The Governance of Foundation-Owned Firms[1,2]

Caglar Kaya[3]
Center for Corporate Governance
Copenhagen Business School

Steen Thomsen[4]
Center for Corporate Governance
Copenhagen Business School
and ECGI

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Abstract

We examine how publicly listed foundation-owned firms (FOFs) are governed compared to matched control groups of investor- and family-owned firms representing conventional ownership structures. We find that the boards in foundation-owned firms have shorter tenure, fewer former CEOs, more women, younger members, and less CEO duality. On the other hand, they have fewer independent directors and are ranked worse in the Bloomberg governance rating. Foundation-owned firms also differ from conventional firms by having more sustainability committees and environmental supply chain management. We propose a board governance index based on nine board features to evaluate the effect of board governance on firm outcomes in the comparative setting of FOFs vs. conventional firms.

Keywords: Enterprise foundations, ownership type, board governance, board characteristics, board of directors (BODs), CSR, and sustainability.

1. Introduction

Enterprise foundations are foundations, which hold a controlling ownership stake in one or more business companies (Thomsen, 1996).[5] They are autonomous non-profit entities (Hansmann & Thomsen, 2013). Although they are more common in Northern Europe, enterprise foundations exist worldwide in various forms (Schröder and Thomsen 2021). Philanthropic enterprise foundations use their income for charitable purposes, including research, education, art, and nature conservation. Pure enterprise foundations focus on owning a company. Family foundations support members of the founding family. Some enterprise foundations own a number of internationally prominent companies, such as Novo Nordisk, Ikea, Trelleborg, Robert Borsch, Mahle, Carlsberg, Rolex, and Tata Group.

Foundation ownership has attracted recent attention as an alternative governance model to conventional capitalist firms that tend to be owned by investors, founding families, or governments. It differs from the traditional ownership structures in many ways. Foundations have no owners, so there exist no individuals with financial ownership claims on firms that foundations wholly own. The foundation lacks financial incentives since the foundation representatives are neither residual claimants nor beneficiaries (Thomsen & Kavadis, 2022; Thomsen, 2017; Herrman & Franke, 2002; Hansmann, 1996), which leads to weaker outside control in foundation-owned firms (Herrman & Franke, 2002). On the other hand, a preference for company survival may lead these firms to take less financial risk and focus more on stable long-term growth (Thomsen, 1999; 1996). Furthermore, foundation-owned firms are characterized by management continuity, long-term governance, long-run investments, including R&D, and higher survival rates (Thomsen et al., 2018; Thomsen, 1999).

However, outside Denmark, where enterprise foundations have been extensively studied (Thomsen 2017), we know relatively little about the governance of foundation-owned companies. How – if at all – does foundation ownership influence the governance at the company board level in the foundation-owned companies?[6] If foundation ownership really provides a distinct corporate governance model, we would expect foundation-owned companies to have different board characteristics and practices.

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[5] For a detailed literature review about enterprise foundations, see Thomsen and Kavadis (2022).

[6] We analyze the board of directors (BODs) of the companies, not the boards of the foundations that own these companies. We call them as company board or board in short throughout the paper. When a company has a two-tier board structure, which is the case in some countries, we focus on supervisory boards.

In the present paper, we seek to address this question: How does the governance of foundation-owned companies differ from conventionally owned and controlled companies? We focus on the board of directors (BODs) who jointly oversee the company's activities. Most of the previous research about BODs has concentrated on the board's relationship with management and paid less attention to the board's relationship with owners (shareholders) (Federo et al., 2020). However, the Organization for Economic Co-operation and Development (OECD, 2019) reports that 73% of the equity in listed corporations worldwide is held by a heterogeneous set of identifiable owners such as families, institutional investors, foundations, private corporations, and the state.[7] Foundations as leading shareholders have a long-term perspective about their companies' future (Thomsen, 1999; Thomsen et al., 2018). As principal shareholders, they have the ability and more substantial incentives to oversee management, primarily through the boards. As non-profit institutions with everlasting nature, foundations adopt governance principles to help them manage potential conflicts between different stakeholders.

We employ a unique dataset of listed foundation-owned companies worldwide developed on an initial dataset collected by Schröder and Thomsen (2021a, 2021b). We extend the dataset by collecting board governance, accounting, and other firm characteristics data from the Bloomberg and Capital IQ dataset platforms. We could obtain detailed governance information on 137 of the 200 publicly listed foundation-owned firms worldwide. We categorize sample firms into foundation-owned firms (FOFs) and non-foundation-owned firms (non-FOFs) to compare the different ownership structures represented by these firms. We match the firms in each group based on size and industry. As a treated group, FOFs represent the foundation ownership type that has distinct characteristics. On the other hand, non-FOFs are the control group representing conventional ownership structures belonging to two sub-categories, family- and investor-owned firms. The latter sub-group is the publicly listed firms where institutional investors are the blockholders with controlling influence.

Furthermore, studying publicly listed foundation-owned firms is interesting because enterprise foundations in these publicly listed firms are the owners with the controlling power, most of the time disproportional to their number of shares. Therefore, they govern the funds of other shareholders, the retail investors, towards some goals other than profit maximization.

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[7] In Europe, identifiable shareholders that consist of private corporations, foundations, public sector, strategic individuals, and institutional investors own 68 % of the publicly listed companies. In the US, the respective ratio is even higher and 81%. (Owners of the World's Listed Companies, OECD, 2019)

We contribute to the literature by focusing on the governance of firms owned by enterprise foundations. We analyze the differences in board characteristics between foundation ownership and conventional ownership types. We find that foundation-owned companies compare favorably to conventionally owned companies on many company board characteristics. Foundation-owned companies employ younger directors on their boards. Their directors serve shorter periods. Foundation-owned firms also position more female board members on their boards. Furthermore, foundation-owned firms' boards behave more accountable in corporate social responsibility (CSR)/sustainability. Their boards are more like to have a CSR committee and adopt environmental supply chain management initiatives.

Regarding board independence, foundation-owned companies rank better than non-FOFs in two of three analyzed measures. They have lower instances of CEO duality and keep their former CEOs or equivalents less on their boards. However, in the percentage of independent directors, FOFs have fewer independent directors on their boards than non-FOFs. In other respects, such as board size, foundation-owned companies are not distinct from the companies owned conventionally.

The paper also adds to the previous literature by constructing a board governance index called the BG index. This index helps us summarize all the governance indicators studied in this paper and provide an overall picture regarding board governance of the firms. Foundation-owned firms have a better BG score than conventionally owned firms on the BG index. We also use this index as a benchmark to evaluate the governance ratings from Bloomberg and Refinitiv Eikon. This paper differs from many studies in corporate governance and finance literature by examining the company's board relationship with owners rather than with management.

The rest of the paper is organized as follows. In Section 2, we review the literature. In Section 3, we present our theoretical framework, develop our hypotheses, and explain the reasoning for constructing a board governance index. In Section 4, we describe our data and the sample, then provide descriptive evidence on foundation-owned firms' corporate governance and financial characteristics by comparing them with conventionally owned firms. In Section 5, we delineate the results of regression analyses. We provide concluding remarks in Section 6.

2. Literature Review

Previous literature on the governance of enterprise foundations has focused mainly on founding family involvement, long-termism, and managerial distance.

One research question is to what extent foundation ownership differs from family businesses and whether a continuing role for the founding family is an advantage or a liability for foundation-owned companies. Thomsen (1999) and Hansmann & Thomsen (2013) find that the founding family is represented on about half of Danish foundation boards, typically with one or two members[8]. However, the family is entirely absent in the other half, which means foundation ownership differs from family ownership. Nevertheless, Thomsen (1999) and Block et al. (2020) find a positive effect of family board membership on the profitability of Danish and German foundation-owned firms. Block et al. (2020) find that German firms owned by family foundations are more profitable than firms owned by charitable foundations. Therefore, it would appear that a continuing family presence may be an advantage rather than a liability for the performance of foundation-owned firms, perhaps because family members tend to identify more with the foundation.

Another research question that has been addressed is to what extent the hypothesized long-termism of foundation ownership is associated with a longer tenure of board members and managers. Based on a study of 394 Danish foundation-owned companies matched with other ownership structures, Thomsen et al. (2018) find evidence that foundation-owned companies are characterized by long-term corporate governance in several respects. For instance, foundation-owned firms have more stable ownership, less managerial turnover, low financial leverage, more long-term investment, and higher survival rates.

An additional topic of interest is to what extent foundation boards are composed of company insiders, i.e., current, or former managers and board members in the companies that the foundations own. Such insider governance would seem to be an additional source of continuity. Hansmann and Thomsen (2013) find considerable variations in "managerial distance" (for example, separation of foundation and company board membership) in a sample of 113 Danish enterprise foundations from 2003 to 2008. They define managerial distance as the extent to which the foundation's board of directors is detached from direct involvement in the affairs of the operating company. They hypothesize that the foundation board will emphasize financial profitability as managerial distance increases. In supporting this hypothesis, they find a positive, significant, and robust association between managerial distance and operating firm's economic performance.

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[8] According to the Danish Law on enterprise foundations, the founding family cannot constitute a majority of the board in enterprise foundations (Thomsen and Kavadis 2022).

This study is also related in general to the corporate governance literature focusing on company boards. Corporate governance arrangements can substantially affect firms' financial performance, firm value, or firm behavior in corporate social responsibility (CSR) & sustainability (Gompers et al., 2003; Bebchuk et al., 2009; Harjoto et al., 2015). Corporate governance is a multi-dimensional phenomenon. These arrangements depend on many corporate governance characteristics, such as board structures (i.e., whether there is a staggered board), executive compensation plans, and limited director liability.

Board governance is an essential part of corporate governance and shares multi-dimensional facets with corporate governance. In fact, board governance characteristics (i.e., the number of board members, their composition in terms of experience and gender, and the status of the CEO on the board) are the first features that our minds think about when we consider different corporate governance arrangements. Board characteristics are crucial for corporate governance because company boards are one of the essential entities in the companies' structures (Jensen, 1993). Shareholders elect the directors who delegate most decisions to managers. Research trying to identify which board characteristic matters more should not look at each characteristic in isolation (Gompers et al., 2003). In this study, by analyzing board governance in foundation-owned firms, we seek to answer the general question in corporate governance literature: How do different ownership types affect the board of directors? Linck et al. (2008) argue that board structures across firms are consistent with the cost and benefits of the board's monitoring and advising roles. At this point, the intensity and importance of these roles might differ from one ownership type to another one.

In foundation ownership, the company board structure depends on the type of enterprise foundation. Enterprise foundations also vary substantially in their governance structures (Hansmann & Thomsen, 2013). At one extreme, the foundation and its captive company form a single entity essentially. The board of directors of the foundation consists of the same individuals who serve on the company's board of directors. At the other extreme, both the foundation and the operating company have their own distinct board of directors, with no overlap in membership between them. When there are more shareholders other than the foundation in the operating company's ownership, the foundation board and company board differentiate more from each other. For instance, the foundation holds the controlling power with its majority of shares, and the rest is listed on the stock exchanges, as in the case of foundation-owned firms in this study's sample.

3. Theory, Hypotheses, and Development of Index

3.1. Theory and Hypotheses

Most of the time, enterprise foundations are enterprise owners which have a majority block of shares with more substantial controlling influence in the companies they invest in. These foundations are long-term investors (Thomsen et al., 2018). Investor horizon matters for engagement of shareholders in corporate governance, more specifically in board governance. Bebchuk, Brav, and Jiang (2015) argue that investors who choose engagement in corporate governance are not short-term, myopic activists aiming to reap short-term gains. In addition, McCahery et al. (2016) find that long-term investors intervene more intensively than short-term investors, and their engagements are primarily triggered by concern about a firm's corporate governance or strategy rather than short-term issues. Enterprise foundations adopt long-termism, and therefore, they have stronger incentives to intervene in the board governance of their portfolio companies. Furthermore, enterprise foundations do not have a time limitation to learn about the firms they invest in. Previous literature shows that long-term owners have more time to know about a firm in order to intervene effectively (i.e., Burkart, Gromb, and Panunzi (1997); Faure-Grimaud and Gromb (2004); Gaspar, Massa, and Matos (2005); and Chen, Harford, and Li (2007))

Like other blockholders, enterprise foundations may want to protect their investment and exert control by nominating directors to the company board, often by placing directors or executives from the foundation (the main shareholder) on the company's board of directors (Hansmann and Thomsen, 2021). We, therefore, expect that CEO duality will be less frequent in foundation-owned firms. Active ownership is defined by McNulty and Nordberg (2016) as shareholder activism where shareholders take actions with the explicit intention of influencing corporations' policies and practices together with a general long-term perspective toward investment in the firm and its affairs. McNulty and Nordberg (2016) emphasize the importance of mutual exchanges aiming at understanding more than change between shareholders and other stakeholders of a firm. Active ownership reflects the long-term character of foundation ownership.

All else equal, the long-term blockholder ownership characteristics of foundation ownership would therefore tend to increase the independence of the company board from the company's own management and strengthen the power of the foundation on the company's board as the main share-

holder. Board directors affiliated with large owners, in this case, foundations, would bring more control from the main shareholder and lead to less influence from the company's management on the board. Thereby, we structure the first hypothesis as follows:

H1: Foundation ownership leads to more control through more directors representing the foundation as the main shareholder and more independence from the company's management (e.g., fewer instances of CEO duality).

Secondly, enterprise foundations are considered long-term owners, which could be associated with longer tenure for executives and directors in foundation-owned companies (Thomsen et al., 2018). Due to the everlasting nature of foundations, we expect that board directors representing foundations in the companies' boards would serve longer than their peers on the boards of companies having more conventional owners. We develop the second hypothesis as follows:

H2: Average tenure of directors on the board of a foundation-owned firm will be longer due to directors representing the everlasting main shareholder, the foundation, in the company board.

Third, philanthropic enterprise foundations may be more likely to take into consideration corporate social responsibility (CSR) in nominating their representatives to the board of directors. The company boards that are under the control of the foundations as the principal shareholders will presumably focus more on sustainability, gender diversity, and best corporate governance practices. We expect a foundation-owned company's board aims to pursue these topics more voluntarily, starting from the board level in the company's governance, than the boards of non-foundation-owned firms. Therefore, we form the third hypothesis as follows:

H3: Boards of foundation-owned firms will be more sensitive to CSR/sustainability topics and more diverse in terms of gender representation.

For several reasons such as owner representation, long-termism, and company focus, publicly listed foundation-owned companies could have boards with more insiders (from the foundations, not from the company's management) and fewer independent directors from the outside compared to publicly listed companies with investor (e.g., institutional) blockholders. For convenience, we name them investor-owned firms in this study. In contrast, publicly listed foundation-owned firms seem likely to share some characteristics (i.e., owner representation, long-termism) with publicly listed family-owned firms (called family-owned firms shortly in this paper). Families are blockholders like

foundations in these publicly listed firms. Therefore, one would expect fewer differences in the board governance between publicly listed foundation-owned firms and publicly listed family-owned firms. On the other hand, there would be more board governance differences between foundation-owned and institutional investor-owned firms. Institutional investors are retail investors which do not share long-termism goal of enterprise foundations.

H4: Foundation-owned and family-owned publicly listed firms will look more similar to each other in board governance than institutional investor-owned publicly listed firms.

As for control variables, we know from previous corporate governance research that company size and industry effects may influence board structure. We seek to consider these factors by matching foundation-owned companies to their nearest neighbor in size measured by total assets within the same industry.

However, it is also known that board structures are influenced by the regulations, which implies the existence of country effects that may co-vary with the national distribution of foundation owner-ship, which is known to be skewed towards Northern Europe and Germany. Therefore, one needs to consider the effect of each country's legal system while analyzing the impact of foundation ownership on board governance. We note that foundation ownership does not exist in many countries and rarely exists in some countries that are common world economies, such as Japan, the US, and the UK. The lack of observing foundation-owned firms in many countries or their rare existence in some countries prevents us from using any country-fixed effects in the forthcoming regression analyses.

3.2. Board Governance Index

We construct a Board Governance (BG) index with the following elements to summarize our governance indicators, as seen in **Table 1** below. We also employ the BG index to evaluate governance ratings by Bloomberg and Refinitiv Eikon.

Table 1 – Construction of Board Governance (BG) Index

Components	Point	Criteria
Board Governance Index (Yearly)		
Board size	: 1/0	:1 if the firm's board size is smaller than the sample mean for board size.
Average board tenure	: 1/0	:1 if the firm's avg. board tenure is less than the sample mean for avg. board tenure.
Perc. of independent directors	: 1/0	:1 if the firm's percentage of independent directors is higher than the sample mean.
Perc. of female directors	: 1/0	:1 if the firm's percentage of female directors is higher than the sample mean.
Average BODs age	: 1/0	:1 if the avgerage age of the firm's board members is less than the sample mean.
Former CEO on the board	: 1/0	:1 if the firm's former CEO does not sit in the board in a specific year.
CEO duality	: 1/0	:1 if the firm's CEO is not the chairman of the board in a specific year.
CSR/Sustainability Committee	: 1/0	:1 if there is a CSR/Sustainability committee reporting directly to the board.
Env. Supply Chain Management	: 1/0	:1 if the board takes some decisions/inititiave to reduce the environmental footprint of the company's supply chain.

Note:*Board governance variables are related to the supervisory board when a company a two-tier board structure: a supervisory board and a management board

The BG index is intended to provide an overall assessment of board governance quality as it pertains to board effectiveness. A board has the final responsibility for the firm's functioning at the apex of the internal control system (Jensen, 1993). A large board might become less effective because of free-rider problems and coalition building. Yermack (1996) finds that small boards are more effective and firms with small boards exhibit more favorable values for financial ratios based on a sample of 452 large U.S. corporations. Furthermore, in a sample of Finnish firms, Eisenberg et al. (1998) find a negative correlation between board size and firm profitability. Del Guercio et al. (2003) find that companies with smaller boards are more effective in protecting the shareholders' interests and overseeing and negotiating contracts with the company management. On the other hand, Coles et al. (2008) conclude that either very small or very large boards are optimal depending on the differences between complex firms (that are larger, diversified, and rely more on debt financing) and simple firms (that have the opposite characteristics).

A longer board tenure may also reduce board effectiveness if board members lose their formal and mental independence. Increased tenure leads to familiarity between directors and company executives (Vafeas, 2003). This is detrimental to the directors' independence.

Director independence on boards is also believed to be associated with board effectiveness. Brickley et al. (1994) find that the boards with outside directors tend to represent the interest of shareholders in control contests. Moreover, Cotter et al. (1997) conclude that independent outside directors enhance target shareholder gains from tender offers. Director independence improves the boards' decisions on other topics such as executive compensation, CEO turnover, the incidence of fraud, and the incidence of opportunistic timing of stock options (Del Guercio et al., 2003; Gillette et al., 2003).

Greater gender diversity is commonly believed to be associated with better board performance. Previous research on boards documents that the presence of female directors could improve corporate governance (Adams and Ferreira, 2009; Abbott et al., 2012). Adam and Ferreira (2009) find that those female directors attend board meetings more often and are more involved with committees (e.g., audit, nominating committees) constructed by boards. Abbott et al. (2012) show that the presence of female board members decreases the likelihood of financial statement restatement. Female board representation also directly increases firm performance. Chen et al. (2018) find that firms with more female directors on their boards achieve greater innovative success by investing more in innovation and obtaining more patents and citations for given R&D expenditures.

CEOs have already had the potential power to control the board, which in turn reduces the CEO's and company's performance ultimately (Jensen, 1993). CEO duality increases this potential risk credibly. Many corporate governance codes, particularly in Europe, recommend against CEO duality[9].

The BG index for any given firm is calculated by providing one or zero points for each component. Each component relates to each of the nine board governance variables in this study. A firm will get one point if it satisfies the criterion in the related board governance feature, otherwise zero. The maximum value that a firm can get for the BG index is nine. For instance, a firm receives one point if its board size is smaller than the average board size of all firms in that specific year.

4. Data and Descriptive Statistics

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[9] World Bank Report (2015): A Guide to Corporate Governance Practices in the European Union, International Finance Corporation

In this section, we first describe the data sources and the sample. Then, we provide the descriptive statistics for the sample.

4.1. Sample and Data Collection

We use three primary databases to source the sample firms' data for the empirical analysis. The first data source is the Bloomberg Terminal, maintained and owned by Bloomberg L.P. We use the Bloomberg database to collect most information about the companies in the sample. We obtain financial statement data, market capitalization, and board governance variables. In the appendix, **Table A1** describes each variable in this paper. The second database is ORBIS, a database maintained by Bureau van Dijk (BvD), a company owned by Moody's. We complete some company information (i.e., foundation ownership structure, industry codes) from the BvD ORBIS database. We also collect some of the firm characteristic variables and financial data from the S&P Capital IQ dataset. The last data source we use in this paper is Thomson Reuters' (now Refinitiv Eikon) ASSET 4 database maintained and owned by the London Stock Exchange Group. Refinitiv Eikon ranks firms in their environmental, social, and governance performance and provides ratings for ESG (environment, social, and governance). We use Refinitiv's governance ratings, one of the pillars of their ESG ratings, in addition to the Bloomberg governance ratings, to strengthen our analyses of board governance.

The focus of this study is on foundation-owned firms in a global setting. We use the dataset gathered by Schroeder and Thomsen (2022), which covers publicly listed companies. As mentioned earlier, foundation-owned firms are common in continental European countries, especially in Scandinavian countries. Germanic countries such as Germany, Austria, and Switzerland follow Scandinavian countries and provide us with some companies owned by foundations. This study intends to extend the empirical evidence regarding board governance, sustainability characteristics, and financial performance of foundation-owned firms beyond Northern Europe. Unlike European countries, foundation ownership is not very common in other countries except India, which hosts the Tata Group. As a large conglomerate, Tata Group runs many firms in different industries and is owned and controlled ultimately by a number of related foundations.

The sample excludes firms operating in the banking, insurance, and utility sectors as well as firms owned by foundations with government-linked activities such as national defense. Firms in these sectors have different governance and financial features due to their distinct business models and their divergent operation and capital structure nature.

The data also contains a control group that is matched by size and industry. The control group consists of two sub-categories: publicly listed family firms and publicly listed investor-owned firms. In this control group, families or investors have controlling share positions in the publicly listed firms. They represent the conventional ownership structure in the corporations. We name them shortly family-owned firms (FAFs) and investor-owned firms (IOFs). We call these firms all together shortly non-foundation-owned firms (non-FOFs) in analogy to foundation-owned firms (FOFs) on which this paper focuses mainly.

 Our final sample includes 411 firms, 34 percent (137 firms) of which is the treated group consisting of FOFs. Sixty-six percent (274 firms) of the sample firms are non-FOFs that make up the control group. Out of 274 firms in the control group, 137 firms are owned and controlled by families and 137 firms by investors. Family ownership and investor ownership are conventional ownership structures. In the appendix, **Table A2** provides the country distribution of sample firms with respect to their status of being a FOF and a non-FOF. Sample firms are from 44 different countries.

87 of 137 foundation-owned firms are from Nordic and Germanic countries in Europe, as seen in **Table A2** in the appendix. On the other hand, 50 foundation-owned firms are from different countries globally. Regarding the control group of non-foundation-owned firms, only 52 of 274 firms are from Nordic-Germanic countries, whereas most of this group comes from other countries globally. This result is expected because we form the control group by matching firms based on two criteria: industry and total asset size. In matching, we do not rely on any geographic consideration.

We use yearly firm-level accounting and corporate governance data. The sample period extends from 2003 to 2020, and the accounting data in many financial variables for sample firms in this period is available. On the other hand, the availability of board governance variables for many firms mostly starts in 2007 or 2008.

We winsorize all variables at the 1st and 99th percentiles to minimize the impact of data errors and outliers. In addition, to make sure that large firms do not dominate results, we deflate total asset and market capitalization (*mcap*) variables using the USA's CPI index in which the base year is 2015. We measure firm size as the natural logarithm of the deflated value of total assets.

4.2. Descriptive Statistics

4.2.1. Summary Statistics – All Sample

First, we trim all the financial variables at the upper and lower 0.01-percentiles to remove the effects of outliers before we start our data analysis. We prefer not to trim the board governance and firm characteristic variables due to their unique features. Second, we deflate all nominal values such as total asset and market capitalization to the 2015 dollar using the consumer price index (CPI) provided by the Federal Reserve Bank of St. Louis. We use the US CPI index since we collect accounting data from the databases in US dollars, although the sample consists of firms from different countries.

This study classifies the variables into three main groups according to their content while conducting descriptive analyses. These three groups of variables are listed as board governance variables (i.e., the board size, the average age in a board of directors (BODs)), financial variables (i.e., leverage, ROA), and firm characteristics variables (age, number of employees). The number of observations varying across different variables, especially in the category of board governance variables, leads to an unbalanced panel dataset.

Table 2 provides the descriptive statistics of all sample in board governance variables. The average number of observations in these variables is 3,055 firm-year observations. One of the main board governance variables is board size having a mean and median of 9.7 and 9, respectively, over the sample period. These findings imply that the firms in the sample have, on average, ten directors on their boards. This statistic is reasonable considering the finding from a 2013's survey of 15 EU member states documenting that the average size of boards in European firms is 12.3 (Heidrick & Struggles, 2014). The survey also finds that Finland has the lowest average number of directors per board at 7.5, while Germany, with the inclusion of worker representatives on its supervisory boards, had the highest at 17.0.

A director serves seven years on a board on average in the sample firms. The average age of directors for the sample is 60. On average, 60% of directors in a board are independent directors in the sample firms. 26% of sample firms have a chief executive officer (CEO) who is also the board's chairman simultaneously, as shown by CEO duality in **Table 2**. In turn, the possibility of a former CEO sitting on the board is 24% for the sample firms.

Regarding gender diversity in the boards, 15.1 % of boards are female directors on average in the sample, as shown in **Table 2**. 13% of sample firms have a committee responsible for corporate social responsibility (CSR) or sustainability topics on their boards. On the other hand, 55% of the

firms have a board that adopts some initiative to reduce the environmental footprint of the firm's supply chain.

The last group of board governance variables that we examine is governance ratings from Bloomberg and Refinitiv as well as the board governance (BG) index that we develop. As seen in **Table 2**, the mean values for Bloomberg governance ratings and Refinitiv governance ratings for the sample firms are 51.3 and 49.2 respectively out of 100. On the other hand, in our BG index, the sample mean is 4.5 where an ultimate score a firm can get in this index is 9. Since these three variables aim to measure the same phenomenon, the better governance in the boards, we also evaluate the pair-wise correlations between these ratings and the BG index as seen in **Table 3**. The results in correlation table also help us to justify the reliability of our BG index. We obtain positive correlation between governance ratings and the BG index as we expect, and these correlation coefficients are statistically significant at the 1% level.

Table 2 - Summary Statistics of All Sample - Board Governance Variables

Table 2 reports the means, medians, standard deviations, and numbers of observations of board governance variables over the entire sample period. The data is yearly, and it extends from 2003 to 2020. Table A1 in the Appendix provides the definition of each variable and Table 1 explains the construction of BG index. All variables are winsorized at the 1% and 99% levels.

Variable	Mean	25th percentile	Median	75th percentile	SD	N
Board Governance Variables						
Board size	9.70	8.00	9.00	11.00	2.9983	3,368
Average board tenure	7.07	4.58	6.23	8.50	3.9204	2,022
Perc. of indep. directors	59.85	42.86	58.33	80.00	23.7743	3,063
Perc. of female directors	15.14	0.00	12.50	25.00	13.8082	3,360
Avg. BODs age	60	57	61	63	4.6278	2,905
Former CEO on the board	0.24	0.00	0.00	0.00	0.4282	3,566
CEO duality	0.26	0.00	0.00	1.00	0.4381	3,537
CSR/Sustainability committee	0.13	0.00	0.00	0.00	0.3380	3,560
Environmental supply chain mngmt	0.55	0.00	1.00	1.00	0.4975	3,213
Bloomberg governance rating	51.3	46.4	51.8	57.1	10.2345	3,260
Refinitiv governance rating	49.2	31.7	48.8	67.3	22.1011	1,664
Board governance (BG) index	4.5	3.0	4.0	6.0	1.5630	3,140

Note: The sample consists of 411 firms. Board characteristics belong to the supervisory board of a firm when the firm has a two-tier board structure: a supervisory board and a management board. Table A1 in the appendix provides the description of each variable in detail. SD and N denote the standard deviation and the number of firm-year observations for each variable, respectively.

Table 3 – Correlation Matrix of Board Governance (BG) Index and Governance Ratings

Table 3 reports the pair-wise correlation coefficients between Bloomberg governance rating, Refinitiv governance rating, and the BG Index.

Variables	Bloomberg gov. rating	Refinitiv gov. rating	BG index
Bloomberg governance rating	1.000		
Refinitiv governance rating	0.382***	1.000	
Board governance (BG) index	0.217***	0.165***	1.000

Note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4 displays the descriptive statistics for the other two group variables for the all sample: financial variables and firm characteristics variables. The average numbers of firm-year observations in financial variables and firm characteristic variables are 6,025 and 4,279 respectively. Since all the firms are publicly listed, the sample consists of relatively large corporations. The mean value of the total asset for the sample is 6 billion dollars over the sample period, whereas the average market capitalization is 5.4 billion dollars. The sample firms on average grow 5% in total assets and 7% in sales from 2003 to 2020.

We examine the debt structure of the sample firms and calculate leverage ratios to employ them as control variables in our further analysis. The mean value of leverage ratio, calculated by the book value of total debt over book value of equity, is 1.76. In contrast, the mean value of the market leverage ratio calculated by the book value of total debt over the market value of equity (market capitalization) is 1.14.

Regarding profitability, we have three variables to measure it as seen in **Table 4**. The first variable is the return on assets (ROA) calculated by the ratio of net income to the total asset. The sample mean for ROA is 0.04. The second proxy is earnings before interest, taxes, depreciation, and amortization (EBITDA) over sales to measure a firm's operating profitability. Sample firms are profitable at the operating level by having 0.09 as a mean value of EBITDA/Sales. Finally, the last measure that we calculate for profitability is net income over sales to understand a firm's profitability in terms of its sales. The sample mean for Net Income/Sales is 0.01. All three profitability ratios show that sample firms are profitable on average.

Table 4 also provides the statistics of firm characteristics variables. The average age of sample firms is 77. The sample firms employ ca. 15000 employees on average. The mean value of sales

over thousands of employees is 340.71 showing the productivity of sample firms. On average, 28% of employees in the sample firms are female. Regarding environmental sensitivity, we analyze the CO_2 emission of the sample firms. We normalize CO_2 emission with the deflated total asset value to consider the firm size effect. The sample firms on average release CO_2 to the environment at an amount that corresponds to 15% of their total assets.

Table 4 - Summary Statistics of All Sample - Financial & Firm Characteristics Variables

Table 4 reports the means, medians, standard deviations, and numbers of observations of financial variables over the entire sample period. The data is yearly, and it extends from 2003 to 2020. Table A1 in the appendix provides the definition of each variable. All variables are winsorized at the 1% and 99% levels.

Variable	Mean	25th percentile	Median	75th percentile	SD	N
Debt Structure						
Leverage	1.76	0.70	1.19	1.92	2.1434	6,221
Market leverage	1.14	0.31	0.65	1.32	1.4845	5,698
Profitability						
ROA (Net Inc./Total Assets)	0.04	0.02	0.04	0.08	0.0860	6,227
EBITDA/Sales	0.09	0.07	0.12	0.18	0.4168	6,186
Net Income/Sales	0.01	0.02	0.05	0.09	0.3299	6,238
Other Financial Variables						
Total asset (million USD)	6,021	387	1,576	5,078	11,698.490	6,241
mcap (million USD)	5,364	305	1,398	4,963	11,483.680	5,715
Asset growth rate	0.05	-0.05	0.03	0.12	0.1871	5,845
Sales growth rate	0.07	-0.04	0.05	0.15	0.2076	5,851
Firm Characteristic Variables						
Firm age	77	35	66	108	51.9355	6,602
Nu. of Employees	14,723	730	3,418	13,649	30,684.28	6,088
Productivity	340.71	165.15	262.07	403.21	308.9355	6,061
Perc. of female employees	27.64	16.00	26.00	38.00	16.5214	1,656
CO_2 emission/total asset	0.15	0.01	0.04	0.10	0.2927	990

Note: The sample consists of 411 firm. *N* denotes the number of firm-year observations for each variable. Variables in in nominal values, such as total asset and market capitalization (mcap), are deflated using USA CPI index with base year 2015. Leverage is the ratio of book value of debt over book value of equity, whereas market leverage is the ratio of book value of debt over market value of equity (market capitalizatiom denoted by *mcap*). Productivity is the ratio of sales over 1000 employees.

4.2.2. Comparing the Treatment and Control Groups

This study aims to investigate whether foundation-owned firms are systematically different in board governance features as well as in other characteristics. Thus, we run some t-tests between these

treated and control groups' mean values for each variable. We compare foundation-owned firms (FOFs) against non-foundation-owned firms (non-FOFs) in board governance, financial, and firm characteristic variables.

Table 5 provides the mean value of each board governance variable for FOFs and non-FOFs together with their differences. We test the statistical significance of each difference between two groups' mean values by performing parametric t-tests with unequal variance. The analysis uses firm-year observations. The sample contains approximately 1,000 firm-year observations for board governance variables in FOFs (the treated group) and 2,100 firm-year observations in non-FOFs (the control group).

As seen in **Table 5**, FOFs and non-FOFs differ economically and statistically in most board governance variables. We analyze nine board governance features in the BG index that we develop. Among nine board governance features, these two groups do not differ only in board size. The average number of directors on a board is approximately ten people in both groups. The difference between the means of the two groups' board size variable is economically and statistically insignificant. On the other hand, for instance, FOFs and non-FOFs differ economically and statistically in board tenure variable. The directors in FOFs' boards serve 1.2 years less than their peers in non-FOFs' boards. This difference is statistically significant at the 1% level.

Table 5 also shows that the directors of boards in foundation-owned firms are younger than their counterparties in non-foundation-owned firms. The average age in FOFs' boards is 58, whereas it is 61 in non-FOFs. Foundation-owned firms employ on average 3.6% more women than non-foundation-owned firms. On the other hand, they position fewer independent directors by 3.2% than non-foundation-owned firms. The differences in mean values between the two groups in these two variables are both statistically significant at the 1 percent level.

Another essential board governance feature that we analyze in **Table 5** is CEO duality. The probability that CEO is the chairman at the same time is 5% in foundation-owned firm in comparison to 35% in non-foundation owned firms, implying that foundation-owned firms separate the role of CEO and chairman most of the time. In addition, FOFs keep the former CEOs in their boards less than non-FOFs. The probability that former CEO is sitting in the board is 18% in FOFs compared to 27% in non-FOFs. The differences between two groups in both CEO duality and former CEO on the board are statistically significant at 1% level.

Regarding corporate social responsibility (CSR) related board governance variables, **Table 5** reports that FOFs' boards behave more responsibly than the boards in non-FOFs. The probability that the boards in FOFs have a CSR/Sustainability committee is 17%, whereas that probability in non-FOFs is only 12%. Moreover, 58% of FOFs adopt environmental supply chain initiatives in their boards, whereas 53% of non-FOFs do that in their boards. FOFs are more likely to implement initiatives to reduce the environmental footprint in their supply chains than non-FOFs do. The differences in these sustainability related board variables between FOFs and non-FOFs are statistically significant at the 1% level.

We also compare the two groups in governance ratings and the BG index. The findings in **Table 5** show some unexpected results. FOFs have economically lower governance ratings than non-FOFs both in Bloomberg and Refinitiv governance ratings. The difference in ratings between the two groups is economically less than 1 point in both rating groups. Furthermore, the rating difference in Bloomberg is statistically significant at 5% level. On the other hand, Refinitiv does not rate FOFs in governance worse than non-FOFs at a statistically significant level. However, FOFs get on average a higher score in the BG index than non-FOFs as we expect since the higher score in this index implies a better board governance. The difference in the index score between two groups is 0.7 points and is statistically significant at a 1% level, as seen in **Table 5**.

Table 5 - Sample Means for FOFs (Treated) and non-FOFs (Control Group) in Board Governance Variables

Table 5 compares the means of each corporate governance variable over the entire sample period between foundation-owned firms (FOFs) and non-foundation-owned firms (non-FOFs).

Variable	FOF	Non-FOFs	Difference	Significance
Board Governance Variables				
Board size	9.82	9.64	0.18	non-sign
Average board tenure	6.23	7.44	-1.21	***
Perc. of independent directors	57.70	60.86	-3.16	***
Perc. of female dircctors	17.61	14.06	3.56	***
Avg. BODs age	58	61	-3	***
Former CEO on the board	0.18	0.27	-0.09	***
CEO duality	0.05	0.35	-0.30	***
CSR/Sustainability committee	0.17	0.12	0.05	***
Environmental supply chain management	58.43	53.47	4.96	***
Bloomberg governance rating	50.7	51.6	-0.9	**
Refinitiv governance rating	48.8	49.4	-0.7	non-sign
Board governance (BG) index	5.0	4.3	0.7	***

Note: Sample consist of 411 firms. 137 firms are foundation-owned firms (FOFs), 274 firms are non-foundation owned firms (non-FOFs). We match the treated (FOFs) and control groups (non-FOFs) exactly 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.

Table 6 shows the t-test results for the mean values for each financial and firm characteristic variable between FOFs and non-FOFs. When we compare the two groups in terms of indebtedness ratios, FOFs do differ from non-FOFs statistically at a 1% significance level on average in both leverage (the ratio of the book value of debt over the book value of equity) and market leverage (the book value of debt over the market value of equity) ratios. FOFs are less indebted than non-FOFs. This result is in line with our expectations. FOFs adopt a more conservative approach in their capital structure than other firms with different ownership structures because they do not follow the goal of shareholders' profit maximization.

Concerning profitability ratios in **Table 6**, the two groups do not differ on two of three ratios. Companies in both groups are profitable according to all three ratios on average. They all make a profit both at the operating level and at the bottom-line level in their income statement. In comparison, FOFs are not more or less profitable than non-FOFs in the ratios of EBITDA/Sales and Net Income/Sales, where the denominator is total revenues. However, when we calculate profitability in

terms of asset size as we do in the ratio of ROA, FOFs perform better than non-FOFs. Although the difference in economic magnitude between the ROA ratios is only 1%, this difference is statistically significant at the 5% level.

We compare FOFs and non-FOFs in terms of their asset size, market capitalization, asset growth rate, and sales growth rate, as seen in **Table 6** under the sub-title of other financial variables. The t-test findings in total asset and market capitalization (*mcap*) depict that FOFs are smaller in size than non-FOFs on average if we measure the size in terms of the book value of the total asset and the market value of equity. The differences in mean values of these two variables between the two groups are statistically significant at 1%. One can expect that FOFs might have a lower market capitalization than firms owned more widely by investors since foundation ownership represents a concentrated ownership type. Regarding asset growth rate, both group firms grow at the same rate of 5% on average in the sample period. Moreover, FOFs and non-FOFs do not differ in sales growth rates during the sample period. Their sales growth rate is 7%.

Table 6 also reports the t-test results while comparing the FOFs with non-FOFs in firm characteristics variables. Foundation ownership brings long-termism and a stable management to the companies; therefore, we expect that FOFs are older than non-FOFs. **Table 6** confirms our expectation by showing that FOFs are 12 years older than non-FOFs in this sample. This difference is statistically significant.

Table 6 - Sample Means for FOFs (Treated) and non-FOFs (Control Group) in Financial and Firm Characteristic Variables

Table 6 compares the means of each financial variable over the entire sample period between foundation-owned firms (FOFs) and non-foundation-owned firms (non-FOFs). In the appendix. Table A1 provides a detailed explanation of each variable.

Variable	FOF	Non-FOFs	Difference	Significance
Debt Structure				
Leverage	1.65	1.81	-0.16	***
Market Leverage	0.94	1.24	-0.31	***
Profitability				
ROA (Net Income/Total Assets)	0.04	0.04	0.01	**
EBITDA/Sales	0.09	0.08	0.00	non-sign
Net Income/Sales	0.01	0.01	0.00	non-sign
Other Financial Variables				
Total Asset	5,445	6,313	-868	***
Market Capitalization (*mcap*)	5,000	6,121	-1,120	***
Asset Growth Rate	0.05	0.05	0.00	non-sign
Sales Growth Rate	0.07	0.07	0.00	non-sign
Firm Characteristics Variables				
Firm Age	85	72	12	***
Nu. of Employees	15,171	14,489	682	non-sign
Productivity	288.52	367.89	-79.37	***
Perc. of Female Employees	27.90	27.27	0.64	non-sign
CO2 emission/total asset	0.12	0.16	-0.04	**

Note: Sample consist of 411 firms. 137 of them are foundation-owned firms (FOFs), 274 are non-foundation owned firms (non-FOFs). Leverage is the ratio of book value of debt over book value of equity, whereas market leverage is the ratio of book value of debt over market value of equity. Productivity is the ratio of sales over 1000 employees. We match the firms in the treated (FOFs) and control groups (non-FOFs) 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.

FOFs employ more workers than non-FOFs on average, as seen in **Table 6**. However, the difference between the mean values of the number of employees between the two groups is not statistically significant. We observe the same trend in the percentage of female employees. FOFs employ slightly more females in their workforce than non-FOFs, but the difference is not statistically significant. Once we compare productivity measured by the ratio of sales over one thousand employees, non-FOFs are more productive than FOFs on average, and the difference is statistically significant at a 1% level. On the other hand, FOFs perform better than non-FOFs in environmental sensitivity. As

seen in **Table 6**, FOFs also pollute nature less than non-FOFs because their CO2 emission is less than those of non-FOFs. The difference in their mean values of CO2 emission/total asset ratio is statistically significant at a 5% level.

4.2.3. Decomposing the Control Group

The sample includes 274 firms in the control group. This group, named non-foundation-owned firms so far, are corporations with conventional ownership structures where either a family or an investor group holds the majority of shares and controls the company's management. To strengthen our descriptive analyses comparing foundation-owned firms (FOFs) to these non-foundation-owned firms (non-FOFs) in the previous section, we further decompose non-FOFs into two sub-groups: family-controlled publicly listed firms and investors-controlled publicly listed firms. It is noteworthy that all these firms are listed in the stock exchanges like foundation-owned firms in the treated group, but either some families or some investors control these publicly listed firms thanks to their majority of shares. Therefore, from now on, we name these firms family-owned firms (FAFs) and investor-owned firms (IOFs) due to the concept of significant control. Family or investor group dominance in publicly listed firms is a common ownership phenomenon that we have witnessed throughout the world. These two sub-groups of firms do have more conventional ownership structures than foundation-owned firms but with some opposite characteristics to each other. Thus, comparing FOFs against each sub-groups alone might present more evidence of how FOFs differ from them in what aspects.

The sample's control group consists of 137 family-owned firms (FAFs) and 137 investor-owned firms (IOFs). We create these two sub-control groups with the same number of firms in the treated group of foundation-owned firms (FOFs) due to the matching procedure that we have adopted. This section compares FOFs in board governance and financial and firm characteristics variables separately with FAFs and IOFs.

Table 7 presents the mean values of board governance variables for the sub-samples of FOFs, FAFs, and IOFs. In general, the findings show that FOFs differ more from IOFs than FAFs in board governance features. We expect this general result because foundation ownership and family ownership are both more concentrated ownership types than investor ownership. **Table 7 – Panel A** indicates that FOFs have a larger board than FAFs on average, and this difference is statistically significant at the 10 percent level. Family control is expected to lead to a smaller size of the board of directors. Due to the family presence in the ownership, the board members in FAFs serve longer in years

than the board members in FOFs. The difference in mean values of board tenure between the two groups is c.a. 3 years and statistically significant at a 1% level. Moreover, the board members in FAFs are older than the board members in FOFs by 2.4 years. This difference is also statistically significant at the 1% level. Regarding the gender composition on the board, we do not observe any difference between FOFs and FAFs. The percentage of female directors is 1 percent higher in FOFs, but this difference is not statistically significant.

As we expect, we observe that FOFs adopt conventional governance standards more than FAFs, because the percentage of independent directors is higher in FOFs (58%) than in FAFs (56%), as shown in **Table 7 – Panel A**. However, this 2% difference is not statistically significant. On the other hand, another finding that might support the claim of greater compliance in FOFs than FAFs is the one about CEO duality. It is more likely to be observed in FAFs than in FOFs. By 19% of probability, CEO duality is more common among FAFs, and this difference is statistically significant at the 1% level. CEO duality, the situation when the CEO is also the chairman of the board, is a factor that jeopardizes institutionalization and governance reform in boards (Rock, 1991; Cox, 1993; Baliga et al., 1996). Scholars in favor of board reform activism argue that boards should comprise predominantly, if not exclusively, of independent directors and the formal separation of the CEO and board chairperson positions (Rock 1991; Black 1992; Bainbridge, 1993; Cox, 1993). The third variable that helps us comment on compliance with general governance standards is the presence of the former CEO on the board. We observe the presence of former CEOs on the boards of FAFs by 6% more probability than on the boards of FOFs.

Table 7 - Panel A also compares FOFs and FAFs in CSR-related board governance variables. The boards of FOFs are more likely to have a CSR/Sustainability committee than those in FAFs by a 5% of probability. This difference between the mean values of the two groups is statistically significant at the 1% level. We also observe that 58% percent of FOFs' boards adopt environmental supply chain initiatives, whereas 52% of FAFs' boards do the same. This difference has a 1% level of statistical significance. In general, FOFs outperform FAFs in these two features and seem more socially and environmentally responsible at the board level.

At the bottom of **Table 7 – Panel A**, we compare FOFs and FAFs in terms of governance ratings and the BG index. In general, we expect that foundation ownership might rank better in governance than family ownership. The finding in the Bloomberg governance rating does not confirm our expec-

tation since FAFs' Bloomberg governance ratings are higher than those of FOFs on average. However, the difference is not statistically significant, and it is also economically negligible because it is just half a point. On the other hand, FOFs outperform FAFs both in Refinitiv governance ratings and in the BG index. FOFs are rated better by 3 points than FAFs at the 5% statistical significance level on average. Regarding the BG index, FOFs have a higher score by 0.7 points on average. This difference is statistically significant at the 1 percent level.

In **Table 7 - Panel B**, we compare foundation-owned firms (FOFs) and investor-owned firms (IOFs). FOFs differ from IOFs statistically in all board governance variables in this study except board size. The board members in FOFs stay shorter time in their roles than their counterparts in the boards of IOFs. FOFs have younger directors than IOFs have on average. The differences between the means of these variables are statistically significant at the 5 and 1 percent levels respectively. All These two findings imply that the boards of FOFs are renewing their members more often and are more dynamic than the boards in IOFs.

Table 7 – Panel B also compares FOFs with IOFs in the variables of the percentage of independent directors in the board, CEO duality, and the likelihood of a former CEO in the board. These three variables can be considered as a proxy for compliance with general corporate governance standards. In two proxies out of three, FOFs seem to have a higher level of board independence than IOFs by having a much lower CEO duality and being less likely to have a former CEO in their boards at the 1 percent statistically significance levels. On the other hand, IOFs have more independent directors than FOFs on average at the 1 percent statistically significance level. This, we conjecture, may be partly attributable to foundation representation on the company board, which will tend to lower board independence.

Concerning sustainability related board governance variables, as seen in **Table 7 – Panel B**, FOFs overperform compared to IOFs as they do with FAFs in corporate social responsibility (CSR) sensitivity at the board level. FOFs' boards are more likely to have a CSR/Sustainability committee than IOFs' boards. The difference in means is 6% and statistically significant at the 1 percent level. Moreover, 58% of FOFs' boards focuses on environmental issues in their supply chain management, whereas 55% of IOFs' boards do the same. The 3% of difference in the mean values between two groups is statistically significant at the 10% level.

Table 7 – Panel B also provides us with comparison of FOFs and IOFs in governance ratings and the BG index. In both Bloomberg's and Refinitiv's governance ratings, IOFs outperforms FOFs at the 5 percent and 1 percent statistical significance levels. These rating companies evaluate on average investors controlled publicly listed firms with higher ranks than foundation controlled publicly listed firms. On the other hand, FOFs have on average a higher score of the BG index than IOFs implying that FOFs have a better governance at the board level than IOFs. The difference in the mean values is 0.7 points and statistically significant at the 1 percent level.

Table 8 compares foundation-owned firms (FOFs) in financial and firm characteristics variables to family-owned firms (FAFs) in **Panel A** and investor-owned firms (IOFs) in **Panel B**, respectively. Reported differences in financial characteristics between these three ownership categories enable us to have more opinions about the origins of the differences in financial and firm characteristics variables between FOFs and non-FOFs in the previous section.

Table 8 – Panel A reports the mean values of financial and firm characteristics variables for FOFs and FAFs, the difference in mean values between the two groups, and the statistical significance of these differences according to the t-test. Regarding debt structure, FOFs are less leveraged than FAFs in both leverage and market leverage ratios. The differences in the mean values of leverage and market leverage ratios between FOFs and FAFs are statistically significant at the 10% and 1% level, respectively. Since FOFs' market capitalization is higher than that of FAFs on average, the indebtedness of FOFs is much lower than that of FAFs if we take market leverage ratios into account. FOFs are 36% less leveraged than FAFs according to the market value of their equities. One can observe the higher mean value of FOFs in market capitalization than the one of FAFs in other financial variables in the same panel.

Regarding profitability as seen in **Table 8 – Panel A**, FOFs do not seem to outperform FAFs neither in ROA, operating profitability (EBITDA/Sales) nor net income profitability (Net Income/Sales). The differences in the mean values of these profitability ratios between two groups are not statistically significant at any level. However, we observe that both group firms are profitable with respect to every profitability ratio during the sample period.

Table 8 – Panel A also reports the comparison between FOFs and FAFs in total asset and market capitalization. FOFs are larger on average than FAFs in terms of book value of total assets and market value of total assets, market capitalizations. The difference in the mean values of total

assets between the two groups is not statistically significant, but the difference in the mean values of market capitalization is statistically significant at the 1% level. This finding is reasonable since family dominance in publicly listed firms might limit the number of the shares listed on the stock exchanges, and thereby, the size of market capitalization. On the other hand, regarding growth rates, FAFs perform better than FOFs in asset and sales growth rates as reported in **Table 8 – Panel A**. This finding does not surprise us considering that firms controlled by families might adopt more aggressive growth than firms controlled by foundations that favor stability and long-termism.

Finally, **Table 8 - Panel A** also shows the findings of t-tests where we use the firm characteristics variables. On average, FOFs are older than FAFs and the age difference between the two groups is statistically significant at the 1% level. FOFs employ more people than FAFs on average. However, the difference is not statistically significant. On the other hand, there are more women in the workforce of FOFs than in the workforce of FAFs and the difference is statistically significant at the 5% level.

As seen in **Table 8 – Panel A**, the productivity of FOFs, calculated by the ratio of sales to 1000 employees, is lower than that of FAFs on average. The difference in mean values is statistically significant at the 1 percent level. FOFs may be less likely to fire employees because of the weaker profit motive. On the other hand, FOFs pollute the environment with CO_2 emission less than FAFs. The difference in the mean values of CO_2 emission/total asset ratio is 6% and statistically significant at the 5% level. Proportional to the asset size, FOFs release 6% less CO_2 to the environment.

Table 8 – Panel B provides the t-test results when we compare foundation-owned firms (FOFs) with investor-owned firms (IOFs). One can find the mean values of the financial and firm characteristics variables, their differences between two groups, and the statistical significance of these differences. Regarding debt structure, both indebtedness ratios, the leverage and market leverage ratios show that FOFs are less indebted than IOFs. Foundations might adopt a more conservative debt policy than investors who might prefer to be more leveraged as a means to grow and get higher profitability. The differences in the mean values of these leverage ratios between two groups are statistically significant at the 1% level.

In profitability ratios as shown in **Table 8 – Panel B**, FOFs differ from IOFs only in one metric out of three metrics statistically. FOFs are more profitable than IOFs in ROA at the 1% statistical

significance level. However, in other two ratios, EBITDA/Sales and Net income/Sales, FOFs and IOFs do not differ from each other at statistically significant levels.

Concerning other financial variables in **Table 8 – Panel B**, FOFs are smaller than IOFs in terms of total asset, although they are larger than IOFs in market capitalization. The difference between mean values of total asset for two groups is statistically significant at the 1 percent level. However, the difference between the mean values of market capitalization for two groups is not statistically significant. When it comes to the growth rates, it appears that FOFs grow in asset and sales at a higher rate than IOFs. The differential growth rates both in assets and sales are c.a. 1% and the differences between the mean values of asset growth rate and sales growth rate are statistically significant at the 10% level.

Table 8 – Panel B also compares FOFs with IOFs in firm characteristics variables, such as firm age, the number of employees, productivity, and the percentage of female employees, and CO_2 emission. FOFs continue to be older in this comparison too. On average, a FOF is 14 years older than an IOF. The difference between two groups is statistically significant at the 1% level. The t-test about the number of employees shows that although FOFs employ slightly more people than IOFs on average, but this difference in the number of employees is not statistically significant at any level. On the other hand, FOFs differ from IOFs in productivity and in terms of the percentage of female employees. T-test results about the differences between mean values of these two variables for FOFs and IOFs are statistically significant at the 1 percent level. IOFs manage to sell more per employee and employ more women in their workforce than FOFs. Although IOFs score better in productivity and employing more female workers, they are outperformed by FOFs in environmental care. FOFs pollute the nature less than IOFs by a 3% lower rate of CO_2 emission per asset size. The difference in CO_2 emission between two groups is statistically significant at the 10 percent level.

Table 7 - Sample Means for FOFs vs. Family-owned Firms (FAFs) and FOFs vs. Investor-owned Firms (IOFs)

Board Governance Variables

Table 7 reports the mean values of each board governance variable for the sub-samples of foundation-owned firms (FOFs), family-owned firms (FAFs), and investor-owned firms (IOFs). Table 7 also compares the treated group (FOFs) with respect to sub-control groups of FAFs (Panel A) and IOFs (Panel B) in each variable separately.

Variable	PANEL A				PANEL B			
	FOF	FAF	Difference	Significance	FOF	IOF	Difference	Significance
Board Governance Variables								
Board size	9.819	9.561	0.258	*	9.819	9.689	0.130	non-sign
Average board tenure	6.230	9.003	-2.773	***	6.230	6.562	-0.332	**
Perc. of independent directors	57.70	56.33	1.364	non-sign	57.70	63.44	-5.74	***
Perc. of female dircctors	17.61	16.63	0.983	non-sign	17.61	12.60	5.01	***
Avg. BODs age	58	61	-2.432	***	58	61	-3	***
Former CEO on the board	0.18	0.24	-0.061	***	0.18	0.29	-0.11	***
CEO duality	0.05	0.24	-0.190	***	0.05	0.42	-0.36	***
CSR/Sustainability committee	0.17	0.12	0.05	***	0.17	0.11	0.06	***
Environmental supply chain mngmt	0.58	0.52	0.07	***	0.58	0.55	0.04	*
Bloomberg governance rating	50.7	51.2	-0.522	non-sign	50.717	51.826	-1.109	**
Refinitiv governance rating	48.8	45.7	3.096	**	48.788	52.602	-3.813	***
Board governance (BG) index	5.0	4.3	0.715	***	4.986	4.294	0.692	***

Note: Sample consists of 137 foundation-owned firms (FOFs), 137 family-owned firms (FAFs) and 137 investor-owned firms (IOFs). 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. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 8 - Sample Means for FOFs vs. Family-owned Firms (FAFs) and FOFs vs. Investor-owned Firms (IOFs)

Financial and Firm Characteristics Variables

Table 8 reports the mean values of financial variables for the sub-samples of foundation-owned firms (FOFs), family-owned firms (FAFs), and investor-owned firms (IOFs). It compares FOFs with respect to sub-control groups of FAFs (Panel A) and IOFs (Panel B) in each variable separately.

	PANEL A				PANEL B			
Variable	FOF	FAF	Difference	Significance	FOF	IOF	Difference	Significance
Debt Structure								
Leverage	1.65	1.76	-0.11	*	1.65	1.86	-0.21	***
Market leverage	0.94	1.30	-0.36	***	0.94	1.20	-0.26	***
Profitability								
ROA (Net Income/Total Assets)	0.04	0.04	0.00	non-sign	0.04	0.04	0.01	***
EBITDA/Sales	0.09	0.08	0.01	non-sign	0.09	0.09	0.00	non-sign
Net Income/Sales	0.01	0.01	0.00	non-sign	0.01	0.02	-0.01	non-sign
Other Financial Variables								
Total asset	5,445	4,958	487	non-sign	5,445	7,564	-2,119	***
Market capitalization (*mcap*)	6,121	3,869	2,252	***	6,121	5,955	165	non-sign
Asset growth rate	0.05	0.07	-0.02	***	0.05	0.04	0.01	*
Sales growth rate	0.07	0.08	-0.01	*	0.07	0.06	0.01	*
Firm Characteristics Variables								
Firm Age	85	74	11	***	85	71	14	***
Nu. of Employees	15,171	13,945	1,226	non-sign	15,171	14,972	199	non-sign
Productivity	288.52	315.26	-26.74	***	288.52	413.82	-125.30	***
Perc. of Female Employees	27.27	24.87	2.40	**	27.27	30.78	-3.51	***
CO2 emission/total asset	0.12	0.18	-0.06	**	0.12	0.15	-0.03	*

Note: Sample consists of 137 foundation-owned firms (FOFs), 137 family-owned firms (FAFs) and 137 investor-owned firms (IOFs). The t-tests are run pairwise with unequal variance. Variables in nominal values, such as total asset and market capitalization, are deflated using USA CPI index with base year 2015. Leverage is the ratio of book value of debt over book value of equity, whereas market leverage is the ratio of book value of debt over market value of equity. Productivity is the ratio of sales over 1000 employees. We match the firms pairwise in these two comparisons exactly based on industry (2-digit SIC) and on asset size. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

5. Empirical Methodology and Analysis

This part presents the empirical methodology and then provides empirical findings. Owing to the panel nature of the dataset, which contains both cross-sectional as well as time-series dimensions, we employ panel data regression for our econometric analyses.

In the first part of this section, we first investigate the differential effect of foundation ownership on board governance. One may have an endogeneity concern arising from the omitted unobservable firm characteristics while analyzing the impact of foundation ownership on different board characteristics. Omitted variables that affect both firm ownership type and the board structures could lead to a spurious correlation between foundation ownership and board governance variables. It is possible, for instance, that some companies are more progressive than others, so they have a better board governance structure and choose to be controlled and owned by a foundation. One way of dealing with the omitted variables problem is to control for any time-invariant firm characteristics using firm-fixed effects. However, using firm-fixed effects is not an option for this study since ownership and control are in general firm characteristics that do not vary very much over time. Firms in the sample do not change their ownership category from foundation ownership to conventional ownership or vice versa during the sample period. Nevertheless, we control for some essential firm characteristics, such as firm size (the natural logarithm of the book value of total assets), leverage (book value of debt/book value of equity), and profitability (EBITDA/Sales) to address the concerns about omitted variables. Furthermore, we control for time-invariant characteristics using time-fixed effects and industry-specific characteristics using industry-fixed effects in all regression specifications.

Another concern is reverse causality. It is not very plausible that board characteristics, such as board size, board tenure, the average age of board members, or whether the CEO is the board's chairman (CEO duality) might influence firms to change their ownership type between different ownership categories of family-ownership, investor-ownership, and foundation-ownership. In fact, we argue theoretically that firms first choose their ownership type such as foundation ownership, and then structure their governance style according to their ownership type.

The regression specification we use in analyzing the effect of foundation ownership on different board features is:

$$Board\ feature_{it} = \beta_1\ FOF\ dummy_i + \beta_2 X_{it} + \alpha_t + \lambda_j + \varepsilon_{it}$$

where $Board\ feature_{it}$ is the board feature of firm i at year t, $FOF\ dummy_i$ is the variable that equals to 1 when a firm i is owned by a foundation, α_t indicates year-fixed effects, and λ_j industry-fixed effects. X_{it} denotes the control variables, including firm size, leverage, and profitability (EBITDA/Sales). $FOF\ dummy_i$ is the main explanatory variable we are interested in.

Table 9 reports the effect of foundation ownership on the first group of board characteristics this study focuses on.[10] These board features, which are the dependent variables in the regressions, are the number of directors in the board (board size), the average tenure of directors in the board (board tenure), the average age of directors in the board. There are two regression specifications for each board characteristic. The only difference between two regression specifications is that the first one includes only one control variable (firm size), whereas the second specification includes two more control variables (leverage and EBITDA/Sales) in addition to firm size. In both regression specifications, we control for the year and industry-fixed effects. However, we cannot use the firm fixed-effects to control for unobserved time-invariant firm characteristics because ownership structure is a feature that does not change so often throughout time. In fact, once a firm is owned by a foundation, it is almost not possible to change a foundation's majority ownership in the firm's ownership structure.

The foundation-ownership does not have statistically significant effect on the board size as seen in the first two columns of **Table 9**, although foundation-ownership dummy (FOF dummy) has a positive coefficient. On the other hand, columns 3 and 4 of **Table 9** indicate that the board tenure is lower in foundation-owned firms. The estimated coefficient of FOF dummy is negative and statistically significant at the 5% level in both columns. The sign and magnitude of the coefficients in columns 3 and 4 imply that being owned by foundation leads to approximately 1 year less in the tenure of directors.

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[10] In our analysis, we organize the nine board governance variables into three groups according to concepts that they refer to. Then, we analyze each group in the same regression table. This organization will also help readers to analyze the results better. The first group consists of general board characteristics such as board size, board tenure and the average age of board members. The second group is the board variables that are related to the level of institutionalization in the boards, the level of board independence. These variables are CEO duality, the percentage of independent directors, and the presence of former CEO on the board. Finally, the third group is the board governance variables related to the gender and environmental issues. These variables are the percentage of female directors, the existence of CSR/Sustainability committee in the board, and whether the board adopts environmental supply chain management.

The last two columns of **Table 9**, columns 5 and 6, report the regression results when the dependent variable is the average age of directors in a board. We call the variable in short "average board age" in the table. We obtain negative estimated coefficients for the FOF dummy at the 1% statistical significance level in respective columns while we have the average board age as a dependent variable in the regressions. These two coefficients of FOF dummy in columns 5 and 6 are close to each other in magnitude, approximately -3. This implies that board members in foundation-owned firms (FOFs) are 3 years younger than those in non-foundation-owned firms (non-FOFs).

Concerning the effects of control variables on the board characteristics in **Table 9**, we obtain some statistically significant coefficients for firm size and EBITDA/Sales in the regressions where the dependent variable is either board size or average board age. The coefficients of leverage ratio are statistically insignificant in all regressions. In the first two columns of **Table 9**, the control variable of firm size, measured by logarithmic value of deflated total asset, has statistically significant positive coefficients at the 1% level. Positive coefficients imply that the larger the firm, the larger the board size as we expect. In the last column of **Table 9**, in the regression where the dependent variable is average board age, we obtain a negative coefficient of -1.6 for the control variable of profitability, measured by EBITDA/Sales. The negative estimated coefficient is statistically significant at the 5% level in column 6. This finding implies that higher profitability might lead to younger boards.

Table 9 – The Effect of Foundation Ownership on Board Characteristics

Table 9 reports the results of the regressions, where the dependent variables are three board characteristics: board size, board tenure, and the average age of board members. The main explanatory variable is the *FOF dummy,* indicating whether a firm is owned and controlled by a foundation. We control for firm size (logarithmic value of total assets), leverage (the ratio of the book value of debt to book value of equity), and EBITDA/Sales. The variable definitions are provided in **Table A1** in the appendix. The year- and industry-fixed effects are included. All variables are trimmed at the upper and lower 0.01-percentiles. Standard errors are clustered at the firm level. *, **, *** indicate significance at the 10%, 5% and 1% levels. The p-values are reported in parentheses.

	(1) Board Size	(2) Board Size	(3) Board Tenure	(4) Board Tenure	(5) Avg. Board Age	(6) Avg. Board Age
FOF dummy	0.486	0.480	-1.046**	-1.072**	-2.932***	-2.867***
	(0.123)	(0.136)	(0.015)	(0.013)	(0.000)	(0.000)
Firm size	0.893***	0.892***	-0.239	-0.249	0.210	0.236
	(0.000)	(0.000)	(0.105)	(0.100)	(0.225)	(0.161)
Leverage		-0.019		-0.063		0.028
		(0.752)		(0.492)		(0.778)
EBITDA/Sales		-0.012		0.245		-1.549**
		(0.967)		(0.830)		(0.014)
Constant	2.329***	2.381***	9.309***	9.498***	59.266***	59.204***
	(0.005)	(0.006)	(0.000)	(0.000)	(0.000)	(0.000)
N. of Obs.	3,298	3,281	1,935	1,924	2,838	2,825
N. of firms	284	284	278	278	242	242
Adj. R-sq	0.313	0.311	0.102	0.100	0.165	0.171
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES

Table 10 reports the results of regressions in which the second group of board characteristics is dependent variables. These board characteristics are CEO duality, the percentage of independent directors, and the presence of former CEOs on the board.

The first two columns in **Table 10** present the regressions' results when the dependent variable is CEO duality. CEO duality is a dummy variable that takes the value of 1 when the CEO is also the chairman of the board of directors; otherwise, the value of 0. The regressions in columns 1 and 2 indicate that CEO duality is less likely to be observed in foundation-owned firms. The estimated coefficients of the FOF dummy are negative, statistically significant at the 1% level, and have the

same magnitude of approximately -0.33 in both columns. This finding implies that being a foundation-owned firm decreases the likelihood of CEO duality by 0.33.

In columns 3 and 4 in **Table 10**, we regress the percentage of independent directors on the foundation-ownership dummy to understand whether foundation ownership affects the number of independent directors on the board of directors. We obtain positive coefficients in both regression specifications implying a positive relationship between foundation ownership and board independence. However, the coefficients are not statistically significant. Regarding the control variables, we find positive coefficients for the firm size at the 1% statistical significance level in the same columns, implying that the bigger the firm, the higher number of independent directors as one expects in general. In column 4 of **Table 10**, we add the control variable of leverage ratio to the regression specification and obtain a positive coefficient of 0.13 at the 5% statistical significance level. This result implies that the higher the leverage ratio, the higher percentage of independent directors in the board. We expect this result since debtholders put pressure on the firm to be more institutionalized starting from the board of directors.

In the 5th and 6th columns of **Table 10**, we analyze the effect of foundation-ownership on another board variable that provides clue about the board independence in a firm: the presence of former CEO in the board. The coefficients of FOF dummy are negative and statistically significant at the 1% level in both regression specifications. This implies that being owned by a foundation decreases the likelihood of former CEO sitting on the board. The presence of former CEO on the board is regarded as a drawback in terms of board independence. At this point, we can argue that FOFs have more independent boards from the perspective of this measure. In these two last regressions, none of control variables have statistically significant coefficients.

Table 10 – The Effect of Foundation Ownership on Board Characteristics

Table 10 reports the results of the regressions, where the dependent variables are: CEO duality, the percentage of independent directors in a board, and the presence of former CEO on board. The main explanatory variable is the FOF dummy indicating whether a firm is owned and controlled by a foundation. We control for firm size (logarithmic value of total assets), leverage (the ratio of the book value of debt to book value of equity), and profitability (EBITDA/Sales). The variable definitions are provided in **Table A1** in the appendix. The year- and industry-fixed effects are included in all specifications. All variables are trimmed at the upper and lower 0.01-percentiles. Standard errors are clustered at the firm level. *, **, *** indicate significance at the 10%, 5% and 1% levels. The p-values are reported in parentheses.

	(1) CEO Duality	(2) CEO Duality	(3) % of Indep. Directors	(4) % of Indep. Directors	(5) Former CEO on Board	(6) Former CEO on Board
FOF dummy	-0.326***	-0.324***	0.136	0.132	-0.083*	-0.082*
	(0.000)	(0.000)	(0.683)	(0.694)	(0.060)	(0.062)
Firm size	-0.010	-0.009	0.657***	0.632***	0.011	0.015
	(0.484)	(0.502)	(0.000)	(0.000)	(0.338)	(0.216)
Leverage		0.004		0.134**		-0.010
		(0.659)		(0.015)		(0.186)
EBITDA/Sales		-0.008		0.087		-0.059
		(0.924)		(0.734)		(0.440)
Constant	0.447***	0.436***	0.005	-0.059	0.188*	0.187*
	(0.000)	(0.000)	(0.995)	(0.947)	(0.052)	(0.056)
N. of Obs.	3,324	3,309	3,094	3,076	3,354	3,338
N. of firms	285	285	280	280	288	288
Adj. R-sq	0.179	0.178	0.216	0.222	0.112	0.114
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES

In **Table 11**, we analyze the effect of foundation ownership on the last group of board characteristics. This is the third group consisting of board variables that are related to gender composition and CSR/Sustainability. As in the last two recent tables, we employ two regression specifications for each dependent variable in **Table 11**. The second regression specification presented in even-numbered columns differs from the first one shown in odd-numbered columns only by using two additional control variables: the leverage ratio and the profitability ratio of EBITDA/Sales. We use the year-fixed effects and the industry-fixed effects in all columns of **Table 11**.

Table 11 provides statistically significant estimated coefficients for the FOF dummy while investigating the effect of foundation ownership on the percentage of female directors on a board. The coefficients of FOF dummy in both columns 1 and 2 are positive, implying that foundation ownership increases the percentage of female directors on the board by 3% in column 1 or 2.7 % in column 2. These two results are in line with the t-test result in the descriptive statistics section reporting that FOFs differ from non-FOFs in terms of the percentage of female directors on the board. The difference between the mean values of two groups is 3.6% as seen in **Table 5** in that section.

Table 11 – The Effect of Foundation Ownership on Board Characteristics

Table 11 reports the results of the regressions, where the dependent variables are: the percentage of female directors in a board, the presence of CSR/Sustainability committee in the board, and the adoption of environmental supply chain management by the board. The main explanatory variable is the *FOF dummy*, indicating whether a firm is owned and controlled by a foundation. We control for firm size (logarithmic value of total assets), leverage (the ratio of the book value of debt to book value of equity), and profitability (EBITDA/Sales). The variable definitions are provided in **Table A1** in the appendix. The year- and industry-fixed effects are included in all specifications. All variables are trimmed at the upper and lower 0.01-percentiles. Standard errors are clustered at the firm level. *, **, *** indicate significance at the 10%, 5% and 1% levels. The p-values are reported in parentheses.

	(1) % of Female Directors	(2) % of Female Directors	(3) CSR Committee	(4) CSR Committee	(5) Envt. Supply Chain Mgmt	(6) Envt. Supply Chain Mgmt
FOF dummy	3.007**	2.730**	0.048	0.045	0.068	0.068
	(0.026)	(0.045)	(0.178)	(0.213)	(0.128)	(0.132)
Firm size	0.998**	0.702	0.005	0.003	0.120***	0.122***
	(0.019)	(0.107)	(0.580)	(0.762)	(0.000)	(0.000)
Leverage		0.400**		0.002		-0.012*
		(0.032)		(0.792)		(0.080)
EBITDA/Sales		3.983***		0.043		0.026
		(0.007)		(0.177)		(0.651)
Constant	6.102*	7.363**	0.077	0.087	-0.438***	-0.434***
	(0.091)	(0.046)	(0.313)	(0.280)	(0.000)	(0.000)
N. of Obs.	3,290	3,274	3,345	3,327	3,021	3,012
N. of firms	284	284	288	288	282	282
Adj. R-sq	0.295	0.300	0.158	0.158	0.280	0.281
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES

In the 3rd and 4th columns of **Table 11**, we analyze the effect of foundation-ownership on the presence of CSR/Sustainability committee in a board. We have positive coefficients in both regressions implying that being a foundation-owned firm increases the likelihood of having CSR committee on the board. However, we do not have statistically significant results. Finally in the columns 5 and 6 of **Table 11**, we examine the effect of foundation-ownership on whether a board adopts environmental initiative in its supply chain management. We obtain positive coefficients implying a positive relationship between two, however we have statistically insignificant coefficients. Regarding control variables, in columns 5 and 6 of **Table 11**, firm size has positive and statistically significant coefficients at 1% level, implying that larger firms' boards adopt environmental supply chain management more. In column 6, once we add the control variable of leverage ratio, we obtain a negative and statistically significant coefficient at the 10% level. The firms with higher leverage do not pay attention to environmental supply chain management at the board level too.

In the second part of **Section 5**, we examine the effect of foundation ownership on firm performance and firm behavior in corporate social responsibility (CSR). We measure the firm's performance with return on asset (ROA) since it is one of the most common profitability performance criteria from the owners' perspective. On the other hand, we use CO_2 emission in thousands of metrics as a proxy for firm behavior in sustainability. We normalize CO_2 emission with a deflated book value of total assets to remove the firm size effects from the measure.

We use the regression specification below to investigate how foundation-ownership influences firm profitability and its behavior in CSR:

$$Outcome_{it} = \beta_1 \, FOF \, dummy_i + \beta_2 X_{it} + \alpha_t + \lambda_j + \varepsilon_{it}$$

where $Outcome_{it}$ is either firm performance proxied by ROA of firm i at year t or firm behavior proxied by CO_2 emission divided by total asset of firm i at year t, $FOF \, dummy_i$ is the variable that equals to 1 when a firm i is owned by a foundation, α_t indicates year-fixed effects, and λ_j industry-fixed effects. X_{it} denotes the control variables, including firm size and leverage. The regressions showing the effect of foundation ownership on firm performance and behavior in CSR are provided in **Table 12**.

The first three columns in **Table 12** report the results of regressions where the dependent variable is a firm's return on total assets (ROA). The descriptive analysis in this paper earlier shows that FOFs are more profitable than non-FOFs on average in terms of variable ROA. The regressions' results in

the second and third columns in **Table 12** also confirm this finding in terms of the coefficients' positive signs. However, all these coefficients are not statistically significant. When we control for firm size and leverage ratio in the third regression specification, we obtain a positive coefficient of 0.009 for the firm size and a negative coefficient of -0.004 for the leverage ratio. Both coefficients are statistically significant at the 1% level. These two findings about the control variables imply that the larger a firm is, the higher its profitability. On the other hand, the higher the leverage ratio, the lower the firm's ROA.

The regressions depicted in the last three columns of **Table 12** analyze the effect of foundation ownership on firm behavior in corporate social responsibility (CSR). We choose the measure of CO_2 emission as a proxy for firm behavior because our sample consists of industrial firms, and CO_2 emission is an important issue due to global warming. In addition, CO_2 emission is one of the few quantitative measures to judge corporations' behavior in CSR, and we collect this data from Bloomberg. FOFs appear to be different from non-FOFs by polluting nature with less CO_2 emission in the descriptive analysis section. In contrast, in this section, being a foundation-owned firm does not have a statistically significant impact on CO_2 emission shown by the regressions in the fourth, fifth, and sixth columns of **Table 12**. The statistical insignificance of the FOF dummy's coefficient does not change even when we control for firm size and leverage in the fifth and sixth columns. The positive coefficient of firm size, which is statistically significant at the 10 percent level, is expected considering that CO_2 emission increases with the size of a firm's operations. We think that the reason why we could not observe any statistically significant effect of foundation ownership on CO_2 emission is the number of observations. Unfortunately, the number of observations for CO_2 emission is 990 in the sample, as seen in **Table 4**. This is much lower than other variables' observation numbers. Due to the usage of fixed effects and dummy variables, the number of observations used in the regression in **Table 12** drops to 978.

Table 12 – The Effect of Foundation Ownership on Firm Performance & Behavior

Table 12 reports the result of the regressions, where the dependent variables are firm performance calculated by ROA (return on total asset) and firm behavior in sustainability measured by CO_2 emission. CO_2 emission is normalized with deflated total assets to remove the size effect. The main explanatory variable is the FOF dummy indicating whether a firm is owned and controlled by a foundation. We control for size (logarithmic value of the total assets) and leverage (the ratio of the book value of debt to book value of equity). The variable definitions are given in **Table A1** in the appendix. Year- and industry-fixed effects are included. All variables are trimmed at the upper and lower 0.01-percentiles. Standard errors are clustered at the firm's level. *, **, *** indicate significance at the 10%, 5% and 1% levels. The p-values are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)
	ROA	ROA	ROA	CO2 Emission	CO2 Emission	CO2 Emission
FOF dummy	0.005	0.009	0.009	-0.007	0.005	0.005
	(0.477)	(0.160)	(0.135)	(0.840)	(0.887)	(0.885)
Firm size		0.008***	0.009***		0.031*	0.030*
		(0.002)	(0.001)		(0.064)	(0.070)
Leverage			-0.004***			0.005
			(0.000)			(0.445)
Constant	0.038***	-0.024	-0.020	0.150***	-0.111	-0.115
	(0.000)	(0.268)	(0.352)	(0.000)	(0.423)	(0.405)
N. of Obs.	6,227	5,774	5,754	987	978	978
N. of firms	401	400	399	100	100	100
Adj. R-sq	0.058	0.090	0.097	0.504	0.520	0.520
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES

In the last part of **Section 5**, we focus on analyzing governance ratings considering the increased importance of these ratings in the recent year. More companies engage in corporate social responsibility to have a better public image and an ESG (environmental, social, and governance) rating. One pillar of these ratings is governance rating. We have two sets of governance ratings in the dataset: Bloomberg governance ratings and Refinitiv governance ratings. We investigate the effects of some board characteristics on firm governance rating together with the possible differential impact of foundation ownership. During the process of rating a firm, the rating agencies evaluate a firm's own behaviors, practices, and performances in governance, but they also compare each firm with their peers. Then, they give a final governance rating to a firm. In addition, the rating processes are not so transparent, although the agencies share their general principles. By this analysis, we will have gained

some insights about these ratings. We focus on three board metrics: CEO duality, board size and average age of board directors. We choose these variables because each of them measures an importance characteristic of a board. CEO duality is a proxy for a board's independence. Board size is a metric which can measure and influence many characteristics such as the representation of different stakeholders in the board (composition), the functionality of a board (whether people from different expertise exist in the board or not), and so on. On the other hand, the average age of board members is a metric to measure the level of experience of the board members. Rating agencies mention that they rate the companies in these characteristics among many others.

The regression specification we employ in this analysis of governance rating is as follows:

$$Gov\ rating_{it} = \beta_1\ FOF\ dum_i + \beta_2 BrdFtr_{it} + \beta_3\ FOF\ dum \times BrdFtr_{it} + \beta_2 X_{it} + \alpha_t + \lambda_j + \varepsilon_{it}$$

In the specification above, $Gov\ rating_{it}$ is the dependent variable and the numerical rating of firm i in year t provided by Bloomberg or Refinitiv Eikon. $FOF\ dummy_i$ is the variable that equals 1 when a firm i is owned by a foundation. $BrdFtr_{it}$ represents the main explanatory board variables (CEO duality, board size, and average age of board members) for firm i at time t. In turn, $FOF\ dum \times BrdFtr_{it}$ indicates interaction term of foundation ownership dummy and the respective board feature variable, e.g., CEO duality or board size. As seen in the previous specifications, α_t indicates year-fixed effects, and λ_j industry-fixed effects. Here, X_{it} denotes a single control variable that is firm size.

When the dependent variable is Bloomberg governance rating, whether a firm is controlled and owned by a foundation (proxied by FOF dummy) does not significantly influence the rating in the statistical sense, as seen in the first two columns of **Table 13**. In these columns, we regress governance rating only on foundation ownership dummy in the first specification and then with firm size as a control variable in the second specification. The higher the firm size is, the higher the governance rating. We add board features to the regression specification starting in the third column. Then, in the fourth, fifth, and sixth columns, we use interaction variables of board features with foundation ownership dummy variable (*FOF dummy*) in our regressions.

As seen in the 4th column of **Table 13**, the effect of CEO duality on governance rating is negative and statistically significant at the 10 percent level. This result is expected since higher CEO duality implies lower board independence from the company's management and will be penalized with a low

rating from Bloomberg. Furthermore, we interact CEO duality with the foundation-ownership dummy in the fourth column of **Table 13**. We observe that the interaction variable's coefficient is not statistically significant, implying that foundation ownership does not change the individual effect of CEO duality on governance rating.

On the other hand, the effect of board size on governance ratings is positive and statistically significant at the 1 percent level as seen in columns 3 and 4 of **Table 13**. This finding is surprising, because Bloomberg states that "a lower value in board size is characterized as *better* from an ESG perspective". However, the coefficients of board size in the 3rd and 4th columns show the opposite effect. On the other hand, we should note that the corporate governance literature has not reached a consensus on whether a larger or a smaller board is better for companies' governance and financial performance. Regarding the effect of the average age of board directors, we obtain statistically insignificant coefficients both in the third column and in the other columns, although all coefficients are positive, depicting a positive relationship between the average age of board members and governance rating.

In the fifth column of **Table 13**, we interact the board size with the foundation ownership dummy variable (*FOF dummy*). We obtain different results in this column. The foundation ownership dummy variable becomes statistically significant at the 10 percent level, and it keeps its negative sign implying that FOFs are more likely to get a lower governance rating. To evaluate the overall effect, one needs to consider the coefficient of the interaction term between board size and FOF dummy. The interaction term is positive and significant at the 10 percent level. However, its magnitude is small and far from changing the negative relationship between foundation ownership and governance rating implied by the individual coefficient of the FOF dummy.

In the last column of **Table 13**, we use both interaction variables as regressors: *CEO duality x FOF dummy* and *board size x FOF dummy*. Using two interaction variables simultaneously is the difference of this specification compared to the last one. We still obtain a negative effect of foundation ownership on governance rating, which is statistically significant at the 10 percent level. The larger boards in FOFs increase their governance ratings compared to smaller boards. Still, this differential effect is not enough to overcome the negative impact of the foundation ownership category on governance rating. Another essential result from this regression is that CEO duality's coefficient is negative and statistically significant at the 10 percent level as it is in the fourth column of **Table 13**. The

higher the CEO duality, the lower the board independence, and the lower the firm's governance rating. However, the interaction variable of *CEO duality x FOF dummy* does not have statistically significant coefficient, implying that foundation-ownership does not have differential influence on the effect of CEO duality on Bloomberg governance rating.

We repeat the same regression analyses that we have performed in **Table 13** this time by using the governance ratings provided by Refinitiv in **Table 14**. Regressions with Refinitiv's governance ratings do not provide us with any statistically significant coefficients at all for neither foundation ownership dummy nor board feature variables. It is, of course, unexpected that Refinitiv's governance rating is not responsive to all these three board features and foundation ownership as seen in **Table 14**. One of the possible explanations might be a statistical reason: we have a much fewer number of observations for Refinitiv governance rating than we have for Bloomberg governance rating.

Table 13 – The Effects of Board Characteristics on Bloomberg Governance Rating

Table 13 reports the results of the regressions, where the dependent variable is the governance rating provided by *Bloomberg*. These regressions examine the effects of board characteristics on governance rating together with the differential effect of foundation ownership. FOF dummy indicates whether a firm is controlled and owned by a foundation. The main explanatory board variables are CEO duality, the board size, and average board age. *CEO duality x FOF dummy* and *board size x FOF dummy* are the interaction variables of two board characteristics with foundation ownership dummy variable. The only control variable is firm size, which is the logarithmic value of the total asset. The variable definitions are provided in **Table A1** in the appendix. The year-fixed and industry-fixed effects are included in all specifications. All variables are trimmed at the upper and lower 0.01-percentiles. Standard errors are clustered at the firm level. *, **, *** indicate significance at the 10%, 5% and 1% levels. The p-values are reported in parentheses.

	Goverance Rating (Bloomberg)					
	(1)	(2)	(3)	(4)	(5)	(6)
FOF dummy	-1.093	-0.980	-0.647	-0.785	-6.929*	-7.082*
	(0.397)	(0.404)	(0.595)	(0.513)	(0.056)	(0.057)
CEO duality			-1.326	-1.433*	-1.302	-1.413*
			(0.129)	(0.073)	(0.131)	(0.077)
Board size			0.416***	0.414***	0.250	0.248
			(0.009)	(0.009)	(0.108)	(0.111)
Avg. board age			0.041	0.037	0.048	0.044
			(0.591)	(0.614)	(0.521)	(0.542)
CEO duality x FOF dum				1.323		1.368
				(0.807)		(0.791)
Board size x FOF dum.					0.657*	0.658*
					(0.055)	(0.054)
Firm size		2.382***	2.260***	2.260***	2.212***	2.212***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	51.663***	32.364***	28.782***	29.069***	30.295***	30.595***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N. of Obs.	3,195	3,161	2,589	2,589	2,589	2,589
N. of firms	283	283	241	241	241	241
Adj. R-sq	0.163	0.267	0.331	0.331	0.337	0.337
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES

Table 14 – The Effects of Board Characteristics on Refinitiv Governance Rating

Table 14 reports the results of the regressions, where the dependent variable is the governance rating provided by *Refinitiv Eikon*. These regressions examine the effects of board characteristics on governance rating together with the differential effect of foundation ownership. FOF dummy indicates whether a firm is controlled and owned by a foundation. The main explanatory board variables are CEO duality, board size, and average board age. *CEO duality x FOF dummy* and *board size x FOF dummy* are the interaction variables of two board characteristics with foundation ownership dummy variable. The only control variable is firm size, which is the logarithmic value of the total asset. The variable definitions are given in **Table A1** in the appendix. The year-fixed and industry-fixed effects are included in all specifications. All variables are trimmed at the upper and lower 0.01-percentiles. Standard errors are clustered at the firm level. *, **, *** indicate significance at the 10%, 5% and 1% levels. The p-values are reported in parentheses.

	Governance Rating (Refinitiv)					
	(1)	(2)	(3)	(4)	(5)	(6)
FOF dummy	1.986	1.786	0.243	-0.665	3.430	2.687
	(0.570)	(0.554)	(0.951)	(0.845)	(0.761)	(0.812)
CEO duality			-3.539	-4.282	-3.569	-4.319
			(0.319)	(0.178)	(0.317)	(0.175)
Board size			0.399	0.362	0.491	0.459
			(0.465)	(0.498)	(0.441)	(0.468)
Avg. board age			-0.045	-0.085	-0.043	-0.082
			(0.879)	(0.759)	(0.884)	(0.763)
CEO duality x FOF dum				6.493		6.548
				(0.716)		(0.715)
Board size x FOF dum					-0.309	-0.326
					(0.765)	(0.752)
Firm Size		6.134***	5.249***	5.334***	5.283***	5.371***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	48.435***	-4.159	5.236	7.571	3.880	6.163
	(0.000)	(0.629)	(0.780)	(0.666)	(0.832)	(0.721)
N. of Obs.	1,639	1,590	1,219	1,219	1,219	1,219
N. of firms	177	177	142	142	142	142
Adj. R-sq	0.147	0.24	0.284	0.285	0.284	0.285
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES

In the last part, we analyze whether foundation-owned firms have a better score in the board governance (BG) index that we develop based on this sample. We employ the following regression specification:

$$BG\ Index_{it} = \beta_1\ FOF\ dummy_i + \beta_2 X_{it} + \alpha_t + \lambda_j + \varepsilon_{it}$$

where $BG\ Index_{it}$ is the board governance index score of firm i at year t, $FOF\ dummy_i$ is the variable that equals 1 when a firm i is owned by a foundation, α_t indicates year-fixed effects, and λ_j industry-fixed effects. X_{it} denotes the control variables, including firm size and leverage. $FOF\ dummy_i$ is the primary explanatory variable we are interested in.

Table 15 provides the regression results. The difference between different columns is that we add control variables one by one in each regression specification. In all regressions, foundation-ownership has a positive and statistically significant coefficient at the 1% level. Foundation-owned firms score better in the BG index than conventional firms in the sample.

We also examine the effect of the BG index on outcome variables: ROA and CO2 emission. We employ a similar regression specification that we have already used in the previous parts.

$$Outcome_{it} = \beta_1\ BG\ Index_{it} + \beta_2\ FOF\ dum_i + \beta_3\ FOF\ dum_i \times BG\ Index_{it} + \beta_4 X_{it} + \alpha_t + \lambda_j + \varepsilon_{it}$$

where $Outcome_{it}$ is either firm performance proxied by ROA of firm i at year t or firm behavior proxied by CO2 emission divided by total asset of firm i at year t, $BG\ Index_{it}$ is the BG index score of firm i at year t, $FOF\ dum_i$ is the variable that equals 1 when a firm i is owned by a foundation. $FOF\ dum_i \times BG\ Index_{it}$ is the interaction variable of the two explanatory variables of interest. α_t indicates year-fixed effects, and λ_j industry-fixed effects. X_{it} denotes the control variables, including firm size and leverage. The regressions showing the effect of foundation ownership on firm performance and behavior in CSR are provided in **Table 16**.

As seen in the first three columns of Table 16, neither foundation-ownership nor the BG index statistically affects the firm profitability measured by ROA. On the other hand, we examine the impact of the BG index and foundation-ownership on firm behavior in CSR measured by CO2 emission/total asset in columns 4, 5, and 6 of **Table 16**. As seen in columns 5 and 6, the BG index has negative and statistically significant coefficients at the 5% level, implying a higher BG index score leads to a lower CO2 emission. In other words, this finding tells us that better governance practices at the board level

reveal themselves in a firm's behavior in CSR. However, the interaction variable of $FOF\ dum_i \times BG\ Index_{it}$ has positive and statistically significant coefficients at the 5% level, as seen in columns 5 and 6 of **Table 16**. The magnitudes of these coefficients are enough to convert the individual effects of the BG index on CO2 emission. For instance, for column 6, the combined effect is 0.015 (-0.026+0.041), implying that foundation-owned firms with a better governance index release more CO2 emissions. This is a finding that is not expected.

Table 15 – The Effect of Foundation Ownership on the BG Index

Table 15 reports the results of the regressions, where the dependent variable is: the board governance (BG) index score. The main explanatory variable is the *FOF dummy*, indicating whether a firm is owned and controlled by a foundation. We control for firm size (logarithmic value of total assets) and leverage (the ratio of the book value of debt to book value of equity). The variable definitions and the construction of the BG index are provided in **Table A1** in the appendix and in **Table 1**, respectively. The year- and industry-fixed effects are included in all specifications. All variables are trimmed at the upper and lower 0.01-percentiles. Standard errors are clustered at the firm level. *, **, *** indicate significance at the 10%, 5% and 1% levels. The p-values are reported in parentheses.

	(1)	(2)	(3)
	BG Index	BG Index	BG Index
FOF dummy	0.700***	0.723***	0.710***
	(0.000)	(0.000)	(0.000)
Firm size		0.039	0.037
		(0.356)	(0.400)
Leverage			0.013
			(0.677)
Constant	4.284***	3.964***	3.961***
	(0.000)	(0.000)	(0.000)
N. of Obs.	3,048	2,949	2,943
N. of firms	288	283	282
Adj. R-sq	0.256	0.260	0.258
Year FE	YES	YES	YES
Industry FE	YES	YES	YES

Table 16 – The Effects of BG Index on Firm Performance & Behavior

Table 16 reports the result of the regressions, where the dependent variables are firm performance calculated by ROA (return on total asset) and firm behavior in sustainability measured by CO_2 emission. CO_2 emission is normalized with deflated total assets to remove the size effect. The main explanatory variables are the BG Index and the FOF dummy indicating whether a firm is owned and controlled by a foundation. We control for size (logarithmic value of the total assets) and leverage (the ratio of the book value of debt to book value of equity). The variable definitions are given in **Table A1** in the appendix. Year- and industry-fixed effects are included. All variables are trimmed at the upper and lower 0.01-percentiles. Standard errors are clustered at the firm's level. *, **, *** indicate significance at the 10%, 5% and 1% levels. The p-values are reported in parentheses.

	(1) ROA	(2) ROA	(3) ROA	(4) CO2 Emission	(5) CO2 Emission	(6) CO2 Emission
BG Index	0.001	-0.000	-0.000	-0.013	-0.026**	-0.026**
	(0.427)	(0.784)	(0.993)	(0.186)	(0.013)	(0.014)
FOF dummy		0.013	0.017		-0.195	-0.195
		(0.464)	(0.311)		(0.104)	(0.101)
BG Index x FOF dummy		0.001	-0.000		0.040**	0.041**
		(0.787)	(0.994)		(0.035)	(0.034)
Firm size		-0.001	-0.000		0.028*	0.028*
		(0.599)	(0.856)		(0.083)	(0.092)
Leverage			-0.004**			0.005
			(0.017)			(0.520)
Constant	0.042***	0.053***	0.052***	0.210***	0.019	0.016
	(0.000)	(0.009)	(0.010)	(0.001)	(0.893)	(0.912)
N. of Obs.	2,952	2,926	2,920	944	937	937
N. of firms	281	281	280	97	97	97
Adj. R-sq	0.077	0.092	0.103	0.503	0.524	0.524
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES

6. Concluding Remarks & Discussion

This paper adds to our knowledge of board governance in enterprise foundations by comparing foundation-owned companies to conventional ownership forms. It extends the literature about enterprise foundations by studying the board governance of foundation-owned firms in a global setting.

This paper's central hypothesis is that differences in ownership structure will be reflected in corporate governance differences, specifically in the characteristics of boards of directors. We find that boards of foundation-owned firms (FOFs) are, in fact, different from those of non-foundation-owned firms (non-FOFs). We split the control group of non-FOFs into sub-categories of family ownership and investor ownership. The distinctive features of FOFs are still valid compared to both family-owned firms (FAFs) and investor-owned firms (IOFs). FOFs appear to have younger boards where board members serve fewer years. We find that FOFs take into consideration corporate social responsibility/sustainability more at the board level.

We also investigate the effects of being a foundation-owned firm on some specific board characteristics through regression analyses. Our empirical findings show that having a foundation owner leads firms to have boards where directors serve for a shorter time, demonstrated by shorter tenure periods. Moreover, foundation ownership decreases the average age of directors on the boards. FOFs are more likely to separate the CEO position and chairmanship roles on the board. In addition, FOFs have less tendency to keep the former CEO on their boards compared to non-FOFs. On the other hand, foundation ownership does not matter to the board size and percentage of independent directors on the boards. Regarding gender composition, our regression analysis shows that foundation-ownership increases the presence of female directors on the boards. Our regression analyses about CSR/Sustainability related board governance variables do not provide any statistically significant effect of foundation-ownership on having a CSR committee on the board or the adoption of environmental chain management by the board.

Moreover, we investigate the effect of foundation ownership on firm performance proxied by ROA and firm behavior in CSR proxied by CO_2 emission. The regression analyses show that foundation ownership is not associated with higher ROA or lower CO_2 emissions.

We also investigate the relationship between foundation ownership and governance ratings directly as well as through the fundamental board characteristics, such as board size, the average age of board members, and CEO duality. We observe that CEO duality negatively influences Bloomberg's

governance ratings statistically significantly, but this effect is not specifically less or more for foundation-owned firms. On the other hand, the larger the board in a firm, the higher the Bloomberg governance rating the firm has if a foundation owns the firm. In this setting, being a foundation-owned firm leads a firm to have a lower Bloomberg governance rating. The average age of board members seems to have no influence on Bloomberg governance ratings. Concerning Refinitiv's governance ratings, we obtain no statistically significant effect of foundation ownership or board characteristics.

Finally, we examine the relationship between foundation ownership and the board governance (BG) index and the effect of the BG index on firm performance (ROA) and CSR behavior (CO_2 emission) variables. We find that foundation ownership leads to a higher BG index score. This implies that foundation-owned firms are seemingly aligned with better board practices. However, we cannot obtain a statistically significant effect of the BG index on ROA neither for FOFs nor for non-FOFs. On the other hand, we document that the firms in our sample with a higher BG score create less CO_2 emissions, but these firms are non-foundation owned firms.

Appendix

Table A1 - Definition of Variables

Variable	Definition
Board Governance Variables*	
Board size	: Number of directors on the company's board. Full-time directors are only counted.
Average board tenure	: Average tenure of all current directors on the company board in years.
Perc. of independent directors	: Independent directors as a percentage of total board nembership.
Perc. of female directors	: Percentage of the total board members that are female.
Average BODs age	: Average age of the members of the board, in years.
Former CEO on the board	: Dummy variable that is equal to one when a former Chief Executive Officer (CEO) or a person with equivalent role has been a director on the board.
CEO duality	: Dummy variable that is equal to one when the company's Chief Executive Officer is also Chairman of the board.
CSR/Sustainability Committee	: Dummy variable that is equal to one if the firm has a CSR/Sustainability or equivalent committee.
Env. Supply Chain Management	: Dummy variable that is equal to one if the firm has any initiative to reduce the environmental footprint of its supply chain adopted by the board.
Bloomberg governance rating	: Bloomberg's metric that rates a firm in many sub-governance metrics
Refinitiv governance rating	: Refinitiv's metric that rates a firm in governance features in a range from 0 to 100.
Board governance (BG) index	: A index variable that takes value from 0 to 9. It is calculated by giving one point for each of the nine components of the index that the firm has. Each component represents each board governance feature.
Financial Variables	
Debt structure	
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)
Profitability ratios	
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).
Other Financial Characteristics	
Total asset	: Book value of total assets deflated using US CPI index with base year 2015.
Market capitalization (mcap)	: Market value of equity deflated using US CPI indes wih base year 2015.
Asset growth rate	: The growth rate in the book value of total assets for each firm.
Sales growth rate	: The growth rate in total sales (total revenues) for each firm.
Firm Characteristic Variables	
Foundation dummy	: 1 if the firm is owned in majority and controlled by a foundation, otherwise 0.
Firm age	: Number of years since the firm was established
Nu. of Employees	: Number of employees.
Productivity	: Net sales over 1000 employees.
Perc. of female employees	: Percentage of total employees that are female.
CO_2 emission/total asset	: Total CO_2 emissions of the company in thousands of metric tonnes divided by the defated value of total asset.

Note:*Board governance variables are related to the supervisory board when a company has a two-tier board structure: a supervisory board and a management board

Table A2 - Geographical Distribution of Sample Firms

Table A23 depicts the distribution of firms in the sample according to their countries. The table also provides information about the status of the firms in terms of ownership type. Foundation-owned firms (FOFs) are the focus of this study as the treated group. On the other hand, family-owned firms (FAFs) or investor-owned firms (IOFs) having a conventional ownership structure make up the control group called non-foundation owned firms (non-FOFs). Foundation ownership structure is more common in Scandinavian and German-speaking countries; therefore, we create a sub-category called Nordic-Germanic (NG) firms to do more thorough analyses of this sub-group.

	Number of Firms	%	Treated Group FOF	%	Control Group non-FOF	%
Total number of firms	411	100%	137	33%	274	67%
Nordic-Germanic (NG) firms	139	34%	87	21%	52	13%
Sweden	37	9%	26	6%	11	3%
Denmark	27	7%	25	6%	2	0%
Norway	11	3%	2	0%	9	2%
Finland	5	1%	4	1%	1	0%
Iceland	1	0%	1	0%	0	0%
Germany	27	7%	12	3%	15	4%
Switzerland	16	4%	4	1%	12	3%
Austria	15	4%	13	3%	2	0%
Firms from other countries	272	66%	50	12%	222	54%
USA	74	18%	4	1%	70	17%
Japan	44	11%	1	0%	43	10%
India	37	9%	24	6%	13	3%
France	18	4%	1	0%	17	4%
Great Britain	16	4%	2	0%	14	3%
Korea	9	2%	0	0%	9	2%
Canada	6	1%	0	0%	6	1%
China	6	1%	0	0%	6	1%
Belgium	4	1%	4	1%	0	0%
Other countries	58	14%	14	3%	44	11%

Note: The percentage figures are calculated based on the total number of firms, 411, in the denominator of each ratio.

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