
COPENHAGEN BUSINESS SCHOOL

MASTER'S THESIS

(CFIVO1009E)

Does Ownership Structure Matter for ESG Score?

MSC IN FINANCE AND INVESTMENTS

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Date of Submission: 15.09.2020

Number of characters incl. spaces excl. tables: 159813

Number of standard pages: 80

Abstract

This paper examines whether ownership structure is a determinant factor for corporate social responsibility (CSR), measured by ESG score, in European public listed firms. Specifically, ownership concentration and identity are treated as separate but dependent dimensions of ownership structure.

To investigate the relationship, this study provides a systematic assessment of theoretical considerations and an empirical examination using panel data. The sample consists of 1,087 firms (35,149 firm-years) in the period 2010 to 2019. Employing fixed effect (within) regression as estimation technique, ESG performance is modeled against the test variables identifying ownership concentration and ownership identity, and control variables accounting for firm size, slack resources, and financial performance.

The results suggest that large shareholders actively engage in CSR policies, but their implications for the firm depend on the specifics owners' characteristics, motivations and beliefs. The degree to which equity owners can implement their preference, therefore, depends on their power relative to other shareholders in the same firm.

As the relative controlling power of the largest shareholder increases, the impact on CSR, per owner identity, is found to be as follows. When the largest owner is a corporation, the government, or an individual investor, they have a negative effect on corporate ESG score - The last-mentioned, with greater impact than the former. If the largest owner is an Insider or Institutional investor, they positively affect corporate ESG score.

The study offers a new and updated perspective for investors, regulators and other stakeholders in understanding corporate commitment to CSR; by highlighting the relevance of accounting for shareholder heterogeneity when assessing the issue.

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1 Introduction

1.2 Motivation and Purpose

In January of 2020, Larry Fink, the CEO of BlackRock, the world's largest asset manager, announced that his firm will “*place sustainability at the center of their investment approach*”, emphasizing its contribution to “*a fundamental reshaping of finance*” (Fink, 2020). In 2015, the first-ever global commitment to fight the climate crisis came into force. The Paris Agreement, which aims to limit global warming to below 2°C was signed by 195 countries and the EU, besides explicitly recognized the role of the private sectors, local governments, civil society, and the national government (European Commission , 2020).

The measures reflect the increasing pressure from society on corporations to implement sustainable and responsible behavior. Corporate undertaking of social activities is, however, not a new phenomenon; early reference date back to the 1950s (Faller & Knyphausen-Aufseß, 2018), and since then, it has been investigated for its legitimacy and effect on corporate financial performance (Margolis & Walsh, 2003). Today, the number of firms evaluated on ESG criteria is soaring, and common practices among sustainability rating agencies provide easy comparisons between companies (Spitzer & Mandyck, 2019), revealing firm's diverse attitudes towards social responsibility.

To understand corporate respond to *a fundamental reshaping of finance* and growing visibility in the field, it seems reasonable to investigate the drivers of increasingly robust social initiatives, or the lack thereof. Previous studies have found several organizational- and external factors as determinants of CSR. The former consists of, among others, firm size (Dam & Scholtens, 2013), slack resources (Waddock & Graves, 1997), and leverage (Rees & Rodionova, 2015). The latter relate to the stakeholder view of the firm; the firm is a coalition of stakeholders and resource allocation is, therefore, an outcome of the negotiations across coalitions of stakeholders (Cyert & March, 2005) (Pedrosa-Ortega, Hernández-Ortiz, García-Martí, & Vallejo-Martos, 2019). In the light of the theory, scholars have emphasized the role of customers (Vogel , 2005), employees (Brekke & Nyborg, 2008) (Branco & Rodrigues, 2006), regulations (Jentsch, 2018), and communities (Boehm, 2005) regarding corporate engagement in social activities. From this view, ESG participation is a response to pressure

from various stakeholders following with their changing preferences. Nonetheless, the corporation cannot fulfill the needs of every stakeholder group. It must prioritize, “*choosing among those competing interests*” (Jensen, 2002), to succeed.

Within the coalition another stakeholder group, the stockholders, is unique in exerting influence on corporate decision-making. For instance, through legally entitled rights such as voting at annual shareholder meetings and shareholder proposals or engagement with the firm’s management and board (Villalonga, 2018). It is well documented in the literature that shareholders have important implications for business practice and policies to assure themselves of getting a return on their investment (Shleifer & Vishny, 1996). For example, capital structure (Chaganti & Damanpur, 1991) (Bokpin & Arko, 2009) and R&D expenditure (Baysinger, Kisnik, & Turk, 1991). Therefore, it is reasonable to assume that equity owners likewise are involved in the firm’s decisions regarding CSR engagement (Oh, Chang, & Martynov, 2011).

Accordingly, ownership structure may be a determinant factor for firms’ ESG score. Understanding its influence on corporate commitment to social initiative can potentially be a valuable supplement to the theory and practice concerned with developing global sustainability strategies and integrating sustainability into organizations. It is within this context the paper was motivated to investigate the relationship between ownership structure and EGS performance.

1.3 Problem description

The thesis aims to examine the impact of ownership structure on corporate sustainability, as reflected by publicly available score of the environmental, social and governance (ESG) performance of firms. Leading to the following overarching research question:

Whether and how does ownership structure matter for corporate ESG score in European public listed companies?

Specifically, this paper aims to fill a gap in the literature by directly investigating whether and how ownership concentration and identity matter for ESG performance; in order to assess whether some types of shareholders could act as a stimulating driver for firms' proactive CSR strategy. The issue of social performance, its drivers, and implications for the firm have received increased attention from regulators, investors, and businesses. However, the literature on ownership versus social performance is fairly limited and possibly outdated.

Associated hypotheses are developed in section four.

1.4 Sustainability, CSR and ESG – a clarification

‘Sustainability’ is commonly used synonymously with the term corporate social responsibility (CSR). The latter, introduced and defined by Bowen (1953 , s. 6), “... *the obligations of businessmen to pursue those policies, to make those decision, or to follow those lines of action which are desirable in terms of the objectives and values of society.*” The former, early conceptualized by the Brundtland Commission (Brundtland, et al., 1987) as developments that “...*meet the needs and aspirations of the present generation without compromising the ability of future generations to meet their needs.*” Gibson (2006) emphasizes that sustainability is a product of continuing evolution and has developed as a multidimensional integrative concept. Among other aspects, the concept embodies balancing social, economic and environmental interest and initiatives linking present and future, local and global, while engaging the full range of public, corporate and civil society organizations and institutions (Gibson, 2006).

Since the introduction of CSR and sustainability, the concepts have been widely investigated. However, their multidimensional, integrative nature has fostered definitional disagreements in academia, and in practice, a wide variety of initiatives are labeled ‘CSR’ or ‘sustainable’. To the extent that many scholars argue that no universal definition exists (Faller & Knyphausen-Aufseß, 2018), and the terms CSR, sustainability, and social initiatives are used interchangeably.

The acronym ESG was first coined in the 2005 landmark study entitled “Who Cares Wins”, to avoid misunderstanding of the terms mentioned above. The UN Global Compact Office introduced three central factors that “*contribute to the sustainable development of global society*” (2005 , s. 1), becoming a breakthrough for quantitative measures of social efforts by corporations.

The three sub-components: firm’s environmental footprint (E), the degree to which they exhibit a sense of social responsibility (S), and corporate governance (G), create the aggregated measure ESG. The environmental pillar is related to issues such as climate change, natural resource, and pollution. The social pillar embodies issues including labor relations, diversity, and human rights. The governance pillar covers matters related to corporate governance, such as board structure and compensation policy, and corporate behavior such as business ethics and corruption.

Today, a number of rating agencies rate and rank companies according to performance within each pillar, followed by an aggregated measure called ESG score. Although the issues within each pillar are not globally defined, the E, S, and G have provided overarching categories to evaluate company's non-financial performance related to CSR and sustainability. As an extension, this paper will use the term 'CSR' and 'sustainability' interchangeably about actions that appear to further some social good. The publicly available ESG scores should be understood as the quantitative measure of this.

Lastly, it must be emphasized that the market for sustainable investing, including corporate engagement and shareholder action, has grown at a spectacular rate the last decade. Global Sustainable Investment Alliance (2019) reported the total market to reach \$30.7 trillion in 2018, a 34 percent increase only since 2016, and a 68 percent increase since 2014.

1.5 Scoop

The paper targets explicitly the relationship between ownership structure and CSR commitment. Thus, the relationship between CSR and financial performance is not empirically investigated. The paper does not take a stance on whether CSR is value enhancing or decreasing in terms of corporate financial performance. Instead, both possibilities are theoretically explored in an extended shareholder perspective.

1.6 Structure

The remainder of the paper is structured as follows: Section 2 presents previous empirical evidence (literature review), summarized by a contribution to existing research. Section 3 offers relevant theoretical considerations. Section 4 develops hypotheses based on section 2 and 3. Section 5 and 6, discusses data gathering and methodology. Section 7 and 8 presents and discusses the results. Finally, the last section concludes, suggesting the implications of the study.

2 Previous Research: Empirical evidence on the impact of ownership on CSR

Early evidence on the relationship between equity ownership and CSR date back to the 1980s (Faller & Knyphausen-Aufseß, 2018). The period is characterized by a remarkable change in firm's ownership structure (Price, 2018), which catalyzed increased attention to governance research as scholars began to explore the related implications (Kaplan, 1997), while CSR was gaining the status of commonly accepted (Crane, 2008). By the 21st century, CSR had become fully institutionalized, and data availability had multiplied, causing the most generous contribution in the early 2000s. Despite the relatively long history, the amount of research is somewhat limited as the relationships *CSR vs. financial performance* and *ownership vs. financial performance* have occupied scholar's attention.

This section provides an overview of previous research to gain insight into the relationship, identify critical aspects and potential conflicts, and finally address empirical challenges to guide this study's further research. Due this paper's scope, only the link between different measure of ownership and corporate social activity of public companies will be prioritized. The review is not exhaustive but focuses on a selection published studies and will pay attention to the broad conclusion rather than describing individual studies in detail.

2.1 Ownership Structure

The vast majority of empirical studies focus on a specific owner type, using two categories, such as institutional vs. non-institution and family vs. non-family owners, combined with a measure for ownership concentration. Typically a proxy for CSR performance as the dependent variable is regressing against one or more proxies of ownership structure and several control variables.

Relatively few study's focus merely on ownership concentration, with ambiguous results. The definition of ownership concentration will be explored in the theoretical framework section. For now, it should be understood as a measure of how tight the outstanding shares of a company are held.

Both Dam and Scholtens (2013) and Crifo et al. (2016) investigate a large sample of European firms and conclude that ownership concentration negatively impacts CSR performance. They argue that

large owners pay a high price for social performance, and the benefits of CSR simply do not outweigh the cost: assuming a trade-off between financial- and social performance. On the other hand, Georgen and Renneborg (2002) conduct a comprehensive analysis of firms included on the S&P500 list and find no significant relations. Despite using seven different proxies of ownership concentration and finding similar signs and level of significance as previous research on the control variables. The different findings may be attributed to sample selection bias; the results only represent the geographical area studied and/or Georgen and Renneborgs (2002) results represent the link between ownership concentration and CSR for larger firms with low levels of ownership concentration, as to the nature of S&P500 firms. Younas et al. (2017) find a positive effect of ownership concentration on sustainability in UK and US firms, but a negative impact in Germany. The divergent country results are attributed to the fact that the shareholders holding large blocks of equity in Germany have different preferences than their US and UK counterparts.

The implications of the studies mentioned above are summarized in two main points. Firstly, the country of origin may influence concentrated ownerships' effect on CSR. Secondly, the differing results may not, or only partly, be contributed to the country studied but is instead a question of owner identity. Said differently, if the largest owners of S&P500 firms typically has one specific identity, but the European companies include a broad range of identities, the difference may not be explained by country – but identity. For instance, Li and Zhang (2010) explicitly show that shareholders with different identities within the same region need to be distinguished when investigating the relationship between the concentration of ownership shares and CSR; they have different preferences regarding social activities.

2.1.1 Family/Insider

Dyer and Whetten (2006) and Bingham et al. (2011) analyze a sample of firms ranked in the S&P 500 list, categorized as either “family” or “non-family” owned firms at the beginning of the period, against two social performance categories “positive initiatives” and “social concerns”. Dyer and Whetten (2006) find that family firms generate fewer social concerns than non-family firms. In contrast, Bingham et al. (2011) find that family firms engage in more social initiatives than their counterpart. However, the interpretation is the same: the prestige of families is closely tied to the reputation of the firm, giving them incentive to reduce socially irresponsible behavior/engage in social initiatives.

On the other hand, Rees and Rodionova (2015) find that family ownership is negatively associated with ESG performance. Moreover, they find a negative relation between closely held equity and ESG score, although these results are weaker, less significant, and sensitive to controls. Supporting the notion that owner identity matters. The findings relating to family ownership are significant for the combined score and all three individual dimensions of ESG. Using a large sample of 3,891 firms over 10 years across 46 countries, controlling for ownership concentration (closely held equity, which includes family holdings, as reported by Worldscope), family ownership as a time-variant variable and a number of robustness test strengthen their results. They argue that CSR is value-destroying, and because families typically are less diversified than other investors, they have a greater incentive to constrain ESG investment. According to Rees and Rodionova (2015), families are guided by personal benefits as measured by financial performance rather than the greater social good. This is consistent with Barnea and Rubin (2010) findings. Through a sample of the 3,000 largest US firms, they conclude that increasing insider ownership reduces firms' social performance. In opposite to Rees and Rodionova (2015), they argue that there is an optimal amount of CSR expenditure that maximize firm value; only at high-level of ownership share insiders don't *overinvest* in CSR because they bear a larger fraction of the costs associated with such.

2.1.2 Institution

Jo and Harjoto (2012), Graves and Waddock (1994), and Mahoney and Roberts (2007) all find a positive relationship between institutional ownership and CSR, using, respectively, US sample, firms listed on the S&P 500 and Canadian firms. In contrast to the majority, the two latter studies investigate the opposite causality: the one-year lagged value of CSR effect on institutional ownership. They interpret these findings as evidence that CSR is a risk-reducing measure. Jo and Harjoto (2012) test the casual effect of lagged CSR on institutional ownership as well as lagged institutional ownership on CSR. They find only significant results of the second effect. It is important to note that the number of observations under analysis is, respectively, 27 and 60 times the size of their counterparts.

Furthermore, Jo and Harjoto (2012) find a positive association between CSR and corporate financial performance. They assume that the interest of institutional investors, is similar to the purpose of other corporate governance mechanisms, to maximize firm value. Institutional investors realize that CSR is value enhancing as a means of conflict resolution between non-investing stakeholder and the firms. Therefore, increased institutional equity holding will increase CSR engagement, as it will reduce self-interest behavior by managers. Arora and Dharwadkar (2011) similarly use a sample of US firms, but

split CSR into two separate dimensions: positive and negative. They find that block institutional ownership has a negative effect on positive CSR but positive effect on negative CSR. The symmetric effect on CSR is interpreted as investors believing that CSR concerns are value-decreasing. However, does not actively engage in CSR initiatives due to a tradeoff between financial- and social performance. Dam and Scholtens (2012) and Barnea and Rubin (2010) find a neutral relationship.

2.1.3 Government

Li and Zhang (2010) examine the role of state-ownership concerning CSR in China. Their findings are summarized as follows. When the controlling shareholder is the state, a more concentrated holding increasing CSR performance. For non-state-owned firms, ownership concentration decreases the level of CSR commitment. The results are applicable to different measures of controlling rights. Again, the intuitive argument behind this finding is based on the trade-off between financial- and social performance: only the state has incentive to divert private wealth for a greater social good. Similarly, Calza et. al (2016) find that an increased percentage of state ownership is associated with better environmental proactivity in their study of European firms for 2015.

2.1.4 Multiple CSR and identity types

Most previous studies have typically used a unidimensional, aggregated CSR measure and included no or narrow set of ownership identities, resting on the assumption that most owners have the same goals. However, a few studies extent the number of ownership types under investigator or split CRS into different dimension. For instance, Rees and Rodionova (2015) analyze family ownership' association with each of the three pillars of which constitutes ESG and Arora and Dharwadkar (2011) split CSR into a negative and a positive dimension.

Rees and Rodionova (2013), on a panel of 3,542 companies from 30 countries in 2002-2010, find that block ownership is generally associated with lower ESG performance. However, the trend is driven by family and corporations, while investment institutions and government have an insignificant impact. Dam and Scholtens (2012) find similar results based on a cross-sectional sample of 691 European firms in 2005. They conclude that undiversified strategic shareholdings (employees, individuals, and firms) are associated with poorer CSR, while diversified shareholders (banks and institutions) have a neutral association.

Furthermore, Rees and Rodionova (2013) and Dam and Scholtens (2012) find that not only owner identity matters, but different investors are sensitive to diverse dimension of CSR. Rees and Rodionova (2013) find that family ownership has a particular strong negative impact on CSR dimensions of which benefits may fall broadly outside the firms, such as emissions reduction and community activities. Dam and Scholtens (2012) find a negative association between state ownership and CSR driven by stakeholder related dimensions of CSR.

2.1.5 Summary remarks

The empirical evidence on the relationship between ownership structure and CSR can be summarized as follows. At best, concentrated ownership can be said to have a weak negative association to CSR, although the empirical evidence yields mixed results. The review indicates that the association is contingent on country and owner identity. Family/insider ownership likewise show ambiguous results. The most comprehensive studies find a negative impact on CSR. For institutional ownership, there is no evidence of a negative association with CSR. Three studies find a positive association, while Arora and Dharwadkar (2011), Barnea and Rubin (2010), Dam and Scholtens (2012), and Rees and Rodionova (2013) results yield a neutral association. Their common denominator is distinguishing between separate dimensions of CSR and the conclusions are based on the overall understanding of institutional ownership. Therefore, it is possible that the positive association is only applicable for certain dimensions of CSR. In contrast, the neutral association may show a more nuanced view based on several dimensions of CSR. This suggesting that different dimensions of CSR play an important role in understanding the relationship between ownership and CSR. State ownership mainly has a positive effect on CSR, while Dam and Scholtens (2012) find a negative association specifically to stakeholder related CSR issues.

Only one study (Jo & Harjoto , 2012) based their theoretical reasoning on a positive relationship between CSR and firm (shareholder) value, two studies (Graves & Waddock , 1994) (Mahoney & Roberts, 2007) view CSR as a risk reducing measure and one study specifically address the existence of an optimal level of CSR expenditure which increase firm value (Barnea & Rubin, 2010) . The remaining 14 studies assume as trade-off between financial- and social performance, and CSR expenditure is rationalized by non-financial motives. The aforementioned studies have compiled data from 1991 to 2014. While CSR is known to have undergone a substantial transformation in investors and executives' mind during the period, the evidence suggests that scholars and shareholders did not follow the rapid development in the “importance” of non-financial measures.

2.2 Comments on empirical evidence

This section addresses the aspects that have been excessively discussed, have potentially led to discrepancies, or are a source of weakness in previous research. Although the empirical evidence section of the paper only assesses papers which specifically analyze the relations between ownership structure and CSR, the economics approach is somewhat similar to the extensively more studied relation, ownership versus firm's performance. Therefore, where fit, method of analysis for both research questions will be discussed and applied in this paper to understanding the related implications.

2.2.1 Economic approach

All of the studies mentioned earlier apply some kind of regression technique to determine the relationship in question.

Many studies have suffered from low data availability, turning to cross-sectional regression (e.g. (Georgen & Renneboog, 2002)(Li & Zhang, 2010) (Dam & Scholtens, 2012)). Ignoring the time-dimensions makes the findings more vulnerable to abnormal periods and effects. However, deploying panel data allows exploitation of change between- and within units over time. Panel data contain more information, more variability and provide control for time-invariant unobserved or unmeasurable that influence the dependent variable (Park, 2011).

The few studies using panel data rarely describe its specifications, nor explicitly test for fixed or random effects, leaving the reading in the dark regarding the structure of the dataset and the validity of results. Furthermore, the majority of studies use one-year lagged explanatory variables. The choice of lag is neither discussed nor tested.

2.2.2 Measure of ownership concentration

In the aforementioned empirical studies, along with other studies of central corporate governance issues, a multitude of proxies have been used to measure ownership concentration. A high correlation coefficient between different measures is used as reasoning for substituting one measure with another. However, the lack of accordance gives rise to questioning their comparability.

The most used proxy of ownership concentration is the percentage of shares held by the largest shareholder (e.g. (Li & Zhang, 2010) (Crifo, Diaye, Oueghlissi, & Pekovic, 2016). Certain studies define thresholds to determine the share of equity ownership needed for a shareholder to exercise control over business activities (Dam & Scholtens , 2013). Firms are typically classified as having a controlling owner if one single block of equity ownership exceeds 5, 10, or 20 percent. However, this method is popularly criticized as the economics intuition behind alternative fixed cut-offs is somewhat unclear (Gugler, 2001) (Overland, Mavruk , & Sjögren, 2019). Other concentration measures includes: the combined shareholding of owners who hold over x percent, the combined shareholding of the n largest owners, the holding of the largest shareholder divided by the hold of the n largest owners, measures of closely held equity as reported by different databases and approximations of the Herfindahl-Index (e.g. (Arora & Dharwadkar, 2011) (Georgen & Renneboog, 2002)).

Ideally, the studies seek to capture the link between the shareholders power to influence strategic decisions (ownership concentration) and whether it is actively used to influence policies regarding CSR. As highlighted by Overland et al. (2019), ownership concentration is multidimensional. The relative power of an owner, for instance is contingent on the relation with managers and the power of other owners, which will be further explored in the theoretical framework section.

The multidimensional nature of ownership concentration may not be captured in one single variable. Therefore, previous research may capture different dimensions of ownership and this may partly explain the divergent results. As described above, certain studies test several concentration measures. For instance, Rees and Rodionova (2015) find a strong positive relationship between closely held equity, a measure reported by Worldscope, and environmental and social performance, but a neutral relationship when using an alternative proxy for concentrated ownership, Datastream's assessment of strategic holdings. Interpreted by the researchers as emphasizing the role of ownership identity but they may in fact, simply study different dimensions of ownership. Li and Zhang (2010) and Dam and Scholtens (2013) both use a "largest shareholders proxy". Thereafter they supplement with, respectively, the largest shareholding divided by the holding of the ten largest shareholders and an approximation of the Herfindahl index. The studies find that their results apply to both concentration measures. Possibly due to the measures catching the same dimension of ownership concentration, or it may strengthen their results. However, neither discuss the matter. Nonetheless, one should be

conscious of the choice of measure such that it captures the power relations relevant to the specific research question.

2.2.3 Classification of owner identity

The inclusion of owner identity in empirical studies is standardized than ownership concentration. At the core owner identity research is the categorization of ownership types. As established above, several studies define one category of ownership type, such as institutions, as separate from the remaining. Other categorize all owners into four groups (Rees & Rodionova, 2013) or as Dam and Scholtens (2012) in the following six: institutional investors, banks, corporate, state, individual, and employees.

Based on the categories, there are several ways to measure owner identity, of which three are most prevalent. First, the identity of the largest owner (Li & Zhang, 2010). This measure does not identify the issue of conflict of interest between two owner categories within the same firm. Second, the aggregating holding of each ownership type (Dam & Scholtens, 2012). Its limitation is assuming no difference in the utility function and power of shareholders with different share sizes. Third, the aggregated holding of each owner type holding over x percent (Rees & Rodionova, 2013). This is similar to controlling owners as in the ownership concentration measures, therefore, limited by the arbitrage choice of threshold. With ownership identity, as with concentration, causation is warranted in selection and interpreting identity proxies.

2.2.4 Measure of CSR

A major challenge regarding empirical research of CSR is the lack of a uniform way to measure CSR policies and impact. Due to the absence of a generally accepted definition of CSR, there exist no agreed up-on proper metrics to assess the matter. CSR consists of several dimensions, yielding the question of whether every dimension is even quantifiable (Dam & Scholtens, 2012).

All studies mentioned, and most empirical studies assessing CSR as a quantifiable variable, employ a CSR measure based on some sort of database provided by a research firm. US studies typically use the Kinder, Lydenberg and Domini (KLD) database (e.g. (Georgen & Renneboog, 2002), while European studies use a broad variety of databases, for example EIRiS (Dam & Scholtens , 2013) and Vigeo database (Crifo, Diaye, Oueghlissi, & Pekovic, 2016).

Different database does not imply an identical measure of CSR. The databases usually provide a number of indicators for CSR, and while some construct an aggregated measure of CSR based on a varying number of indicators (Georgen & Renneboog, 2002), others group indicators into categories such as “people related CSR issues” (Johnson & Greening, 1999). Therefore, the denomination CSR, although similar, often refer to different dimensions of CSR.

The emergence of ESG has brought the comparability of empirical studies regarding corporate sustainability one step further. The three globally accepted pillars of CSR provide an overall a framework to evaluate CSR; it facilities increased comparability across studies and rating agencies. Only three studies found in the research of ownership association to CSR apply ESG scores (Rees & Rodionova, 2015) (Rees & Rodionova, 2013) (Younas, Klein, & Zwergel, 2017), emphasizing the necessity of further research on the subject in association to the rise of ESG. However, applying ESG scores is not without problem. The ESG-factors are not regulated, and it is up to the individual rating agencies to weight indicators, disclosure, performance, industry and other elements constituting the score. ESG is an evolving discipline, slowly adopting a common language among stakeholders.

2.2.5 Summary remarks on empirical evidence

Based on the description and remarks on prior empirical evidence, a restudy of ownership structure and ESG score can provide value for at least three main reasons.

First, new research will provide evidence applicable to the last decade. The most recent empirical evidence found in this section’s research is Younas et al.(2017) study Germany, UK, and US companies from 2004-2014. Hence, no study has yet been conducted on data after 2014. As described, the relevancy of CSR has rapidly developed the past decade; pressure from stakeholders such as policy makers, customers and employees and increasing information flow through sustainable rating agencies have made ESG an integrated element of the financial market. A restudy of ownerships association to CSR can reveal the potential impact of these external developments.

Secondly, the theoretical perspectives on how ownership and CSR interact are not fully developed. The majority of studies fail to account for the implications of using different concentration measures, and no common approach of research on ownership identity has been established. This may be due to the unidimensional theoretical lens applied by the studies. The majority of studies take a stand on whether CSR expenditure is value-enhancing, -decreasing or bell shaped. Thereafter choose one (at

most two) theoretical frameworks to build hypotheses, choose measures of ownership structure and provide explanations for phenomena discovered in the empirical investigation. The lack of theoretical foundation regarding ownership proxies is a severe problem of the validity of the results, as the consequence is overlooking important dimensions of the relation. Therefore, combining multiple theoretical lenses may provide new insight, influence the choice of empirical approach and measures of the explanatory variables (Okhuysen & Bonardi , 2017).

Lastly, the relations between ownership structure and ESG score may not only provide an improved understanding of CSR's placement in society and be a valuable addition to behavior theory, but indirectly approach the effect of CSR on valuation.

3 Theoretical framework

The following address and discuss the theoretical considerations relevant to the relation between ownership structure and CSR. This section starts the theory-building with an overarching understanding of CSR and its implication for the firm. Thereafter, a systematic assessment of theoretical considerations regarding ownership structures' impact on the firm, including CSR, will be conducted. Lastly, different ownership identities will be explicitly investigated.

3.1 ESG: implications for the firm

Central to the concept of CSR is the notion of how society defines the role of business, and thus the associated responsibilities. The shareholder and stakeholder theories are normative theories of what the business ought to do. Shareholder theory asserts that maximizing returns to shareholders is the firm's only (social) responsibility and that pure socially responsible activities by definition reduce wealth (Friedman , 1970). If ESG initiatives are conducted only as a means to the end profitability, then the company is using the initiative to affect the objective dictated by the shareholder theory; the initiative is no longer viewed as socially responsible according to the theory. On the other hand, stakeholder theory asserts that the firms have a duty to satisfy the interest of multiple stakeholders (Freeman, 1984). A widely accepted interpretation of stakeholders refers to shareholders, customers, employees, suppliers, and the local community. According to the theory, the business has two responsibilities: to ensure all stakeholders ethical rights and balance the legitimate interest of

stakeholders in decision-making. Its fundamental distinction to shareholder theory is that *all* stakeholders' interest is to be considered despite reduced company profitability.

The conflicting theories suggest that depending on how business is conducted within a firm – which theory is most prevalent - will dictate the amount and the type of CSR commitment. The theories split traditional business and CSR, and typically focus on one or the other – separately. However, coined by Porter and Kramer (2011), the term shared value has risen as an intersection between the two theories. Based on the idea that companies can increase profits by solving societal problems, shared value creation moves from shareholder theories strict value-destroying view of CSR and the stakeholder acceptance of profit destroying investments. This enlightened self-interest is an integral part of modern CSR, invoking the so-called triple bottom line of economic, social, and environmental performance (Porter & Kramer, 2006).

In extension of the theoretical conflict regarding the duty of the firm, countless researches have investigated whether robust ESG practice achieves higher, lower, or similar levels of financial performance relative to a comparable firm that do not meet the same ESG criteria. The empirical results, however, have been ambiguous. Friede et al. (2015) and Margolis et al. (2009) have attempted to overcome the biases and shortcomings in previous work by conducting, respectively, a comprehensive systematic review and meta-analysis of the relationship: both suggesting mainly positive correlations. Thus, several scholars and business practitioners have argued that responsible behavior at, the very least, do not systematically impair financial performance (Aguilera, Rupp, Williams, & Ganapathi , 2007) (Villalonga, 2018).

Nonetheless, a few common denominators are universally accepted as central to ESG investing. All-embracing for the subject of matter is the argument that justifying a commitment to CSR, in the name of profit maximization, requires a long-term perspective (Johnson & Greening, 1999) (Graves and Waddock, 1994). Furthermore, ESG advancement can improve firm value through risk mitigation. For instance, the risk of a lawsuit over lack of employee or product safety (Graves and Waddock, 1997), or by preparing for environmental disruption, like investing in new technology or sources of energy. Collected, it is the belief that certain ESG investments improve long-term risk-adjusted returns. However, most ESG commitments are particularly costly. For example, it may require a

fundamental change in a company's value chain. Lastly, it is generally difficult to assess whether the company is going to, or have achieved, the objective of long-term risk adjusted returns.

ESG commitment is commonly associated with competitive advantages. It is well known that companies must adopt to main their competitive advantages, such as high customer-switching cost, cost advantage, intangible assets, and efficient scale. Viewing ESG through this perspective, the investment is merely a part of retaining a company's sustainable competitive advantage, creating intangible value beyond the value of financial fundamentals. It may not value enhancing in a classical sense of net present value calculation. However, firms which do not adopt ESG strategies are argued to inevitably become laggards and will simply not survive in the future (Fatemi & Fooladi , 2013) (Berry & Rondinelli , 1998) (Barnett, 2007). The remaining question is the amount of resource one should allocate to ESG initiatives. Firms can either implement proactive initiative to improve CSR, or reactively follow rules and guidelines to avoid negative consequences. As early as 1983, Mintzberg (1983, s. 10) set the stage for the long-standing debate, explaining that firms ESG initiative are only economically and financially rewarded to a certain extent - "*it pays to be good but not too good*". Altogether grasping the multidimensional issue of ESG investing – no optimal ESG score can determined, instead it portrays the non-financial dimension of firm fundamentals.

3.2 Ownership structure: implications for corporate strategy

3.2.1 Separation of ownership and control

Yan (2000) defines ownership as a combination of rights and responsibilities regarding a specific asset. As Berle and Means (1932) argued, the traditional logic of ownership involves two aspects: the right to control the asset and the right to benefit from its use. In the case of publicly listed firms, equity investment in corporate stocks entitles its holder to a share of the company (Munk, 2018). The link between legal ownership and the ability to control corporate assets, however, is no longer straightforward as first defined. The shareholder is the ultimate risk-bearer and for that entitled to cash-low rights; claim on a share of the dividends and other payout of the company (Munk, 2018). Satisfying the latter of the two aspects. On the other hand, it is the ultimate manager who typically initiates and implements decisions (Fama & Jensen, 1983). Managers of modern, public held corporation are generally not the major residual claimants, rather professional, well-informed individuals carrying out the every-day operation of the firm. Shelifer and Vishny (1996) note that in

theory, this would not be a problem given a complete contract that specifies the managers exact actions in all states of the world, ensuring full control to the owners. However, the uncertain nature of the future makes it infeasible to create such a complete contract and contradict the rationale for hiring managers in the first place. That is the need for specialized human capital. This separation of management function from ownership gave rise to scholars expressing concerns that the holder of corporate stock might lose control over his resources; Introducing the phenomena in economic theory of the firm, separation of ownership and control (Demsetz, 1983) (Fama & Jensen, 1983).

3.2.2 Agency problem type 1

According to agency theory (Jensen & Meckling, 1976), the separation of ownership and control generate a situation where owner and managers may have different objectives. Agency theory examines the relationship “*under which one or more person (the principals (s)) engage another person (the agent) to perform some service on their behalf*” (Jensen & Meckling, 1976, s. 308), in the context of conflicting interest between parties. According to the theory, both parties are utility maximizers, giving rise to agency problems: the loss of welfare to the principal for inducing an agent to behave on his/her behalf. The relationship between shareholder (principal) and managers (agent) of a corporation fits the definition of a pure agency relationship. The manager is motivated by self-interest, such as the pursuit of prestige and power (Harrison & Harrell, 1993). Their action can either conflict or pair with the overall interest of the firm, in opposed to managers solely reaching decisions that maximize shareholder-value, causing what is to be referred to as agency problem type 1.

For example, manager power increases with the amount of resources under his/her control. Therefore, instead of paying out excess free cash flow to shareholders, the manager may grow the firm beyond its optimal size or undertake value-destroying investments (Jensen, 1986). Thus, managers may overinvest in ESG projects for their private benefits such as increased managerial power or to improve their reputation as “good global citizens” (Barnea & Rubin, 2010). On the other hand, managers are likely to operate with a relatively short time-horizon. Their self-interest may be reflected in their motivation to maximize firm performance in the period in which they are compensated at the expense of the firm’s long-term performance (Walsh & Seward, 1990). Consequently, the manager may not voluntarily bear the cost of ESG investments, rather prioritizing projects which can be realized within their timeframe.

3.2.3 Control mechanisms

The agency model proposes a number of external and internal control mechanisms to reduce the magnitude of agency costs created by the separation of decision and risk-bearing functions (Shleifer & Vishny, 1996). The former includes the market of corporate control. A debated mechanism, of which the idea is that the stock market will recognize when a company's resources are not utilized to reach its full potential. That is, as management engages in self-interested behavior, the company stock price will decrease accordingly, because it reflects the implication of internal decisions for current as well as future performance of the firm (Fama, 1980). The market for corporate control builds on the underlying premises of market efficiency, making it a controversial mechanism. The latter include all shareholder efforts to discipline managers throughout their holding period (Cărauşu, 2015). For instance, 1) exercising their voting rights on matters where they generally retain approval rights, such as board membership, new stock issues, merger and auditor choice (Fama & Jensen, 1983), or 2) by direct shareholder pressure, through submission of shareholder proposals for inclusion in the proxy statement, presentation at shareholders meeting and voting (Gillan & Starks, 2000), and negotiation with firm's management (Huson, Parrino, & Starks, 2001). The following will reference such efforts by shareholders using the umbrella term 'monitoring'.

3.2.4 The role of ownership concentration

In order for shareholders to have the incentive to ensure that their interests are satisfied, their stake must be large enough to offset the costs of control (Grossman & Hart, 1988) (Jensen & Meckling, 1976). Shareholders are typically not required to exercise their rights, and the gathering of information to effectively engage in monitoring of the firm is costly (Fama & Jensen, 1983). When ownership of capital is dispersed among small shareholders, no shareholder is likely to exercise control because each faces a substantial free-rider problem (Shleifer & Vishny, 1997). Meaning, all shareholders reaps the benefits of any shareholders effort to acquire knowledge and oversee managers, but the entire costs is inquired by the activist owner making the effort. Additionally, the holdings of disperse individuals have limited influence in the context of negotiation – even if the benefits outweigh the costs, small shareholders are ill-equipped to exert sufficient pressure to influence corporate outcome (Zeckhauser & Pound, 1990). Disperse ownership allows optimal allocation of risk bearing, as investors can diversify across several securities, its consequence lack of incentive to take direct interest in one particular firm (Fama, 1980) and enables managers to pursue their own goals.

The situation changes when a shareholder own a significant percentage of corporate stock. Blockholders, the owner of a large block of a company's share, increase the cost-efficiency of monitoring because the benefits increase with the shareholding, while the costs occurred typically doesn't grow at the same rate. Due to lack of diversification, they bear a significantly higher risk than small shareholders, which enhance their incentive to exploit monitoring mechanisms. Furthermore, blockholders have more power to implement concerted actions (Shleifer & Vishny, 1997).

Therefore, scholars argue that management exercise more freedom in the use of the firm resource when the company shares are "*owned by a large number of individuals none of whom is in position to obtain direct or indirect benefits per share greater than those available to other shareholders*" (Ragazzi, 1981), namely disperse/diffused ownership structure. On the other hand, as ownership focusses in the hands of one or a few large shareholders, namely concentrated ownership structure, they are more likely to influence the firm's corporate decisions, including participation in CSR.

As discussed in the *empirical evidence* section, the threshold for what it takes for a shareholder to have such incentive and the power to exercise effective control over business activities is arguable. Certainly, a shareholder who holds over 50% of a company's outstanding shares will have control in the case of an absolute majority rule. The owner will lonesome win any (absolute majority) voting contest (Overland, Mavruk , & Sjögren, 2019). However, as evident in most ownership research, a shareholder may exercise control with a significantly smaller voting share than 50 percent. For this reason, fixed cut-offs like 20 percent ownership share have been common practice as an approximation for whether an owner possesses control over a firm. Nevertheless, there is no logical explanation for why a shareholding of 21 percent should be associated with a greater degree of control than a shareholding of 19 percent in a corresponding firm. In comparison, the latter simultaneously is considered equal to an owner holding only 2 percent in a third company. Emphasize must therefore be put on the concentration of ownership, indicating the shareholders' degree of control.

Owners' control is considered to increase continuously with the owners' share size, or more accurately, control right such as voting share (although the precise relations between ownership share and owner 'power' is complex (Thomsen & Pedersen, 2000)). Leading to the following assumption in regards to agency problem type 1: The monitoring of management increases in proportion with the holding of the largest owner, "*In this situation the largest shareholder will represent all shareholder*

because self-dealing managers is in the best interest of no shareholders” (Overland, Mavruk , & Sjögren, 2019, s. 5).

3.2.5 Agency problem type 2

Jensen and Meckling (1976) note that agency problems can likewise arise in situations involving cooperative efforts by two or more individuals despite no obvious principal-agent relationship. The agency problem type 1 assumes that the owners are a homogeneous group seeking to maximize economics profits or shareholder value (Thomsen & Pedersen, 2000). In such a case, the presence of block ownership will lonesome produce shared benefits of control, which are the resulting wealth effect that eventually is shared with minor shareholders, as a result of the reducing agency problem type 1. However, concentrated ownership may enable a situation where the largest shareholder has the power to rather use the firms’ resource in the pursuit of their own interest (Morck, Wolfenzon, & Yeung, 2005). Similar to how management entrenchment, blockholders can under- or overinvest in CSR to gain private benefits. Firms are then exposed to an agency problem type 2.

Ben-Nasr et al. (2015) find strong empirical evidence that the presence of multiple large shareholders, beyond the largest owner, contribute to reducing the conflict caused by agency problem type 2. Furthermore, Maury and Pajuste (2005) find empirical evidence that the contestability of the largest shareholder by a second-largest shareholder, of whom has a different ownership identity, limits the expropriation behavior of the largest shareholder. Leading to the following assumption is association to agency problem type 2: while the largest shareholder ability to exercise control is augmented by a larger holding, it is also affected by the influence of other shareholders.

3.3 Ownership concentration: implications for ESG score

Owners of corporate stock want to retain control to assure themselves of getting a return on their investment. While blockholders, on average, might be able to enforce such control and affect the actions of corporations more frequently than do small stockholder, their evaluation of a successful investment depends on their motivation. Their motivation can, at least, be split into two broad categories: 1. financial motives (maximizing economic profit) and 2. non-financial motives; each of which can produce shared or private benefits of control. In what way corporate blockholders weight the two will, based on agency problem 1 and 2, have divergent impact for corporate strategy.

As CSR engagement often is described as a particular form of strategic investment by a corporation, influential shareholders are likewise assumed to be involved in decisions to engage or not to engage in CSR. Shareholders can be expected to support CSR participation to the extent that their individual benefits, financial and non-financial, exceeds the potential costs incurred by the allocation of resource to CSR.

Barnea and Rubin (2010, s. 72) describe, *“to the extent that firms’ decision are made to achieve value-maximizing objective the chosen level of CSR expenditure should be consistent with such objective”*. The citation emphasizes the existence of some optimal level of ESG score, which maximizes the financial benefits social initiatives. Good managements will undertake this amount of CSR investment. However, agency problem type 1 and the theory concerning concentrated ownership suggest that blockholders are the only one with incentive and power to enforce this level of ESG score and will ‘neutralize’ potential managerial entrenchment. Based on the management, concentrated ownership can theoretically have positive or negative effect on CSR commitment.

Moon (2014) points out the difficulty of monetizing the benefits of CSR engagement. The actual impact of CSR may only get visible in the long run and/or are indirectly induced (Sino-German Corporate Social Responsibility Project , 2012). For instance, risk-mitigating activities such as withdrawal from drilling an ecologically sensitive area may ward off future government regulation, stimulate innovation and be a source of competitive advantage due to improving the relationship with stakeholders; potentially, even ensure the future survival of the company. However, most ESG developments require substantial investments, and the uncertain nature of the benefits makes it difficult to assess whether or not the project is a negative net present value (NPV) investment.

Furthermore, Thomsen and Pedersen (2000) note that profit maximization is only well defined theoretically, when markets are complete. When markets are incomplete, even profit-maximizing owners may disagree about corporate strategy, even if the level of CSR expenditure that maximizes profits was provided. That is because shareholders have differing preference regarding, inter alia, risk and time profile of expected cash flows. Consequently, the amount dominant shareholders are willing to invest in ESG improvements become a source of how they independently perceive and determine CSR, which need not align with the believes of other, smaller shareholder – blurring the line between shared- and private benefits of control, in the case of financially motivated shareholders.

Apart from divergent believes, risk- and time profiles potentially causing even financially motivated shareholders to differ in terms of resource allocation towards CSR, additional non-financial motives may affect blockholders to exercise their power differently. Non-financial motives refer to the use of controlling power to consume corporate resources and benefits not directly linked to making money. For instance, reputation and moral duty are suggested to be determinants of CSR (Dyer & Whetten, 2006).

The basic principle of social identity theory is that individuals view themselves as an extension of the group they belong (Hogg & Knippenberg, 2003). The group, relevant for discussion, is embodied by organizational identity theory, defined as the organizations' self-definition (Bingham , Dyer Jr. , Smith, & Adams, 2011), illustrated by a jointly view of 'who we are?' (Albert & Whetten, 1985). The identification link between shareholders (individual) and the organization is recognized by scholars to explain why shareholders might direct their firms towards robust CSR practice. Firstly, individuals who are closely associated with an organization are subject to a moral dimension – that the corporation should “do good” because it is the right thing to do and “who we are” (Dyer & Whetten , 2006). Secondly, individuals prefer membership in groups that are generally viewed positively by outsiders (Dutton, Dukerich, & Harquail, 1994). Suppose a shareholder individual reputation is closely linked to that of the corporation. In that case, they are said to put greater emphasis on CSR (Dyer & Whetten , 2006) and one can expect a positive relation between concentrated ownership and ESG score. Accordingly, one must recognize that blockholders have different roles in society, impacting their strategy and behavior. Linked to agency problem type two, it embodies the divergent objectives that are not financially motivated.

Ownership concentration, one dimension of ownership structure, determines the power of shareholders to influence managers (Thomsen & Pedersen, 2000). Theory suggests that both financial and non-financial motives play a role in the way this power is exercised. The weight of these can differ by the owners' identity and within each 'category' there are potentially conflicting interests that further cause dominant shareholders to act differently in regard to CSR commitment. In sum, the level of concentrated ownership can be either positively or negatively related to CSR measured by ESG score, contingent upon inter alia the existing management, time- and risk preference, and the extent to which the influential shareholder(s) identify with their organization.

3.4 Ownership identity: implications for ESG score

This section will focus on the connection between CSR and particular owner identities, a dimension of ownership structure believed to have important implications for corporate strategy. The purpose is to model owner preference by theoretically analyzing the relevant financial and non-financial costs and benefits of CSR for each category of ownership. Assuming that the objectives are similar within categories which previously have been found to cover the largest owners in European, public listed companies (Thomsen & Pedersen, 2000) (Dam & Scholtens, 2012). The following six owner identities are to be investigated: the government, corporate investors, individual investors, institutional investors, insider investors and private equity investors.

3.4.1 Government Ownership

State ownership (state and government are used interchangeably in the following) are stock investments by governmental agencies and sovereign wealth funds. The very existence of state ownership in welfare economics is often justified by its nonprofit-maximizing behavior (Pargendler, 2012), as it is expected to offer public value creation and correct market failures by operating differently than private shareholders (Thomsen & Pedersen, 2000) (Kerry, 2018). Emphasizing the government's moral obligation towards its citizens to go beyond merely financial objectives.

Consistently, the literature suggests that state equity ownership is likely to use firms as a vehicle to pursue social and political objectives (Borisova, Brockman, Salas, & Zagorchev, 2012). For example, employment and labor management, health- and social care, as well as regional development such as

infrastructure. Such objectives can often be aligned with those regarding CSR. Supporting a solely political view, Porta et al. (2002) suggest that the state acquire firms to provide public benefits and eventually gain votes. Furthermore, most European countries explicitly aims to protect the environment (Dam & Scholtens, 2012), inter alia through reducing carbon emission. Following the logic of Porta et al. (2002), if such efforts are neglected through government holdings, they are particularly vulnerable to lost credibility and lowered reputation.

The state is considered long-term investors. Their primary task is not to generate short term financial return (PwC, 2015), and they are typically relatively wealthy: they can coordinate resources through government procurement and state funding (Hsu, 2020). This implies a relative advantage for state-owned enterprises as CSR development typically require substantial investment and long-term resource commitment.

Investment in CSR is a method of conflict resolution with various stakeholders, according to Freeman's (1984) stakeholder theory. Stakeholder theory indicates that corporations engage in CSR because they are required to be ethical and socially supportive (Carroll, 1979), not solely with the purpose to generate returns. Which seems like an applicable assumption in terms of state ownership.

3.4.2 Institutional Ownership

Institutional investor ownership relates to stock market investment of large asset owners such as pension fund and hedge funds. They (usually) invest money on behalf of ultimate investors (clients), and their performance is often measured in terms of financial success. Therefore, their dominant objective can be described as maximizing economic profits (Thomsen & Pedersen, 2000). The group is considered sophisticated investors as they are professionals with a substantial amount of resources in terms of wealth and specialized knowledge, making them less likely to make uneducated investments (Palmer, 2019). Institutional investors are further characterized by highly diversified portfolio investments and "arm's length relationship with the firm" (Thomsen & Pedersen, 2000).

Critics of CSR would argue that the above characteristics, financially motivated, resources to gather and process information, and lack of shared identification with the firms, point in the direction of a negative association between ESG score and institutional ownership. Relying on the assumption that

there is a trade-off between financial- and social performance, professional investors would recognize this and actively discourage such behavior.

However, according to the Global Sustainable Investment Alliance ((2017) (2019)), institutional investors have historically led the market for sustainable investing in Europe – and still do. Sustainable investing is here defined as the consideration of environmental, social, and governance factors in portfolio selection and management (corporate engagement and shareholder action). Consistent with the premise that institutions focus on their clients' financial returns, this suggests that institutions have been early movers in acknowledging the value effect of CSR activities.

Rees and Rodionva (2013) argue that their distinct characteristics, diversification, wealth, and solely financial objective, rather allow them to be more enthusiastic about potential advantages of advanced environmental and social performance. In comparison to undiversified shareholders, like corporations and insiders, which generally have a more complex nexus of financial and non-financial motives along with higher exposure to the particular risks involved. The logic being that institutions can focus their resources on properly addressing the costs and benefits of ESG, not disturbed by alternative motives and with the flexibility to go beyond only secure and predictable gains.

Indeed, there exist both short and long-term institutional investors. The former are likely to consider CSR as a cost with limited benefits. Bushee (1998) describes these as holding small stakes in numerous companies and the frequent in and out of stocks leaves them with little incentive to monitor management, thereby acting as passive investors. As the holding of an institutional investors in a particular firm, however, increases or are sufficiently large, they are more likely to be dedicated, long-term investors providing them with incentive to actively monitor management (Bushee, 1998). These may consider ESG investment to be particularly important for shareholder value creation, as they reap the long-term benefits of investment.

3.4.3 Corporate Ownership

Corporate ownership refers to the holdings by companies. Apart from concentration on their core business, companies also engage in intercorporate investments. That is, when a company makes any investment in another company.

Broadly, intercorporate investments can be classified within two categories (Silver, Chen, & Kagan, 2020): investment in financial assets, and investment in associates and business combinations. The first describes a situation where the securities are owned for investment purposes, investment of excess fund to simply increase profitability through the equity stake. According to modern portfolio theory, diversification of securities is essential to maximize return by taking on the optimal amount of risk (Markowitz, 1953). As such, this category is typically associated with having a small corporate ownership share in the target firm with little to no influence on strategic decision-making.

The second category embodies investments that are not purely financially motivated, in terms of the target firms' performance, but are grounded in strategic reasons. Corporate owners may engage in intercorporate investments to coordinate, synchronize, and focus on the business operations of the target firms or create business combinations such as merger, acquisitions and consolidation (Thomsen & Pedersen, 2000). Attempting to gain competitive advantages or increased efficiency that often involve economies of scales or "other synergies", such as sharing production facilities, branding, broaden the market or eliminate competition (Andrade, Mitchell , & Stafford, 2001).

To be in the position to have significant influence over the target firms' business activities and eventually fulfill the strategic objective, the corporate owners must acquire a relatively large ownership interest. Leading to the assumption that strategic objectives dominant pure financial motives in respect to the target firm's performance, as the shareholding increases for corporate owners.

A branding motive would imply explicitly creating an identification link between the two firms. Accordingly, it can stimulate corporate owners to actively engage in CSR initiatives on the target firms' behalf. As consumers are found to rewards firms for their support of social programs (Becker-Olsen , Cudmore, & Hill, 2006), the good reputation of the target firm is likewise expected to enhance the reputations of the corporate owners.

Nonetheless, most strategic objectives do not have a direct link to CSR commitment. More likely, it is that CSR engagement is simply neglected – being in the shadow of complex nexus of strategic motives. Having a large ownership share that is strategically motivated typically suggests a higher risk exposure to the particular company, which may further restrain corporate owners from engaging in long-term commitments with uncertain cash-flows. Consequently, it is reasonable to expect corporate owners with large shareholdings to focus on programs which are directly in their strategic interest and have the most to gain.

3.4.4 Private Equity Ownership

Traditionally, the term private equity (PE) refers to specialized investment firms that manage a leveraged private pool of capital through active engagement with individual companies (Celik & Isaksson, 2014). PE funds are generally viewed as holding large stakes in non-listed companies and only seen as owners of public listed firms in relations to liquidity events such as initial public offering (IPO). Active engagement in publicly traded companies is a relatively recent strategy.

PE firms are typically active investors. They gain influence or control over a companies' operations to build and grow a better company over a fixed period, usually 4-7 years (holding stage), before selling them (exit stage) to redistribute capital and dividends to the investors of the PE fund (limited partners). Hence, the underlying motivation for PE firms is solely financial, the pursuit of a return on investments that satisfies the investment fund providers. Therefore, they would purely analyze CSR opportunistically as a means to improve the bottom-line performance, following shareholder theory.

On a theoretical level, PE firms have been recognized as highly efficient at maximizing shareholder value through corporate governance initiatives, such as reduction of agency costs and strong incentive to management (e.g. (Jensen, 1986) (Kaplan & Stromberg , 2009)). Furthermore, environmental and social issues have been shown to offer a wide range of innovation possibilities and business opportunities (Porter & Kramer, 2002), which has a strong resonance with the PE model; They are known to be oriented towards solutions that can exploit new market opportunities (The Yound Foundation, 2008).

On the other hand, due to the relatively short timeframe PE funds may expropriate stakeholders, focusing on short-term financial gains at the expense of employees as well as environmental and social issues. Consequently, they are less likely to proactively improve ESG score, instead follow rules, guidelines, and invest a “minimum” amount to avoid adverse outcomes such as bad press due to misbehavior.

3.4.5 Individual Ownership

Individual owners are private individuals who invest in the stock market for their personal account, and not on behalf of a third party. Consequently, the group generally possesses smaller fortunes than, for example, institutional owners and are regarded as non-professional market participants; Argued to have multiple implications for their decision making and controlling power.

Firstly, due to the relatively high cost of information production and processing, they lack knowledge and expertise to make best-in-class decisions. Furthermore, Barber and Odean (2013) emphasize that the group is more prone to behavior and emotional errors, as opposed to their professional counterparts. The literature demonstrates that in addition to maximizing shareholder value, the group have various motives such as dividend income and stable cash flow (Kumar & Graham, 2006), tax incentives (Sialm & Starks, 2009), and ethical considerations (Bollen, 2007). Demonstrating their propensity to pursue private benefits at the expense of value-maximization.

According to McLachlan and Gardner (2004) there is a substantial difference between sustainable aware and conventional individual investors. The prior clearly value responsible conduct of firms, while the latter don't identify or merely ignored it. During the latest decade, however, there have been reported a substantial growth in the group's awareness of ESG issues. In terms of the market for sustainable investing, as defined by Global Sustainable Investment Alliance (2017), individual investors only accounted for 3.4% up until 2013 (Eurosif, 2016). However, by 2015 Eurosif (2016) could report a significant growth, now covering 22.1% of the market.

Although institutional investors continue to lead the market it is clear that the laggards, individual investors are catching up. This is possibly due to recognizing the financial benefits and risk implications of ESG, or simply driven by momentum caused by e.g. media coverage (Barber & Odean, 2013). The question remains whether sustainable consideration still is a niche market for these investors.

Secondly, Pound (1988) proposes that they suffer from higher costs of monitoring compared to sophisticated investors which have the opportunity to pool resources, causing individuals to be less efficient monitors. This implies that individual owners must obtain a relatively larger ownership share to influence corporate decision-making.

Lastly, as to their smaller fortunes, a given ownership share requires a larger proportion of their overall wealth. Correspondingly, it is reasonable to assume that increased shareholding leads to lower diversification for the group. Possibly causing individuals to be more risk averse, focusing on stable and predictable low risk – low return project, as they have devoted a disproportionate share of their wealth in one company.

3.4.6 Insider Ownership

Insider investors correspond to individual investors, although with the distinct characteristic of being very closely associated with the firm. An insider can, for example, be corporate managers, directors and employees. Therefore, private benefits related to the identification link is prevalent. Insiders can gain utility from being identified with their companies' high ESG score or the warm glow that accompanies the actual investment, as previously discussed in relation to managers in specific.

Morck et al. (1988) find evidence that insiders are entrenched at a low level of ownership. In contrast, increased ownership serves to align their interest with the objective of maximizing firm value since they would bear more of the cost associated with the non-value maximizing activities. Therefore, overinvestment in CSR is expected to decline as ownership rises.

Insiders are found to hold under-diversified portfolios, as they invest heavily in the stock of their employer (Barber & Odean, 2013). Similar to individual investors, lack of diversification may cause them to be more risk averse. Hence, insiders may, in fact, constrain ESG developments in exchange for personal benefits in terms of low risk, stable cash flow projects at high level of ownership.

Lastly, one must recognize that certain ESG initiatives directly affect insider investors, which can counteract other private motivations in favor of ESG investment. For example, health and safety for employees and executives' pay.

4 Research question and hypotheses development

Drawing upon the prior empirical evidence and the theoretical framework, testable hypotheses are developed in relation to the research question specified in the problem description:

Whether and how does ownership structure matter for corporate ESG score in European public listed companies?

The baseline for the analysis is 1) the effect of ownership structure on ESG score must be lagged, and 2) may dependent on the individual pillars. It is theoretically impossible that a changing ownership structure has a simultaneous effect on ESG score, nor in the extreme short term. Since ESG is related to a long-term commitment, a common belief is that ESG score operates the same way. However, rating agencies typically do not adjust ESG score according to completed ESG initiatives. Rather, it adjusts the score according to when policies are implemented, or occasionally, reported by the firm to be implemented in the near future – “having an emissions reduction policy is positive” (Refinitiv, 2018 p. 9). As such, the time laps from a new ownership structure enters the firm until a possible change in ESG score is instead a question of how long it takes to implement a policy. There exists no “average” term for policy implantation. Some experts suggest a thorough review of policies at least once a year (SHRM, 2019), while one can conduct that this is not always the case. The empirical evidence section reveals that the matter is generally not discussed in previous resource. As such, different lags will be testes in the empirical evidence section.

The second important factor relates to the fact that aggregated ESG score is the main topic of interest for this paper. However, it becomes clear from the empirical evidence section that the different pillars may be of matter, and as emphasized in the theoretical framework, ESG is not just one type of investment. Companies can choose and pick from a number of strategies to increase the score according to personal beliefs and motivation, and in the debate of ESG, it is widely recognized that *certain types* of ESG investments are value-enhancing, while others are not. A thorough analysis of this is not the main focus of this paper, but it recognized that the potential effect of ownership structure on ESG score can be driven by one or more of the pillars. As such, it will be investigated in the empirical analysis, but only with significant results discussed in greater detail. Furthermore, there is a lack of theory regarding individual identities relations to the specific pillars. Noteworthy statistical

results will therefore be interpreted as a valuable addition to the study of ESG score as a whole, rather than being viewed in separate.

This paper treats ownership concentration and owner identity as separate, although dependent dimensions of ownership structure, representing respectively quantitative and qualitative ownership information. Correspondingly, separate as well as conditional hypotheses are developed.

4.1 Ownership concentration

The control of the company is traditionally viewed as a function of the stockholders. However, the theory of separation of ownership and control manifest that stockholder power is often diffused in public modern corporations (Fama & Jensen, 1983). Therefore, control is left to the managers. This separation is generally attributed to the ownership structure and gives rise to agency problems between management and shareholders. This paper assumes that increased ownership by the largest shareholder will reduce agency problem type 1. With that, agency problem type 2 arise, embodying the conflict between shareholders. In sum, the degree to which equity owners are able to implement their preferences depend on the extent to which they can have significant influence on the firm through their percentage of equity ownership, which in turn depends on their power relative to other stakeholders and shareholders in the same firm (Villalonga, 2018). In accordance, the hypotheses regarding ownership concentration is:

Hypothesis 1:

The absolute shareholding of the largest owner does not have a statistical impact on ESG score.

Hypothesis 2:

The relative ownership share of the largest shareholder has a statistical impact on ESG score.

4.2 Ownership identity

Large shareholders are powerful in terms of making demands for policy commitments. However, the theoretical framework makes clear that increased ownership concentration can either be positively or negatively related to CSR. The implication for the firm, depend of the owner's characteristics, motivations and beliefs (Thomsen & Pedersen, 2000). Assuming that the ownership identities determine the preference and goals of the owners, the perceived value of ESG benefits is believed to differ with owner identity, setting the stage for the succeeding hypotheses.

As a natural extension of the understood power relation between the largest shareholder, the management and other shareholders, the first hypothesis regarding ownership identity is presented:

Hypothesis 3:

The identity of the largest owner does not have an independent statistical impact on the company's ESG score.

In theory, the **government** has a clear interest in addressing concerns affecting society at large and various groups of stakeholders. Believed to associate themselves with shareholder theory and have advantages in terms of wealth and investment horizon, the following relationship is predicted:

Hypothesis 4:

If the largest shareholder is the government, their relative ownership share is positively associated with the company's ESG score.

Institutional investors have beneficial resources and the position in society to possibly realize the long-term financial gains of CSR engagement. Therefore, this paper posits that firms which have institutional owners with controlling power will have a relatively high ESG score, resulting in the following hypothesis:

Hypothesis 5:

If the largest shareholder is an institution, their relative ownership share is positively associated with the company's ESG score.

When the shareholding of a **corporate owner** become sufficiently large their objective is likely to be strategic, which can be viewed as a sub-category of financial motivation. However, in contrast to institutions, corporate owners are not primarily engaged for the target firm to increase its value, introducing shared benefits of control. Rather, corporations are strategically engaged to increase individual value, reaping private benefits of control. On this basis, it is predicted that accomplishing the strategic objective overpower engagement in other corporate activities such as CSR:

Hypothesis 6:

If the largest shareholder is a corporation, their relative ownership share is not a determinant factor for company's ESG score.

Private Equity investors are viewed as strong monitors, especially when it comes to the government pillar. However, due to their pure financial motivation this active engagement extends to the other two pillars. Therefore, it is likely that PE owners do have an impact on company's ESG score. On the one hand, the direction can potentially be positive. ESG initiative that creates shared value resonates with the group's business model; Reaping the competitive advantages through innovation which ultimately results in improved social performance. On the other hand, their relatively short time-horizon suggest that they will not obtain the full benefits of investment. On average, however, this paper predicts that the secondly mentioned force is stronger:

Hypothesis 7:

If the largest shareholder is a Private Equity firm, their relative ownership share is negatively associated with the company's ESG score.

Eurosif (2016) reports a significance increase in **individuals'** consideration and engagement in CSR issues - some investors clearly appreciate corporate social initiatives. However, they have traditionally been laggards in the field. Assuming a larger shareholding, enabling them to influence strategic decision making, they are subject to a scale disadvantage, are less diversified causing them to potentially be risk averse, and have various private motives apart from financial performance. Therefore, it is predicted that ESG consideration is still a niche market for the category:

Hypothesis 8:

If the largest shareholder is an Individual owner, their relative ownership share is negatively associated with the company's ESG score.

Insiders have both direct and indirect private benefits to gain by robust CSR practice. On the other hand, when their shareholding increases their interest are found to align with the firm's profit maximization objective. The empirical evidence even suggests that their distinctive characteristics not only align their interest with the firm, but further cause them to restrict ESG expenditure for the sake of low-risk, predictable programs. Although the argumentation is split, the latter is considered more likely. Resulting in the following hypothesis:

Hypothesis 9:

If the largest shareholder is an Insider owner, their relative ownership share is negatively associated with the company's ESG score.

5 Empirical Analysis: The data sample

The following is designed to investigate the research question by testing the related hypotheses. Firstly, a description of the data set, including the data source, adjustments, and variables is presented. Secondly, a discussion of summary statistics for the sample is conducted. This is followed by a description of the relevant empirical models and a systematic approach for choosing the most appropriate method of analysis. Finally, the results are presented and discussed.

5.1 Dataset

5.1.1 Study sample and data source

The main source of data origins from the European listed companies with available ESG score at the Thomson Reuters database. Thomson Reuter is one of the world's largest digital information platforms in the financial industry. The company acquire information from inter ala annual reports, nongovernmental organization, corporate sustainability reports, and news sources for publicly traded companies from more than 45 countries. Through Refinitiv, a unit of Thomson Reuter, the company evaluate the environmental, social, governance, and the composite ESG performance of over 9,000 companies worldwide updated on weekly basis (Refinitiv, 2020).

The chosen observation period for the analysis is 2010 to 2019. Hereupon quarterly data frequency is chosen for two main reasons: 1) The frequent update of ESG score by Refinitiv allows for a more nuanced view and 2) Such that the owners for the period are evaluated with the correct ESG score. The latter can be exemplified as follows. In the case of yearly data, if an owner holds a company at the day of the data gathering, but sells the day after, they are to be associated with the following years' worth of ESG score. Meanwhile, this score is in the timeframe of another owner identity. Naturally the problem still exists with quarterly data, but it should give more precise results.

For each company, at each quarter, ownership data is likewise gathered from Thomson Reuter. This includes the equity holding in percentage of the overall outstanding shares of the four largest investors in the company. Each investor is individually classified according to investors type as defined by Thomson Reuter. Control variables, accounting- and market data, is gathered from Bloomberg. A small subset of the companies does not provide quarterly reports. In such cases, the semi-annual

values cover both quarters. Although this creates a lag for a subsample of the companies, the semi-annual reports are considered sufficient.

Some firms enter or leave the sample during the period. Therefore, each individual i is not observed in all time periods t , yielding a so-called unbalanced panel dataset. Firms entering the dataset are caused by either 1) the firm is publicly listed during the research period, or 2) the firm receives its first ESG score from Thomson Reuters during the research period. Firms leaving the dataset is caused by the delisting of a stock, due to factors such as mergers and acquisitions or poor performance/bankruptcy. Excluding these firms, only including firms that are listed and have received an ESG score throughout the research period, could result in a survivorship- or limited selection bias. Therefore, the dataset is not adjusted – it is kept unbalanced.

All data management including the main analysis is conducted in Stata 15. For all the relevant Stata commands the program is designed to handle unbalanced panel data sets without causing inconsistency of the estimators.

The main adjustment is the exclusion of observations for which there is missing data on one or more of the variables. Ownership data accounts for the majority of missing data, while only a few companies lack accounting and market data. This reduction is inevitable as observations with missing data cannot be used and are automatically excluded from the Stata estimation. There are no reasons to believe a systematic factor is the source of the missing data, therefore the adjustment is not considered to bias the estimates. In extension, the analysis requires consecutive data. That is, there cannot be missing values (gaps) within a time-series for a specific company.

The final sample consists of 36,149 firm-quarters observations, covering 1087 firms in the period 2010-2019 (40 quarters), with the average number of periods per firm equal to 33.

5.2 Variables

The section addresses all variables relevant to the analysis, arranged into three categories: Measure of CSR, measure of ownership structure and control variables.

5.2.1 Measure of CSR

The social, environmental, and governance separate pillar scores as well as the composite ESG score is Refinitiv's assessment; Which for the purpose of this paper is the quantitative measure of CSR performance.

Relevant data on firm sustainability is classified into categories within each pillar of ESG. The environmental pillar consists the three categories, board, product innovation, emission- and resource reduction. The social pillars consist of the four categories, workforce, human rights, community, and product responsibility. The governance pillars consist of the three categories management, shareholders, and CSR strategy (Refinitiv, 2020). The respective pillar score is a weighted sum of the sub-categories. For the E and S pillars the weights are conditional on the company's industry, while for the G pillar the weights are conditional on the country of incorporation.

Using a percentile rank scoring methodology, the environmental and social scores are based on the relative performance with the company's sector while the government score relative to country of incorporation – similar to the weights of the sub-categories. The methodology produces a scoring chart from 0 to 100; 0 being the worst performing company and 100 being the best performing company in terms of ESG. The methodology from sustainability categories to each of the three pillars, is similarly applied from the pillars to overall ESG score (Refinitiv, 2020).

One must note that Thomson Reuter is one of numerous providers of firms ESG performance. Differences arise with respect to which items of ESG choices are considered, the categories included in each pillar and the weighting matrix of each rating agency. As ESG scores are based on non-financial data that cannot be defined in the same manner as a more straightforward financial analysis, such as company credit ratings, the scores for a single company is more vulnerable to vary between agencies. Consequently, employing an alternative ESG score provider may yield divergent results. However, due to the data constraints of this paper and the literature wide application of Thomson

Reuter, the provider is considered sufficient and allows for relatively easy comparison with previous and future research.

To retain the maximum sample size, observations with missing E, S, or G score is only excluded when the respective pillar is under analysis, explaining the fewer observation of these variables.

5.2.2 Measure of Ownership Structure

As discussed, ownership concentration is a multidimension concept as there are at least two cause of conflict of which can affect decision-making in a firm: agency problem type 1 and 2. The first, embodies the monitoring dimension of ownership concentration, while the second, the shareholder conflict dimension. Argued by Overland et al. (2019), a concentration measure could be appropriate for analyzing one of the two dimensions, while not capturing the other. With the purpose to catch both dimensions as reflected in hypothesis 1 and 2, two sets of ownership concentration measures are developed.

Measures that are classified to represent the monitoring dimensions and hypothesis 1:

- P1: Percentage of equity held by the largest shareholder.
- P5: The total percentage of equity held by the five largest owners.

When studying the monitoring dimension, these are believed to be reasonable proxy's for concentration, as the agency problem type 1 is reduced as one or more shareholders have concentrated power.

Measures that are classified to represent the shareholder conflict dimension and hypothesis 2:

- First/Second: Percentage of equity held by the largest shareholder divided by the percentage of equity held by the second largest owner.
- First/SumTwoFour: Percentage of equity held by the largest shareholder divided by the sum of the percentage of equity held by the second to fourth largest owner.

The above are relative concentration measures. The largest shareholders opportunity to act in personal interest is limited to the power of other shareholders. Therefore, these measures are designed to catch the relative power of the largest shareholder - the shareholder conflict dimension. However, as one

owner acquire a sufficiently large share of controlling power it will automatically also capture the monitoring dimension. Thus, it can be viewed as a combination proxy.

While basing the owner concentration measure on voting share would be the most appropriate, data restriction limits the paper to apply equity shareholding.

The ownership type is based on the ownership sectors classification provided by Thomson Reuters, splitting owners into 16 different categories. These categories are further grouping into six meaningful owner types to be analyzed: government-, institutional-, corporate-, private equity-individual-, and insider ownership. In line with the hypotheses of the paper, the owner identity refers to the identity of the largest shareholder of a company. As the identities they are thoroughly described in the theoretical framework, they are to be further elaborated in this section. See appendix 1 for details on identity categorization.

5.2.3 Control variables

Consistent with common practice, statistical controls are introduced to control for their confounding influence on the relationship of interest, ownership structure versus CSR. That is, to rule out alternative explanations for the observed relation and thereby allow for more reliable inferences (Becker, 2005). Based on the previous research section, common control variable account for slack resources, firm size, and financial performance.

Arora and Dharwadkar (2011) and Hong et al. (2011) find that high financial slack, uncommitted liquid resources, predict ESG commitment. The availability of resource not only enables firms to adapt to strategic change, but also make long-term investments with uncertain cash flow returns. Two types of high discretion slack can be identified, 1) available slack and 2) potential slack, widely measured as, respectively, cash and leverage ratio e.g. debt-to-equity ratio (e.g. Navarro, 1988). The first measure is expected to be positively associated to ESG score. The second, can reduce the free cash flow available for over-investment by self-interest managers (Jensen, 2002); Therefore, expected to be negatively related to ESG score.

Firm size has been extensively shown to influence ownership structure as well as ESG commitment. Demsetz and Lehn (1985) empirically find a negative effect of firm size on ownership concentration.

In other words, large firms typically have more a dispersed ownership structure compared to small firms. The simple logic relying on the relative cost of obtaining a given fraction of outstanding shares in a large firm versus a small firm. Additionally, a smaller share is typically required for a given degree of control in the larger firm. The impact of firm size on CSR participation is connected to different attributed that are associated with size. For instance, larger firms typically have financial flexibility, lower uncertainty and fewer resource constraints. Many of these are specifically accounted for by independent control variables. However, a well-accepted view is that larger firms are more visible and therefore subject to greater external pressure (Udayasankar, 2008). As a result, more likely to be more socially responsive.

Despite numerous studies by scholars, the relationship between financial performance and CSR remains questionable. While Hirigoyen and Poulain-Rehm (2015) find that financial performance negatively granger-cause overall social performance, a key argument for investing in CSR is exactly increased financial performance. As such, there is reason to believe that financial performance possibly is an endogenous variable: it is determined by its relationship with another variable within the model. Although debated, lagged explanatory variables is a common strategy applied by researchers to deal with endogeneity concerns (Bellemare, Masaki, & Pepinsky, 2017). Theory suggest that the casual effect in question operate with a time lag only. Therefore, lag identification is not just a natural way to estimate the parameter of interest but contributes to avoid the endogeneity issue. Following prior research (including all studies in the previous research section), lagged profitability is applied as a control variable for its effect on ESG score. Two measures of financial performance, one accounting and one market-based, are applied.

Country of incorporation and industry is found to be determinants for ESG score. Therefore, each company is associated with two time-invariant variables describing country of operations and principal business activity. The latter sorts the companies into one out of ten sector classifications as provided by Global Industry Classification Standard (GICS).

Table 1:

Presentation and calculation of control variables

Control variables	Calculation
Financial performance:	
Accounting Based: - Return on equity (ROE)	$= \frac{\text{Trailing 12M net income}}{\text{Average Total Equity}} * 100$
Market Based: - Market-to-bookvalue (MtB)	Measure of the relative value of a company compared to its market value. $= \frac{\text{Market Capitalization}}{\text{Book Value of common equity}}$
Company size:	
- Book value of total assets (Total Assets)	Average Total Assets
Slack resources:	
- Cash and Cash Equivalent (Cash)	Total of cash and near cash items.
- Debt-to-equity (DtE)	$= \frac{\text{Short and long term debt}}{\text{Shareholders equity}} * 100$

Note: Average is the average of the beginning period balance and the ending same period balance.

5.3 Descriptive Statistics

The purpose of the section is to familiarize the reader with the data sample, uncover potential trends and address possible challenges associated with the dataset.

Table 2 gives summary statistics for all quantitative variable included in the analysis. N represents the number of firms, obs the number of observations in the total sample and $xttbar$ the average number of periods each of the firms are included in the sample. Table 3 display the Pearson product-moment correlation matrix of the same variables.

Table 2:
Summary Statistics

VarName	Mean	Std.Dev.	p25	p50	p75	N	obs	xttbar
ESG	52.10	20.30	37.3	52.7	68.1	1087	36149	33.26
E	48.67	27.74	26.2	50.1	73.2	1087	36067	33.18
S	54.39	23.87	36.0	55.5	74.2	1087	36041	33.16
G	51.48	22.32	33.6	52.6	69.5	1087	36060	33.17
P1	23.22	19.94	8.5	14.9	32.2	1087	36149	33.26
SumFive	41.44	20.04	25.7	37.3	56.1	1087	36149	33.26
FirstSecond	52.05	2032.38	1.2	1.8	4.5	1087	36149	33.26
FirstSumTwoFour	30.37	1251.37	0.5	0.8	2.2	1087	36149	33.26
ROE	14.76	57.29	5.0	11.7	19.7	1087	36149	33.26
MtB	3.63	61.13	1.0	1.8	3.4	1087	36149	33.26
TotalAssets	50251.99	188886.20	1885.1	5600.7	20900.0	1087	36149	33.26
DtE	214.10	1972.91	28.8	62.2	124.3	1087	36149	33.26
Cash	2682.96	12026.78	96.8	335.4	1110.0	1087	36149	33.26

Currency: EUR

Table 3:
Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) ESG	1.00												
(2) E	0.85	1.00											
(3) S	0.89	0.73	1.00										
(4) G	0.66	0.37	0.40	1.00									
(5) P1	-0.14	-0.08	-0.10	-0.18	1.00								
(6) SumFive	-0.20	-0.15	-0.16	-0.20	0.89	1.00							
(7)FirstSecond	-0.02	-0.01	-0.01	-0.03	0.09	0.06	1.00						
(8)FirstSum -TwoFour	-0.02	-0.01	-0.01	-0.03	0.08	0.06	0.92	1.00					
(9) ROE	0.03	0.01	0.02	0.03	-0.05	-0.05	-0.01	-0.01	1.00				
(10) MtB	0.01	0.00	0.01	0.00	-0.02	-0.02	-0.01	-0.01	0.06	1.00			
(11)Total Assets	0.25	0.23	0.20	0.20	-0.05	-0.11	0.01	0.01	-0.03	-0.01	1.00		
(12) DtE	-0.02	-0.01	-0.02	-0.03	-0.02	-0.02	0.00	0.00	-0.04	0.25	0.03	1.00	
(13) Cash	0.22	0.19	0.18	0.18	-0.04	-0.09	0.00	0.00	-0.03	-0.01	0.81	0.02	1.00

Before interpreting the tables above, it is important to note that all estimations presented in table 2 and 3 does not take the panel structure of the dataset into account. Rather it pools all datapoints, not considering company identities nor time, for calculation. Nonetheless, providing the reader with an understanding of the data.

The mean value of ESG is 52.10, as expected, being a mean reverting variable. Each pillar is highly correlated with ESG score, although the G pillar the least - with a correlation of 0.66.

Regarding concentration measures, the average largest owner in European public listed companies hold approximately 23 percent of outstanding shares. The five largest owners, on average, hold 41 percent of the shares. The relative concentration measures have a very high standard deviation. Suggesting that the sample include both extremes in terms of the largest owners controlling power. That is, 1) the top four owners hold approximately the same amount, and 2) the largest owner holds a substantially larger share than all other shareholders. The percentiles for the proxies expose that the top quartile increase the average value considerably. A closer study of the extreme values reveal that they are mainly related to corporate- and government ownership. The extreme values are legitimate observation and a natural part of the population of study, providing additional information on corporate and government ownership. Therefore, they are not removed for the dataset. Inspecting the correlation matrix, it becomes clear that the two concentration categories are highly correlated within grouping (0.89 and 0.92), but the correlation among grouping is low. There is a negative correlation between ownership concentration and ESG score suggesting a negative relationship. However, as explained, the matrix does not account for the structure of the data and may therefore be misleading

An in depth discussing of the control variables will not be conducted. Although, it must be mentioned that the correlation between the variables Total Assets and Cash is rather large. This may introduce multicollinearity to the model. According to Wooldridge (2006 , s. 96), the problem of multicollinearity is not well defined, and the concern expressed is “*no different from worrying about a small sample size: both work in increase Var ($\hat{\beta}$)*”. The citation refers to standard OLS regression, however, is likewise applicable for the regression technique applied in this paper (Wooldridge, 2006). The consequence of extreme multicollinearity is simply greater standard errors. As such, multicollinearity is not further explored, merely acknowledge as it might reduce the significance of the estimates.

Following Jo and Harjoto (2012), the variables Total Assets and Cash are logarithmically transformed when applied in the model; such that they can be interpreted as measuring percentage change. The variables vary a lot on their relative scale compared to the other four controls. Partially because they are the only two variables which are not measured as ratios, but money amounts. A transformed scale makes sense in this case because it is not the raw values but the relative changes that are more interesting – a 2% increase in cash provides more information than a €10,000 increase.

Table 4 present the relevant summary statistics for the individual owner identities. On average, the ESG score is the greatest for companies where the largest owner is a private equity firm or the government. The score is the lowest where the largest owner is an Individual. Similarly, when the largest owner is an insider or corporation their average equity holding is greater than for the other identities (respectively 35.88% and 34.97%). Whereas, when the largest owner is an Institution the mean holding is the lowest, only 10.6%. Corporations and the government, in particular, have a large relative ownership share with high standard deviations – as previously discussed.

Table 4:
Summary statistics by ownership identity of the largest owner (T1)

T1	Percent of data	ESG		P1		FirstSumTwoFour	
		(Mean)	(Std.Dev)	(Mean)	(Std.Dev)	(Mean)	(Std.Dev)
Government	10.19	57.79	21.9	30.08	22.85	233.89	3829.60
Institution	41.58	52.58	19.86	10.62	9.13	1.12	13.95
Corporate	27.51	52.09	19.50	34.97	21.54	19.47	491.24
Private Equity	2.35	59.17	18.77	21.03	13.74	1.68	2.38
Individual	12.58	44.38	19.74	28.17	16.81	2.74	6.68
Insider	5.79	52.49	19.86	35.88	18.93	5.48	26.56

6 Empirical Framework

Before specifying the exact models relevant to the research questions, a general understanding of panel data, regression technique and the appropriate tests for deciding the optimal estimation method is presented.

6.1 Panel data

A panel data set observe multiple entities n at several point in time t . Accordingly, the data has both a cross-sectional and a time series dimension. Which naturally allows for more complicated behavioral models.

For simplicity the basic economic model will be considered as a multiple linear regression for individuals $i = 1, \dots, N$ observed at several time period $t = 1, \dots, T$, incorporating separate variables for time-varying and time-invariant (time-constant) variables.

$$y_{it} = \alpha + x'_{it}\beta + z'_i\gamma + c_i + u_{it}$$

Where y_{it} is the dependent variable, α is the intercept, x'_{it} is a row vector of time-varying explanatory variables and z'_i is a row vector of time-constant explanatory variables, β is a column vector of parameters, γ is a column vector of parameters, c_i is an individual-specific effect (also called unobserved heterogeneity) and u_{it} is the idiosyncratic error term (Schmidheiny, 2019).

Panel data estimations can be split into two broad categories: homogeneous- and heterogeneous panel data models. The first is equivalent to removing the individual and time attributes of the data, e.g. ignoring the panel structure of the data. This equals a pooled ordinary least square estimator (OLS). Hence, will only produce unbiased estimates if $c_i = 0$. The second, recognize individual difference between entities and can be further split into random and fixed effect models.

6.2 Identifying the regression model

The purpose is to present and clarify the differences between two key approaches to panel data analysis: fixed effect (FE) and random effect (RE) models. Followed by a structure approach to choosing the appropriate panel regression model for the analysis.

6.2.1 Random effect

The main assumption underlying the RE model is that the variation across entities (companies) is random, the individual-specific effect (or the unobserved effect) is a random variable that is uncorrelated with explanatory variables.

The model can be written as:

$$y_{it} = \alpha + x'_{it}\beta + z'_i\gamma + v_{it}$$

Where $v_{it} = c_i + u_{it}$. As with OLS, a RE analysis include the individual effect in the error term.

The Breush-Pagan Langrange multiplier (LM) test is a tool to decide whether to apply the RE regression or if the pooled OLS regression is sufficient. If the main random effect assumption of unrelatedness hold, but the models does not actually contain an individual-specific effect (i.e. no panel effect), a simple pooled OLS is efficient.

$$H_0: \sigma_c^2 = 0$$

$$H_1: \sigma_c^2 \neq 0$$

The null hypothesis in the LM test is therefore that the variance across individuals is zero.

6.2.2 Fixed effect

The FE model is designed to study the relationship between predictor and outcome variables within an entity.

It's crucial distinction from the RE estimator is allowing for arbitrary correlation between the observed explanatory variables and the individual specific effect (Wooldridge, 2001). In other words, the model assumes that each company has individual characteristics that influence the explanatory variables. For example, the political system of a particular country, e.g. country of origin, may influence the ownership structure. These characteristics can either be observed or unobserved.

“If c_i can be arbitrary correlated with each element of x_{it} , there is no way to distinguish the effect of time-constant observables from the time-constant unobservable c_i ” (Wooldridge, 2001, s. 266). The second important characteristic of the FE model is that the explanatory variables cannot be time-invariant (time-constant), because such characteristics cannot cause changes within an entity. When analyzing companies, fixed attributed such as country of origin or industry cannot be included in x_{it} . While problematic in certain applications, this is not a problem when the variables of direct interest are time varying. The reason being that the model controls for these factors, it is not biased by omitted time-invariant characteristics, although not including them in the output.

The fixed effect (within) model:

$$\ddot{y}_{it} = \ddot{x}_{it}' \beta + \ddot{u}_{it}$$

Where $\ddot{y}_{it} = y_{it} - \bar{y}_i$, $\ddot{x}_{it} = x_{it} - \bar{x}_i$, $\ddot{u}_{it} = u_{it} - \bar{u}_i$

The individual-specific effect c_i is absorbed by the model, the time-invariant regressors z_i and the intercept α cancels out as it cannot be distinguished from c_i . Note that the parameter reported as `_cons` in the Stata output is the average fixed effect $\frac{1}{N} \sum_i c_i$.

The least squares dummy variables estimator (LSDV) is a strategy for estimating the fixed effect model, therefore produce identical parameter estimates of regressors. Unlike the “within” estimation, the LSDV model is a pooled OLS including a set of $N - 1$ dummy variables identifying each entity; it includes the individual-specific effect directly in the regression model.

Among other things, the model is specifically useful to decide whether a fixed effect model is necessary or a simple OLS is efficient. A F-test of the entity-dummies will establish whether there is a significant difference across units (i.e a panel effect), only then the pooled OLS is inconsistent. That is, testing the following hypothesis:

$$H_0: c_{i=1} = c_{i=2} = \dots = c_{i=N} = 0$$

$$H_1: c_{i=1} = c_{i=2} = \dots = c_{i=N} \neq 0$$

If the null hypothesis is rejected at least one group intercept is not zero, and the fixed effect model is preferred.

6.2.3 Fixed vs Random effect

A random effect model will produce biased estimates of effect size when a fixed effect model is appropriate; a fixed effect model will reduce power as it neglects between unit effects when the random effect model is appropriate.

The random effect estimator is only suitable when the individual-specific effect is uncorrelated with the regressors, while the fixed-effect is consistently estimated either way. This is the key rationale in deciding between the RE and FE approach. To test the assumption, standard procedure in empirical panel data analysis is conducting a Hausman test, which indirectly tests the assumption with the following hypothesis (Hausman, 1978):

$$H_0: E[c_i | X_i, z_i] = 0$$

$$H_1: E[c_i | X_i, z_i] \neq 0$$

If there is a statically significant correlation the null hypothesis is rejected and interpreted as evidence against the RE assumption. That is, the FE approach is appropriate (Wooldridge, 2001).

However, the Hausman test is only valid under homoscedasticity. To directly test the hypothesis under these conditions one can run an auxiliary regression, followed by a joint Wald-test.

$$y_{it} = \alpha + x'_{it}\beta + z'_i\gamma + \bar{x}'_i \lambda + \delta_t + u_{it}$$

Where $\bar{x}'_i = \frac{1}{T} \sum_t x_{it}$ are the time average of all time-varying variables (Schmidheiny, 2019).

The hypothesis of the Wald-test is,

$$H_0: \lambda = 0$$

$$H_1: \lambda \neq 0$$

directly testing for correlation between regressors and individual-specific effects.

This test is supported by textbook economic proof (Wooldridge, 2001) and found to outperform the Hausman test (Esarey & Jaffe, 2017).

6.3 Model specification

The purpose of the section is to guide the reader through the empirical process described to identify the appropriate regression technique for the study. For the sake of simplicity, a baseline test (the equation below) which examines the relations between (lagged) ownership concentration and firms aggregated ESG performance will exemplify the methodology, although the following tests have been conducted for all regression models.

$$\begin{aligned}
 ESG = & \beta_0 + \beta_1 P1_{it-4} + \beta_2 ROE_{i,t-4} + \beta_3 MtB_{i,t-4} + \beta_4 \text{Log}(TotalAssets)_{i,t-4} \\
 & + \beta_5 \text{Log}(Cash)_{i,t-4} + \beta_6 DtE_{i,t-4} + IndustryDummies_i + CountryDummies_i \\
 & + u_{it}
 \end{aligned}$$

Where all independent variables are lagged one year (four quarters).

To begin the model specification, the appropriate formal test to examine the individual effects is conducted. The aim is to identify potential unobserved heterogeneity, in the decision between homogeneous versus heterogeneous panel data modelling.

F-test for individual specific Fixed Effect

F(1085, 30709) = 125.879	Prob > F = 0.000
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Breusch and Pagan Lagrangian multiplier test for random effect

X ² (1) = 2.4e + 05	Prob > X ² (1) = 0.000
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The LM test examines whether a random effect exists. With a large chi-squared, the null hypothesis is rejected confirming the random effect model (p<0.000) over the pooled OLS estimator. The F-test examines the null hypothesis that the 1085 dummy parameters in the LSDV are zero. The F-statistic of 125.9 rejects the null hypothesis, supporting the fixed effect model (p<0.000). In sum, a heterogeneous panel data model is suitable.

To compare the random effect model to its fixed counterpart, the Hausman specification test and an auxiliary regression followed by a joint Wald-test is conducted:

Hausman specification test

$$X^2(5) = 182.25$$

$$Prob > X^2 = 0.000$$

Wald test

$$F(6, 1085) = 23.68$$

$$Prob > F = 0.000$$

The tests are essentially examining the same assumption: that the individual-specific effect is a random variable uncorrelated with the explanatory variables. The second test, however, use cluster-robust standard errors (explained in the following section) to allow for heteroscedasticity and serial correlation. The null hypothesis, in both cases, is rejected. Leading to the conclusion that individual effects c_i is significantly correlated with at least one regressor in the model: the random effect model is problematic, therefor the fixed effects estimation model is superior for the data sample in question.

6.3.1 Consistency of the fixed effects estimator

Time Fixed Effects

Time fixed effects, δ_t , is an approach to control for market-wide shocks or developments in empirical studies, assuming a homogenous response to shocks (Sojli, Tham, & Wang, 2018). For instance, the importance attributed to ESG have seemingly increased for European public listed firms throughout the research period. Therefore, it is natural to suspects that this have affected all companies ESG scores. The time fixed effects capture (or control for) the influence of such aggregate (time-series) trends, which in its absence may be captured by the causal relationship in question producing a time-varying omitted variable bias.

$$y_{it} = \alpha + x'_{it}\beta + z'_i\gamma + \delta_t + c_i + u_{it}$$

To evaluate whether time fixed effects are required when running the FE model, the model is extended to account for the effect by including a dummy variable for each time period. After running the model, a joint test can determine whether the dataset is in fact affected by time fixed effects. That is, testing the following hypothesis,

$$H_0: \delta_1 = \delta_2 = \dots = \delta_t = 0$$

$$H_1: \delta_1 = \delta_2 = \dots = \delta_t \neq 0$$

The result for the particular model is:

F-test for time-fixed effects

F(35, 30674) = 260.02	Prob > F = 0.000
-----------------------	------------------

The null hypothesis that all time-dummies are zero is rejected: at least one-time specific intercept is not zero. There are significant time fixed effects.

Model error structure

Described by Wooldridge (2001, s. 269) the FE estimator is only efficient when “*the idiosyncratic error u_{it} have a constant variance across t and are serially uncorrelated*”, if the assumption is violated the estimator gives an improper variance matrix.

Consequently, a modified Wald test to detect potential groupwise heteroskedasticity in the residuals of the fixed-effect regression is performed. Under the null hypothesis, the variance of the error is the same for all individuals: $H_0: \sigma_u^2 = \sigma^2 \forall i = 1, \dots, N$. The test is directly conducted in Stata using the command `xttest3` developed by Baum (2011), following Greene (2000).

Modified Wald Test for groupwise heteroskedasticity

X ² (1086) = 1.0e + 08	Prob > X ² = 0.000
-----------------------------------	-------------------------------

The null hypothesis of no groupwise heteroskedasticity is strongly rejected.

According to Bertrand, Duflo and Mullainathan (2004), in the presence of serial correlations the usual standard errors of the fixed effect estimator is too optimistic. The Wooldridge (2001) test for autocorrelation is used to check for this complication. The method uses the residuals from the regression in first difference,

$$\Delta y_{it} = \Delta X_{it} \beta_1 + \Delta u_{it}$$

Where Δ is the first-difference operator. Wooldridge (2001) observed that if the residuals are not serially correlated, then $Corr(\Delta u_{it}, \Delta u_{it-1})$ converges to -0.5. Therefore, by conducting a least square regression of the first difference on the lagged difference of the error term, one can test that that the coefficient on the lagged residuals is equal to -0.5. Conducted for the baseline model, the coefficient on lagged residuals is equal to -0.000665, there is evidence of serial correlation.

The test can also be directly conducted in Stata using the command *xtserial* (Drukker, 2003), under the hypothesis,

$$H_0: \rho = 0$$

$$H_1: \rho \neq 0$$

Where $u_{it} = \rho u_{i,(t-1)} + \varepsilon_{it}$.

F-test for autocorrelation

$$F(1, 1085) = 271338.631$$

$$Prob > F = 0.000$$

The null hypothesis of no serial correlation is strongly rejected.

The error structure is characterized by panel heteroskedasticity and autocorrelation. To ensure robust variance estimations when these underlying regression model assumptions are violated, relying on so-called cluster robust standard errors is common practice (Hoechle, 2007). Presented by Rogers (1993), the stata command *vce(cluster id)* cluster the standard error within entities providing the feature to control for autocorrelation and heteroskedasticity.

6.3.2 Final Regression Model

The fixed effect estimation is found to be the appropriate model, accounting for the characteristics of time fixed effects, heteroscedasticity, and autocorrelation, by including time dummies and cluster-robust standard errors. It is found by comparing the efficiency of standard error estimation between the pooled OLS-, random effect-, and fixed effect regression model, with additional robustness tests. As mentioned, the model identification process is completed for all of the following regressions. Uniformly advocating the identical estimation technique and specifications. Finally, the overarching regression model is presented, which will be further discussed in the Empirical Results section.

$$\begin{aligned} Score_{it} = & \beta_0 + \beta_1 Ownership\ concentration_{it-q} + \beta_2 Ownership\ identity_{it-q} \\ & + \beta_3 Ownership\ concentration_{it-q} * Ownership\ identity_{it-q} \\ & + \beta_4 ControlVariables_{it-q} + QuarterDummies_y + u_{it} \end{aligned}$$

Where the dependent variable is one of the four measures of CSR for firm i in time t . Ownership concentration is one of the four ownership concentration measures at time $t - q$. As discussed, ownership identity embodies the identity of the largest owner. The variable represents the set of (5) dummies, one for each of the ownership types under scrutiny except the reference ownership identity. Control Variables are the five variables *Total Assets*, *Cash*, *ROE*, *MtB* and *DtE* at time $t - q$. Quarter dummies are included to account for time-fixed effects. Industry- and country dummies are, as discussed above, excluded from the fixed effects estimation.

7 Empirical Results

7.1 The impact of ownership concentration on ESG score

To start, the impact of ownership concentration on ESG score is investigated, simultaneously testing various lags. Table 5 provide the estimation results for the relationship between various ownership concentration proxies and ESG scores of European public listed companies, alle explanatory variables are lagged one year.

Table 5: The impact of one-year lagged ownership concentration on ESG.

Fixed-effects(within) panel data regression results of ESG performance for the period 2010 to 2019. Standard errors are calculated using clustered standard errors.

	(1) ESG	(2) ESG	(3) ESG	(4) ESG
P1_14	-.026 (.022)			
SumFive_14		-.018 (.017)		
FirstSecond_14			-.0001*** (0)	
FirstSumTwoFour~4				-.0002*** (0)
ROE_14	.005* (.003)	.005* (.003)	.005* (.003)	.005* (.003)
MtB_14	.001 (.001)	.001 (.001)	.001 (.001)	.001 (.001)
logTotalAssets_14	.0008** (0)	.0008** (0)	.0008** (0)	.0008** (0)
logCash_14	.59*** (.207)	.593*** (.207)	.597*** (.206)	.597*** (.206)
DtE_14	0 (0)	0 (0)	0 (0)	0 (0)
_cons	44.441*** (1.288)	44.593*** (1.379)	43.81*** (1.206)	43.81*** (1.206)
Quarter Dummies	YES	YES	YES	YES
Observations	31801	31801	31801	31801
N	1086	1086	1086	1086
R-squared	.247	.247	.247	.248
Adj R ²	.246	.246	.246	.247
F-stat	23.525***	23.676***	28.807***	54.609***

Standard errors are in parentheses

**** p<.01, ** p<.05, * p<.1*

Coefficients for dummy time variables not reported for the sake of brevity.

Most striking, is the revelation that neither the shareholding of the largest owner (*PI*) nor the shareholding of the five largest owners (*SumFive*) is significant at any level (or lag), whereas both relative concentration proxies are significant at the 0.01 level. Supporting the notion that the two categories of concentration proxies capture different dimension across grouping but same within

grouping. The results indicate that the monitoring dimension of ownership is less prevalent than the shareholder conflict dimension.

The table show that there is a significant negative relationship between the relative ownership concentration of the largest owner and ESG score. The fact that only the combination proxies of ownership concentration is significant, indicate that the effect is contingent on the power to override other shareholders. That again, speaks in favor of ownership identity to be of matter for the relationship with ESG. Therefore, the negative relationship may be the main effect – or – may be biased, for example lean in favor of the ownership identity with the strongest effect.

Note that the coefficients of the explanatory variables *FirstSecond* and *FirstSumTwoFour* are economically small. It is possibly caused by catching the negative effect from certain ownership types and the positive effect of others. Furthermore, the variables have a very large scale, evident from inter alia the related standard deviations, partaking in the regression coefficients to be of particularly small order of magnitude.

Consistent with the finding of prior research, a number of the control variables describing firm characteristics are significant. The tables show that company size, measured by the natural logarithm of total assets, and available organizational slack, measured by the natural logarithm of cash and cash equivalent, is important for the level of engagement in ESG. The first is significant at the 0.05 level, and the second at the 0.01 level. The positive signs are expected, as described in the control variable section. Furthermore, it appears that strong financial performance positively affects ESG score. However, only significant at the 0.1 level. *MtB* and *DtE* is insignificant.

The F-test of overall significance in the regression analysis is significant at the 0.01 level. Meaning that the model fits the data better than with no explanatory variables. The R-squared estimate is approximately 0.25 for all regressions, indicating that the model indeed manages to capture some of the variation of ESG. The purpose of the model is not to provide a close prediction of every individual observation, rather to identify ownership structures' relation to ESG score. As such, the R-squared is considered relatively good; additionally, it is similar to previous studies (e.g. (Oh & Chang, 2011)).

The reported results are based on one-year lagged explanatory variables. As described, the lag between ESG score and ownership structure is rarely discussed, and the appropriate lag is theoretically unclear. The same regression is therefore conducted for two, three and four years lagged explanatory variables. Running these extra estimates give the exact same results. However, with less significant coefficients and the statistical power of the model is reduced. The fact that the relative ownership concentrations likewise are significant at higher lags is not surprising, as ownership structure changes slowly; X_t is typically correlated with X_{t-q} , called serial correlation within the independent variable. The following will apply one-year lagged explanatory variables, although comment on estimates for further lags in the case of divergent results.

7.2 The impact of ownership identity on ESG score

Table 6 takes ownership identity of the largest owner into account by including a dummy variable for each identity, except corporate ownership that will be the reference group. That is, every owner identities' effect on ESG score is compared to corporate owners' relations to ESG score.

Table 6: The impact of one-year lagged ownership identity and ownership concentration on ESG.

Fixed-effects(within) panel data regression results of ESG performance for the period 2010 to 2019. Standard errors are calculated using clustered standard errors.

	(1) ESG	(2) ESG
FirstSecond_l4	-.0001*** (0)	
FirstSumTwoFour~4		-.0002*** (0)
1bn.Corporate_l4		
2. Government_l4	.148 (.957)	.149 (.957)
3.Individual_l4	-.476 (.844)	-.476 (.844)
4.Insider_l4	.821 (2.006)	.821 (2.006)
5.Institution_l4	.565 (.606)	.565 (.606)
6.PE/VC_l4	.269 (1.364)	.269 (1.364)
ROE_l4	.005* (.003)	.005* (.003)
logTotalAssets_l4	0.0008** (0)	0.0008** (0)
logCash_l4	.597*** (.206)	.597*** (.206)
DtE_l4	0 (0)	0 (0)
_cons	43.572*** (1.289)	43.572*** (1.289)
Quarter Dummies	YES	YES
Observations	31801	31801
N	1086	1086
R-squared	.248	.248
Adj R ²	.247	.247
F-stat	26.526***	48.331***

Standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

F- test of owner identity dummies (identical for both models)

$F(05, 1085) = 0.57$ Prob > F = 0.722

Apparent from the results none if the owner identities are significantly different than corporate ownerships' effect on ESG score. A Wald test is performed to test the hypothesis that all the ownership identity slopes are equal to zero, versus the alternative that not all six of the identity means are the same value. The hypothesis is valid despite excluding one of the ownership identities – only including the remaining five in the regression. Although the coefficients will differ, the p-value of the test will be identical regardless the reference identity (Wooldridge J. M., 2006). The test results fail to reject the null hypothesis ($p > 0.72$), and ownership identity of the largest owner does not explain a significant fraction of the variation in ESG score. Based on the theoretical framework, the results are expected.

7.3 The impact of ownership concentration conditional on owner identity on ESG score

7.3.1 Interaction Effect

An interaction effect occurs when the effect of one variable is dependent on another variable. The hypotheses predict exactly this effect - that ownership concentration and identity are separate but dependent dimensions of ownership structure. Subsequently, the interaction between the two variables is included in the model. It can be interpreted either way: ownership concentrations' effect on ESG score is contingent upon owner identity, or opposite, the identity of the largest owner does not have an independent effect because they simultaneously need the power to affect corporate strategic decision making. Thereby, reaching the model presented in “Final Regression Model”.

However, in the presented model the only interaction effect included is between the ownership concentration and identity, therefore subject to the assumption that the effect of control variables is the same regardless the identity of the largest owners. Testing this assumption, debt to equity and market to book ratio is distribute differently by ownership identity (significant at the 0,05 level). Hence, these interaction effects are additionally included in the model. Not being variables of interest, they are omitted from the output table below. Furthermore, addressing the potential worry of overfitting the model, it must be noted that including these two extra interaction effects do not particularly change the regression results. Once again, the identity corporation is applied as the reference group.

Table 7: The impact of one-year lagged interaction effect between ownership identity and ownership concentration on ESG.

Fixed-effects(within) panel data regression results of ESG performance for the period 2010 to 2019. Standard errors are calculated using clustered standard errors.

	(1) ESG	(2) ESG	(3) ESG	(4) ESG
P1_14	-.04 (.027)			
SumFive_14		-.032 (.024)		
FirstSecond_14			0*** (0)	
FirstSumTwoFour~4				0*** (0)
1bn.Corporate_14 *Concentration proxy_14				
2. Government_14* Concentration proxy_14	-.017 (.056)	-.015 (.048)	0 (0)	0 (0)
3.Individual_14* Concentration proxy_14	-.061 (.063)	-.031 (.047)	-.121*** (.037)	-.289** (.128)
4.Insider_14* Concentration proxy_14	.147 (.103)	.078 (.064)	.01*** (.002)	.03*** (.006)
5.Institution_14* Concentration proxy_14	.089** (.045)	.054* (.028)	.002 (.045)	-.023 (.064)
6.PE/VC_14* Concentration proxy_14	.025 (.064)	.016 (.079)	-.07 (.046)	-.159 (.113)
ROE_14	.005* (.003)	.005 (.003)	.005* (.003)	.005* (.003)
MtB_14	-.001 (.001)	-.001 (.001)	-.001 (.001)	-.001 (.001)
logTotalAssets_14	0*** (0)	0*** (0)	0** (0)	0*** (0)
logCash_14	.601*** (.205)	.597*** (.205)	.588*** (.205)	.589*** (.205)
DtE_14	0*** (0)	0*** (0)	0** (0)	0** (0)
_cons	44.41*** (1.401)	44.907*** (1.625)	43.462*** (1.288)	43.459*** (1.29)
Quarter Dummies	YES	YES	YES	YES
Independent Identity Dummies	YES	YES	YES	YES
DtE*T1 and MtB*T1	YES	YES	YES	YES
Observations	31801	31801	31801	31801
N_clust	1086	1086	1086	1086
R-squared	.255	.254	.257	.267
Adj R ²	.254	.253	.255	.266
F-stat	24.137	24.794	63.352	63.387

Standard errors are in parentheses *** $p < .01$, ** $p < .05$, * $p < .1$

F test of interaction effect: T1*Concentration proxy

F(5, 1085) =	1.54	1.38	18.37	8.45
Prob > F	0.175	0.231	0.000	0.000

The F-statistics, on the bottom of table 7, test the null hypothesis that all of the coefficients associated with the interaction of ownership concentration and ownership identity are equal to zero. Similar to the test conducted for identities dummies, the test yields the same results regardless the reference group. Consequently, it can be concluded that there only exists a difference across identities on the relationship between relative ownership share and ESG score ($p < 0.000$). Finding neither an individual effect of the absolute concentration proxies nor an interaction effect, the proxies are concluded to not be a determinant factor for ESG score and will not be addressed further. Due to the all-over similar results for the relative concentration measures, the proxy with the highest R-squared (FirstSumTwoFour) is exclusively applied further on in the analysis.

The coefficients of the interaction effect reflect the deviation from the reference category of the original variables after controlling for relevant other variables. For example, the estimate for individuals is the controlled deviation from corporations only: when the largest owner is an individual an increase in relative ownership share within the same firm will have a negative impact on ESG score the following year (significant at the 0.01 level and 0.05 level for respectively FirstSecond and FirstSumTwoFour), compared to the impact on ESG when a corporation is the largest owner.

Having a statistically significant interaction effect, the main effect must be reconsidered. The coefficients of FirstSecond and FirstSumTwoFour cannot be interpreted alone, as they will vary according to the reference group. The interpretation is rather complicated due to the multiple interaction effects included in the model; therefore, it is simply noted for the readers convenience.

Since the above results are interpreted with corporate owners as reference, five additional regressions are conducted – one for each owner as reference (table 8). The model is specified precisely as above. The concentration proxy is FirstSumTwoFour.

Table 8:

Interaction effect between FirstSumTwoFour and T1 on ESG score. Model specified as in Table 7.

	Corporate	Government	Individual	Insider	Institution	PE
Corporate		0	.289**	-.03***	.023	.159
Government	.00		.289**	-.03***	.023	.159
Individual	-.289**	-.289**		-.319**	-.266*	-.13
Insider	.03***	.03***	.319**		.053*	.189*
Institution	-.023	-.023	.266*	-.053*		.136
PE	-.159	-.159	.13	-.189*	-.136	

Table 8 provide more insight to the question of owner identity. Firstly, individuals and insiders can clearly be distinguished from their peers. When the largest owner is an insider, an increased relative ownership share has a statistically significant positive effect on the following years ESG score compared to all other owner identities. When the same applies for Individual owners, they have a significantly negative effect on ESG score compared to all other identities expect private equity firms. Corporate-, government-, institutional-, and private equity ownership seem not to have differing effect on ESG score between themselves. Possibly because they have the same effect (positive or negative), or as they increase in ownership within the same firm, they are simply not a determinant factor for ESG score.

7.3.2 Marginal Effects

Until now, the identities are merely compared to each other: to what extent do they differ when their relative ownership share increase within a firm. The hypotheses, however, are directed towards their separate effect on ESG score, dependent on ownership concentration.

At first glance, it may seem convenient to run the regression on sub-samples of which represent the identity of the largest owner. However, this would yield biased results. The identities alternate a number of times within one company over time. Therefore, only keeping for example T1 = government would create time-series gaps for a number of entities. This is problematic for at least two reasons. Firstly, the formula for fixed effect (within) regression is $(y_{it} - \bar{y}_i) = (x_{it} - \bar{x}_i)\beta + (\varepsilon_{it} - \bar{\varepsilon}_i)$, but the mean would not represent the entity mean – only the mean when the government

is the largest owners. Secondly, potential increase/decrease in ESG score that occurred in the time-series gaps, will be attributed to one or more of the variables when the time series continues.

To get the separate effect of ownership concentration on ESG score by ownership type, one must rather obtain the margins of derivatives of responses (marginal effects). It is a post-estimation method to allow for better interpreting of complicated analysis, such as inclusion of interaction terms. A margin of response is a statistic based on a fitted model calculated. It makes the marginal calculations of the mean for each owner identity, accounting for the direct effect of identity $T1$, but also for the interaction effect(s) $T1 * FirstSumTwoFour$ (and $T1 * DtE$ and $T1 * MtB$). That is, the marginal mean for $T1=Government$ is obtained by treating all observations as if they represented the Government, and the margin output is the average value of ESG if everyone in the data were treated as if $T1 = Government$.

Derivatives are an informative way to summarize fitted results (A Stata Press Publication, 2017). The fitted coefficients in the models above are the derivatives explaining the change in ESG for a change in a variable. The derivative of $FirstSumTwoFour$ is more complicated due to the interaction effect,

$$\frac{dy}{d}(FirstSumTwoFour) = \beta_1 + \beta_3 T1$$

The goal is to examine the response variable $dy/d(FirstSumTwoFour)$, calculated as separate for each owner identity. By combining the margin and derivative option, Stata will yield the average effect of $FirstSumTwoFour$ for each owner identity, based upon the fitted model in table 7.

Table 9: Margins of derivative of response

Based on Fixed-effects(within) panel data regression table 7.

Average marginal effects
 Model VCE : Robust
 Expression: Linear prediction, predict()
 dy/dx w.r.t.: FirstSumTwoFour_l4

	Delta-method					
	dy/dx	Std.Err.	z	P>z	[95%Conf.	Interval]
FirstSumTwoFour_l4						
T1_l4						
Corporate	-0.0002	0.000	-3.520	0.000***	-0.0003	-0.00008
Government	-0.0002	0.000	-36.390	0.000***	-0.0002	-0.0002
Individual	-0.289	0.128	-2.260	0.024**	-0.539	-0.039
Insider	0.030	0.006	5.190	0.000***	0.019	0.041
Institution	-0.023	0.064	-0.360	0.720	-0.149	0.103
Private Equity	-0.159	0.113	-1.400	0.161	-0.381	0.063

The results in table 9 shall be interpreted as the separate effect of relative ownership concentration on ESG by ownership identity. The estimates show that the relative ownership share is significantly related to ESG score for four out of the six owner identities at the 0,05 level. As expected from the above comparison, individuals and insiders respectively has a negative and positive statistically significant effect on ESG score (at the 0.01 level). Corporate and government ownership have a negative effect on ESG (significant at the 0.01 level), although with a lower magnitude than individuals. The relative ownership share is, however, not a determinant factor for ESG score within a firm when the largest owner is an institution or a private equity firm; combined with the small coefficient of corporate and government ownership, it possibly explains the previous results of not distinguishing between the four identities.

To examine whether the results are driven by particular pillars of the ESG matrix, the composite score on the left side of the regression model is replaced by one out of the three pillar scores (variables E, S or G). The estimates are presented in table 10. The explanatory variables are once again lagged one year, and the model is specified as table 7 except the dependent variable. Regarding all the pillars, the results are very similar to the aggregated ESG score as the dependent variable.

The differences, however, are as follows. Regarding the environmental pillar, the coefficient for the separate effect of *FirstSumTwoFour* when the largest owner is an individual is no longer significant. Furthermore, institutions are associated with a negative impact on the environmental score at a 0.05 significance level. Observing the social pillar, the coefficient of insiders is no longer significant. Lastly, corporations' relative ownership concentration does not significant impact the government pillar. Otherwise the results correspond to table 9.

In sum, there is evidence that the negative effect of individuals is driven by the S and G pillar, while the positive effect of insiders is driven by the E and G pillars. Although the relative ownership share of institution does not seem to have an effect on the following years ESG score, it is observed a negative effect on the E pillar. Private Equity is not significant in any model. Government and corporations generally have small, but strongly significant effects on ESG score.

Table 10: Margins of derivative of response. Dependent variable is one out of the three pillars.

Based on Fixed-effects(within) panel data regression table 7.

Average marginal effects

Model VCE : Robust

Expression : Linear prediction, predict()

dy/dx w.r.t. : FirstSumTwoFour_l4

Dependent variable E

	Delta-method					
	dy/dx	Std.Err.	z	P>z	[95%Conf.	Interval]
FirstSumTwoFour_l4						
T1_l4						
Corporate	-0.0003	0.000	-20.210	0.000***	-0.000	-0.000
Government	-0.0004	0.000	-118.860	0.000***	-0.000	-0.000
Individual	-0.235	0.156	-1.510	0.132	-0.540	0.070
Insider	0.079	0.007	11.750	0.000***	0.066	0.093
Institution	-0.062	0.025	-2.440	0.015**	-0.111	-0.012
Private Equity	-0.496	0.291	-1.700	0.11	-1.066	0.074

Dependent variable S

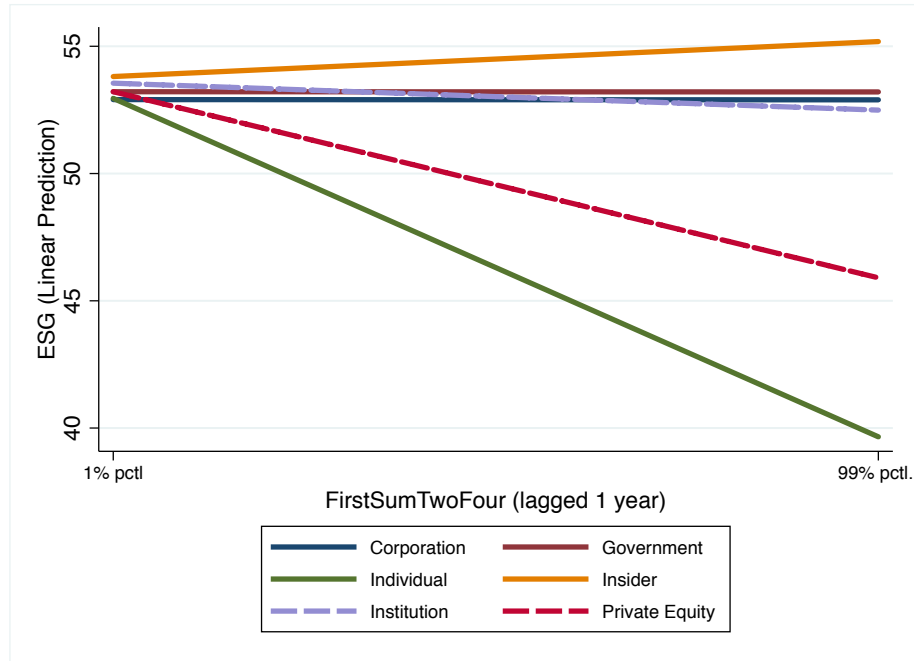
	Delta-method					
	dy/dx	Std.Err.	z	P>z	[95%Conf.	Interval]
FirstSumTwoFour_l4						
T1_l4						
Corporate	-0.0002	0.000	-8.940	0.000***	-0.000	-0.000
Government	-0.0002	0.000	-30.210	0.000***	-0.000	-0.000
Individual	-0.343	0.116	-2.960	0.003***	-0.571	-0.116
Insider	0.001	0.008	0.140	0.886	-0.014	0.016
Institution	-0.006	0.020	-0.290	0.768	-0.045	0.033
Private Equity	0.035	0.258	0.140	0.892	-0.470	0.540

Dependent variable G

	Delta-method					
	dy/dx	Std.Err.	z	P>z	[95%Conf.	Interval]
FirstSumTwoFour_l4						
T1_l4						
Corporate	-0.0000	0.000	-0.210	0.831	-0.000	0.000
Government	-0.0002	0.000	-22.390	0.000***	-0.000	-0.000
Individual	-0.296	0.151	-1.960	0.050**	-0.591	-0.001
Insider	0.041	0.008	5.020	0.000***	0.025	0.057
Institution	0.012	0.172	0.070	0.944	-0.324	0.349
Private Equity	-0.364	0.273	-1.330	0.182	-0.899	0.171

The findings describing the relative ownership shares effect on the following years ESG score, by owner identity, is visualized in graph 2. The non-significant identities are in dashed lines.

Graph 2: Predictive margin of ownership identity (explanatory variables lagged 1 year)



Interesting, however, is the finding that the results are somewhat different with two-year lagged explanatory variables (model specified as in table 7 except number of lags). The coefficient for insiders is no longer statistically significant, while institutions relative ownership now has a positive and statistically significant effect on ESG score at the 0.01 level. All other estimation is similar to the results of the one-year lagged explanatory variables. Approximately the same results (as table 11) are applicable for even higher lags, the significance of the coefficients decreases for each lag as well as the statistical power of the model – similar to lagging the first model (table 5).

Table 11: Margins of derivative of response.

Dependent variable ESG. Explanatory variables lagged 2 years.

Based on Fixed-effects(within) panel data regression table 7.

Average marginal effects

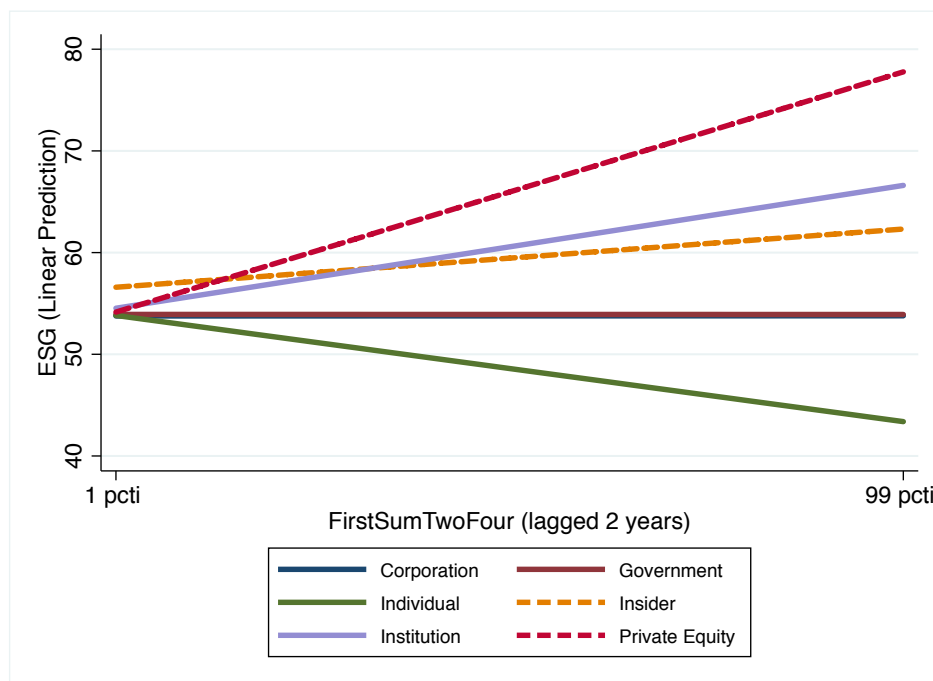
Expression : Linear prediction, predict()

dy/dx w.r.t. : FirstSumTwoFour_l8

	Delta-method					
	dy/dx	Std.Err.	z	P>z	[95%Conf.	Interval]
FirstSumTwoFour_l8						
T1_l8						
Corporate	-0.0002	0.000	-2.510	0.012**	-0.000	0.000
Government	-0.0002	0.000	-38.210	0.000***	-0.000	-0.000
Individual	-0.227	0.110	-2.060	0.040**	-0.443	-0.011
Insider	0.124	0.093	1.330	0.183	-0.059	0.308
Institution	0.263	0.090	2.920	0.004***	0.086	0.439
Private Equity	0.514	0.342	1.500	0.133	-0.157	1.184

The four identities corporation, government, individual, and private equity remain exactly the same, also for each individual ESG pillar (although smaller coefficients and less significant results). Insiders and institutions have seemingly exchanged places. *FirstSumTwoFour* separate effect for Insider ownership is only significant when regressed against the G pillar, at the 0.10 level with a positive coefficient. The separate effect for institutional ownership on ESG score and each individual pillar is positive; significant at respectively the 0.01 level (ESG) and 0.05 level (E, S, and G). Graph 3 visualize the two-year lagged effect.

Graph 3: Predictive margin of ownership identity
(explanatory variables lagged 2 years)



8 Discussion of Results

The paper has empirically examined the relationship between ownership structure and ESG score, considering ownership concentration and ownership identity as separate and intertwined dimensions of ownership structure. New evidence on the relationship is acquired by exploiting a large sample of quarterly data on European public listed companies in the period 2010-2019. This section discusses the results in the context of the theoretical framework and previous empirical evidence.

8.1 Ownership concentration

The estimates from the fixed effect (within) regression in table 5 are used to test the hypotheses exclusively regarding ownership concentration (hypothesis 1 and 2). The finding suggests that the ownership share of the largest owner and the five largest owners in a company is not a determinant factor for ESG score the following year. On the other hand, the relative ownership share of the largest owner, relative to the second largest owner and the second to fourth largest owner, is found to be a determinant factor for the following years ESG score. Offering support to the first two hypotheses – the paper fails to reject hypothesis 1 and 2.

The theoretical implication of accepting hypothesis 1 is that there is a lack of evidence for a strong case of agency problem type 1 in European public listed firms concerning CSR expenditure. In a severe case of the problem, one would expect that the increased holding of the largest owner(s) would affect ESG score. When self-dealing managers severely depart from the firms' profit-maximization objective to over- or under-invest in ESG initiatives, the largest owner(s) represent all shareholders as they, on average, are expected to direct management towards the profit optimizing amount of ESG expenditure.

The implications of accepting hypothesis 2a is that the power to influence corporate strategic decision-making is contingent upon other shareholders controlling power. Reduced competition from competing shareholders enables and incentivizes the largest shareholder to influence CSR commitment. This revelation supports the theory of agency problem type 2, predicting a conflict among shareholder regarding corporate resources utilization, including CSR commitment. Which again suggest that the individual owners' preferences differ in terms of CSR – if all owners had the same goal regarding CSR, the power to influence strategic decision would not be contingent upon other shareholders as

they would all push in the same direction. This explains the finding of a minimal, negative effect on ESG score: the different owners pull opposite directions causing the effect to converge towards zero.

The results resonate with prior empirical evidence, which generally observes a neutral or weakly negative relationship, dependent on the proxy of ownership concentration applied. The analysis showcases the divergent implication of different proxies and provides evidence that it is crucial to evaluate the shareholder relation dimension, when investigating whether and how ownership structure effect ESG score. In sum, the application of two ownership concentration proxies and the above discussion explains the previous inconclusive research and expose their weakness of not considering divergent objectives between specific owners.

8.2 Ownership identity

The approach to investigate the effect of owner identity is twofold. First, the separate effect of owner identity (of the largest shareholder) is explored (table 6). Thereafter, the paper study the dependent effect between ownership concentration and identity, on ESG score.

Hypothesis 3 predicts that the owner identity does not have an independent effect on ESG score. Table 6 provides strong support for the prediction: the paper fails to reject hypothesis 3. In line with theory, merely being the largest owner does not provide the incentive or the power to influence corporate strategic decisions.

The interaction effect between ownership concentration and owner identity of the largest owner is included in the model to analyze the dependence of the two dimensions. The results reveal that increased absolute ownership concentration does not have an independent effect per owner identity, resonating with the findings from hypothesis 1. However, increased relative ownership concentration have a separate effect per ownership identity. When identity interact with the relative concentration measures, the approach overcome the limitations of prior research by identifying the issue of conflicting interest between owner categories and assuming a difference in utility function and power of shareholders with different size.

8.2.1 Government and Corporate Ownership

The marginal effect of the relative ownership share for each owner identity suggest that corporations and the government have a small negative effect on ESG score. That is, when their shareholding increases within a firm the effect on ESG score the following year is negative. Consequently, hypothesis 4 and 6 is rejected.

Hypothesis 6 predict that corporations relative ownership share is not a determinant factor for ESG score. For the reasons that the negative effect size is very small, it can be discussed whether the hypothesis is, in fact, rightfully rejected. The scale of the variable proxying relative ownership concentration is very large, in particular for corporate ownership, in comparison to the scale of ESG score. Therefore, a unit change in relative ownership concentration for corporations typically equals a minimal change in ownership structure, hence expecting to yield a very small change in ESG score. Consequently, the relation is considered meaningful. It is reasonable to assume that instead of CSR initiative being overshadowed by strategic objectives, the initiatives are actively discouraged to focus corporate resources on programs which are directly in the corporate owner's strategic interest.

The rejection of hypothesis 4, predicting a positive effect of government shareholding on ESG score, is quite surprising given the substantial theoretical grounds for the prediction and the majority of prior empirical evidence. From the literature review, only Dam and Scholtens (2013) find a (weak) negative association to the so-called sub-category of CSR, stakeholder dimension. This papers' analysis finds no evidence that the effect is driven by one particular pillar of ESG.

In contrast to the theoretical framework, the results suggest that the government does not use their firms to pursue social objective, such as reduced emission or political objective which aligns with CSR, like increased reputation through identification link. A possible explanation could be that the government, on average, has a strictly financial motive – following stakeholder theory, not shareholder theory as first assumed. The average ESG score of government-owned firms is high (57.79); combined with the small coefficient, explaining their active ownership within a firm when (relative) ownership increase, it suggests that the group invest in well-performing companies in the first place. In sum, this might indicate that the government believes ESG investment is value-enhancing up to a certain point but decreasing beyond the point.

8.2.2 Individual Ownership

The findings support the prediction of hypothesis 8: if the largest shareholder is an individual owner, their relative ownership share is negatively associated with the company's ESG score. The effect size is larger than for corporate and government ownership. The evidence suggests that the negative relation is driven by the social and government pillar of ESG, while individuals' relative ownership share does not appear to be a determinant factor for the following years environmental performance within a firm.

Following the empirical results, it is reasonable to conclude that ESG prioritization is still a niche market for the group. Supporting McLachlan and Gardner (2004) findings, there still is a substantial difference between sustainable aware and conventional individual investors. As ownership increases the conventional investors are the most prevalent. On the one hand, these investors might recognize the possibility of shared value creation of specific ESG initiatives. However, due to their scale disadvantage in terms of resources and information gathering, the group is possibly intimidated by the commitment, as they perhaps do not have the capabilities to thoroughly assess the costs and benefits of CSR. On the other hand, they might be laggards in the field, not believing in ESG as a value-enhancing initiative. Nonetheless, it seems that the group gravitates towards stable and predictable projects.

8.2.3 Private Equity Ownership

The findings indicate no clear effect of private equity ownership on ESG score, on that basis hypothesis 7, predicting a negative relationship, is rejected. Compared to the other identities, they do not statistically differ concerning the effect of increased relative ownership share on ESG score.

Closer inspection exposes that relatively few companies in the sample have private equity firms as the largest owner. The empirical investigations' ability to detect an effect is the so-called power of the study. The power reduces with a small sample size, as it inters alia leads to higher variability, which typically leads to biases such as less conclusive results (no-response). Large effects are the easiest to reveal and may even be revealed in small samples. However, if the effect is relatively small, and the sample is limited, there is inevitably high variability among the companies and the study cannot determine the true effect. Observing the confidence interval from the regression results it suggests that the group is subject to the bias mentioned. The small sample size reduces the study's

power and increases the margin of error, which render the results regarding private equity ownership as meaningless.

The model specification analyzes the effect of increased ownership within a public listed company. As private equity firms traditionally are only seen as owners of public listed firms in relation to IPO's or leverage buyouts, it is not surprising that the sample is small and even smaller in the case of increased ownership over time. The active ownership of public listed firms is limited, and the only conclusion that can be made with confidence is that the average ESG score of private equity owned firms is relatively high compared to the other identities.

8.2.4 Insider Ownership

The marginal effect of the relative ownership share for each owner identity suggests that insider ownership has a positive effect on the following years' ESG score, driven by the environmental and government pillar; rejecting hypothesis 9, which predicted a negative relationship.

Broadly the groups' characteristics are similar to individual investors. Conversely, the two identities' effects are the furthest apart out of all the owner identities. This suggests that the private benefits associated with specifically being an insider are dominant for the group, compared to motives related to being a non-professional investor – which is the common denominator to individual investors. The insider specific private benefits are positively associated with ESG score, for example, increased reputation through identification link with the firm and direct benefits through ESG initiatives effect on company policies. The latter example is expected to be associated with the social and government pillar of ESG. However, the overall positive effect on the aggregated score is found to be driven by the E and G pillar. Indicating that either, 1) the identification-link as a private benefit is the main motive, or 2) when an insider is the largest owner and hold a relatively large ownership share, the insider is not employees, rather manager and directors - they have more to gain from the G pillar than the S pillar, for example through increased executive pay. Furthermore, previous empirical evidence finds a negative association between insider ownership and CSR. The switching sign could be explained by the increased global attention attributed to ESG, causing the utility gain by being identified with a high ESG score company to amplify – supporting alternative nr. 1.

Contrasting all the other identities, insiders' relationship is only valid for a one-year lag between ownership concentration and ESG score. Similar to private equity ownership, relatively few

companies in the sample have insiders as the largest owner (although, a larger amount). The sample size systematically decreases as the number of lags increase. Therefore, insiders are possibly subject to the same “no-response bias” caused by small sample size at higher lags. Another possible explanation for the observation is that the effect only operates with a one-year lag, there exists no long-term effect, or for the other identities X_t is typically correlated with X_{t-q} , but this may not be the case for insider owners – they are not the largest owner throughout many periods.

8.2.5 Institutional Ownership

The empirical results suggest that the relative ownership concentration for institutional ownership is not a determinant factor for the following years’ ESG score. However, when ownership concentration is lagged two-years, institutions are positively related to ESG score, as predicted by hypothesis 5. Following the above discussion regarding insider ownership, one explanation could be: institutions hold the stocks for one year, before an insider takes on the role of the largest shareholder and increase the ESG score in year two. The more convincing explanation is that institutions do not have a short-term but a long-term impact on corporate ESG score.

When institutions are the largest owner, their average ownership share is substantially smaller than their counterparts. Even if their relative ownership share is equivalent to the other owner identities, their absolute ownership share is much smaller (on average) – making it the more challenging to influence management, despite having more controlling power than the smaller shareholders within the same firm. As a consequence, policy implementation naturally takes a longer time; offering an explanation for the different outcomes of one- and two-year lagged variables.

The divergent results of utilizing different lags may explain previous research’s ambiguous results, finding both positive and no relations between institutional ownership and ESG score.

In sum, hypothesis 5 is supported with a two-year delay. Institutions are believed to have the resources and appropriate role in society to thoroughly assess the costs and benefits of CSR projects and take on the associated risks. Naturally, making them more likely to succeed in creating shared value – increase profits by solving societal problems – which again, incentives institutions to continue to prioritize CSR investments.

9 Limitations

A thorough inspection of relevant econometric approaches is conducted in this study to ensure reliable results. The key strength of the fixed effect (within) model is providing a means for controlling for omitted variable bias (unobserved heterogeneity). Though the research design makes several methodological improvements, it is not free of limitations. The following section addresses the most prominent.

In a panel data set, there are two sources of variance within the sample. The first, between entity variation, each entity is systematically different from one another. The second, within entity variation, the behavior of each entity varies between each time observation. Describing respectively how an entity vary, on average, from the sample mean and how an entity varies at any point in time from its individual mean. The fixed effect within model, applied in the analysis, ignores the between-group variation. Its consequence is losing much of the variation in the dataset. When there is little variation in x_{it} across t , in which case $x_{it} - \bar{x}_i$ tend to be highly correlated, as discussed for the sample (so-called multicollinearity) (Wooldridge J. M., 2006), the standard errors are typically inflated. Therefore, the estimates may not reveal the relations that are present in the data; for example, the effect of private equity and institutional ownership relative ownership concentration on the following years ESG score.

Furthermore, the FE model is restricted to time-varying variables – something has to “happen”. Therefore, the paper cannot explore the relationship in a country or industry setting. As mentioned, the model controls for this, why it is not initially a problem. However, the model assumes that this unobserved heterogeneity is constant over the research period. If this is a false assumption, the model does not account for this.

Turning to the most prevailing limitation of the study, briefly touched upon in the description of control variables: endogeneity bias caused by reverse causality. Some recent studies have noted the possibility of reverse causality, implying that low or high ESG score attracts a certain type of ownership structure, as opposed to the causality studied in this paper. Certainly, this might be true. The theoretical framework, empirical analysis and discussion makes it unlikely that the causality goes only one-way or the other. The more realistic case can be exemplified as follows: a particular type of

ownership structure is attracted to high(low) ESG score, but also increase (decrease) the score throughout the holding period as part of an active ownership strategy. The so-called sequential exogeneity describes a situation where y is determined by x , and x is determined by y_{t-1} .

One assumption of the FE model is strict exogeneity of the explanatory variables. Simply put, the explanatory variables cannot be determined by the dependent variable. Therefore, sequential exogeneity essentially violates this assumption. Various types of dynamic panel data models have been suggested to address this particular endogeneity problem (Leszczensky & Wolbring, 2019). The validity of the methods is greatly discussed by academics and frequently criticized for the difficulty of implementation, causing great variability in the results. To be specific, the limitation of the study is not testing various dynamic models to validate or reject the results of the fixed effect model, in the case that the reverse causality impact the empirical results.

Having that said, the problem of sequential exogeneity is reduced for the empirical analysis conducted in this paper due to three main reasons. Firstly, the ownership concentration proxies change very slowly over time. Therefore, the relationship investigated is most likely the dominant causality. Secondly, another common strategy to account for direction of causality (see Jo & Harjoto (2012) and Dam and Scholtens (2012)) is using lagged values of the explanatory variable. This strategy is a natural way to estimate the relationship of interest, believed to partake in reducing the problem of reverse causality. Lastly, challenging the reverse causality by regressing ownership concentration on one-year lagged ESG score does not yield significant results.

Other limitations are as follows: only including companies which have received an ESG score rating from Thomson Reuter may imply a sample selection bias, only relying on Thomson Reuters ESG scores as opposed to several rating agencies makes it difficult to ensure the strength of the results, the sample consists only of firms with European origin and can therefore not be generalized beyond this single continent context, and the research design does not empirically reveal why certain identities act the way they do.

Future research should consider looking more closely into these particular limitations to evolve the empirical methodology, possibly strengthen the credibility of the results or discover other aspects of the relationship.

10. Conclusion

This paper analyses whether the corporate social responsibility (CSR) policies, measured by ESG score, of European multinational enterprises, is to part, determined by ownership structure. In particular, the role of ownership concentration and the identity of the largest owner is investigated. The largest owner of European public listed companies is categorized into one out of the following six identities: corporate, government, individual, insider, institutional, or private equity investor.

Two elements constitute the foundation of the analysis. Firstly, in response to social pressure and growing evidence linking social- and financial performance, increasing CSR engagement can be observed in many companies (Barnea & Rubin, 2010). However, not all companies follow the rapid development. Secondly, large shareholders are influential in terms of making demands for policy commitments. Therefore, it is likely that these shareholders have important implications for CSR commitment.

The results reveal that the largest shareholder's relative ownership share is a determinant factor for ESG score, while the absolute ownership share is not. These findings highlight that, 1) large shareholders have the incentive to actively engage with their firms regarding CSR, and 2) different large shareholder have different preference concerning the topic; therefore, implementation is contingent on their power relative to other shareholders in the same firm. Which confirm the first part of the research question, ownership structure matter for corporate ESG score.

This paper argues that the relationship between shareholder and CSR differs because the owners have financial and non-financial motives, which can produce either shared- or private benefits of control. In extension of this, the results indicate that when the largest owner is a corporation or the government, increasing relative controlling power has a modest negative effect on ESG score. Likely driven by, respectively, alternative prioritization and financial motives aiming to reach some optimal level of ESG score, which maximize economic profit. For individual owners, the negative effect is larger. They restrain CSR development possibly because they believe there is a trade off between social- and financial performance or other reasons prevail over CSR in the investment decision.

Insiders have a positive effect on CSR when their controlling power increases. The reasons are believed to be associated with the indirect and direct private benefits only an insider receives in

relation to robust CSR policies. For example, reputational benefits. It appears that institutions also positive affect ESG score, although with a longer implantation horizon. The positive relation is believed to be conducted as a means to the end profitability, however, on its way creating shared benefits of control. The investors have the resources to thoroughly asses the costs and benefits of investment, making them the more likely to succeed – initiating a CSR-virtuous circle. Lastly, no clear results apply for private equity ownership. In sum, this explains the second part of the research question – how ownership structure effects corporate ESG score.

From a theoretical perspective, this paper posit that it is important to account for shareholders' heterogeneity whilst assessing CSR. A great deal of attention has been paid to the value creation aspect of CSR commitment, in terms of financial performance. However, this paper finds that financial performance is only a part of the story. Shareholders can be expected to support CSR inasmuch the benefits exceed the related costs – but the benefits do not need to align with the financial performance or can fully be financially justified.

The study also has important practical implications. The threat from environmental disruption is clear, social consideration is a topic of increasing importance, and the failure of corporate governance is often recognized as a source of economic crisis. Under these circumstances, one must assume that regulators, policy makers, and stakeholders seek to improve corporate ESG performance to keep up with the global challenges. The results indicate that particular attention must be paid to the shareholders - they can be drivers for social change if the benefits are retained, but powerful owners also have the means to limit social advancement.

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Appendix:

Appendix 1: Ownership classification

Thomson Reuter classifies each owner according to one of the fourteen categories below. This paper further group owners into six broader categories: government, corporate investors, individual investors, institutional investors, Private Equity and Insider Investors.

Government

Government Agency
Sovereign Wealth Fund

Individual Investor

Individual Investor
Foundation

Corporate Investors

Corporation
Holding company

Institutional Investors

Pension Fund
Insurance Company
Investment Advisor/Hedge Fund
Endowment Fund
Bank and Trust

PE/VC

Private Equity
Venture capital

Insider Investor

Insider Investors

