in 2018). In terms of industrial classifications, 70% of FOCs are in the manufacturing sector, followed by service and trade (17.5%) and transportation (7.29%).

Table 1, Panel B presents the descriptive statistics for variables in the full sample. Since all the firms are publicly listed, the sample consists of relatively large corporations with an average of 15,448 employees. For the full sample, the firm size has an average market value of $6.7 billion, a median of $1.4 billion. Foundation ownership is a binary variable that takes a value of one for foundation firms and zero otherwise. Foundation firms comprise 33% of the full sample, followed by family firms (33%) and institutional investor firms (33%). On average, firms have a mean (median) age of 74 (62) years, so they are very mature firms. The average (median) stock return is 9.18 (10.93%) per annum.

Table 2 presents summary statistics for credit risk measures and bank loan characteristics. We use the previously defined credit risk measures. The first credit risk measure is Standard & Poor's long-term issuer ratings (hereafter S&P ratings). Of the 411 firms in our full sample, only 112 firms are rated by S&P in the sample from 2003 until 2021. 26 of them are FOCs, and 86 are non-foundation-owned corporations (non-FOCs). Appendix B provides the credit rating numerical scales. The median firm is rated by S&P with a score of 13, corresponding to BBB- BBB- is one of the lower medium grades in the investment grade zone. Therefore, sample firms, on average, tend to have a lower investment grade.

The second credit risk measure is the CreditModel score. We obtain these scores for 381 firms in the sample starting from 2017 until 2021. Although the time frame is shorter, more firms have this credit risk measure compared to S&P ratings. In the sample, 125 FOCs and 256 non-FOCs have a CreditModel score. The CreditModel scoring has the same scale as S&P ratings. Sample firms have a numerical score of 12 corresponding to bb + as both in the median and mean values, implying investment grade.

The probability of default (PD) is the sample's third measure of credit risk. We obtained this measure for 404 firms, of which 134 are FOCs and 270 are non-FOCs. CapitalIQ provides these probabilities of default starting from 2017. Therefore, the sample period for this variable is five years. Since we have relatively large publicly listed firms in the sample, the probabilities of default are very low, as expected. The sample mean and median values for PDs are 1.49% and 0.69%, respectively.

The last measure for credit risk is the Altman Z-score (Altman, 1968, 1993). We calculate this score based on 388 firms in the sample from 2003 to 2020. If a firm's Altman Z-score is higher than 3.0, the firm is considered to be far from bankruptcy (Altman, 1968). The higher the Z-score, the further away the firm is from bankruptcy.[24] The sample firms have a Z-score of 3.4 on average, implying that sample firms are significantly less likely to default.

The second part of Table 2 reports bank loan characteristics' summary statistics. The DealScan dataset provides the loan information for each syndicated bank loan. The main sample consists of 411 firms. However, we obtain syndicated bank loan information for roughly 208 firms on average once we merge our primary datasets with the DealScan dataset for the period from 2003 to 2016. Unfortunately, the number of firms drops for some bank loan characteristic variables, such as the percentage (%) of secured loans and average loan spread, due to missing data. DealScan dataset's coverage is limited for some variables.

From Table 2, we observe that sample firms have on average, two syndication loans per year, with an average loan amount of $403 million.[25] Sample firms borrow syndicated loans at an average amount of 20 % of their previous year's total asset size. This appears to be a reasonable estimate considering that syndicated loans are usually large and are granted for financing a long-term project or

[21] We do not use any third criteria, such as geographical location, since the prevalence of foundation-controlled companies (FOCs) varies significantly across countries, leading to a limited presence in certain geographical regions.

[22] Knut and Alice Wallenberg Foundation is a Swedish public and private foundation formed in 1917 by Knut Agathon Wallenberg and his wife Alice Wallenberg. It was established to support research in the natural sciences, technology and medicine. Source: https://kaw.wallenberg.org/en.

[23] Source: S&P's Capital IQ.

[24] Altman (1968 and 1993) determines some critical points in his Z-score. Once a firm has a Z-score that equals to or is above 2.99, the firm is not likely to go to bankruptcy at all; a Z-score below 2.99 and above 1.80, the firm is considered to have a moderate chance of default; a Z-score that equals to or is below 1.80 the firm is more likely to default.

[25] The natural logarithmic value of it is $6 million, as seen in Table 2.

Table 1
Descriptive statistics.

	Geographical distribution					
PANEL A: Number of Firms	**Nordic**	**Germanic**	**Rest Europe**	**North America**	**Asia & Rest World**	**Total**
FOCs	58	29	17	4	29	137
Non-FOCs	23	29	56	77	89	274
Sub-total	81	58	73	81	118	411
	Industry Classification					
	Manufacturing	**Service & Trade**	**Construction & Mining**	**Transportation**	**Other**	**Total**
FOCs	96	24	6	10	1	137
Non-FOCs	174	56	16	17	11	274
Sub-total	270	80	22	27	12	411
	Summary Statistics for Financial Variables					
PANEL B - Variables	**Mean**	**25thpercentile**	**Median**	**75thpercentile**	**SD**	**N**
Firm Characteristics						
Foundation ownership	0.33	0.00	0.00	1.00	0.4714	7,769
Total asset (mil USD)	5897.6	371.3	1544.9	4887.5	11546.00	6,412
Market capitalization (mil USD)	6697.1	291.3	1367.0	4917.4	68158.76	5,839
Non-floating shares	0.36	0.13	0.36	0.57	0.2567	5,733
Stock return (%)	9.18	−14.29	10.93	35.27	50.5705	6,544
Equity volatility (%)	37.63	26.00	33.22	44.14	18.5806	6,544
Minority interest	0.08	0.00	0.02	0.06	0.5064	4,463
Leverage	1.63	0.67	1.17	1.88	2.3215	6,386
Market leverage	1.20	0.31	0.65	1.34	1.6666	5,822
Sales (mil USD)	5,024	355	1,295	3,921	10450.88	6,446
ROA	0.03	0.02	0.04	0.08	0.1056	6,397
EBITDA/Sales	0.05	0.07	0.12	0.18	0.6650	6,342
Net Income/Sales	−0.02	0.02	0.05	0.09	0.5803	6,408
Firm age	74	31	62	106	54.2513	7,561
Number of employees	15,448	644	3,100	13,100	40011.83	6,358

Note: Table 1 reports the geographical distribution and industry classifications of sample firms in Panel A. Panel B reports the means, medians, standard deviations, and numbers of observations of firm sample characteristics. The data is on an annual basis and extends from 2003 to 2020. Appendix A provides the definition of each variable. All variables are winsorized at the 1% and 99% levels. The sample consists of 411 companies. *SD* denotes the standard deviation; *N* is the number of firm-year observations for each variable. Variables in nominal values, such as total assets, market capitalization (mcap), and sales, are deflated using the USA CPI index with the base year 2015. *Total asset* is the book value of assets at the end of each financial year. *Market capitalization (mcap)* is the market value of each firm's equity as of the year end. *Non-floating shares* are the percentages of shares outstanding owned by investors other than insiders, strategic corporate investors, and strategic 5% holders. *Stock return* is the mean value of daily stock returns over a one-year period in percentages. *Equity volatility* is the standard deviation of daily stock returns over a one-year period in percentages. *Leverage* is the ratio of the book value of debt over the book value of total equity, whereas *market leverage* is the ratio of book value of debt over market value of equity (mcap). *Minority interest* is of the book value of minority interest over book value of equity.

refinancing several existing loans. In addition, firms usually provide some types of collateral or promise some covenant conditions so they can borrow higher amounts exceeding their financial capacity individually based on their financial statements. The average and maximum maturities of sample firms' bank loans are 50 and 57 months, respectively. These are indicative of the longer-term characteristics of syndicated bank loans.

Regarding other loan characteristics, sample firms borrow, on average, from seven different bank lenders in a syndicated bank loan. They provide some type of covenants for more than half of the syndicated loans that they borrow each year, calculated by the ratio of 1.15 to 2, the ratio of the mean value in the number of covenants to the mean value of the number of new loans as seen in Table 2. The sample mean for the secured loan dummy indicates that 17% of the firms in the sample borrow at least one secured bank loan. 51% of the bank loans are secured loans. Sample firms pay an average interest rate of 25 bps for syndicated bank loans.

3.2.2. Comparing the treatment and control groups

Next, we examine the difference in creditworthiness between FOCs and non-FOCs. Table 3 provides univariate statistics between the treatment group (FOCs) and the control group (non-FOCs). Higher values of S&P credit rating, CreditModel score, and Altman's Z-score imply a lower credit risk. FOCs have higher mean values in all these credit measures. The differences in the mean values between the two groups are statistically significant. Based on the Z-score, FOCs also tend to have a lower probability of default than non-FOCs.

We also provide each group's average credit risk measure during the sample period in Figure 2. All four charts in Figure 2 provide further support to our findings. During the 2008 global financial crisis and the 2019 COVID-19 crisis, the charts display substantial decreases in credit ratings and scores and reveal increases in the probabilities of default. However, during these crises, FOCs manage to perform better than non-FOCs in both ratings and scores, as we observe the differences diverge. Having and keeping higher credit ratings matters to bank lending behavior during crises since the lenders react to corporate credit rating downgrades by raising loan

Table 2
Summary Statistics of Credit Risk Measures and Bank Loan Characteristics.

Variable	Mean	Rating/Score	25thpercentile	Median	Rating/Score	75thpercentile	SD	N
Credit Risk Measures								
S&P credit rating	13.0	BBB-	11.0	13.0	BBB-	15.0	3.0337	1,441
CreditModel score	12.0	bb+	10.0	12.0	bb+	14.0	2.7825	1,870
Prob. of default (PD)	0.0149		0.0025	0.0069		0.0144	0.0259	1,936
Altman's Z-score	3.40		1.85	2.73		4.05	2.8463	5,803
Bank Loan Characteristics								
Number of new loans	2		1	1		2	1.5651	960
Ln(New loans amount)	6		5	6		7	1.4088	959
Debt capacity ratio	0.20		0.05	0.11		0.25	0.3066	849
Loan avg. maturity (months)	50		36	54		60	32.9612	928
Loan max. Maturity (months)	57		36	60		60	37.5549	928
Avg. number of lenders	7		3	6		10	6.4959	960
Number of covenants	1.15		0.00	0.00		0.00	2.5928	960
Secured loan dummy	0.17		0.00	0.00		0.00	0.3775	960
% of secured loans	0.51		0.00	0.94		1.00	0.4969	346
Avg. loan spread (bps)	24.91		10.00	20.00		35.00	20.8941	327

Note: Table 2 reports the means, medians, standard deviations, and numbers of observations of credit risk measures and bank loan characteristics. All variables are based on annual data. The sample period for the credit risk measures is from 2003 to 2021 for the S&P credit ratings, from 2017 to 2021 for the CreditModel scores, from 2017 to 2021 for the probabilities of default (PDs), and from 2003 to 2020 for Altman's Z-scores. Syndicated bank loan data extends from 2003 to 2016. All variables are winsorized at the 1% and 99% levels. The sample consists of 411 companies. SD and N denote each variable's standard deviation and number of firm-year observations, respectively. S&P credit ratings' and CreditModel scores' notches are converted to a numerical scale from 1 to 22 (for detailed information, please refer to Appendix B). Bank loan characteristics are obtained from the Loan Pricing Corporation Deal Scan database. Each new loan represents a new syndicated loan that a firm borrows from banks each respective year. The statistical values for bank loan characteristics represent mean values across companies through the sample period based on the count, average, minimum or maximum value of each individual bank loan at the firm-level. Appendix A provides all variable definitions.

spreads, increasing collateral requirements, and shortening loan maturities (Hasan et al., 2021). Furthermore, we also provide the distribution of firm-year observations of S&P credit ratings and CreditModel scores across different credit notches between the treatment and control groups in Figure 3. For both credit ratings and CreditModel scores, the observations that belong to FOCs are more right skewed than those of non-FOCs, as seen in Figure 3.

Table 4 provides the associated bank loan summary statistics for FOCs and non-FOCs. FOCs tend to borrow more syndicated bank loans each year and in larger amounts per loan than non-FOCs ($602 million versus $403 million). In addition, FOCs tend to have a higher capacity to borrow with respect to their asset size than non-FOCs, as shown by the debt capacity ratio in Table 4. On average, FOCs borrow for longer terms (56 versus 49 months). The maximum loan maturity for FOCs loans is 63 months, whereas it is 56 months for non-FOCs. The ability to borrow for longer terms can be interpreted as a sign of higher creditworthiness for foundation-controlled companies with a caveat that other loan contract conditions, such as covenants, ceteris paribus.

Table 4 also compares FOCs and non-FOCs in terms of covenants and collateral. On average, when they use a syndication bank loan, FOCs provide fewer covenants than non-FOCs. This difference between the two groups is statistically significant. The probability of a FOC having a secured loan is 9%, whereas the probability of a non-FOC company having a secured loan is 19%. This statistically significant difference between the probabilities implies that a FOC can access a long-term syndication loan more easily without providing any security. FOCs tend to hold fewer secured loans and pay 3.3 basis points less in interest rate for each new syndicated loan than non-FOCs (although this result is not statistically significant).

In Table 5, we compare FOCs and non-FOCs by firm characteristics and provide information about stock market activity, financial standing, age, and the number of employees. Table 5 also shows that FOCs tend to be older (and statistically significant) and have more employees than non-FOCs. On average, FOCs tend to have a higher market capitalization and provide a higher stock return to their investors than non-FOCs. While delivering a higher return, FOCs also have a lower risk measured by equity volatility. The differences between the two groups of companies are statistically different. Regarding financial statement variables, we observe that FOCs are less leveraged. They are more profitable (based on the income statement and balance sheet figures) as we see in the ROA and EBITDA/Sales variables. However, in the Net Income/Sales variable, both foundation-controlled and non-foundation-controlled companies are making losses. According to their sales figures, foundation-controlled companies are making fewer losses than non-foundation-controlled ones.

The control group consists of public companies that are held by either families or institutional investor groups. For all variables, we next decompose the control group into two sub-groups: family-controlled public companies (abbreviated to FACs) and investor-controlled companies (abbreviated to ICCs). In terms of credit risk measures, FOCs are better rated and have a lower default probability than both FACs and ICCs. This is also reflected in many bank loan characteristics when we compare FOCs to the two sub-groups. FOCs have a higher number of new loans and longer maturities than FACs and ICCs. FOCs tend to borrow larger amounts than FACs and ICCs ($602 million versus $544 million and $365 million). FOCs pay 3.5% less interest for syndicated loans than FACs and 3.2% less interest than ICCS. With respect to firm characteristics, FOCs have a higher market capitalization and provide a lower equity volatility than FACs and ICCS. FOCs tend to be less indebted than both FACs and ICCs and have higher profitability. FOCS, on average, tend to be older than FACs and ICCs (83 versus 69 and 71 years, respectively). The univariate statistics for FOCs, FACs, and ICCS are provided

Table 3
Sample Means for FOCs (Treated) and non-FOCs (Control Group) Credit Risk Measures.

Variable	857251905000	Credit Risk	FOCs	Non-FOCs	Difference	Significance	Period
Credit Risk Measures							
S&P credit rating	–	lower risk	14.23 BBB	12.61 BB+	1.62 *two notches*	***	2003–2021
CreditModel score	–	lower risk	12.26 bb+	11.93 bb+	0.33 –	**	2017–2021
Prob. of default (PD)	+	higher risk	0.0108	0.0169	−0.0061	***	2017–2021
Altman's Z-score	–	lower risk	3.81	3.21	0.60	***	2003–2020

Note: Table 3 compares the means of each credit risk measure over the respective periods between foundation-controlled companies (FOCs) and non-foundation-controlled companies (non-FOCs). The sample consists of 411 firms. 137 firms are foundation-controlled corporations (FOCs), and 274 firms are non-foundation-controlled corporations (non-FOCs). We match the companies in treated (FOCs) and control groups (non-FOCs) on industry (2-digit SIC) and on asset size. S&P credit ratings' and CreditModel scores' notches are converted to a numerical scale of from 1 to 22. The t-tests are run pairwise with unequal variance. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

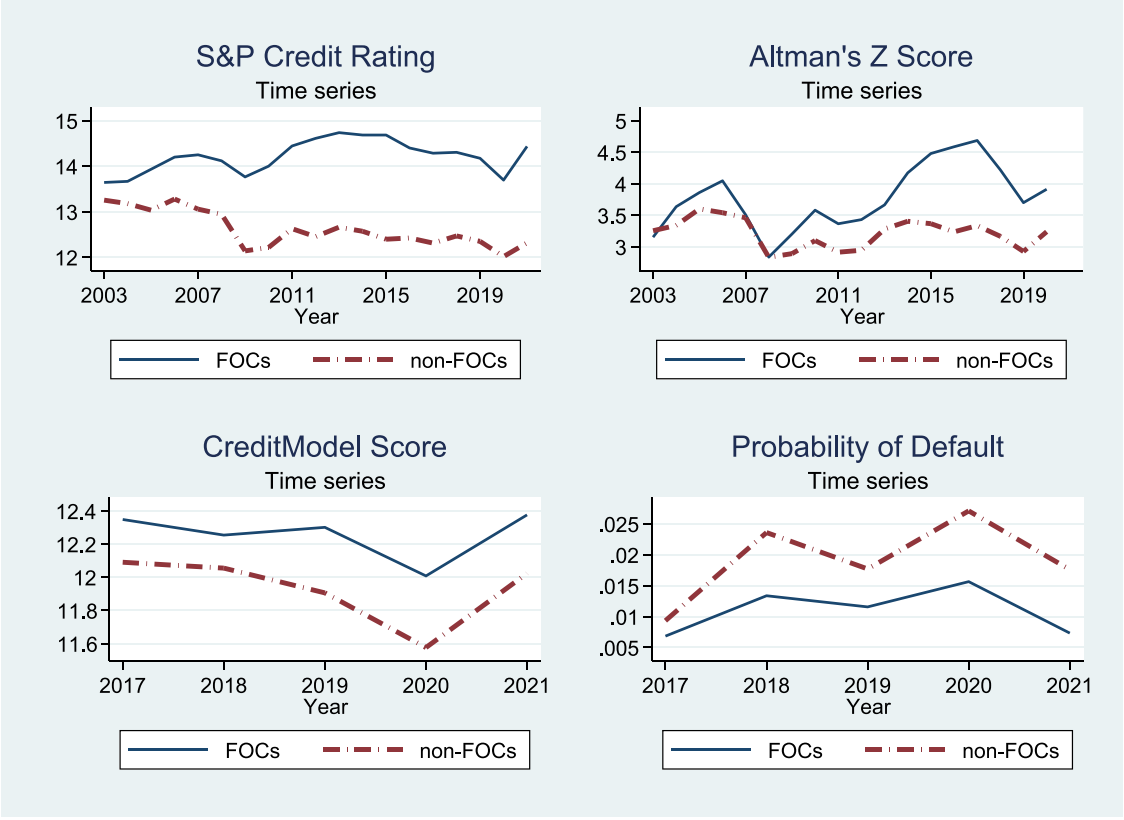

Fig. 2. Time Trends in Credit Risk Measures Figure 2 provides the time series for each credit measure for foundation-controlled (FOCs) versus non-foundation-controlled (non-FOCs) companies. Each line depicts each group's cross-sectional average of the individual credit risk measure. FOCs' mean values are shown in the solid lines, whereas non-FOCs' mean values are dashed lines.

instead in Appendices C, D, and E.

4. Multivariate analysis

First, we empirically investigate the role of foundations' controlling ownership on credit risk in publicly listed companies by applying a panel data firm-level analysis. We perform an OLS regression of credit risk on the foundation ownership and the other control variables. We include time fixed-effects that control for time-invariant characteristics and industry fixed-effects to capture industry-specific factors. We use robust standard errors clustered at the firm level in all regression specifications (Petersen, 2008).

We estimate the following panel-data regression model specification:

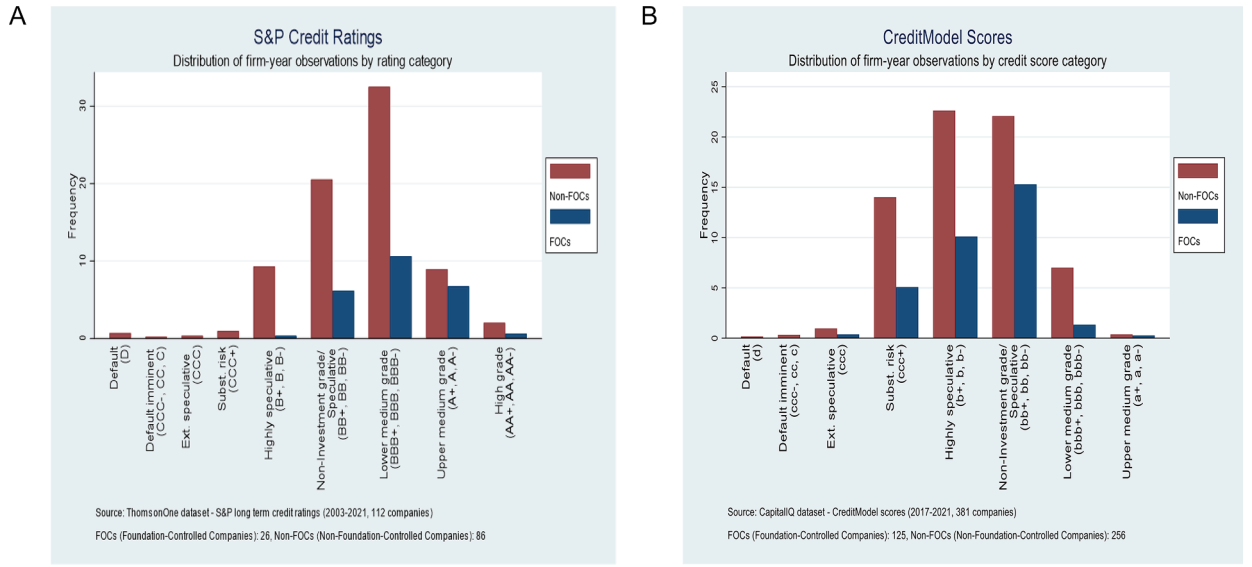

Fig. 3. Distribution of S&P Credit Ratings and CreditModel Scores.

Table 4
Sample Means for FOCs (Treated) and non-FOCs (Control Group) Bank Loan Characteristics.

Variable	FOCs	Non-FOCs	Difference	Significance
Bank Loan Characteristics				
Number of new loans	2.12	1.83	0.29	*
Ln(New loans amount) (mil USD)	6.4	6.0	0.3	***
Debt capacity ratio	0.26	0.19	0.07	**
Loan avg. maturity (months)	56	49	7	***
Loan max. maturity (months)	63	56	7	***
Avg. number of lenders	7	8	−1	non-sign
Number of covenants	0.2	1.4	−1.1	***
Secured loan dummy	0.09	0.19	−0.10	***
% of secured loans	0.43	0.53	−0.10	non-sign
Avg. loan spread (bps)	22.0	25.2	−3.3	non-sign

Note: Table 4 reports the means of bank loan characteristics of foundation-controlled companies (FOCs) and non-foundation-controlled companies (non-FOCs) and compares them with *t*-test analysis. The sample consists of 411 firms. 137 firms are foundation-owned corporations (FOCs), and 274 firms are non-foundation-owned corporations (non-FOCs). We match the companies in treated (FOCs) and control groups (non-FOCs) exactly on industry (2-digit SIC) and on asset size. Loan information comes from the Loan Pricing Corporation Deal Scan database from 2003 to 2016. Each new loan represents a new syndication loan that a firm borrows from many banks each respective year. *Number of new loans* is the number of new syndication loans that a firm obtains. *New loans amount* is the total amount of new syndication loans for each firm at the end of each financial year and depicted in logarithmic value. *Debt capacity ratio* is the ratio of the total amount of new loans to the previous financial year's total assets. *Loan average (avg.) maturity* is the average maturity of all syndication loans and is expressed in months. *Loan maximum (*max.*) maturity* is the maximum maturity among all syndication loans and is shown in months. *Average (avg.) number of lenders* shows the total number of banks across all syndication loans divided by the number of loans. *Number of covenants* is the total number of agreed restrictions that a firm promises to the banks for its new syndication loans each year. *Secured loan dummy* takes a value of 1 if the firm has at least one secured loan, 0 otherwise. *Percentage (%) of secured loans* is the ratio of the number of secured loans to the total number of new loans. *Average loan spread* is the average of the interest rate spreads on the firm's loans each year in basis points (bps). The t-tests are run pairwise with unequal variance. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

$$Creditrisk_{it} = \beta_1 FOCdummy_i + \beta_2 X_{it-1} + \beta_3 Y_{it-1} + \alpha_t + \lambda_j + \varepsilon_{it} \quad (1)$$

where $Creditrisk_{it}$ is the credit risk of firm i at year t proxied by one of the four risk measures that we employ, *FOCdummy* is the binary variable that equals 1 when a firm i has a foundation as the main shareholder. X_{it} denotes the accounting-based control variables and Y_{it} denotes the market-based control variables. Regarding fixed effects, α_t is the dummy variable that indicates year-fixed effects and λ_j is the dummy variable for each two-digit SIC code that represents industry-fixed effects.

Applying the Merton Model (1974) as the basis and following the credit risk determinants literature (Alexander and Kaeck, 2008; Ericsson et al., 2009; Pires et al., 2015), we include the following control variables: the percentage of non-floating shares, firm size (the natural logarithmic value of total assets), leverage (debt/equity), profitability (EBITDA/Sales), stock return, and volatility. We lag control variables based on accounting figures for one year to alleviate potential simultaneity bias in the regression analyses. In

Table 5
Sample Means for FOCs (Treated) and non-FOCs (Control Group) Firm Characteristics.

Variable	FOCs	Non-FOCs	Difference	Significance
Firm Characteristics				
Total asset *(mil USD)*	5,351	6,172	−821	***
Market capitalization (*mcap*) *(mil USD)*	7,377	6,372	1,005	non-sign
Non-floating shares	0.44	0.32	0.12	***
Stock return (%)	10.52	8.50	2.02	*
Equity volatility (%)	37.17	37.85	−0.68	*
Minority interest	0.05	0.09	−0.04	***
Leverage	1.53	1.68	−0.15	***
Market leverage	1.02	1.29	−0.28	***
Sales *(mil USD)*	4,576	5,248	−672	**
ROA	0.04	0.03	0.01	**
EBITDA/Sales	0.06	0.05	0.02	non-sign
Net Income/Sales	−0.022	−0.024	0.002	non-sign
Firm age	83	70	13	***
Number of employees	15,552	15,394	158	non-sign

Note: Table 5 presents the mean values of firm characteristics for foundation-controlled companies (FOCs) and non-foundation-controlled companies (non-FOCs) and compares them with a *t*-test analysis. The sample consists of 411 companies. 137 of them are foundation-owned corporations (FOCs), 274 are non-foundation-owned corporations (non-FOCs). Variables in nominal values, such as total assets, market capitalization, and sales, are deflated using the USA CPI index with the base year 2015. *Total asset* is the book value of assets at the end of each financial year. *Market capitalization (mcap)* is the market value of each firm's equity as of the year end. *Non-floating shares* are the percentages of shares outstanding owned by investors other than insiders, strategic corporate investors, and strategic 5% holders. *Stock return* is the mean value of daily stock return over a one-year period in percentages. *Equity volatility* is the standard deviation of daily stock returns over a one-year period in percentages. *Leverage* is the ratio of the book value of debt over the book value of equity, whereas *market leverage* is the ratio of the book value of debt over the market value of equity. *Minority interest* is the ratio of the book value of minority interest over the book value of equity. We match the companies in the treated (FOCs) and control groups (non-FOCs) on industry (2-digit SIC) and on asset size. The t-tests are run pairwise with unequal variance. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

addition, stakeholders, such as bankers and credit risk analysts, have delayed access to information from the financial statements as usual. On the other hand, we do not lag for a year market-based control variables, which are the percentage of non-floating shares, stock return, and volatility, since all stakeholders, including debtholders, can obtain market data daily.

Second, we examine the effect of foundation ownership for publicly listed firms on access to bank finance by using a dataset of syndicated bank loans. We employ a similar panel-data regression model, but where the dependent variable is one of the bank loan characteristics. The regression equation is as follows:

$$Bankloancharacteristic_{it} = \beta_1 FOCdummy_i + \beta_2 X_{it-1} + \beta_3 Y_{it-1} + \alpha_t + \lambda_j + \varepsilon_{it} \quad (2)$$

where $Bankloancharacteristic_{it}$ is the feature of the syndicated bank loans that the firm i borrows in year t. These features that we include in this analysis: the number of new syndicated bank loans (referred to as "number of new loans"), the natural logarithm of the total amount of new loans each year (represented as "Ln(New Loans Amount)"), a dummy variable indicating the presence of at least one secured loan (referred to as "secured loan dummy"), the total number of covenants across the new loans in each year (referred to as "number of covenants"), the average maturity (referred to as "loan avg. maturity"), the maximum maturity (referred to as "loan max. maturity"), the average number of lenders (referred to as "avg. number of lenders"), and the average interest rate (referred to as "avg. loan spread") of these new loans for each company, calculated on an annual basis.

Table 6 details the impact of foundation controlling ownership in publicly listed companies. In all columns, the dependent variable is the S&P credit rating used as a credit risk measure. Each column represents a different regression model with an increasing number of independent variables. As we see in all columns, the coefficients of the FOC dummy representing the controlling ownership of a foundation in a publicly listed firm are all positive and statistically significant, at least at the 10% level. The results imply that for publicly listed companies, foundation-controlling ownership leads to a better credit rating and lower credit risk. This result remains valid if we control for the main determinants of credit risk, such as leverage ratio or stock market return volatility, as a measure of asset volatility. In addition to this main result, these regression results in the 3rd, 4th, and 5th columns indicate that there exists a negative relationship between the percentage of non-floating shares and S&P credit rating. The higher percentage of non-floating shares implies lower stock illiquidity. Enhanced stock liquidity decreases a firm's credit risk (Das and Hanouna, 2009; Brogaard et al., 2017). Therefore, an increase in the percentage of non-floating shares leads to a lower credit rating. This result also aligns with previous literature about corporate governance, arguing that short-term investors provide a control mechanism for publicly listed firms with their transactions (Edmans et al., 2013). Therefore, a firm with a higher percentage of floating shares would need to be more transparent, leading to lower credit risk. Regarding other control variables, Table 6 reports the expected findings that larger firms, more profitable firms, and firms with lower equity volatility tend to have a lower credit risk.

We repeat the regression analyses of Table 6 similarly for other credit risk measures. We examine the effect of the foundation-

Table 6
The Effect of Foundation Controlling Ownership on S&P Credit Rating.

	S&P Credit Rating				
	(1)	(2)	(3)	(4)	(5)
FOC dummy	1.017**	1.364**	1.070**	0.909*	0.615*
	(0.045)	(0.011)	(0.038)	(0.062)	(0.077)
Non-floating shares		−1.193	−1.717**	−1.962***	−1.503**
		(0.283)	(0.048)	(0.006)	(0.024)
Firm size			1.013***	0.989***	0.889***
			(0.000)	(0.000)	(0.000)
Leverage				−3.405**	−2.210**
				(0.011)	(0.050)
Profitability				6.964***	4.844***
				(0.000)	(0.000)
Stock return					−0.001
					(0.409)
Equity volatility					−0.071***
					(0.000)
Constant	12.761***	12.969***	3.858**	5.329***	8.293***
	(0.000)	(0.000)	(0.022)	(0.003)	(0.000)
N. of Obs.	1,440	1,270	1,261	1,261	1,228
N. of firms	111	106	106	106	103
Adj. R-sq	0.367	0.394	0.515	0.600	0.698
Year FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES

***Note*:** Table 6 reports the results of the OLS regressions, where the dependent variable is *the S&P credit rating* as a credit risk measure. In all regression models, the main explanatory variable is the FOC dummy variable indicating 1 whether a firm is owned and controlled by a foundation and 0 otherwise. We control for *non-floating shares* (the percentage of non-floating shares to the total number of outstanding shares), *firm size* (logarithmic value of total assets), *leverage* (the ratio of the book value of debt to the book value of equity), *profitability* (EBITDA/Sales), *stock return* (yearly mean value of daily logarithmic returns), and *equity volatility* (stock return volatility that is the yearly standard deviation of daily stock returns). We lag the accounting-based control variables, which are firm size, leverage, and profitability, by one year. The detailed variable definitions are shown in Appendix A. We state the number of firm-year observations, the number of firms, and the adjusted R^2 for each regression. All regression models include year- and industry-fixed effects. We trim all variables at the upper and lower 0.01 percentiles. The p-values are reported in parentheses and calculated using cluster standard errors, which correct for dependence within clusters (firms). *, **, *** indicate significance at the 10%, 5%, and 1% levels.

controlling ownership on the CreditModel scores, probabilities of default, and the Altman Z-scores of publicly listed firms individually by adding more credit risk determinants in each regression.[26]

We provide the findings of the regression models for each credit measure in Table 7. The difference between odd-numbered and even-numbered columns for the first three credit risk measures (S&P credit rating, CreditModel score, and probabilities of default) is the type of control variables that we use. In the regression models in the even-numbered columns, we use market-based credit risk determinants as control variables in addition to financial statement-based control variables. The coefficients of the FOC dummy are positive when the dependent variable is the S&P credit rating or CreditModel score, implying that foundation-controlling ownership leads to a higher credit rating or a credit score indicating a lower credit risk. The coefficients are statistically significant at either the 10% level or the 1% level.

The FOC dummy obtains a statistically significant negative coefficient in the 5th and 6th columns since the dependent variable is the probability of default, whose higher values imply a higher credit risk. Foundation-controlling ownership in publicly listed firms is associated with a lower probability of default, and the result is statistically significant at the 1% level.

The last two columns of Table 7 present the regression results when we use the Altman Z-score. The regression specifications in the 7th and 8th columns differ from previous specifications because we cannot use financial statements-based control variables in the regression. One needs to use financial statement figures of total assets, leverage, and profitability to calculate the Altman Z-score. Using these variables as regressors in a regression where the Altman Z-score is a dependent variable would lead to biased estimates of coefficients. However, we still need to control for firm size. Therefore, we use the logarithmic value of the number of employees as a proxy of firm size instead of the logarithmic value of the total assets. The FOC dummy has a positive coefficient at the 10 % level in the 7th column, implying that foundation-controlling ownership also leads to a higher Altman Z-score associated with lower credit risk. However, once we use the market-based credit risk determinants (stock return and equity volatility), we lose the statistical significance for the FOC dummy's coefficient.

Relying on an annual dataset of newly syndicated bank loans, Table 8 and Table 9 examine the effect of foundation-controlling ownership on various bank loan characteristics. The regression tables differ only from each other based on which bank loan

[26] Results are available upon request from the authors.

Table 7
The Effect of Foundation Controlling Ownership on Credit Risk Measures.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	S&P Credit Rating		CreditModel Score		Probability of Default		Altman's Z-score	
FOC dummy	0.909*	0.615*	0.637***	0.455***	−0.687***	−0.328***	0.501*	0.442
	(0.062)	(0.077)	(0.001)	(0.009)	(0.000)	(0.002)	(0.084)	(0.124)
Non-floating shares	−1.962***	−1.503**	−0.979***	−0.983***	0.182	0.166	0.456	0.443
	(0.006)	(0.024)	(0.005)	(0.003)	(0.581)	(0.464)	(0.416)	(0.411)
Ln(Total asset)	0.989***	0.889***	0.962***	0.860***	−0.330***	−0.105**		
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.011)		
Leverage	−3.405**	−2.210**	−4.637***	−3.487***	3.995***	2.079***		
	(0.011)	(0.050)	(0.000)	(0.000)	(0.000)	(0.000)		
Profitability	6.964***	4.844***	1.527**	0.740	−0.147	0.347**		
	(0.000)	(0.000)	(0.023)	(0.166)	(0.477)	(0.028)		
Stock return		−0.001		0.004***		−0.016***		0.012***
		(0.409)		(0.003)		(0.000)		(0.000)
Equity volatility		−0.071***		−0.047***		0.085***		−0.031***
		(0.000)		(0.000)		(0.000)		(0.000)
Ln(Nu. of Employee)							−0.102	−0.189*
							(0.348)	(0.076)
Constant	5.329***	8.293***	7.323***	9.296***	1.875***	−1.899***	4.027***	5.837***
	(0.003)	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)
N. of Obs.	1,261	1,228	1,777	1,753	1,846	1,825	4,400	4,346
N. of firms	106	103	377	374	396	393	338	335
Adj. R-sq	0.600	0.698	0.529	0.590	0.246	0.518	0.195	0.243
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES

***Note*:** Table 7 reports the results of the OLS regressions. The dependent variable is one of the credit risk measures: S&P credit rating in the 1st and 2nd columns, CreditModel score in the 3rd and 4th columns, Probability of Default in the 5th and 6th columns, and Altman's Z-score in the 7th and 8th columns. In all regression models, the main explanatory variable is the FOC dummy variable indicating 1 whether a firm is owned and controlled by a foundation and 0 otherwise. We control for the same set of variables as we do in the regressions of Table 6**.** The logarithmic value of the number of employees serves as a proxy of firm size for the last two columns' regressions. All regression models include year- and industry-fixed effects. We trim all variables at the upper and lower 0.01 percentiles. The p-values are reported in parentheses and calculated using cluster standard errors, which correct for dependence within clusters (firms). *, **, *** indicate significance at the 10%, 5%, and 1% levels.

characteristic is analyzed as a dependent variable.

Table 8 reports the results of the regressions where four different dependent variables are utilized in two different regression specifications. Even-numbered columns add the control variables to the regression specifications in the odd-numbered columns. The dependent variables are the number of new loans, the logarithmic value of the new loans' total amount, the existence of at least one secured new loan, and the total number of covenants a firm agrees to provide the banks for new syndication loans. We do not obtain any statistically significant findings in the first four regressions in Table 8. Foundation controlling ownership itself does not enable those public companies to borrow more syndicated loans or bank loans in larger amounts. On the other hand, the coefficients of the FOC dummy are statistically significant at the 1% levels, as we see from the 5th column until the 8th column in Table 8. Foundation-controlling ownership in public companies makes firms less likely to have a secured loan. In addition, foundation-controlling ownership is associated with fewer covenants. These two findings are robust even when all control variables are used in the regressions. The evidence suggests that banks can certify the credibility of foundation ownership through less strict loan contract conditions, emphasizing the certification role of banks as it is in the case of assessing borrowers' environmental risk (Nguyen and Shi, 2021).

Table 9 provides results from the regressions with four other different bank loan characteristics as a dependent variable. The first two dependent variables in the respective columns from 1 to 4 are related to the maturity of these new bank loans: loans' average maturity and maximum maturity. The other two dependent variables from column 5 to column 8 are the average number of lenders and the average interest rate spread in these loans. A longer maturity in a bank loan contract might be assessed as a sign of higher credibility of the obligor firm. The first two columns in Table 9 show that the foundation-controlling ownership in public firms is associated with a longer average maturity in those firms' syndication bank loans. The 3rd and 4th columns indicate that foundation-controlled companies can reach the most extended maturities in their loan contract. These two findings are statistically significant at the 10% and the 5% levels.

The 6th column in Table 9 implies foundation controlling ownership drives firms to borrow from fewer banks. The number of lenders in a syndicated bank loan may be evaluated as a lower credit risk for the obligor firm since fewer banks are willing to share this risk, with a caveat that these banks have the capacity to lend the amount of the loan. The last two columns of Table 9 investigate the effect of foundation-controlling ownership on the average interest rate spread of these syndicated loans. Both column 7 and column 8 provide a negative coefficient of the FOC dummy on the average loan spread, implying that the foundation-controlling ownership is inversely associated with the interest rate of these loans. This is an expected outcome of the lower credit risk of foundation-controlled

Table 8
The Effect of Foundation Controlling Ownership on Bank Loan Characteristics - I.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Number of New Loans		*Ln*(New Loans Amount)		Secured Loan Dummy		Number of Covenants	
FOC dummy	0.335*	0.304	0.264	0.170	−0.129***	−0.121***	−1.319***	−1.673***
	(0.073)	(0.144)	(0.114)	(0.197)	(0.002)	(0.005)	(0.000)	(0.000)
Ln(Total asset)		0.112		0.648***		−0.061***		−0.340**
		(0.129)		(0.000)		(0.000)		(0.010)
Leverage		0.730*		0.426		0.198		1.821*
		(0.056)		(0.198)		(0.155)		(0.081)
Profitability		2.009*		2.503***		0.199		4.646**
		(0.054)		(0.000)		(0.419)		(0.030)
Stock return		0.002		0.001		−0.000		0.005*
		(0.108)		(0.515)		(0.622)		(0.062)
Equity volatility		0.009		0.001		0.006***		0.008
		(0.112)		(0.763)		(0.002)		(0.495)
Constant	1.818***	−0.148	6.065***	0.034	0.195***	0.338**	1.391***	2.337**
	(0.000)	(0.805)	(0.000)	(0.943)	(0.000)	(0.033)	(0.000)	(0.025)
N. of Obs.	954	799	953	799	954	799	954	799
N. of firms	202	181	202	181	202	181	202	181
Adj. R-sq	0.077	0.110	0.142	0.499	0.074	0.133	0.077	0.101
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES

***Note*:** Table 8 presents the regression results, where the dependent variable is one of the bank loan characteristics: the number of new loans in the 1st and 2nd columns, the logarithmic value of new loans' amount in the 3rd and 4th columns, secured loan dummy in 5th and 6th columns, and number of covenants in 7th and 8th columns. In all regression models, the main independent variable is the FOC dummy variable indicating 1 whether a firm is owned and controlled by a foundation and 0 otherwise. In even-numbered columns, we control for leverage, profitability, stock return, and equity volatility. We lag accounting-based control variables, which are leverage and profitability, by one year. The detailed variable definitions are shown in Appendix A. We state the number of firm-year observations, the number of firms, and the adjusted R^2 for each regression. All regression models include year- and industry-fixed effects. We trim all variables at the upper and lower 0.01 percentiles. The p-values are reported in parentheses and calculated using cluster standard errors, which correct for dependence within clusters (firms). *, **, *** indicate significance at the 10%, 5%, and 1% levels.

public companies. However, these coefficients are not statistically significant. At this point, we note that we have fewer observations in the two last regressions because we have interest rate data for the loans of a few firms.

To summarize, we show that foundation-controlled public companies seem to reap the benefit of their controlling owners' identity in their banking relations since having a foundation as a blockholder in their ownership structure reinforces their credibility in the eyes of debtholders. They are more likely to get favorable conditions in their syndicated bank loan contracts and a lower cost of debt.

5. Robustness checks

We conduct additional tests to examine the robustness of our results. First, we address the possible moderating effects of each country's legal environment and financial infrastructure on the relationship between foundation-controlling ownership and firm credit risk. Unobserved factors in each country, especially the ones related to the legal and institutional framework, may give rise to the emergence of foundation ownership and, therefore, may have confounding effects on our results obtained in the previous sections. The legal environment in each country, in general, legal rights provided to the corporations may have implications for corporate ownership structures and the governance mechanisms in place, and finally, the creditworthiness of each firm. Moreover, the depth, access, and efficiency of financial institutions and financial markets in each country matters substantially in firm-banking relationships.

Table 10 displays the relationship between foundation ownership and credit risk within the varying legal and financial frameworks of each country. Specifically, the FOC dummy variable remains significant across all models, highlighting the consistent influence of foundation ownership on a firm's credit risk. Notably, the strength of legal rights index inversely correlates with the CreditModel score, and the effect is statistically significant in columns 2 and 4. This finding indicates that robust legal frameworks favoring firms' legal rights may reduce creditors' rights and monitoring power against obligor firms in such jurisdictions, thereby potentially reducing

Table 9
The Effect of Foundation Controlling Ownership on Bank Loan Characteristics - II.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Loan Avg. Maturity		Loan Max. Maturity		Avg. Number of Lenders		Avg. Loan Spread	
FOC dummy	6.426*	7.441*	8.209**	9.831**	−1.120	−1.853***	−0.113	−6.969
	(0.071)	(0.063)	(0.034)	(0.023)	(0.119)	(0.005)	(0.986)	(0.124)
Ln(Total asset)		−1.191		0.022		1.534***		−2.633**
		(0.379)		(0.988)		(0.000)		(0.043)
Leverage		−1.060		0.865		3.743**		20.679**
		(0.890)		(0.918)		(0.022)		(0.016)
Profitability		2.760		8.111		3.650		10.277
		(0.865)		(0.651)		(0.293)		(0.740)
Stock return		−0.003		0.018		0.008		−0.025
		(0.922)		(0.558)		(0.311)		(0.393)
Equity volatility		−0.009		0.010		−0.050**		0.482**
		(0.911)		(0.924)		(0.034)		(0.011)
Constant	49.244***	59.732***	55.621***	53.047***	7.696***	−6.019**	24.949***	18.556
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.035)	(0.000)	(0.145)
N. of Obs.	923	776	923	776	954	799	326	265
N. of firms	199	180	199	180	202	181	99	88
Adj. R-sq	0.102	0.094	0.096	0.095	0.089	0.216	0.246	0.385
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES

***Note*:** Table 9 reports the regression results, where the dependent variable is new loans' average maturity in the 1st and 2nd columns, their maximum maturity in the 3rd and 4th columns, their average number of lenders in the 5th and 6thcolumns, and their average (interest rate) spread in 7th and 8th columns. In all regression models, the main explanatory variable is the FOC dummy variable indicating 1 whether a firm is owned and controlled by a foundation and 0 otherwise. In even-numbered columns, we control for leverage, profitability, stock return, and equity volatility. We lag accounting-based control variables, which are leverage and profitability, by one year. We provide a detailed definition of all variables in Appendix A. We state the number of firm-year observations, the number of firms, and the adjusted R^2 for each regression. All regression models include year- and industry-fixed effects. We trim all variables at the upper and lower 0.01 percentiles. The p-values are reported in parentheses and calculated using cluster standard errors, which correct for dependence within clusters (firms). *, **, *** indicate significance at the 10%, 5%, and 1% levels.

firms' assigned credit scores.[27]

Conversely, the financial development index exhibits a positive effect on CreditModel score and a negative effect on the Probability of Default, reflecting that increased financial market depth and access influence firm credit scores positively and decrease the probability of default.

Table 11 underscores the impact of foundation-controlling ownership on various loan characteristics. We contextualize the analysis within the framework of each country's financial development. After controlling for the characteristics of each country's financial institutions and financial markets, foundation ownership is still significantly associated with a lower number of covenants and a higher loan maturity, which may imply a higher degree of trust and less perceived risk by lenders. The average number of lenders and loan spread also respond negatively to foundation ownership and suggests that such firms might enjoy more favorable borrowing terms, possibly due to perceived higher creditworthiness or lower credit risk. Regarding the financial development (FD) index, a higher index value corresponds to more developed financial markets and more efficient financial institutions. From columns 1 to 4, the statistically significant coefficients of the FD index suggest that in developed financial markets, lenders tend to impose more covenants, and firms often secure loans with shorter maturities. Conversely, in columns 5 to 8, despite the coefficients not being statistically significant, their estimated signs indicate that more developed financial markets are associated with a higher average number of lenders in syndicated loans and lower interest rates, reflecting the benefits of increased depth and access to bank financing from the borrower's perspective.

6. Conclusion and directions for future research

Foundation ownership offers an alternative governance model to many conventional ownership structures, such as state, family ownership, and institutional investor forms of ownership (Kronke, 1988; Thomsen, 1996, 1999; Thomsen and Kavadis, 2022; Mayer,

[27] The CreditModel score, serving as a proxy for credit risk, is assigned by lenders or credit authorities to evaluate a borrower firm's risk profile based on their risk understanding and appetite for the specific credit customer. It reflects the creditor's perspective on the firm's credit risk, with higher scores indicating lower risk. The legal rights index measures the degree to which a country's legal framework supports lenders' abilities to enforce contracts and secure collateral. However, a higher level of borrower's legal rights can impede lenders' monitoring and bargaining power, particularly in bankruptcy scenarios, by strengthening protections for the borrower. This dynamic can constrain lenders' options for renegotiating terms or pursuing claims, leading to a perceived increase in credit risk. Consequently, an inverse relationship between the legal rights index and the CreditModel score emerges, as robust borrower protections potentially elevate the perceived risk from the lender's perspective.

Table 10
Foundation Controlling Ownership and Credit Risk: The Moderating Role of Country-Level Legal Rights and Financial Development.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	CreditModel Score				Probability of Default			
FOC dummy	0.455***	0.461**	0.768***	0.843***	−0.328***	−0.388***	−0.486***	−0.510***
	(0.009)	(0.015)	(0.000)	(0.000)	(0.002)	(0.001)	(0.000)	(0.000)
Non-floating shares	−0.983***	−1.567***	−0.298	−0.788**	0.166	0.110	−0.149	−0.115
	(0.003)	(0.000)	(0.382)	(0.045)	(0.464)	(0.699)	(0.565)	(0.703)
Ln(Total asset)	0.860***	0.850***	0.830***	0.813***	−0.105**	−0.051	−0.090**	−0.039
	(0.000)	(0.000)	(0.000)	(0.000)	(0.011)	(0.307)	(0.032)	(0.445)
Leverage	−3.487***	−3.637***	−3.412***	−3.520***	2.079***	2.122***	2.053***	2.095***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Profitability	0.740	0.524	0.900	0.694	0.347**	0.254	0.312**	0.224
	(0.166)	(0.296)	(0.127)	(0.211)	(0.028)	(0.162)	(0.050)	(0.219)
Stock return	0.004***	0.005***	0.004***	0.005***	−0.016***	−0.018***	−0.017***	−0.018***
	(0.003)	(0.003)	(0.000)	(0.009)	(0.000)	(0.000)	(0.000)	(0.000)
Equity volatility	−0.047***	−0.042***	−0.045***	−0.039***	0.085***	0.094***	0.084***	0.092***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Legal rights index		−0.155***		−0.175***		−0.021		−0.016
		(0.000)		(0.000)		(0.390)		(0.530)
Financial dev. index			3.100***	3.676***			−1.500**	−1.108*
			(0.000)	(0.000)			(0.023)	(0.050)
Constant	9.296***	8.893***	6.349***	6.665***	−1.899***	−2.055***	−0.779	−1.381*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)	(0.006)	(0.211)	(0.053)
N. of Obs.	1,753	1,059	1,753	1,059	1,825	1,109	1,825	1,109
N. of firms	374	366	374	366	393	385	393	385
Adj. R-sq	0.590	0.579	0.606	0.604	0.518	0.499	0.522	0.502
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES

***Note*:** Table 10 presents the regression outcomes from the robustness analysis, which examines the resilience of the positive relationship between foundation ownership and firm creditworthiness against variations in the legal and financial frameworks of each country. The dependent variables are credit risk measures, with the CreditModel score delineated in columns 1 to 4 and the Probability of Default in columns 5 to 8. The primary explanatory variable across all models is the FOC dummy, which assigns a value of 1 to firms under foundation controlling ownership and 0 otherwise. Building upon the control variables used in Table 7, this analysis introduces the strength of the legal rights index from the World Bank and the financial development index from the International Monetary Fund as proxies for country-specific legal environments and financial infrastructures, respectively. We trim all variables at the upper and lower 0.01 percentiles. The p-values are reported in parentheses and calculated using cluster standard errors, which correct for dependence within clusters (firms). *, **, *** indicate significance at the 10%, 5%, and 1% levels.

2023). FOCs are more motivated to act in debtholders' interests as they closely monitor management. This active monitoring of management, stable ownership control, long-term orientation, increased information transparency, and lack of a profit-maximization goal mitigates debtholder concerns about risk-shifting, asset substitution, or debt overhang, which would be the case in other forms of blockholder ownership.

In this paper, we examine the impact of foundation ownership on credit risk for an international sample of publicly listed companies. First, we show that FOCs perform better than family-controlled and investor-controlled firms across all credit risk measures. That is, FOCs tend to have better S&P credit ratings, higher CreditModel scores, and Altman Z-scores than non-FOCs. Furthermore, FOCs are less likely to default. After showing the negative relationship between foundation-controlling ownership and credit riskiness, we test the impact of foundation ownership on all credit measures with time- and industry-specific factors taken into consideration. As a third analysis, we utilize syndicated bank loans to investigate the effect of foundation controlling ownership on credit risk. While we cannot directly observe the mechanisms leading to the lower credit risk assessment of FOCs by banks, we nevertheless show that foundation ownership is more beneficial in attracting better bank loan contracting conditions. Specifically, we find that foundation-controlling ownership tends to extend the duration of syndicated loans. Our regression results also indicate that a foundation ownership presence leads to public firms being less likely to provide as much collateral for syndicated bank loans. Furthermore, foundation-controlling ownership also decreases the number of covenants in a loan contract. Overall, our findings suggest that foundation ownership decreases the shareholder-creditor agency conflict compared to more conventional ownership structures.

We should also consider the research findings against the study's possible limitations. For our sample, the number of foundation-controlled publicly listed firms is relatively limited, and those firms tend to be from the Nordic and Germanic countries. We argue that legal and institutional frameworks in these countries may give rise to the emergence of this ownership type. Therefore, unobserved factors in these countries may have confounding effects on our results. However, we do note that the number of foundation-controlled public firms from developing countries (for example, Tata Group in India) is growing relative to other studies. Unfortunately, we do not have enough foundation-controlled firms and, thereby, firm-year observations from each country to justify the use of country-fixed effects to empirically address this limitation. However, to mitigate potential concerns, our analysis extends to robustness checks that incorporate the Human Development Index (HDI) as a covariate, thereby accounting for country-specific levels of human development. Additionally, we delineate our analysis to contrast the effects observed within developed countries against those in

Table 11
Foundation Controlling Ownership's Impact on Loan Characteristics: The Role of Country Financial Development.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Number of Covenants		Loan Max. Maturity		Avg. Number of Lenders		Avg. Loan Spread	
FOC dummy	−1.673***	−1.100***	9.831**	6.871*	−1.853***	−1.606**	−6.969	−7.664*
	(0.000)	(0.001)	(0.023)	(0.080)	(0.005)	(0.028)	(0.124)	(0.088)
Ln(Total asset)	−0.340**	−0.362***	0.022	0.147	1.534***	1.524***	−2.633**	−2.595**
	(0.010)	(0.006)	(0.988)	(0.918)	(0.000)	(0.000)	(0.043)	(0.043)
Leverage	1.821*	2.051**	0.865	−0.386	3.743**	3.842**	20.679**	20.577**
	(0.081)	(0.035)	(0.918)	(0.962)	(0.022)	(0.019)	(0.016)	(0.016)
Profitability	4.646**	4.345**	8.111	9.660	3.650	3.520	10.277	9.289
	(0.030)	(0.031)	(0.651)	(0.582)	(0.293)	(0.318)	(0.740)	(0.765)
Stock return	0.005*	0.005**	0.018	0.016	0.008	0.008	−0.025	−0.027
	(0.062)	(0.039)	(0.558)	(0.592)	(0.311)	(0.301)	(0.393)	(0.349)
Equity volatility	0.008	0.011	0.010	−0.001	−0.050**	−0.049**	0.482**	0.474**
	(0.495)	(0.350)	(0.924)	(0.993)	(0.034)	(0.037)	(0.011)	(0.012)
Financial dev. index		4.544***		–23.657**		1.956		−13.735
		(0.001)		(0.020)		(0.508)		(0.329)
Constant	2.337**	−1.443	53.047***	72.671***	−6.019**	−7.647*	18.556	30.625*
	(0.025)	(0.384)	(0.000)	(0.000)	(0.035)	(0.050)	(0.145)	(0.080)
N. of Obs.	799	799	776	776	799	799	265	265
N. of firms	181	181	180	180	181	181	88	88
Adj. R-sq	0.101	0.131	0.095	0.098	0.216	0.216	0.385	0.386
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES

***Note*:** Table 11 delineates the outcomes of the robustness analysis, presenting the regressions where the dependent variable is the number of covenants in the 1st and 2nd columns, the maximum maturity of new loans in the 3rd and 4th columns, the average number of lenders in the 5th and 6th columns, and the average (interest rate) spread in 7th and 8th columns. In all regression models, the main explanatory variable is the FOC dummy variable, where 1 indicates whether a firm is owned and controlled by a foundation and 0 otherwise. In addition to the control variables (*leverage, profitability, stock return, and equity volatility*) that we use in Tables 8 and 9, we control for each country's financial infrastructure with the financial development (FD) index from the International Monetary Fund in even-numbered columns. We lag accounting-based control variables, which are leverage and profitability, by one year. We provide a detailed definition of all variables in Appendix A. We state the number of firm-year observations, the number of firms, and the adjusted R^2 for each regression. All regression models include year- and industry-fixed effects. We trim all variables at the upper and lower 0.01 percentiles. The p-values are reported in parentheses and calculated using cluster standard errors, which correct for dependence within clusters (firms). *, **, *** indicate significance at the 10%, 5%, and 1% levels.

developing countries.[28] Our additional results are pivotal, not only in confirming the stabilizing role of foundation ownership against credit risk but also in highlighting the significance of country-specific legal and financial systems as influential factors. By controlling for these country-level variables, the study presents a more refined analysis that accounts for external legal and institutional factors, thereby enriching the understanding of foundation ownership's impact on credit risk.

Our paper also has potential policy implications. In 2020, the European Commission stated that EU companies needed to move away from a short-term focus.[29] Our results imply that foundation ownership is an effective ownership structure because foundations prioritize long-termism in a firm's investment and growth, management, employment, sustainability, and climate-related issues. Foundation-controlling ownership raises investor trustworthiness by placing their capital in these public firms. Policymakers and regulators should encourage foundation ownership as an alternative ownership with their legislations and rules, considering that foundation ownership's creditworthiness is reflected in more favorable creditworthiness and bank loan terms.

Our study contributes to the ongoing research on the growing importance of foundation-controlled firms. There also exist some future avenues of research. For example, our findings could be tested with data from private foundation-owned firms. Globally, there are more private foundation-owned firms, but accessing private firm data and measuring these firms' creditworthiness would be more problematic. Another future research avenue may be whether stock market investors also acknowledge the higher creditworthiness of foundation-controlled publicly listed firms. Also, whether foundation identity as the main blockholder implies any differential effect on stock returns, volatility, and illiquidity compared to other blockholder types remains an open question.

CRediT authorship contribution statement

Bonnie Buchanan: Writing – review & editing, Writing – original draft, Resources, Project administration, Methodology, Investigation, Conceptualization. **Caglar Kaya:** Writing – review & editing, Writing – original draft, Software, Methodology, Funding acquisition, Formal analysis, Data curation, Conceptualization.

[28] Additional analyses diagnosing the role of country development are available upon request from the authors.
[29] https://boardagenda.com/2020/08/03/european-commission-urges-long-term-strategy-over-short-term-goals/.

Declaration of competing interest

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Data availability

The authors do not have permission to share data.

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Appendix A. Description of variables

Variable	Definition
Credit Risk Measures	
S&P credit rating	: Ordinal variable taking on value from 1 to 22 that represents the Standard and Poor's (S&P) long-term issuer credit ratings. For more details on the conversion procedure, see Appendix B.
CreditModel score	: Ordinal variable taking on value from 1 to 22 that represents a credit score provided bya global scoring model* that belongs to S&P Global. For more details, see Appendix B.
Prob. of default (PD)	: A measure of the likelihood of the firm being default. Obtained through S&P's Probability of Default Model Fundamentals (PDFN) 2.0 - Public Corporates.
Altman's Z-score	: A proxy for credit risk based on accounting data, initially proposed by Altman (1968).
Bank Loan Variables	
Number of new loans	: Number of new syndicated (and some sole-lender) loans that the firm borrows from a consortium of banks in each year.
New loans amount	: Natural logarithm of the total amount of new loans at the end of each financial year. The total amount of loans is deflated using US CPI index. (in million USD)
Debt capacity	: The ratio of total amount of new loans to the previous financial year's total assets.
Loan avg. maturity	: The average maturity of all loans expressed in *months.*
Loan max. maturity	: The maximum maturity among all loans expressed in *months.*
Avg. nu. of lenders	: Average number of lenders that firm has in its bank loan agreements.
Number of covenants	: The total number of covenants across loans for each firm in each year.
Secured loan dummy	: A dummy variable equals to 1 if the firm has at least one secured loan.
% of secured loans	: The ratio of the number of secured loans to the total number of new loans.
Avg. loan spread	: The average interest rate spread that a firm pays for its loans in basis points (bps).
Explanatory Variables	
Foundation dummy	: A dummy variable equals to 1 if the controlling shareholder is a foundation.
Firm size	: Natural logarithm of the book value of total assets at the end of the financial year Book value of total assets is deflated using US CPI index with base year 2015.
mcap	: Natural logarithm of the market value of equity. Market capitalization (mcap) is deflated using US CPI index wih base year 2015.
Floating shares	: Percentage of shares outstanding owned by investors other than insiders, strategiccorporate investors, and strategic 5% holders.***
Non-floating shares	: 1 minus the percentage of floating shares.
Stock return	: Yearly mean value of daily logarithmic returns in percentages.
Equity volatility	: Standard deviation of daily stock returns over one year period in percentages.
Minority interest	: The ratio of minority interest to total equity.
Leverage	: Book value of total liabilities over book value of equity.
Market leverage	: Book value of total liabilities over market value of equity (market capitalization)
Sales	: Natural logarithm of the firm's total revenues. It is deflated using US CPI Index.
ROA	: Net income over book value of total asset.
EBITDA/Sales	: Earnings before interest, taxes, depreciation and amortization over total sales.
Net Income/Sales	: Net income over total sales (total revenues).
Firm age	: Number of years since the firm was established.

(*continued on next page*)

(*continued*)

Variable	Definition
Number of employees	: Number of employees.
Legal rights index	: An index variable showing the strength of legal rights (0=weak to 12=strong) in each country. It is obtained from the World Bank Doing Business Project's report. The report

Note: * CreditModel 3.0 - Corporate specializes in automated solution to assess the credit risk of numerous counterparties, globally. It is a global scoring model that also includes the analysis of unrated firms and low-default sectors. ** We abbreviate foundation dummy as FOC dummy in the regression tables and it stands for "foundation-controlled firms".

Appendix B. S&P ratings and CreditModel scores numerical scale

S&P ratings	CreditModel scores	Conversion to numerical scale
AAA	aaa	22
AA+	aa+	21
AA	aa	20
AA-	aa-	19
A+	a+	18
A	a	17
A-	a-	16
BBB+	bbb+	15
BBB	bbb	14
BBB-	bbb-	13
BB+	bb+	12
BB	bb	11
BB-	bb-	10
B+	b+	9
B	b	8
B-	b-	7
CCC+	ccc+	6
CCC	ccc	5
CCC-	ccc-	4
CC	cc	3
C	c	2
SD/D	d	1

Appendix B presents a mapping of each S&P long-term credit rating and CreditModel score onto a numerical scale ranging from 1 to 22, as per the methodology outlined in Almeida et al. (2017). This table facilitates the conversion of S&P ratings and CreditModel scores into a unified numerical scale. For the collection of S&P Long-Term issuer credit ratings (2003–2021), we thoroughly hand-collect data from ThomsonOne, identifying any S&P ratings assigned to sample firms during the analysis period. Alphabetical scores for these firms were systematically recorded for each year they were rated

Appendix C. Sample means for FOCs vs. Family-controlled companies (FACs) and FOCs vs. Investor-controlled companies (ICCs) Credit risk measures.

	PANEL A				PANEL B			
Variable	FOCs	FACs	Difference	Significance	FOCs	ICCs	Difference	Significance
Credit Risk Measures								
S&P credit rating	14.23	12.75	1.48	***	14.2	12.5	1.70	***
	bbb	bbb-	*one notch*		bbb	bb+	*two notches*	
CreditModel score	12.26	11.56	0.69	***	12.26	12.27	-0.01	non-sign
	bb+	bb+	-		bb+	bb+	-	
Prob. of default (PD)	0.0108	0.0163	-0.0054	***	0.0108	0.0176	−0.0068	***
Altman's Z-score	3.81	3.29	0.52	***	3.81	3.14	0.67	***

Appendix C reports the mean values of each credit risk measure for the sub-samples of foundation-controlled companies (FOCs), family-controlled companies (FACs), and investor-controlled companies (ICCs). Appendix C compares the treated group (FOCs) with respect to sub-control groups of FACs (Panel A) and ICCs (Panel B) in each measure separately. The sample consists of 137 foundation-controlled companies (FOCs), 137 family-controlled companies (FACs), and 137 investor-controlled companies (ICCs). We match the firms pairwise in these two comparisons exactly based on industry (2-digit SIC) and on asset size. S&P credit ratings' and CreditModel scores' numerical scale of from 1 to 22. The t-tests are run pairwise with unequal variance. ***, **, and * indicate significance at the 1 %, 5 %, and 10 % levels, respectively

Appendix D. Sample means for FOCs vs. Family-controlled companies (FACs) and FOCs vs. Investor-controlled firms (ICCs). Bank Loan Characteristics.

	PANEL A				PANEL B			
Variable	FOCs	FACs	Difference	Significance	FOCs	ICCs	Difference	Significance
Bank Loan Variables								
Number of new loans	2.1	1.8	0.3	non-sign	2.1	1.8	0.3	*
Ln(New loans amount) (mil USD)	6.4	6.3	0.1	non-sign	6.4	5.9	0.5	***
Debt capacity ratio	0.26	0.24	0.02	non-sign	0.26	0.17	0.09	***
Loan avg. maturity (months)	56	52	3	non-sign	56	48	8	***
Loan max. maturity (months)	63	58	5	*	63	55	8	***
Avg. number of lenders	7	9	-2	***	7	7	0	non-sign
Number of covenants	0.2	1.5	-1.3	***	0.2	1.3	-1.1	***
Secured loan dummy	0.09	0.23	-0.14	***	0.09	0.17	-0.08	***
% of secured loans	0.43	0.49	-0.06	non-sign	0.43	0.55	-0.12	non-sign
Avg. loan spread	22.0	25.5	-3.5	non-sign	22.0	25.1	-3.2	non-sign

Appendix D reports the mean values of each syndicated bank loan variable for the sub-samples of FOCs, FACs, and ICCs. Appendix D compares the treated group (FOCs) with respect to sub-control groups of FACs (Panel A) and ICCs (Panel B) in each bank loan characteristic separately. The sample consists of 137 foundation-controlled companies (FOCs), 137 family-controlled companies (FACs), and 137 investor-controlled companies (ICCs). We match the firms pairwise in these two comparisons exactly based on industry (2-digit SIC) and on asset size. The t-tests are run pairwise with unequal variance. Loan information comes from the loan Pricing corporation Deal Scan database from 2003 to 2016. Each new loan represents a new syndication loan that a firm borrows from many banks each respective year. *Number of new loans* is the number of new syndication loans that a firm obtains. *New loans amount* is the total amount of new syndication loans for each firm at the end of each financial year and is depicted in logarithmic value. *Debt capacity ratio* is the ratio of the total amount of new loans to the previous financial year's total assets. *Loan average (avg.) maturity* is the average maturity of all syndication loans and is expressed in months. *Loan maximum (*max*.) maturity* is the maximum maturity among all syndication loans and is shown in months. *Average (avg.) number of lenders* shows the total number of banks across all syndication loans divided by the number of loans. *Number of covenants* is the total number of agreed restrictions that a firm promises to the banks for its new syndication loans each year. *Secured loan dummy* takes a value of 1 if the firm has at least one secured loan, 0 otherwise. *Percentage (%) of secured loans* is the ratio of the number of secured loans to the total number of new loans. *Average loan spread* is the average of the interest rate spreads on the firm's loans each year in basis points (bps). The t-tests are run pairwise with unequal variance. ***, **, and * indicate significance at the 1 %, 5 %, and 10 % levels, respectively

Appendix E. Sample means for FOCs vs. Family-controlled companies (FACs) and FOCs vs. Investor-controlled companies (ICCs). Firm Characteristics.

	PANEL A				PANEL B			
Variable	FOCs	FACs	Difference	Significance	FOCs	ICCs	Difference	Significance
Total Asset *(mil USD)*	5,351	4,820	530	non-sign	5,351	7,424	-2,073	***
Market Capitalization *(mil USD)*	7,377	6,532	845	non-sign	7,377	6,237	1,140	non-sign
Non-floating shares	0.44	0.48	-0.03	***	0.44	0.20	0.25	***
Stock return (%)	10.52	10.59	-0.07	non-sign	10.52	6.66	3.86	***
Equity volatility (%)	37.17	38.52	-1.35	**	37.17	37.27	-0.09	non-sign
Minority interest	0.05	0.09	-0.03	***	0.05	0.09	-0.04	*
Leverage	1.53	1.68	-0.15	**	1.53	1.69	-0.16	**
Market leverage	1.02	1.34	-0.32	***	1.02	1.25	-0.24	***
Sales *(mil USD)*	4,576	4,002	574	**	4,576	6,403	-1,827	***
ROA	0.04	0.03	0.01	non-sign	0.04	0.03	0.01	**
EBITDA/Sales	0.06	0.03	0.03	non-sign	0.06	0.06	0.00	non-sign
Net Income/Sales	-0.02	-0.04	0.02	non-sign	-0.02	-0.01	-0.01	non-sign
Firm age	83	69	15	***	83	71	12	***
Number of employees	15,552	14,860	692	non-sign	15,552	15,884	-332	non-sign

Appendix E reports the mean values of each firm characteristic for the sub-samples of FOCs, FACs, and ICCs. Appendix e compares the treated group (FOCs) with respect to sub-control groups of FACs (Panel A) and ICCs (Panel B) in each variable separately. The sample consists of 137 foundation-controlled companies (FOCs), 137 family-controlled companies (FACs), and 137 investor-owned companies (ICCs). The t-tests are run pairwise with unequal variance. Variables in nominal values, such as total assets, market capitalization, and sales, are deflated using the USA CPI index with the base year 2015. *Total asset* is the book value of assets at the end of each financial year. *Market capitalization (mcap)* is the market value of each firm's equity as of the yearend. *Non-floating shares* are the percentages of shares outstanding owned by investors other than insiders, strategic corporate investors, and strategic 5 % holders. *Stock return* is the mean value of daily stock return over 1 year period in percentages. *Equity volatility* is the standard deviation of daily stock returns over a one-year period in percentages. *Leverage* is the ratio of the book value of debt over the book value of equity, whereas *market leverage* is

the ratio of the book value of debt over the market value of equity. *Minority interest* is the ratio of the book value of minority interest over the book value of equity. We match the companies in these two comparisons in terms of industry (2-digit SIC) and on asset size. The t-tests are run pairwise with unequal variance. ***, **, and * indicate significance at the 1 %, 5 %, and 10 % levels, respectively.

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