Managerial Response to Investor Environmental Demand: The Role of Firm Ownership Structure*

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Abstract

We provide evidence suggesting that managers respond to investor environmental demand as revealed through stock price movements. We document that this response is highly interrelated to the firm's ownership structure. Specifically, we find a stronger response when the largest shareholders are more powerful in terms of voting rights or cash flow rights (particularly family firms and dual-class share firms) and when the stock is more important in the shareholders' portfolios. These findings suggest that shareholder power is an important component of managerial response to investor demand and provide evidence on how firms' sustainability activities are governed by dominant (long-term) owners.

Key words: ESG, catering theory, firm ownership structure, dual class shares, portfolio composition.

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1. Introduction

Evidence suggests that investors have broad and increasing interest in firms with stronger environmental profiles (e.g., Krueger, Sautner and Starks, 2020; Sautner, van Lent, Vilkov and Zhang, 2021; Bolton and Kacperczyk, 2021, 2022; Pastor, Stambaugh and Taylor, 2022). However, the extent to which the firms' owners and managers respond to such investor interest is unclear. Moreover, an understanding of managers' decision-making processes with regard to the environmental aspects of their firms requires consideration of the interrelationship between investor demand and shareholder preferences, particularly in the presence of powerful owners.

We examine these issues in a setting in which we have the advantage of precise data on both a firm's environmental profile and the firm's ownership details. Specifically, we have the advantage of access to Swedish data, which allows us to test our hypotheses with a more complete picture of the firms' ownership structures. This consideration of firms' ownership structure is important because it constrains managers' decisions, particularly in the presence of powerful owners. We consider the concept of powerful ownership from several different perspectives. We first focus on the largest owner's voting power and cash flow rights. Additionally, we consider other aspects of the owner's motivation and power by examining the stock's position in the owner's portfolio and whether the owner is an insider. Further, we examine whether the power is effectuated through specific ownership structures such as family firms, dual class shares or concentrated ownership. In particular, family firms and dual class ownership structures have been shown to be prevalent in Sweden (e.g., Cronqvist and Nilsson, 2003), and in Europe more generally (e.g., Faccio and Lang, 2002, and Maury and Pajuste, 2005). In addition, the firm ownership structure and the largest owner's power, type, portfolio composition, and concentration have all been shown to be related to corporate outcomes (e.g., Lyandres, Marchica, Michaely and Mura, 2019; Dyck, Lins, Roth and Wagner, 2019; Faccio, Marchica and Mura, 2011; Fich, Harford and Tran, 2015; Maury, 2006; Sekerci, 2020; Maury and Pajuste, 2005; and Iliev, Kalodimos, and Lowry, 2021).

We capture the investor environmental demand by employing a catering approach analogous to that of Baker and Wurgler (2004), which they use to capture how managers respond to fluctuating investor demand for dividends. Similarly, Naughton, Wang and Yeung (2019) and Jiao, Tong and Yan (2021) adopt a catering perspective to focus on firms' aggregate CSR. We differ in two primary ways. First, we consider that a firm's ownership structure could be an important component of how managers respond to increased market demand for environmental investments. Second, we focus on investor demand regarding firms' environmental profiles isolated from aggregate CSR (or ESG) because of the increasing world-wide focus on environmental issues and the complexity of measuring aggregate CSR. Further, given our focus on the influence of the long-term owners in the firm, investors' environmental goals can differ from their social or governance goals. Thus, isolating environmental issues can provide a clearer understanding of the relationship.

According to Baker, Greenwood and Wurgler (2009), managers are often interested in making decisions that deliver certain firm characteristics, such as dividends, for which investors are willing to pay a premium. In our context, managers would be sensitive to investor environmental demand and, everything else equal, would seek to improve their environmental profile during periods when investors are more willing to pay a premium for such investments. However, not considered by the previous research on catering to demand is the fact that managers can be constrained by the interests of dominant shareholders. Prior work suggests that investor incentives and preferences, particularly those of the largest shareholders, have the potential to influence firm policies and outcomes (e.g., Anderson and Reeb, 2003b; Edmans and Holderness, 2017; McCahery, Sautner and Starks, 2016; Ravid and Sekerci, 2020; and Lowry, Wang, and Wei, (2022). Thus, viewing the managerial responses to investor demand in isolation from considerations of powerful owner effects can be problematic, particularly for companies with such

owners. That is, it becomes important to integrate the investor demand with the ownership structure because the owners, particularly dominant shareholders, have ultimate control.

We find that when the market as a whole places a premium on stocks with high environmental scores, firm managers, on average, appear to respond by increasing their environmental investments as reflected in subsequent increases in firm-level environmental scores. However, we also provide evidence that catering to investor environmental demand can be intricately linked to aspects of a firm's ownership structure. Specifically, we document a positive association between management's catering to demand for environmental investment and the presence of dominant and long-term oriented owners (owners with substantial voting and cash flow rights, concentrated portfolios, which are commonly achieved through dual-class shares, and family ownership). Our results indicate that the dominant owners seem to care about externalities as they monitor managerial responses to the market-wide appreciation of environmental investments. Overall, our empirical results suggest that managers' decisions on their environmental investments vary with investor environmental demand interacted with the firm's ownership structure.

Our research contributes to several different strands of the literature. First, by showing that investor environmental demand can explain the variation in the firms' environmental profiles, we add a unique perspective to the growing body of work examining the determinants of corporate ESG decisions (e.g., El Ghoul, Guedhami, Wang and Kwok, 2016; Liang and Renneboog, 2017; Dyck et al., 2019; Abeysekera and Fernando, 2020; Ferrell, Liang and Renneboog, 2016) and the work showing the influence of investors and owners on firms' environmental activities. For example, Dimson, Karakas and Li (2015, 2021) provide evidence that institutional investor engagement, both on an individual basis and in collaboration can affect firms' environmental and social choices. Hoepner, Oikonomou, Sautner, Starks and Zhou (2022) show that the engagement on environmental issues can affect firms' subsequent downside risk.

Second, we contribute to the research that examines managerial responses to investor demand through the catering perspective (e.g., Baker and Wurgler, 2004; Baker et al., 2009; Li and Lie, 2006; Braggion and Giannetti, 2019; Naughton et al., 2019; Jiao et al., 2021). We provide new evidence that managerial responses to investor environmental demand are inextricably linked to the firm's ownership structure, suggesting that certain ownership structures, in particular, long-term dominant owners (a large shareholder, family ownership, or dual class shares), actually promote the managerial response to investors' environmental demand. This in turn suggests that the shareholder voice channel, as compared to the exit channel, can be influential in shaping firm environmental policies. Our results compliment the findings of Gantchev, Giannetti and Li (2022) who focus on the role of *exit* by institutional investors and show that following negative ES news, and subsequent stock price declines, the presence of ES-conscious institutional investors is associated with improvement in firm ES policies, particularly when managers receive stock-based compensation.

Third, our paper contributes to the "long-termism" debate in the literature (e.g., Krueger et al., 2020; Starks, Venkat and Zhu, 2021; Kim, Kim, Kim and Park, 2019). Specifically, our results suggest that the managerial response to investor environmental demand is linked to the presence of long-term-oriented owners (i.e., family owners, owners holding dual class shares) and those with large economic incentives to monitor (i.e., owners with substantial voting rights, owners with concentrated portfolios).[1] Overall, our results suggest evidence on how firm sustainability activities can be governed by their (long-term) owners.

[1] One could also interpret these findings as being consistent with long-term oriented owners, especially family owners, promoting catering as a result of public attention on environmental issues. That is, external reputational pressures might result in family owners seeking environmental reforms at firms (for example see Giannetti and Wang (2021) for the role of public attention on gender issues on corporate governance).

2. Data, variables and descriptive statistics

2.1 Data

Focusing our analysis on Swedish data provides distinct advantages for testing our hypotheses. First, as pointed out, the most important reason is the existence of detailed ownership data for Swedish firms. Thus, we can measure dominant ownership characteristics, which are not as available in other markets due to a lack of publicly available data. Specifically, we can measure the owners' voting power along with their cash flow rights, their affiliation with the firm (e.g., as the CEO or the Chairman), and the weighting of the firm within their portfolios. We can also determine the ownership type (e.g., families, financial institutions, and other entities such as corporations, governments, foundations, and individuals), whether the firm has dual class shares and the firm's ownership concentration (e.g., Cronqvist and Nilsson, 2003; Ravid and Sekerci, 2020). Another advantage of using Swedish data is the direct influence the largest shareholders have on firm governance given that by Swedish law, the director nomination committee typically includes the largest five shareholders (Dent, 2013).

Second, in terms of testing investor demand for environmental characteristics, Sweden provides a setting in which such demand may be more prevalent and is not as subject to political concerns. That is, Sweden ranks as one of the highest in the world in terms of cultural norms towards environmental preferences (e.g., Dyck et al., 2019), thus providing an ideal setting to investigate corporate policies on these issues. Moreover, restricting the analysis to one country provides a natural control for differences in cultural norms and management decisions across countries, which are needed controls given the findings of Cai, Pan and Statman (2016), Liang and Renneboog (2017) and Dyck et al. (2019) who find that country characteristics are important in explaining firms' ESG choices.

Our sample comprises 208 non-financial Swedish firms listed on the NASDAQ-OMX stock exchange in Stockholm. We gather the firms' characteristics from Thomson Reuters Datastream. Firm-level environmental ratings for the 2009-2015 period are obtained from Global Engagement Services International AB (GES).[2] The GES data has advantages for our empirical tests because it was the leading ESG data provider in the Swedish market during our sample period and GES scores take into consideration sector specific issues (e.g., sectors with high supply chain risks have supply chain related criteria in the assessment) (Eccles and Stroehle, 2018). The data coverage provided by GES is considered to be the best one for Sweden compared to what other databases such MSCI offers for Swedish listed firms (Krueger, Metzger, and Wu, 2021).

Firm ownership data is from Modular Finance AB (previously SIS Ägarservice AB), which provides the Swedish government share registry data of all shareholders for firms listed on the Stockholm Stock Exchange. (This data has been used previously by Cronqvist and Nilsson, 2003; Giannetti and Simonov, 2006; Giannetti and Laeven, 2008; Ravid and Sekerci, 2020, amongst others.) We focus on each firm's largest shareholders given that such shareholders are generally viewed as having the ability to influence firm governance (e.g., Shleifer and Vishny, 1986; Edmans and Holderness, 2017). Since, as mentioned, Swedish law delegates the nomination of directors to the nomination committee that typically comprises representatives of the firm's largest five shareholders, we also examine ownership concentration based on the three largest and five largest shareholders.

Ownership stakes are reported as percentages of both total capital and votes (as the database captures whether a firm has a dual class share structure). Moreover, the database reports the ultimate owner type as one of the following: families, financial institutions, corporations,

[2] GES is intimately familiar with the Swedish market as Eccles and Stroehle (2018), who review the ESG data providers, note that: GES is "…very much a product of Swedish culture and depicts an interesting development in its conceptualization of sustainability." GES International (https://www.gesinternational.com/) was acquired by Sustainalytics, a global leader in ESG and corporate governance research, ratings and analytics, in January 2019 (https://www.sustainalytics.com/press-release/sustainalytics-acquires-ges-international/).

governments, foundations, and individuals, which we divide into three groups, family firm, financial institution and other entities. Furthermore, the database provides information on the nature of the owner's affiliation with the firm, i.e., whether the owner is the CEO, a member of the management team, the chairman of the board, or a board member. Finally, the database provides information regarding each investor's portfolio composition, which allows us to calculate the relative weight of investment in each firm in a shareholder's portfolio, a measure we refer to as 'stock importance' as in Ravid and Sekerci (2020).

2.2 Variable construction and descriptive statistics

All variable definitions are reported in Table 1, where the currency is the Swedish Krona (SEK). The GES database reports firms' environmental ratings (*Escore)* on a scale of 0-3, based on an average of a firm's environmental 'preparedness' and 'performance' scores, evaluated based on a detailed company-specific analysis which depends on management's disclosure and actions. For example, the questions addressed by management and assessed by GES include for example, 'Does the company describe its environmental organization and routines?', 'To what extent does the company present its environmental policies and targets?', and 'Has the amount of greenhouse gases released by the company changed over time?'. (All of the environmental-related questions are listed in Appendix A.) To illustrate, the *Escore* for AAK (formerly, AarhusKarlshamn) increased from 1.17 in 2013 to 1.42 in 2014. The firm's 'E preparedness' score did not change, thus the increased *Escore* was due to the change in the firm's 'E performance'. Specifically, the firm's performance improved in the following three sub-categories, which are all measured relative to the firm's turnover: the change in the amount of waste, the change in the firms' energy consumption, and the amount of water consumption.

In order to facilitate the interpretation of results we rescale the *E* scores to lie between 0 and 1.[3] We present the summary statistics in Table 2. By design, the *Escore* across the sample firms

[3] Our results are robust to using the unscaled data.

averages 0.313 (with a standard deviation of 0.234). These statistics are comparable to those reported in prior work (e.g., Ferrell et al., 2016).

Our measure of investor environmental demand (*Demand for E*) is somewhat analogous to the dividend premium concept in Baker and Wurgler (2004). That is, we measure the investor environmental demand for each year as the difference in the logs of the value-weighted average of the market-to-book ratios of more environmentally-conscious firms versus less environmentally-conscious firms in year *t-1*. We classify firms as more environmentally-conscious if they are above the sample median *Escore* and less environmentally-conscious if they are below the sample median *Escore*. Table 2 shows that the *Demand for E* has a mean of 1.852 with a standard deviation of 0.126, a minimum of 1.635 and a maximum of 2.064.

To capture the relevant aspects of a firm's ownership structure, we employ several different variables. First, we focus on the power and control of the largest owner in the firm. As pointed out by Burkart and Lee (2008), the allocation of voting rights not only provides evidence regarding the balance of power among shareholders, it also represents the shareholders' leverage over management. Similarly, Adams and Ferreira (2008) summarize substantial theoretical and empirical evidence showing that the differences between voting rights and cash flow rights can affect managerial decisions. Consequently, we use two measures to capture these aspects of firms' ownership and control structures with regard to the largest shareholder. First, *Vote 1SH* represents the percentage of votes held by the largest shareholder, while *Capital 1SH* captures the percentage of cash flow rights held by the largest shareholder. As Table 2 shows, on average, the largest shareholder in our sample holds 33.1% of the votes (*Vote 1SH*) and 24.4% of the cash flow rights.

In Table 2, we also show that, on average, the 2nd and 3rd largest shareholders in our sample hold voting rights of 10.6% and 6%, respectively. These statistics are similar to those in prior work, e.g., Maury and Pajuste (2005) who report that the voting rights of the first, second and third largest shareholders in their Finnish sample are 42.3%, 11.5%, and 6%, respectively.

We capture the importance of the company to the largest shareholder by using the relative size of the firm in that shareholder's portfolio. *Stock importance* is the weight of the stock in the largest shareholders' portfolio, and *Stock importance DV* is an indicator variable that equals 1 if the stock has the highest weight in the portfolio.[4] In our analyses, we use *Stock importance DV* to simplify the interpretation in the interaction models. Similar to Faccio et al. (2011), who examine ownership in Western European countries, we find that shareholder portfolio concentration varies widely. Some shareholders in our sample have quite diverse portfolios with a minimum value of *Stock importance* equal to 0.001, while others are reported to have just one stock in their portfolio and consequently, have a *Stock importance* value of 1. On average, we find that about 62% of the largest owners have the focal firm as the most significant part of their portfolio and the average portfolio share is 59%.

We measure the largest shareholder's role in the firm by using an indicator variable (*Insider*), which takes a value of 1 if the largest shareholder is any of the following: the CEO, a member of the management team, the Chairman of the board, or a board member, and 0, otherwise. We find that about 56% of the largest shareholders are also insiders. In further analyses we include a measure of ownership type using three indicator variables that take a value of 1 if the largest owner is i) a *Family* and 0 otherwise, ii) a *Financial institution* and 0 otherwise, or iii) *Other entities* (i.e., corporations, government, foundations, and individuals) and 0 otherwise. Family firms constitute around 55% of our sample, which is similar to that for other Continental European countries (e.g., Faccio and Lang, 2002, and Maury and Pajuste, 2005).

We also differentiate firms with disproportional voting rights by designating a *Dual class* indicator variable that equals 1 if the firm has a dual class share structure and 0 otherwise. We find

[4] For example, in 2005 Melker Schörling was AAK's largest shareholder, and at the end of 2005 Schörling's portfolio comprised five firms with the following weights: AAK (43.34%), Securitas (28.29%), Assa Abloy (24.83%), Bong (3.09%), H&M (0.44%). In this example, our *Stock importance* measure for the AAK is 43.34%, which is the weight that Schörling gives to AAK in his portfolio; and our *Stock importance DV* is 1 since AAK has the highest weight in Schörling's portfolio.

dual class shares to be prevalent in our Swedish sample with slightly over half of the firms (50.6%) having a dual class structure. This can be compared to the 66% ratio reported for loyalty shares in France, which effectively impose a dual class structure (Belot, Ginglinger and Starks, 2021).

We utilize one other measure of dominant owners' power by employing the firm's shareholder concentration through *MBH Herfindahl top3* and *MBH Herfindahl top5*, which are, respectively, measured as the Herfindahl index of the holdings of the top 3 or 5 shareholders, using the sum of the squares of the top three or five shareholders' voting rights. The higher the index, the higher the firm ownership concentration. The mean of 0.17 is comparable to the literature focusing on Continental Europe where firm ownership is largely concentrated (e.g., Maury and Pajuste, 2005).

We also control for firm-specific variables. Firm size (*Size*) measured as the natural logarithm of total assets. *ROA* is EBITDA divided by total assets. *Leverage* is measured as the total long-term debt divided by total assets. *Sales* is the net sales divided by total assets. *Capex* is capital expenditures divided by total assets.

In Table 3 we present the correlation matrix of the major variables. We observe that the firm *Escore* and *Demand for E* are positively correlated with each other (at the 10% significance level). In the following section we conduct our multivariate analyses to further investigate the relationship between *Demand for E* and the firm's E rating while controlling for other variables.

3. Empirical results on the role of firm ownership structure on managerial responses to investor environmental demand

In this section we examine the relations between the managerial responses to investor environmental demand and a firm's ownership.

3.1 Largest owner control and managerial responses to investor environmental demand

We examine the relation between the firm's environmental profile, i.e., environmental rating (*Escore),* in year *t* and *Demand for E* measured in year *t-1* through the following baseline regression model:

$$Escore_{it} = \beta_0 + \beta_1(Demand\ for\ E_{t-1}) + \beta_2 Vote\ 1SH_{i,t-1} + \beta_3 X_{Firm\ Controls, i,t-1} + u_{it.} \quad (1)$$

While our primary analyses use OLS specifications, given that the *Escore* ranges from zero to one, in the robustness section we report results using Tobit models. In our baseline model we control for firm characteristics and the power of the largest shareholder (based on their voting rights, *Vote 1SH*). We make two slight modifications to the Baker and Wurgler (2004) methodology by including industry fixed effects (FE) and clustering standard errors at the firm level. Although it seems unlikely that the aggregate *Demand for E* would be affected by the *Escore* of a single firm, in order to mitigate potential endogeneity problems stemming from reverse causality we lag all right-hand-side variables by one year. (We discuss endogeneity issues in more depth in the robustness tests below.)

We provide the results of these analyses in Table 4. In Column 1 we only include our *Demand for E* variable. In Column 2 we add the controls. In Columns 1-2, the positive and significant coefficients on *Demand for E* suggest that firms cater to investor environmental demand. In terms of the economic magnitude, in Column 2, a one standard deviation increase in *Demand for E* (0.126) is associated with a 1% higher (=0.126*0.080) *Escore*. In terms of the control variables, we find firm size to be positively associated with higher environmental scores and a lack of significance for the other control variables.

Given the potential influence of dominant owners on firm decisions, which has been shown to ultimately affect firm value and performance (e.g., Edmans and Holderness, 2017) we examine whether the managerial response to environmental demand, i.e., catering, has a significant relation

to measures of firms' ownership structures. In Column 3 of Table 4, we include the voting power of the largest owner (*Vote 1SH*) as well as this variable's interaction with *Demand for E*. The coefficient on *Vote 1SH* is significantly negative when *Demand for E* is zero, suggesting that environmental investments are lower in the presence of powerful shareholders *when* the market demand for such investments is zero (i.e., when there is no valuation difference between more environmentally-conscious firms and less environmentally-conscious firms). Yet, the coefficient on the interaction of *Demand for E* and *Vote 1SH* suggests that managerial response to investors' environmental demand is greater when the voting rights of the largest shareholder are larger. In terms of economic magnitude, in Column 3 a one standard deviation increase in the interaction term (0.390) is associated with an *Escore* that is 8.5% higher (=0.390*0.217). Similarly, in Column 4 we consider the largest owner's cash flow rights rather than voting rights and again find a negative coefficient on the ownership measure and a significantly positive coefficient on the interaction between the *Capital 1SH* and the investors' environmental demand. The positive links between powerful shareholders and catering to demand for firm's environmental investments is consistent with large shareholder monitoring.

We next examine whether the managerial response to investor environmental demand appears to be affected by the large shareholder's motivation. It has been argued that a large owner's portfolio composition can influence their incentives to monitor. For owners in which a company is a more important part of their portfolio, evidence suggests they have stronger incentives to monitor. In fact, prior work reports links between the presence of large owners and their portfolio composition and mergers and acquisitions (Fich et al., 2015), firm value via exit (Ekholm and Maury, 2014) or voice (Ravid and Sekerci, 2020). In order to capture this aspect of the largest owner's portfolio composition we use the *Stock importance DV* variable, which is 1 if the stock has the highest weight in the largest shareholder's portfolio.

In Columns 1-2 of Table 5 the coefficient on *Stock importance DV* is negative when *Demand for E* is zero, while the interaction between the *Demand for E* variable and *Stock importance DV* is positive, consistent with the hypothesis that managers respond to investor environmental demand when the firm holds the most important position in the owner's portfolio. Not surprisingly, the association between *Escore* and *Demand for E* holds when the largest owners' investments are more critical, and thus their monitoring incentives are presumably stronger.

In terms of the economic magnitude, in Column 2 a one standard deviation increase in the interaction term (0.907) is associated with a 9% higher (=0.907*0.099) subsequent *Escore*. Accordingly, our findings support the premise from the literature that large owners with concentrated portfolios have incentives to monitor and potentially influence firm decisions. Our findings suggest that managerial responses are related to heterogeneity in the largest owner's portfolio. More specifically, our results indicate that the environmental investments change in line with the overall market demand for environmental investing in the presence of large, concentrated owners.

Another aspect of the largest shareholder's motivation and power is whether this owner is also an insider, which we define as the largest shareholder who is also the CEO, a member of the management team, the chairman of the board, or a board member. *Insider voting rights* captures the percentage of votes held by this insider. This variable is closely related to family voting rights as the correlation between insider (voting rights) and family (voting rights) is: 0.635 (0.869) at the 1% significance level. We interact *Insider voting rights* with the *Demand for E* in Column 3 of Table 5.

The results again provide evidence of lower environmental investment in the presence of a powerful insider when *Demand for E* is zero, but a positive managerial response to investor environmental demand when the largest owner is also an insider. In terms of the economic magnitude, in Column 3 a one standard deviation increase in the interaction term (0.466) is

associated with a 6.8% higher (=0.466*0.146) subsequent *Escore*. The marginally significant coefficient on the interaction variable suggests that managerial responses to investor environmental demand are associated with the presence of large and powerful insider owners.

3.2 Family firm and dual class share ownership structures and managerial responses to investor environmental demand

In this section, we further examine the link between a firm's ownership structure and the managerial response to demand for environmental investing. Owners, including the largest owner, can have strengthened control under a family firm and/or a dual class equity structure. We note that the correlation between *Family* and *Dual class* is 0.357 (significant at the 1% level), indicating that many, but certainly not all, family firms employ a dual class structure to manage the control of the firm. In addition, nonfamily firms utilize dual class shares. Thus, while related, these measures capture different aspects of ownership structure.

As discussed above, prior work suggests that ownership type is an important determinant of firm decisions, including ESG-related decisions (e.g., El Ghoul et al., 2016; Dyck et al., 2019; Abeysekera and Fernando, 2020). However, the previous empirical results are mixed on the nature of the relation between family ownership and firms' ESG choices. For example, using an international sample, El Ghoul et al. (2016) report that family-controlled firms have lower ESG performance. On the other hand, for a sample of U.S. firms, Abeysekera and Fernando (2020) show that family-owned firms appear to be more environmentally responsible relative to non-family firms. Our analysis allows us to provide further insights on this issue. As family owners tend to have long-term goals for their firms as well as incentives to monitor and be involved in strategic decisions (e.g., Anderson and Reeb, 2003b), we expect that the distinct governance features of family ownership would be reflected in the firm's decisions on environmental investments if such investments meet the family owners' goals.

In Table 6 we report the regression results when we employ family ownership or dual class shares as the primary ownership variables of interest. In Columns 1-2 we report the results for the *Family* ownership classification. Specifically, in Column 1 we compare *Family* to nonfamily firms. In Column 2 we add the *Other entities* as a second ownership type, thus our basis for comparison is *Financial institutions*. The corresponding *voting rights* variables for each ownership classification capture the percentage of votes held by the respective shareholder category.

The results show that although family ownership structure is associated with lower environmental investment when *Demand for E* is zero, the positive coefficient on the interaction term (*Demand for E*Family's voting rights)* in Column 1 of Table 6 indicates that managerial response to investor environmental demand becomes significantly larger as the voting rights of the family increase compared to non-family firms (the base group in Column 1). Column 2 shows that these results persist after incorporating the voting rights of *Other entities*. Further, the result is economically significant. For example, in Column 2, a one standard deviation increase in the interaction term (0.462) is associated with an *Escore* that is 8% higher (=0.462*0.176). The interaction results suggest that firms' environmental investments increase with market demand for environmental investing in the presence of family owners. While our findings are consistent with other work showing links between family ownership and firm outcomes (e.g., Abeysekera and Fernando, 2020), there exists a key difference in that we show that family owners' governance roles explain the managerial catering decisions regarding environmental investments.

In Columns 3-4 of Table 6 we examine whether dual class share structures are associated with the managerial responses. The prior literature does not provide a clear expectation. Some work suggests that dual class shares can be detrimental to firm value due to the entrenchment potential that can result from differential voting rights (e.g., Cronqvist and Nilsson, 2003). At the same time, dual class share structures could increase the (long-term) commitment of superior voting class shareholders to the firm, improve their monitoring incentives, and ultimately enhance firm value

(Ravid and Sekerci, 2020). Accordingly, we interact the *Demand for E* with the *Dual class* indicator to determine if a link exists between dual class structures and managerial responses to demand for environmental investing.

Although the presence of dual class structures is associated with lower environmental investment when *Demand for E* is zero, again we observe positive coefficients on the interaction terms in Columns 3-4 of Table 6 suggesting that dual class structures are associated with greater managerial response to investor environmental demand than are non-dual class structures (in Column 4 we also control for the voting rights of the largest owner, *Vote 1SH*). In terms of the economic magnitude, in Column 4 a one standard deviation increase in the interaction term (0.930) is associated with a 7% higher (=0.930*0.076) *Escore*. The magnitude is economically significant and similar to that for family ownership.

Overall, the interaction results from Table 6 suggest that firms' environmental investments increase with the market demand for environmental investing in the presence of both family firms and dual class structures. These findings suggest that catering is promoted by long-term oriented owners as family ownership and dual class share structures are two ownership features that are shown to be associated with long-termism in the literature (e.g., Anderson and Reeb, 2003b, Ravid and Sekerci, 2020).

3.3 Firm ownership concentration and managerial response to investor environmental demand

Prior work suggests that the presence of multiple large owners in a firm's ownership structure is associated with firm-level outcomes (e.g., Maury and Pajuste, 2005; Attig, Guedhami and Mishra, 2008). In Sweden large owners are influential as they can easily account for 15-25% of the votes at a given company and the largest owners typically have representation on the board nomination committee (Dent, 2013). Consequently, we consider the top three shareholders as

potentially influential particularly since they are also, on average, blockholders (i.e., shareholders who hold a minimum of 5% of the firm votes), similar to Maury and Pajuste (2005). Specifically, we capture the firm's ownership concentration by the variable, *MBH Herfindahl top3.* We also include the top five shareholders using *MBH Herfindahl top5*. The larger the Herfindahl measure, the greater the firm's ownership concentration. We again interact the ownership measures with the *Demand for E* variable and focus on the interaction terms.

Columns 1-2 in Table 7 present the findings from this analysis, which provides marginally significant evidence that managerial response to investor environmental demand is positively associated with the firm's ownership concentration. In terms of the economic magnitude, in Column 2 a one standard deviation increase in the interaction term (0.326) is associated with a significantly higher *Escore* of some 7.5% (=0.326*0.230). More specifically, the interaction results suggest that firms' environmental investments increase with the overall market demand for environmental investing in the presence of multiple large blockholders. Overall, our findings are consistent with prior work suggesting that interaction between blockholders has an influence on firm-level outcomes as the presence of multiple blockholders help improve the overall monitoring in the firm and thus the firm governance (e.g., Pagano and Roell, 1998; Maury and Pajuste, 2005; Attig et al., 2008).

Overall, results from Tables 4-7 combined suggest that firms' environmental investments are somewhat lower in the presence of large powerful shareholders, but that they increase with investor environmental demand in the presence of such owners. These findings indicate that catering to the demand is promoted by large owners who have strong economic incentives to monitor and be involved in firms' strategic decisions.

4. Robustness tests and endogeneity

We conduct robustness tests in this section. First, we address the potential serial correlation across firms by clustering standard errors at the year level for the all-in specification from Table 4. The results reported in Column 1 of Table 8 show that our main result holds (at the 10% significance level) in this specification. Second, to further address endogeneity due to reverse causality we lag the *Demand for E* in Column 2 by two years to allow for a potential delay in catering to materialize (recall that in our primary analyses we use a 1-year lag). The main results hold.

Third, another endogeneity concern derives from potentially omitted variables correlated with the *Demand for E*. For example, one might argue that unobserved managerial preferences at a particular firm affect the firm's environmental investments and thus constitute omitted variables in our analyses. It is, however, unlikely that unobserved managerial preferences at the firm level would *also* impact the average market-to-book ratios of all high-*E* firms or all low-*E* firms. In other words, a correlation between such potentially omitted variables and *Demand for E* is unlikely. The same logic applies more generally to unobserved firm-level factors. That is, it is unlikely that unobserved firm-level heterogeneity would be correlated with our *Demand for E* variable due to the way our *Demand for E* variable is constructed.

However, we still use alternative estimation techniques to control for such omitted variables that would potentially be correlated with our *other* independent variables. To this end, in Columns 3-4 of Table 8 we control for firm fixed effects using the least squares dummy variable (LSDV) approach and the within estimator, respectively. The LSDV firm fixed effects model introduces an indicator variable for each firm and thus estimates unobserved firm heterogeneity. The within estimator firm fixed effects model mitigates the effect of unobserved firm heterogeneity by de-meaning variables over time. Our results hold in both of these specifications.

Finally, by construction the *Escore* is bounded between zero and one. Yet one could argue that some firms have actual *Escores* greater than the upper bound, while others could even have

negative scores. Consequently, we employ Tobit specifications, the results of which are reported in Table 9. Column 1 reports the coefficients for standard Tobit specifications, while Column 2 reports the average partial effects (APE) of E(y|x), where y is the *observed* outcome, following Wooldridge (2002).[5] The APE of E(*Escore* | *Demand for E*), where *Escore* is the observed outcome, is 0.082 as seen in Column 2.[6] These results are consistent with those of the earlier OLS analyses (Table 4) where we report coefficients of 0.080 for *Demand for E*. As a result, our main findings are robust to different estimation techniques.

5. Alternative explanations

In this section we consider alternative explanations for our findings. First, we recognize the potential concern that firms that "do well" might also "do good". Thus, any observed *E* value premium could be correlated with currently omitted *Demand for Profitability* or might simply capture a *Demand for Profitability* premium. To examine these issues, we measure *Demand for Profitability* in a manner analogous to that for our *Demand for E* variable. Although we find a small positive correlation between *Demand for Profitability* and *Demand for E* of 0.265 (significant at the 1% level), when we include *Demand for Profitability* as a control in our main model our primary findings on *Demand for E* persist. This suggests that our results are not driven by *Demand for Profitability*. In further untabulated multivariate tests, we find that the relationship between *Demand for Profitability* and the firm's *Escore* is even negative. These additional findings suggest that *Demand for Profitability* is not an alternative proxy for *Demand for E*.

[5] We use the "margins" command in Stata to calculate the marginal effects for the *observed* dependent variable as we only observe the third-party data provider's *E* scores, i.e., the observed outcomes (*y*). While not commonly used, Tobit specifications can also be used as a basis for modelling the underlying or true value of the firm's *unobserved* E investments (or the latent variable, denoted as *y** in standard econometric treatments of the Tobit model (e.g., McDonald and Moffitt (1980), and Wooldridge (2002)). In some sense, firms might wish to invest (or have an E score) above the upper bound or below the lower bound (even negative). From this perspective, the marginal effects for the latent variable correspond to the Stata coefficients output in a standard Tobit specification as reported in Table 9.

[6] For further robustness, not tabled, we use the original *Escore* from the data provider, which ranges from 0-3. The results are qualitatively similar.

Second, one might argue that our variable of interest, *Demand for E* has an increasing trend that would potentially induce a spurious relationship with our outcome variable, environmental scores, and thus, drive our results. There is no trend in this variable, which increases our confidence that we are not detecting a spurious relationship between our primary dependent and independent variables. Rather, managers have incentives to cater to the market demand for environmental investment by adjusting their environmental policies.

Lastly, one might argue that firms make environmental investments due to a general lack of investment opportunities rather than as purposeful investments. To examine this possibility, we adopt the Baker and Wurgler (2004) approach and control for investment opportunities as measured by capex/total assets, market to book ratio, and dividend yield. Additionally, we re-estimate our baseline regressions separately for subsamples of firms with high investment opportunities and for those with low investment opportunities. Our results, not tabled, are generally robust to these alternative specifications.

6. Conclusions

We provide evidence of managerial response to investor environmental demand. We employ firms' subsequent environmental scores as a measure of how managers respond and we measure investor environmental demand using a modification of the Baker-Wurgler (2004) catering demand methodology. For a sample of Swedish firms our tests show a positive relation between investor environmental demand and subsequent firm environmental ratings. Moreover, we find that a firm's ownership structure is an important component of this relationship. That is, the relationship is statistically and economically stronger in firms with dominant owners measured either with regard to the largest shareholder (using the largest shareholder's voting rights, cash flow rights or the importance of the firm in that shareholder's portfolio) or with regard to family firms and those that use a dual class share structure.

Overall, our findings highlight investor demand as an important driver of firm-level investment in environmental issues and that changes in firms' environmental investments vary with both investor environmental demand and aspects of firms' ownership structures. These results suggest that large long-term owners seem to care about externalities since they monitor managerial responses to the market appreciation of environmental investments. Our paper contributes to policy maker considerations as our results overall provide evidence regarding the interaction between a firm's government structure and its environmental policies.

Appendix A

The GES Escore is the average of the 'E preparedness' score and 'E performance' score. The 'E preparedness' and 'E performance' are evaluated by GES based on a detailed company-specific analysis including an assessment of items, such as:

Does the company describe its environmental organization and routines?
To what extent does the company present its environmental policies and targets?
The scope of implementation of environmental management system.
To what extent is the company certified according to ISO14001 and/or EMAS?
What is the extent and quality of environmental information presented by the company?
Environmental requirements in relation to suppliers.
Has the amount of greenhouse gases released by the company changed over time?
How has the amount of hazardous waste changed based on turnover?
How has the amount of waste changed based on turnover?
How has the amount of air emissions other than greenhouse gases changed?
How has the energy consumption changed based on turnover?
How does the company handle the issue of hazardous substances?
Does the company conduct environmental impact assessment in its project development process?

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Table 1. Variable definitions

ES variables	
Escore	Environmental (E) score of the firm as assessed by GES International. The rating scale is 0-1. E data is available annually for 2009-2015.
Demand for E	Proxy for the investor environmental demand. Analogous to the 'dividend premium' concept in Baker and Wurgler (2004), we measure the investor environmental demand for each year as the difference in the logs of the value-weighted average of market-to-book ratios of more environmentally-conscious firms versus less environmentally-conscious firms in year t-1, where more or less environmental-consciousness is defined by using the sample median *Escore* as the cut-off.
Largest owner's power	
Vote 1SH/ 2SH/ 3SH	% of votes held by the largest shareholder, 2nd and 3rd largest shareholder, respectively
Capital 1SH	% of cash flow rights held by the largest shareholder
Dual class	Indicator variable that equals 1 when the firm has a dual class share structure
Largest owner's type	
Type dummy variables	Three indicator variables created to represent the type of the largest owner. The indicator variables take the value of 1 if the largest owner is a) a *family*, b) a *financial institution*, c) *other entities* (i.e., corporations, government, foundations, and individuals), and 0 otherwise.
Largest owner's portfolio composition	
Stock importance	The weight of the stock in the largest shareholders' portfolio
Stock importance DV	Indicator variable that equals 1 if the stock has the highest weight in the portfolio of the largest owner; and 0 otherwise
Largest owner's affiliation	
Insider	Indicator variable taking the value of 1 if the largest shareholder is any one of the following: the CEO, a member of the management team, the Chairman of the board, or a board member, and 0 otherwise
Firm ownership concentration	
MBH Herfindahl top3	Herfindahl index of the holdings of the top 3 shareholders measured as the sum of the squares of the top 3 shareholders voting rights
MBH Herfindahl top5	Herfindahl index of the holdings of the top 5 shareholders measured as the sum of the squares of the top 5 shareholders voting rights
Control variables	
Total assets (TA) (in million)	The natural logarithm of total assets
ROA	EBITDA divided by total assets
Leverage	Total long-term debt divided by total assets
Net sales/TA	Net sales divided by total assets
Capex/TA	Capital expenditures divided by total assets

This table presents definitions of the variables used in this paper. The currency used is SEK.

Table 2. Summary statistics

	(1) number of observations	(2) mean	(3) standard deviation	(4) min	(5) max
Escore	1452	0.313	0.234	0.000	1.000
Demand for E	1452	1.852	0.126	1.635	2.064
Vote 1SH	1476	0.331	0.208	0.010	0.934
Vote 2SH	1466	0.106	0.066	0.004	0.358
Vote 3SH	1394	0.060	0.036	0.003	0.219
Capital 1SH	1476	0.244	0.161	0.010	0.861
Dual class	1476	0.506	0.500	0.000	1.000
Family	1484	0.549	0.499	0.000	1.000
Financials	1484	0.183	0.387	0.000	1.000
Other entities	1484	0.268	0.443	0.000	1.000
Insider	1457	0.564	0.496	0.000	1.000
Stock importance	1398	0.590	0.410	0.001	1.000
Stock importance DV	1394	0.622	0.485	0.000	1.000
MBH Herfindahl top3	1394	0.170	0.175	0.001	0.872
MBH Herfindahl top5	1392	0.173	0.174	0.001	0.872
Total assets	1714	14.629	2.155	9.332	22.579
ROA	1690	0.073	0.189	-0.917	0.444
Leverage	1711	0.208	0.188	0.000	1.160
Net sales/TA	1713	1.059	0.759	0.000	3.720
Capex/TA	1695	0.033	0.044	0.000	0.298

This table provides descriptive statistics of the main variables. All variables are described in Table 1.

Table 3. Correlation matrix

	Escore	Demand for E	Vote 1SH	Dual Class	Family	Financial institution	Insider	Stock importance DV	MBH Herfindahl top3
Escore	1								
Demand for E	0.043*	1							
Vote 1SH	0.053*	0.01	1						
Dual class	0.086***	-0.002	0.423***	1					
Family	0.140***	0.003	0.437***	0.357***	1				
Financial institution	-0.160***	-0.001	-0.358***	-0.395***	-0.522***	1			
Insider	0.111***	-0.013	0.403***	0.426***	0.635***	-0.547***	1		
Stock importance DV	-0.102***	0.016	0.278***	0.196***	0.047**	-0.238***	0.120***	1	
MBH Herfindahl top3	-0.005	0.012	0.969***	0.389***	0.411***	-0.296***	0.375***	0.270***	1

This table presents the correlation matrix of the selected variables used in this study. All variables are described in Table 1. ***, **, * denote statistical significance at the 1%, 5% and 10% levels, respectively.

Table 4. Role of largest owner votes and managerial response to investor environmental demand

	(1)	(2)	(3)	(4)
Dependent variable: *Escore*				
Demand for E	0.066***	0.080***	0.007	-0.018
	(0.018)	(0.017)	(0.036)	(0.041)
Vote 1SH		-0.004	-0.407**	
		(0.040)	(0.183)	
Demand for E*Vote 1SH			0.217**	
			(0.100)	
Capital 1SH				-0.711**
				(0.294)
Demand for E*Capital 1SH				0.393**
				(0.161)
Total assets		0.086***	0.086***	0.086***
		(0.006)	(0.006)	(0.006)
ROA		-0.063	-0.064	-0.066
		(0.041)	(0.042)	(0.041)
Leverage		-0.053	-0.053	-0.054
		(0.055)	(0.056)	(0.056)
Net sales/TA		0.017	0.018	0.017
		(0.014)	(0.014)	(0.014)
Capex/TA		-0.070	-0.063	-0.077
		(0.229)	(0.228)	(0.229)
Constant	0.233***	-1.027***	-0.894***	-0.855***
	(0.056)	(0.104)	(0.127)	(0.137)
Observations	1,234	1,182	1,182	1,182
Year FE	No	No	No	No
Industry FE	Yes	Yes	Yes	Yes
R-squared	0.238	0.639	0.639	0.640
Errors clustered	Yes	Yes	Yes	Yes

This table reports OLS regression results in which the dependent variable is the firm's *Escore*, defined as the firm's environmental score. *Demand for E* proxies for the investor environmental demand. All independent variables are measured at time *t-1*. *Vote 1SH* is percentage of votes held by the largest shareholder. *Capital ISH* is the percentage of cash flow rights held by the largest shareholder. All variables are described in Table 1. ***, **, * denote statistical significance at the 1%, 5% and 10% levels, respectively. Clustered errors at firm level are in parenthesis.

Table 5: Role of stock importance to largest owner and owner's insider position and managerial response to investor environmental demand

	(1)	(2)	(3)
Dependent variable: *Escore*			
Demand for E	0.023	0.023	0.045*
	(0.027)	(0.027)	(0.025)
Stock importance DV	-0.186***	-0.186***	
	(0.070)	(0.070)	
Demand for E*Stock importance DV	0.099***	0.099***	
	(0.038)	(0.038)	
Insider voting rights			-0.273*
			(0.145)
Demand for E*Insider voting rights			0.146*
			(0.080)
Vote 1SH		-0.002	
		(0.042)	
Total assets	0.086***	0.086***	0.086***
	(0.006)	(0.006)	(0.006)
ROA	-0.059	-0.059	-0.050
	(0.041)	(0.041)	(0.042)
Leverage	-0.070	-0.070	-0.061
	(0.058)	(0.058)	(0.059)
Net sales/TA	0.019	0.019	0.016
	(0.014)	(0.014)	(0.014)
Capex/TA	-0.068	-0.067	-0.056
	(0.227)	(0.227)	(0.226)
Constant	-0.921***	-0.920***	-0.968***
	(0.116)	(0.117)	(0.114)
Observations	1117	1117	1142
Year FE	No	No	No
Industry FE	Yes	Yes	Yes
R-squared	0.642	0.642	0.644
Errors clustered	Yes	Yes	Yes

This table reports OLS regression results in which the dependent variable is the firm's *Escore*, defined as the firm's environmental score. *Demand for E* proxies for the investor environmental demand All independent variables are measured at time *t-1*. *Stock importance DV* variable is equal to 1 if the stock in question has the highest weight in the portfolio of the largest owner; and 0 otherwise. The insider is the largest shareholder who is any of the following: the CEO, a member of the management team, the Chairman of the board, or a board member, and 0 otherwise. Accordingly, *Insider voting rights* indicate the % of votes held by the insider. *Vote 1SH* is % of votes held by the largest shareholder. All variables are described in Table 1. ***, **, * denote statistical significance at the 1%, 5% and 10% levels, respectively. Clustered errors at firm level are in parenthesis.

Table 6. Role of family ownership and dual class shares and managerial response to investor environmental demand

	(1)	(2)	(3)	(4)
Dependent variable: *Escore*				
Demand for E	0.049**	0.028	0.040	0.040*
	(0.023)	(0.031)	(0.024)	(0.024)
Family's voting rights	-0.250*	-0.324**		
	(0.133)	(0.160)		
Demand for E*Family's voting rights	0.135*	0.176**		
	(0.074)	(0.088)		
Other entities' voting rights		-0.294		
		(0.254)		
Demand for E*Other entities voting rights		0.161		
		(0.131)		
Dual class			-0.180***	-0.188***
			(0.061)	(0.061)
Demand for E*Dual class			0.077**	0.076**
			(0.033)	(0.033)
Vote 1SH				0.049
				(0.047)
Total assets	0.086***	0.086***	0.087***	0.088***
	(0.006)	(0.006)	(0.006)	(0.006)
ROA	-0.065	-0.065	-0.049	-0.053
	(0.042)	(0.042)	(0.042)	(0.042)
Leverage	-0.052	-0.053	-0.069	-0.072
	(0.055)	(0.056)	(0.055)	(0.055)
Net sales/TA	0.017	0.017	0.016	0.014
	(0.014)	(0.014)	(0.014)	(0.014)
Capex/TA	-0.072	-0.071	-0.034	-0.066
	(0.222)	(0.223)	(0.232)	(0.230)
Constant	-0.972***	-0.934***	-0.968***	-0.986***
	(0.109)	(0.120)	(0.103)	(0.104)
Observations	1182	1182	1182	1182
Year FE	No	No	No	No
Industry FE	Yes	Yes	Yes	Yes
R-squared	0.639	0.639	0.645	0.646
Errors clustered	Yes	Yes	Yes	Yes

This table reports OLS regression results in which the dependent variable is the firm's *Escore*. *Demand for E* proxies for the investor environmental demand. All independent variables are measured at time *t-1*. The ownership type is either a) a *family*, b) a *financial institution*, c) *other entities* (i.e., corporations, government, foundations, and individuals), and 0 otherwise. *Family's voting rights* indicate the % of votes held by this category largest shareholder. *Other entities voting rights* indicate the % of votes held by this category largest shareholder. The base group in Column 1 is the voting rights of nonfamily firms; and in Column 2 it is *Financial institution*'s *voting rights*. *Dual class* indicator variable equals 1 when the firm has a dual class share structure, and 0 otherwise. *Vote 1SH* is % of votes held by the largest shareholder. All variables are described in Table 1. ***, **, * denote statistical significance at the 1%, 5% and 10% levels, respectively. Clustered errors at firm level are in parenthesis.

Table 7. Role of firm ownership concentration and managerial response to investor environmental demand

	(1)	(2)
Dependent Variable: *Escore*		
Demand for E	0.037	0.036
	(0.025)	(0.026)
MBH Herfindahl top3	-0.434*	
	(0.221)	
Demand for E*MBH Herfindahl top3	0.230*	
	(0.121)	
MBH Herfindahl top5		-0.443**
		(0.223)
Demand for E*MBH Herfindahl top5		0.233*
		(0.122)
Total assets	0.085***	0.085***
	(0.006)	(0.006)
ROA	-0.062	-0.062
	(0.042)	(0.042)
Leverage	-0.076	-0.076
	(0.059)	(0.059)
Net sales/TA	0.017	0.017
	(0.014)	(0.014)
Capex/TA	-0.028	-0.027
	(0.240)	(0.240)
Constant	-0.939***	-0.936***
	(0.115)	(0.115)
Observations	1124	1122
Year FE	No	No
Industry FE	Yes	Yes
R-squared	0.64	0.64
Errors clustered	Yes	Yes

This table reports OLS regression results. The dependent variable is the firm *Escore* defined as the firm's environmental score. *Demand for E* proxies for the investor environmental demand. All independent variables are measured at time *t-1*. *MBH Herfindahl top3* is the Herfindahl index of the holdings of the top 3 shareholders measured as the sum of the squares of the top 3 shareholders voting rights. *MBH Herfindahl top5* is the Herfindahl index of the holdings of the top 5 shareholders measured as the sum of the squares of the top 5 shareholders voting rights. All variables are described in Table 1. ***, **, * denote statistical significance at the 1, 5 and 10% levels, respectively. Clustered errors at firm level are in parenthesis.

Table 8. Alternative model specifications

	(1)	(2)	(3)	(4)
Dependent Variable: *Escore*				
Demand for E	0.080*		0.054***	0.054***
	(0.035)		(0.017)	(0.015)
Demand for E L2		0.042***		
		(0.015)		
Vote 1SH	-0.004	-0.018	-0.017	-0.017
	(0.022)	(0.040)	(0.094)	(0.085)
Total assets	0.086***	0.085***	0.006	0.006
	(0.002)	(0.006)	(0.013)	(0.011)
ROA	-0.063*	-0.043	-0.014	-0.014
	(0.026)	(0.040)	(0.017)	(0.016)
Leverage	-0.053*	-0.064	0.056	0.056
	(0.022)	(0.057)	(0.047)	(0.042)
Net sales/TA	0.017**	0.016	0.012	0.012
	(0.005)	(0.013)	(0.019)	(0.018)
Capex/TA	-0.070	-0.093	0.065	0.065
	(0.036)	(0.235)	(0.114)	(0.103)
Constant	-1.027***	-0.960***	0.224	0.107
	(0.093)	(0.098)	(0.219)	(0.178)
Observations	1182	972	1182	1182
Estimation	OLS	OLS	LSDV	Within
Year FE	No	No	No	No
Industry FE	Yes	Yes	No	No
R-squared	0.639	0.646	0.94	0.022
Errors clustered at	Year	Firm	Firm	Firm

This table reports robustness tests for the baseline regression. In this table we use alternative estimation specifications. Columns 1-2 report OLS results while Columns 3-4 report firm FE models by using either the LSDV approach or the within estimator. In Columns 2, *Demand for E* variable is lagged by two years, respectively. The dependent variable is the firm *Escore* defined as the firm's environmental score. *Demand for E* proxies for the investor environmental demand. All independent variables are measured at time *t-1*. *Vote 1SH* is % of votes held by the largest shareholder. All variables are described in Table 1. ***, **, * denote statistical significance at the 1, 5 and 10% levels, respectively. Clustered errors at either year or firm level are in parenthesis.

Table 9. Tobit specifications

	(1)	(2)
Dependent Variable: *Escore*		
Demand for E	0.091***	0.082***
	(0.019)	(0.017)
Vote 1SH	-0.016	-0.014
	(0.042)	(0.038)
Total assets	0.089***	0.080***
	(0.006)	(0.006)
ROA	-0.057	-0.052
	(0.050)	(0.045)
Leverage	-0.056	-0.051
	(0.058)	(0.052)
Net sales/TA	0.015	0.013
	(0.016)	(0.014)
Capex/TA	-0.129	-0.117
	(0.241)	(0.217)
Constant	-1.078***	0.321***
	(0.108)	(0.008)
Observations	1182	1182
Estimation	Tobit	Tobit
Year FE	No	No
Industry FE	Yes	Yes
Pseudo R2	4	4
Errors clustered	Yes	Yes

This table reports Tobit regression results. Column 1 reports the default coefficients from Stata for standard Tobit specifications, while Column 2 reports the average partial effects of E(y|x), where y is the observed outcome. The dependent variable is the firm *Escore* defined as the firm's environmental score. *Demand for E* proxies for the investor environmental demand. All independent variables are measured at time *t-1*. *Vote 1SH* is % of votes held by the largest shareholder. All variables are described in Table 1. ***, **, * denote statistical significance at the 1, 5 and 10% levels, respectively. Clustered errors at firm level are in parenthesis.