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# **Employee stock ownership and voluntary carbon disclosure**

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## **Abstract**

This paper investigates the relationship between Employee Stock Ownership (ESO) and voluntary carbon disclosures. Given that previous research has shown the beneficial effects of ESO on work attitudes and corporate performance, we link ESO and board representation with the attributes of voluntary climate-related disclosures. We use three proxies to capture these attributes: corporate decisions to respond to the Carbon Disclosure Project (CDP) annual questionnaire; corporate decisions to make responses publicly available, and the quality of a firm's disclosures on climate-change-related risks and strategies to mitigate them. Our results show a positive association between ESO and decisions to both answer the CDP questionnaire, and make responses publicly available. In contrast, ESO does not seem to impact carbon disclosure quality. The findings contribute to the ongoing debate on the determinants of voluntary climate change disclosures, highlighting the importance of ESO to enhance the transparency of voluntary disclosures of climate change business impacts.

**Keywords:** employee stock ownership, carbon disclosure, climate change, sustainability, carbon disclosure project

## Introduction

This paper examines the relationship between employee stock ownership (ESO) and voluntary climate-related disclosures in France. A consensus exists in many countries that employee stock ownership needs to be promoted. For instance, Jared Bernstein, recently appointed to the White House's Council of Economic Advisers by President Joe Biden, released a report<sup>1</sup> in 2020 investigating ways of promoting ESO development in the US. In 2017, the French Minister of the Economy and Finance pledged that, by 2030, 10% of French companies' capital will be held by employees<sup>2</sup>. In 2021, the Canadian federal government included in its budget a commitment to exploring employee ownership trust frameworks. According to the British Employee Ownership Association, the UK experienced a massive ESO increase, recording a 30% rise in the number of employee-owned businesses between January 2020 and June 2021<sup>3</sup>. Plus, ESO is also growing in China, where over 500 public companies announced the opening of an equity share plan in 2020<sup>4</sup>.

How can such enthusiasm for ESO be explained? Bernstein (2020) relies on the existing academic literature to answer this question. ESOs provide retirement savings (especially in the US where they are mainly used as retirement plans). Employee ownership allows for aligning the value of a company with the work of its employees; ESO companies possess a more robust business cycle, experiencing lower rates of bankruptcy and liquidation during periods of economic shocks; and ESO companies have been found to outperform others in sales, job growth, and productivity. Such conclusions derive from research on US ESOs, for which employees often own most of the company's shares. Nevertheless, studies carried out in other countries also reach the same conclusions. Climate change concerns now present critical goals for corporations and many listed companies include their impact on the United Nations Sustainable Development Goals in their annual reports. Additionally, further

financial performance measures related to Environmental, Social and Governance (ESG) factors are coming under increasing scrutiny from analysts and investors.

Does ESO affect other key corporate outcomes? For example, ESG factors, which are frequently used by institutional investors looking to develop socially responsible investment strategies. According to a survey of British ESO businesses<sup>5</sup>, “70% saw employee ownership as a socially responsible thing to do, with 77% having ‘making a positive contribution to society and environment’ as part of their purpose.” In a 2021 survey conducted by Amundi<sup>6</sup>, employee ownership and ESG were found to be inseparable for 84% of the companies surveyed.

Following this line of reasoning, ESO could be regarded as a social component of ESG strategy. ESG criteria are not well established or rigorously assessed. One drawback of an ESG rating can be to place all indicators at the same level, whereas, in high-carbon sectors, for instance, lowering carbon emissions (E strategy) is much more costly than promoting diversity (S strategy). There is an incentive for compensating poor E strategy with an ambitious S strategy, which results in obscuring the congruence of the three ESG dimensions. Indeed, this congruence was even less obvious before the 2015 Paris Agreement on climate change, when neither the ESG factors nor carbon emission disclosures were prominent or acknowledged.

Since the 2008 Credit Crunch, the value of financial assets has decreased massively and individual investors like employee owners have been most affected. According to the European Federation for Employee Share Ownership (EFES), the value of an average employee’s investment in company stocks has decreased by 42%, from 31,700 euros in 2007 to 21,800 in 2009. Also, the value of major stock market indexes (MSCI, S&P500, and

CAC40) reached a historical floor at this time. Our study focuses on the period between financial market recovery from 2009 and the 2015 Paris Agreement.

The case of France is appealing for several reasons, being a leading European country in terms of ESO with more than 3 million employees (2.8 on average for 2009–2015) holding stocks in the company they work for (Mathieu, 2021). The representation of employee owners among the board of directors of listed companies has been mandatory since 2006. France is also very open to foreign investors, who held an average of 45% of the CAC40 market value between 2009 and 2015 (Banque de France, 2019)<sup>7</sup>. France is also a civil law country and nine other European countries have inherited from this civil law code, according to Belot et al. (2014).

This research has several motivations. While recent studies have investigated corporate incentives to provide climate change disclosures (Galletta et al., 2021; Hassan & Romilly, 2018; Hsueh, 2019; Solomon & Lewis, 2002), to the best of our knowledge no previous paper considers the impact of employee ownership on this decision. Given that the management and reporting of climate change risks are contingent on corporate ownership structure, we link employee ownership to the CDP questionnaire responses, as well as to the quality of the disclosures. The CDP offers an interesting setting through which to examine the determinants of a “voluntary but non-discretionary disclosure” specifically reliant on institutional investors’ requests.

Our results show a positive association between ESO and firms’ decisions to answer the CDP questionnaire, together with decisions on whether to make responses publicly available. In contrast, ESO does not seem to impact carbon disclosure quality. The findings

contribute to the ongoing debate on the determinants of voluntary climate change disclosures, highlighting the importance of ESO to enhance the transparency of voluntary disclosures of climate change business impacts.

The remainder of the paper is organized as follows. The third section presents the ESO and climate change disclosure requirements present in France, describes the relevant prior literature, and offers our hypotheses. The fourth section describes our methodology. Lastly, the fifth section provides our empirical results, which are then followed by a conclusion.

## **Literature review and Hypotheses development**

### **Employee stock ownership and climate change disclosure in France**

ESO has existed in France since the 1960s and is fueled by the gainsharing and profit-sharing bonuses created in 1959 and 1967. France is the only country in the world where profit-sharing is mandatory for all companies employing more than 50 employees, as well as being the leading European country in terms of employee ownership. Overall, French employee owners account for 40% of the total number of employee owners in Europe. The 3 million employee owners in France represent 12% of the country's workforce, which has mainly developed via large, listed corporations since the 1986 privatizations. The French State and public policies have played a significant role in ESO development and there is bipartisan ongoing support that is similar in context to the US. With regard to ESO functioning, its availability largely depends upon company savings plans (*Plan d'Epargne Entreprise*). Each company has its own plan and these plans offer many investment funds. ESO is just one

investment option among others (like in the US 401k pension plans), but ESO is not and cannot be part of a pension plan. The money invested in the company savings plan is frozen for five years and comes from: the employee's voluntary contributions, profit- and gain-sharing bonuses, and the employer's contributions. Since 2006, ESO representation on a company's board of directors is mandatory for listed companies when employees hold at least 3% of the equity. Plus, employees have voting rights that can be exercised directly or indirectly by the trustees of the company savings plan<sup>8</sup>.

CDP operates as an independent not-for-profit organization with the backing of 590 institutional investor signatories, a combined US\$110 trillion in assets, and 200+ major purchasers with over US\$5.5 trillion in procurement spending in 2020 alone. The CDP annual climate questionnaire, signed by institutional investors, is sent to every country's largest corporations with the objective of creating the 'largest database of comparable greenhouse gas information.' All firms are requested to respond to the same questionnaire. The list of firms requested is publicly available on the CDP website (<https://www.cdp.net/en>) together with the firms' responses. The CDP questionnaire filled in includes sections on the following issues: climate change risks and opportunities; greenhouse gas emissions accounting (scope 1, 2, and 3 of the GHG protocol, external verification); greenhouse gas emission management (reduction programs); emission trading; emission intensity; and climate change governance (responsibility, individual performance, communications, and public policy). Given that the CDP questionnaire structure changed dramatically after the 2015 Paris Agreement, the current study focuses on CDP survey responses made prior to this agreement.

### **Prior Research on ESO and Corporate Disclosure**

In their literature review on carbon disclosure, Hahn et al. (2015) three areas: general regulations and frame conditions, output of carbon disclosure and outcome resulting from

carbon disclosure. What influences the amount, level, and quality of carbon disclosure is a question covered by the second area. Our research falls into this second area as we investigate what influences the level and quality of carbon disclosure, assuming that the ownership of shares by employees in the company they work for affects voluntary carbon disclosure of the company.

Hahn et al. (2015) also identify three main theoretical perspectives adopted by the literature on carbon disclosure: sociopolitical theories of disclosure, economic theory of disclosure and institutional theory. Sociopolitical theories include stakeholder theory and legitimacy theory. Legitimacy theory assumes that disclosure is the consequence of the overall external pressure whereas institutional theory considers that companies are influenced by other institutions. Our research builds on the stakeholder theory and agency theory. According to the stakeholder theory, carbon disclosure is a response to stakeholders' pressure to disclose information. Employees are key stakeholders who interact the most with the company. According to Blasi et al. (2018), corporate transparency is one reason to be interested in ESO. This mainly refers to transparency within the workplace, for which ESO has often been looked at through an agency theory lens (Abdelnour et al, 2022; Caramelli, 2011). From this theory's perspective, ESO enhances the willingness of employee owners to share information because of the alignment between their interests and corporate interests, which is also likely to improve decisions made within the company. From the agency theory perspective, broad-based employee stock ownership and profit-sharing both contribute to better information sharing. ESO and profit-sharing "can create more harmonious workplaces with greater corporate transparency and increased worker involvement in their work lives through access to information and participation in workplace decisions" (Blasi et al., 2018, p. 38). While previous literature has studied how ESO affects corporate transparency in general, we specifically focus on corporate transparency in the context of climate change disclosures.



Nevertheless, the relationship between ESO and corporate and workplace performances is the most extensive, as ESO is most often related to improved corporate productivity and performance. Apart from transparency, Blasi et al. (2018) identifies three other reasons to be intrigued by employee stock ownership and profit-sharing. The vast majority of the literature on ESO can be included in these three other reasons. According to previous findings, employee stock ownership and profit-sharing result in lower inequality, higher workplace performance, better firm survival and employment stability and more worker involvement. Firstly, they reduce inequality by broadening income and wealth distribution. Secondly, they improve corporate productivity and workplace performance by creating incentives to encourage more effort, cooperation, information sharing, and innovation. Thirdly, they save jobs by enhancing firm survival and employment stability.

The meta-analysis of O'Boyle et al. (2016) includes 102 samples covering more than 56,000 different firm types (private or public) from several countries. Overall, it shows that ESO has a positive and significant impact on firm performance that can be measured in terms of productivity (labor, value-added), return on assets and equity, Tobin's Q, growth (sales, assets, or profitability), earnings, cumulative abnormal returns, book-to-market ratios, total shareholder return, and annualized returns. Most of the studies included in the meta-analysis were undertaken in the US (68 out of 102) and the performance indicators consist of accounting, economic and financial measures. Prior to this meta-analysis, Kruse (2002), Kruse et al. (2010), and Carberry (2011) have developed comprehensive literature reviews on the effects of employee ownership on corporate outcomes. These reviews also focused on the US, where ESO is the most developed globally. Kim and Patel (2017, 2020) recently investigated the relationship between ESO and performance in European countries, for which they relied on a large sample of 1,797 European companies listed from 2006 to 2014 and

found no overall significant relationship between ESO and performance. However, the joint effects of ESO with country, year, industry, or firm explain 2.25%, 0.12%, 0.51%, and 4.16% of ROA variance, respectively. Furthermore, they document similar associations between ESO and labor productivity. Given the important heterogeneity of tax and public policies regarding ESO, these contextual differences are not surprising. Kim and Patel (2020) use the same EFES dataset but focus on the Credit Crunch. They find companies with ESO to have been more resilient since they had better labor productivity and bankruptcy distance measures according to Altman's Z. Plus, ESO companies also demonstrated higher job stability. As mentioned, our investigation is focused on the case of French listed companies.

Among European nations, France is by far the country with the most numerous employee owners, representing 40% of the total European number in 2015. Despite extensive research on the links between ESO and performance, only Nekhili et al. (2020) look at how ESO is related to extra financial performance or ESG performance. In doing so, they find that ESO representation on the board of French listed companies has a significant effect on ESG performance<sup>9</sup>. Furthermore, their analyses find ESO board representation to be positively related to environmental and corporate governance performance but, in contrast, negatively related to social performance. Additionally, they document a positive effect on financial performance as measured by Tobin's Q of the interaction between ESO board representation and ESG performance. This finding means that ESO tends to improve the perceptions that other external investors have of ESG performance, which translates into a better market valuation.

Blasi et al. (2016) document that, among the '100 Best Companies to Work for in America,' those with ESO and profit-sharing tend to experience greater employee

participation in decisions and greater information sharing when compared to other firms. Also, findings indicate a more positive workplace culture than other firms experience. Information sharing with employees was measured using a survey item to which 230,465 individual employees responded: “Management keeps me informed about important issues and changes.” Another transparency-related issue concerns firm disclosure. According to Bova et al. (2015), “a firm’s use of an employee ownership plan appears to benefit the firm by not only aligning goals between the firm and its employees but by also increasing disclosure from the firm to all of its stakeholders by mitigating the firm’s need to keep information opaque” (p. 666). Bova et al. (2015) assume that employees at firms that publicly disclose information can use the knowledge gained to bargain for wages above market level. As ESO aligns the interests of workers with their employing firms’, Bova et al. (2015) expect and confirm that companies with ESO will disclose more.

### **Hypotheses development**

To elaborate on the findings of previous literature and develop our research hypotheses, we rely on stakeholder theory that carbon disclosure is a response to stakeholders’ pressure to disclose information assuming that employees are key stakeholders of a company. From the agency theory perspective, broad-based employee stock ownership and profit-sharing both contribute to better information sharing and greater corporate transparency. We also build on the study of Bova et al. (2015) assumption that ESO is positively related to firm disclosure because of wage bargaining motivations. In doing so, we assume that the likelihood of disclosing information about climate change policy increases alongside ESO levels. In the case of climate change, however, the positive association between disclosure and ESO can also come from other causes. Fakhfakh and Fitzroy (2018) show that profit-sharing favorably

affects environmental outcomes, which leads them to consider that financial participation should be considered as a tool for environmental protection. They hypothesize that workers benefit from a better local environment to a greater extent than outside owners and that this association is stronger when they benefit from financial participation. From this point of view, employee owners would feel more inclined to prompt their employers to disclose information about contributions to climate change. Also, there are anecdotal facts suggesting that employee owners develop more concern for energy and resource savings than non-owners, as employees who hold shares in their company may consider that resources are also theirs and so use them more sparingly. Finally, the documented association of ESO with higher firm survival rates, including during times of economic downturns (Kim & Patel, 2020; Kurtulus & Kruse, 2107), suggests that ESO firms have longer-term preferences.

Therefore, we offer an empirical test of the following hypotheses.

H1a: ESO increases voluntary climate change disclosures.

H1b: Companies with higher ESO levels are more likely to make their climate change disclosures public.

H2: ESO is positively associated with the CDP disclosure quality.

## **Methodology**

### **Sample**

Our initial sample draws upon a database comprised of corporate governance data for 164 of the largest French listed firms in the Paris Euronext stock exchange. First, we match the corporate governance database with the CDP France annual survey for the years 2009–2015.

Hahn et al. (2015) find that a majority of articles investigating carbon disclosure rely on the CDP survey. This survey was sent to 250 French listed companies during this period, asking them to answer a standard questionnaire regarding climate-related risks and opportunities, GHG emission accounting, carbon performance, and governance. Companies that received the questionnaire may decide to answer the questionnaire or else not to disclose its contents. Those that did so also have the liberty of choosing whether to make their responses public or not. We then used Refinitiv Eikon to collect financial data for the 133 remaining companies. The final sample includes 851 firm-year observations<sup>10</sup> (105 in 2009, 127 in 2010, 127 in 2011, 127 in 2012, 123 in 2013, 123 in 2014, and 119 in 2015).

## **Variables and Models**

Table 1 presents a description of the different dependent, independent and control variables used in our models.

[Insert Table 1 Here]

### **Dependent Variables**

Our models use three different measures from the CDP annual survey to evaluate the firm's carbon disclosure strategy. These measures include the firm's decision to answer the questionnaire, its level of transparency in answering the survey, and the carbon disclosure score. The first independent variable 'CDP-RESPONSE' is a dummy variable that takes the value of 1 if the firm has answered the CDP questionnaire and 0 otherwise. The second independent variable 'CDP-TRANSPARENCY' is a variable that measures the disclosure transparency level and can take three different values: 2 for the companies that answered the CDP questionnaire and made their responses public, 1 for the companies that answered the

questionnaire but remained non-public, and 0 for those that did not reply. The last dependent variable ‘CDP-SCORE’ evaluates the disclosure quality which assesses the quality and completeness of the companies’ CDP project response. It is associated with their climate-change-related strategy, targets and performance, risks and opportunities, governance, emissions methodology, and data<sup>11</sup>. It offers a structured summary of how thoroughly companies have responded to CDP's questionnaire (CDP, 2015).

### Independent Variables

We use two proxies for employee ownership (EO). First, we use the percentage of outstanding shares held by the firm’s employees (ESO), which is used in previous literature (Guedri & Hollandts, 2008; Klein, 1987; Rosen et al., 1986) to measure the size of ESO plans. We also use the percentage of employee-owners directors (ESO-BOARD), calculated as the number of employee owners represented on the board of directors divided by the total number of directors (Ginglinger et al., 2011; Hollandts et al., 2018; Nekhili et al., 2020). This variable acts as a proxy for the contribution of employee-owners in the decision-making process.

### Control Variables

Extant literature has identified several variables that affect a firm’s voluntary environmental disclosure. Our paper assesses the effect of these variables by including them in our regression analysis. The first set of control variables includes other corporate governance variables that influence the firm’s voluntary disclosure. We first control for some board of directors’ attributes, such as the percentages of independent (INDEPENDENCE) and female (WOMEN-PERCENTAGE) directors (Ben-Amar et al., 2017; Eng & Mak, 2003; Jaggi et al., 2018; Lim et al., 2007; Zhang et al., 2013), calculated as the number of independent directors and female directors, respectively, divided by the total number of directors. We also control

for other ownership concentration (CONCENTRATED) (Cerbioni & Parbonetti, 2007; García-Meca & Sánchez-Ballesta, 2010; Lakhal, 2005) by including a binary variable that takes the value of 1 when more than 20% of the firm's shares are concentrated and the value of 0 if the ownership is dispersed.

Previous research shows that financial variables affect a firm's carbon voluntary disclosure as well. Therefore, we control for the firm's size (SIZE) by including the natural logarithm of total assets in our models, which is positively associated with environmental disclosure (Clarkson et al., 2008; Hsueh, 2019; Jaggi et al., 2018; Mahoney & Thorn, 2006; McGuire et al., 2003). We also account for the effect of the firm's financial performance (Brammer & Pavelin, 2006; Jaggi et al., 2018; Stanny & Ely, 2008), proxied by return on assets (ROA). Additionally, we include the price-to-book value (PTBV) in our models to control for the effect of the firm's growth opportunities on environmental disclosures. Firms with important growth opportunities attempt to reduce information asymmetry with external investors and are therefore more likely to communicate their environmental strategy (Ben-Amar et al., 2017; Fazzini & Dal Maso, 2016; Jaggi et al., 2018).

Prior research suggests that the type of industry sector is a major determinant of a firm's voluntary disclosure policy (Ben-Amar et al., 2017; Brammer & Pavelin, 2006; Hsueh, 2019; Stanny & Ely, 2008). High-carbon industries experience higher risks regarding climate change and so are expected to provide more information about their strategies (Jaggi et al., 2018). Based on the CDP reports, we consider automobile and components, chemicals, forest products, gas and electrical utilities, oil and gas, mining, pipelines, precious metals, steel, and transportation as representing high-carbon sectors.

## Models

Our multivariate analysis tests the three following models to study the effect of employee ownership on the firm's carbon disclosure strategy:

$$\begin{aligned} \text{CDP-RESPONSE}_{i,t} = & \alpha_0 + \alpha_1 \text{EO}_{i,t-1} + \alpha_2 \text{SIZE}_{i,t-1} + \alpha_3 \text{PTBV}_{i,t-1} + \alpha_4 \text{ROA}_{i,t-1} \\ & + \alpha_5 \text{INDEPENDENCE}_{i,t-1} + \alpha_6 \text{WOMEN-PERCENTAGE}_{i,t-1} \\ & + \alpha_6 \text{CONCENTRATED}_{i,t-1} + \alpha_7 \text{HIGH-CARBON}_i + \varepsilon_i \end{aligned} \quad (1)$$

$$\begin{aligned} \text{CDP-TRANSPARENCY}_{i,t} = & \alpha_0 + \alpha_1 \text{EO}_{i,t-1} + \alpha_2 \text{SIZE}_{i,t-1} + \alpha_3 \text{PTBV}_{i,t-1} + \alpha_4 \text{ROA}_{i,t-1} \\ & + \alpha_5 \text{INDEPENDENCE}_{i,t-1} + \alpha_6 \text{WOMEN-PERCENTAGE}_{i,t-1} \\ & + \alpha_6 \text{CONCENTRATED}_{i,t-1} + \alpha_7 \text{HIGH-CARBON}_i + \varepsilon_i \end{aligned} \quad (2)$$

$$\begin{aligned} \text{CDP-SCORE}_{i,t} = & \alpha_0 + \alpha_1 \text{EO}_{i,t-1} + \alpha_2 \text{SIZE}_{i,t-1} + \alpha_3 \text{PTBV}_{i,t-1} + \alpha_4 \text{ROA}_{i,t-1} \\ & + \alpha_5 \text{INDEPENDENCE}_{i,t-1} + \alpha_6 \text{WOMEN-PERCENTAGE}_{i,t-1} \\ & + \alpha_6 \text{CONCENTRATED}_{i,t-1} + \alpha_7 \text{HIGH-CARBON}_i + \varepsilon_i \end{aligned} \quad (3)$$

Where the independent variable EO is proxied by: (1) the percentage of shares owned by the firm's employees (ESO), and (2) the percentage of directors who are also employee owners (ESO-BOARD).

All continuous variables used in the three models above have been winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles to reduce the effect of extreme outliers.

## Results

### Descriptive Statistics

[Insert Table 2 Here]



Table 2 presents our sample descriptive statistics. The sample is very balanced, consisting of an evenly distributed number of observations across the years. CDP-RESPONSE, CDP-TRANSPARENCY, and CDP-SCORE are the three dependent variables. CDP-RESPONSE and CDP-TRANSPARENCY are dichotomic variables, while CDP-SCORE is continuous. In total, 58% of the companies included in our sample responded to the CDP questionnaire (see CDP-RESPONSE), which is a rate comparable to that reported by Ben Amar et al. (2015) in Canada but lower than the 75% reported by Luo et al. (2012) for S&P500. Among these companies, 51.35% (437 out of 851) chose to make their responses publicly available. The average grade obtained by the responding companies is 73.55 (SD: 20.84); the rest of the table displays the independent and control variables. The average percentage of shareholders' equity held by the employees (ESO) is 1.45% (SD: 1.56), while employee stock owners hold 1.47 percent of the board of directors' seats. The control measure factors of financial (PTBV, ROA, SIZE) and governance (INDEPENDENCE, WOMEN-PERCENTAGE, CONCENTRATED) have been previously documented in the literature as affecting carbon disclosure practices. The table also reports that 40% of the companies belong to carbon-intensive sectors (automobiles and components, chemicals, forest products, gas and electrical utilities, oil and gas, mining, pipelines, precious metals, steel, and transportation). The presence of a high percentage of female board members (18.13% of the boards on average, SD: 11.38), independent board members (49.03% of the boards on average, SD: 17.64), and concentrated ownership (66.74% of the companies, SD: 47%) are notable features of French listed companies. The other control variables are: PTBV (Mean: 1.66, SD: 0.86), SIZE (Mean: 15.64, SD: 1.49), ROA (Mean: 4.13, SD: 3.18). Descriptive statistics are also reported for companies with ESO (N=749) and without employee ownership (N=102). The average ESO company produced a higher response rate to the CDP questionnaire (64% vs. 19%), offering more transparency (1.20 vs. 0.34) but with a lower score (73.39/100 vs. 77.94/100)

than its non-ESO counterpart. The average ESO company is larger, with a more independent and female board, less concentrated ownership, succeeds in being more profitable, and more often than not belongs to a high-carbon sector.

[Insert Table 3 Here]

Table 3 reports the correlation matrix between the analyses variables. ESO is strongly correlated with ESO-BOARD, with a consequence being that these two variables will be included separately in the regression models. To verify the absence of multicollinearity issues, we calculated the average variance inflation factors (VIF), which amount to 1.81 and 1.77 for the ESO and ESO-BOARD regressions, respectively. These two independent variables are significantly related to CDP-RESPONSE and CDP-TRANSPARENCY but not to the CDP-SCORE. The other variables correlated to ESO and ESO-BOARD are: SIZE (+), INDEPENDENCE (+), WOMEN-PERCENTAGE (+), CONCENTRATED (-), and HIGH CARBON (+).

**Multivariate Analysis**

[Insert Table 4 Here]

Table 4 presents the results of a random-effects logit regression of a carbon disclosure dummy on both of our employee ownership proxies. These proxies include the percentage of outstanding shares owned by the firm’s employees (ESO) and the percentage of board members who are also employee owners (ESO-BOARD). Consistent with our predictions in the literature review section, and in line with our hypothesis H1a, we find that both ESO proxies significantly increase the likelihood of voluntarily answering the CDP questionnaire

(ESO: coef.=0.631;  $p$ -value < 0.05 – ESO-BOARD: coef.= 0.182;  $p$ -value < 0.1). In line with the agency theory literature, ESO companies have higher disclosure levels than other firms and, therefore, are more likely to respond.

Regarding control variables, the firm size coefficient is positive and significant at the 1% level. These results are in line with prior environmental disclosure research (Clarkson et al., 2008; Mahoney & Thorn, 2006; McGuire et al., 2003). Larger companies have more resources for measuring and reporting their emissions than smaller ones, meaning they have a higher propensity to respond to the annual questionnaire. Our results also indicate that firms with higher profitability (ROA) and more growth opportunities (PTBV) are more likely to answer the CDP questionnaires, as predicted in the methodology section.

[Insert Table 5 Here]

Table 5 shows the results of a mixed-effect ordered probit regression of the company's disclosure transparency level on both our employee ownership proxies. The dependent variable (CDP-TRANSPARENCY) is an ordinal variable, which takes the value of 2 if the firm answers the questionnaire and makes its response public (51.35% of the observations – 437 firms) and available on the CDP website, 1 if the firm answers the questionnaire and chooses to make its response non-public, and 0 otherwise (41.48% of the observations). Our results indicate that ESO is significantly positively related to disclosure transparency levels (ESO: coef.=0.241;  $p$ -value < 0.01 – ESO-BOARD: coef.=0.063;  $p$ -value < 0.01). These findings confirm our hypothesis H1b and suggest that ESO not only increases the likelihood of carbon disclosure (answering the CDP questionnaire) but also the subsequent transparency levels.

As per the control variables, we find that the size of the firm and its growth opportunities increase CDP disclosure transparency levels (p-value < 0.01). Consistent with Ben Amar et al. (2017), we also find that the percentage of women present on a firm's board of directors significantly increases carbon disclosure transparency levels. Additionally, the concentration of shares binary variable has a negative effect on CDP-TRANSPARENCY that is significant at the 1% level.

[Insert Table 6 Here]

Table 6 presents the results of a random effect negative binomial regression<sup>12</sup> of the firm's carbon disclosure score on both employee ownership proxies and control variables. This regression is run only on firms that answered the questionnaire and made their responses public (437 observations). This score ranges from 0 to 100, assessing companies based on the quality and completeness of their CDP project responses in the context of climate-change-related strategy, targets and performance, risks and opportunities, governance, emissions methodology, and data. The results of this regression do not highlight a significant relationship between the carbon disclosure score and any of the ESO proxies used in this paper. This indicates that while ESO improves the likelihood and transparency of a firm's carbon disclosure, it does not do likewise regarding the information on GHG emissions, or the risks and opportunities related to climate change as disclosed to external stakeholders. Although the literature suggests that ESO companies are more likely to improve their climate change strategy and risk management processes, the empirical evidence does not highlight this effect. These results are mainly influenced by the low number of observations in this model (435 observations only) and the relatively low percentage of capital held by employees

(a median of 1%). These low percentages may increase the disclosure of information – as indicated in the results of tables 4 and 5 – but are not important enough to change the company’s climate change strategy and risk management. This relationship requires further investigation on a larger. It is indeed necessary to study the relationship between ESO and disclosure quality on a larger scale in order to increase both the sample size and the significance of the observed variables.

The only significant coefficient is related to *SIZE*, suggesting that the costs of disclosing detailed carbon emission information can only be met by the largest companies. With respect to governance characteristics, the coefficients associated with board independence are never significant and those associated with board gender diversity are only positive and significant for transparency. Considering the results obtained for the *ESO-BOARD* variable, our results support the idea that the representation of employee shareholders upon the board of directors would be a more effective governance mechanism for promoting climate disclosure. Shareholder concentration – a French characteristic – has no significant impact on the probability of receiving a CDP survey response, or on the CDP-score, but is negatively and significantly associated with decisions to publicize responses. This latter result may be explained by the reduced need to bring in outside investors.

## **Conclusion**

This paper investigates the relationship between employee stock ownership and climate change disclosures. Employee ownership is a growing practice supported by public authorities in several countries. It can also be regarded as a sustainable strategy for promoting long-term goals while reducing internal conflict. Since the 2015 Paris Agreement, climate change has

become a significant part of such strategies. Consequently, listed companies are encouraged to consider additional criteria to profit alone, including the adoption of CSR policies. As a result of this focus on climate change and CSR, institutional investors have developed in-depth socially responsible investment strategies according to key ESG criteria, among which we find ESO and carbon disclosure. We argue that France offers an interesting case for investigating the relationship between ESO and carbon disclosure, being a civil law country with heavy exposure to foreign institutional investment, to an extent that academic literature often mentions this as a distinctive feature. The country is a European ESO leader, with 3 million employee owners and mandatory ESO board representation. We proxied ESO with both the percentage of shareholders' equity held by employees and the percentage of board seats occupied by employee owners. A positive association is identified between ESO and the likelihood of voluntarily answering the CDP questionnaire, together with the transparency of the answers. A significant relationship between ESO and the quality of the questionnaire information disclosed is not confirmed. The lack of significance in this latter case may be explained by several factors that would benefit from future investigations. Nevertheless, some may already be apparent in the literature highlighting the negative outcomes of ESO on corporate performance, as opposing positive and negative outcomes are features that result in a curvilinear relationship with corporate outcomes (Guedri & Hollandts, 2008). Employee owners are often presented as natural allies of the top management as far as opposing takeover is concerned, which would negatively affect corporate governance (Benartzi et al., 2007). Such an alliance is not excluded in the case of carbon disclosure either, as the disclosing of detailed information has the potential to threaten both employees and executives in carbon-intensive industries. Another contradictory explanation to consider is that employee owners are not really in sync with the essence of climate change strategy and risk being used as foils by executives. This non-significant relationship requires further investigation in a different

context; one that focuses on the effect of ESO on the quality of disclosure. To the best of our knowledge, this paper is the first to investigate the link between ESO and carbon disclosure policies. Our findings are in line with Blasi et al. (2018) and Bova et al. (2015), who found ESO to improve overall transparency, and Nekhili et al. (2020), who show that ESO positively affects ESG performance and, more specifically, environmental performance. Our research contributes to the literature on the corporate outcomes of ESO and profit-sharing, as well as to the growing literature on ESG performance. From this latter point of view, our results underline the Social and Environmental dimensions of ESG performance, which can be complementary and not substitutes. Future research may focus on recent data including several countries.

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## Appendix

| Variable                     | Description  | Source      |
|------------------------------|--|-------------|
| <i>Dependent variables</i>   |  |             |
| CDP-RESPONSE                 | Dummy variable of 1 if the firm answered the CDP questionnaire (AQ) and 0 if not   | CDP Reports |
| CDP-TRANSPARENCY             | This variable is equal to 0 if the firm did not answer the CDP questionnaire, to 1 if the firm answered the questionnaire and made it non-public, and to 2 if the firm answered the questionnaire and made it public   | CDP Reports |
| CDP-SCORE                    | The carbon disclosure score (over 100) as reported in the CDP report. This variable exists only for firms that answered the CDP questionnaire and made their response public (CDP-TRANSPARENCY = 2)  | CDP Reports |
| <i>Independent variables</i> |  |             |
| ESO                          | Percentage of outstanding shares held by the company's employees   | IODS        |
| ESO-BOARD                    | Percentage of employee owners on the board of directors  | IODS        |
| <i>Control variables</i>     |  |             |
| SIZE                         | The logarithm of total assets  | Refinitiv   |
| ROA                          | Return on Assets   | Refinitiv   |
| PTBV                         | Price-to-book value  | Refinitiv   |
| INDEPENDENCE                 | Percentage of independent directors on the board of directors  | IODS        |
| WOMEN-PERCENTAGE             | Percentage of women on the board of directors  | IODS        |
| CONCENTRATED                 | Dummy variable of 1 if more than 20% of the firm's shares are concentrated and 0 if the ownership is dispersed   | Refinitiv   |
| HIGH CARBON                  | Dummy variable of 1 if the firm belongs to a high-carbon impact industrial sector. These sectors include automobiles and components, chemicals, forest products, gas and electrical utilities, oil and gas, mining, pipelines, precious metals, steel, and transportation. | CDP Reports |

*Table 1: Variable description*

|                  | All companies |       |                    |       |       | Companies with ESO |       |                    |       |       | Companies without ESO |       |                    |       |       |
|------------------|---------------|-------|--------------------|-------|-------|--------------------|-------|--------------------|-------|-------|-----------------------|-------|--------------------|-------|-------|
|                  | Obs.          | Mean  | Standard Deviation | Min   | Max   | Obs.               | Mean  | Standard Deviation | Min   | Max   | Obs.                  | Mean  | Standard Deviation | Min   | Max   |
| CDP-RESPONSE     | 851           | .58   | .49                | 0     | 1     | 749                | .64   | .48                | 0     | 1     | 102                   | .19   | .39                | 0     | 1     |
| CDP-TRANSPARENCY | 851           | 1.09  | .96                | 0     | 2     | 749                | 1.20  | .94                | 0     | 2     | 102                   | .34   | .74                | 0     | 2     |
| CDP-SCORE        | 437           | 73.55 | 2.84               | 13    | 100   | 421                | 73.39 | 2.99               | 13    | 100   | 16                    | 77.94 | 16.32              | 55    | 100   |
| ESO              | 842           | 1.45  | 1.57               | 0     | 4.8   | 749                | 1.64  | 1.57               | 0     | 4.80  | 102                   | 0     | 0                  | 0     | 0     |
| ESO-BOARD        | 851           | 1.47  | 3.68               | 0     | 21.43 | 749                | 1.68  | 3.88               | 0     | 21.43 | 102                   | 0     | 0                  | 0     | 0     |
| PTBV             | 851           | 1.67  | .87                | .65   | 3.39  | 749                | 1.65  | .84                | .65   | 3.39  | 102                   | 1.82  | 1.02               | .65   | 3.39  |
| SIZE             | 851           | 15.64 | 1.49               | 13.43 | 17.92 | 749                | 15.81 | 1.47               | 13.43 | 17.92 | 102                   | 14.39 | .95                | 13.43 | 16.58 |
| INDEPENDENCE     | 851           | 49.03 | 17.64              | 22.22 | 77.77 | 749                | 49.99 | 17.62              | 22.22 | 77.78 | 102                   | 42.02 | 16.24              | 22.22 | 77.78 |
| WOMEN-PERCENTAGE | 851           | 18.14 | 11.38              | 0     | 36.36 | 749                | 18.35 | 11.37              | 0     | 36.36 | 102                   | 16.59 | 11.44              | 0     | 36.36 |
| CONCENTRATED     | 851           | .67   | .47                | 0     | 1     | 749                | .64   | .48                | 0     | 1     | 102                   | .84   | .37                | 0     | 1     |
| ROA              | 851           | 4.13  | 3.19               | -.93  | 9.34  | 749                | 4.14  | 3.17               | -.93  | 9.34  | 102                   | 4.1   | 3.35               | -.93  | 9.34  |
| HIGH CARBON      | 851           | .40   | .49                | 0     | 1     | 749                | .41   | .49                | 0     | 1     | 102                   | .35   | .48                | 0     | 1     |
| 2009             | 851           | .12   | .32                | 0     | 1     | 749                | .12   | .33                | 0     | 1     | 102                   | .07   | .25                | 0     | 1     |
| 2010             | 851           | .15   | .36                | 0     | 1     | 749                | .15   | .36                | 0     | 1     | 102                   | .14   | .35                | 0     | 1     |
| 2011             | 851           | .15   | .35                | 0     | 1     | 749                | .15   | .36                | 0     | 1     | 102                   | .14   | .35                | 0     | 1     |
| 2012             | 851           | .15   | .36                | 0     | 1     | 749                | .15   | .36                | 0     | 1     | 102                   | .18   | .38                | 0     | 1     |
| 2013             | 851           | .15   | .35                | 0     | 1     | 749                | .15   | .36                | 0     | 1     | 102                   | .19   | .39                | 0     | 1     |
| 2014             | 851           | .14   | .35                | 0     | 1     | 749                | .14   | .35                | 0     | 1     | 102                   | .17   | .37                | 0     | 1     |
| 2015             | 851           | .14   | .35                | 0     | 1     | 749                | .14   | .35                | 0     | 1     | 102                   | .13   | .34                | 0     | 1     |

Table 2: Descriptive statistics

|                    | 1         | 2         | 3        | 4         | 5         | 6         | 7         | 8         | 9       | 10     | 11     | 12    |
|--------------------|-----------|-----------|----------|-----------|-----------|-----------|-----------|-----------|---------|--------|--------|-------|
| 1 CDP-RESPONSE     | 1.000     |           |          |           |           |           |           |           |         |        |        |       |
| 2 CDP-TRANSPARENCY | 0.965***  | 1.000     |          |           |           |           |           |           |         |        |        |       |
| 3 CDP-SCORE        | .         | .         | 1.000    |           |           |           |           |           |         |        |        |       |
| 4 ESO              | 0.422***  | 0.437***  | 0.062    | 1.000     |           |           |           |           |         |        |        |       |
| 5 ESO-BOARD        | 0.277***  | 0.280***  | -0.046   | 0.629***  | 1.000     |           |           |           |         |        |        |       |
| 6 PTBV             | -0.038    | -0.040    | -0.111** | -0.192*** | -0.083**  | 1.000     |           |           |         |        |        |       |
| 7 SIZE             | 0.606***  | 0.642***  | 0.301*** | 0.482***  | 0.281***  | -0.183*** | 1.000     |           |         |        |        |       |
| 8 INDEPENDENCE     | 0.222***  | 0.210***  | 0.106**  | 0.199***  | 0.057*    | -0.076**  | 0.184***  | 1.000     |         |        |        |       |
| 9 WOMEN-PERCENTAGE | 0.182***  | 0.215***  | 0.349*** | 0.155***  | 0.062*    | -0.004    | 0.162***  | 0.120***  | 1.000   |        |        |       |
| 10 CONCENTRATED    | -0.225*** | -0.232*** | 0.030    | -0.209*** | -0.087**  | 0.036     | -0.170*** | -0.508*** | -0.062* | 1.000  |        |       |
| 11 ROA             | -0.040    | -0.033    | -0.113** | -0.130*** | -0.096*** | 0.467***  | -0.170*** | 0.002     | 0.012   | -0.024 | 1.000  |       |
| 12 HIGH CARBON     | 0.115***  | 0.123***  | 0.097**  | 0.207***  | 0.221***  | -0.165*** | 0.170***  | 0.152***  | -0.024  | -0.018 | -0.054 | 1.000 |

Table 3: Pearson Correlation matrix

\*, \*\*, \*\*\* denote the 10%, 5%, and 1% significance levels, respectively.

|                              |   | CDP-RESPONSE         | CDP-RESPONSE         |
|------------------------------|---|----------------------|----------------------|
| <i>Independent Variables</i> |   |                      |                      |
| ESO                          | + | 0.631**<br>(0.292)   |                      |
| ESO-BOARD                    | + |                      | 0.182*<br>(0.102)    |
| <i>Control Variables</i>     |   |                      |                      |
| SIZE                         | + | 3.245***<br>(0.493)  | 3.364***<br>(0.448)  |
| PTBV                         | + | 0.637*<br>(0.373)    | 0.695*<br>(0.376)    |
| ROA                          | + | 0.156*<br>(0.0825)   | 0.153*<br>(0.0815)   |
| INDEPENDENCE                 | + | 0.0127<br>(0.0191)   | 0.0159<br>(0.0193)   |
| WOMEN-PERCENTAGE             | + | -0.0399<br>(0.0298)  | -0.0372<br>(0.0295)  |
| CONCENTRATED                 | - | -0.835<br>(0.637)    | -0.795<br>(0.643)    |
| HIGH CARBON                  | + | 0.292<br>(0.957)     | 0.184<br>(0.961)     |
| Constant                     |   | -52.67***<br>(7.823) | -54.35***<br>(7.199) |
| Year Fixed Effect            |   | Yes                  | Yes                  |
| Log-likelihood               |   | -226.92              | -231.75              |
| Wald Chi <sup>2</sup>        |   | 63.69                | 76.03                |
| Prob Chi <sup>2</sup>        |   | 0.000                | 0.000                |
| Observations                 |   | 842                  | 851                  |
| N                            |   | 133                  | 133                  |

Table 4: Employee ownership's effect on carbon disclosure decision.

This table presents the results of a logit regression of the carbon disclosure decision dummy variable on employee ownership proxies and control variables. Variables are defined in Table 1.

Heteroscedasticity-consistent standard errors are used to calculate the standard errors.

\*, \*\*, \*\*\* denote the 10%, 5%, and 1% significance levels, respectively.



|                              |   | CDP-<br>TRANSPARENCY | CDP-<br>TRANSPARENCY  |
|------------------------------|---|----------------------|-----------------------|
| <i>Independent Variables</i> |   |                      |                       |
| ESO                          | + | 0.241***<br>(0.0414) |                       |
| ESO-BOARD                    | + |                      | 0.0629***<br>(0.0164) |
| <i>Control Variables</i>     |   |                      |                       |
| SIZE                         | + | 0.648***<br>(0.0436) | 0.676***<br>(0.0421)  |
| PTBV                         | + | 0.187***<br>(0.0712) | 0.152**<br>(0.0696)   |
| ROA                          | + | 0.0191<br>(0.0186)   | 0.0231<br>(0.0185)    |
| INDEPENDENCE                 | + | 0.00242<br>(0.00339) | 0.00483<br>(0.00333)  |
| WOMEN-PERCENTAGE             | + | 0.0101*<br>(0.00607) | 0.0134**<br>(0.00602) |
| CONCENTRATED                 | - | -0.361***<br>(0.125) | -0.368***<br>(0.124)  |
| HIGH CARBON                  | + | 0.0476<br>(0.107)    | 0.0285<br>(0.106)     |
| Year Fixed Effect            |   | Yes                  | Yes                   |
| Log-likelihood               |   | -496.85              | -515.91               |
| Wald Chi <sup>2</sup>        |   | 341.18               | 347.31                |
| Prob Chi <sup>2</sup>        |   | 0.000                | 0.000                 |
| Observations                 |   | 842                  | 851                   |
| N                            |   | 133                  | 133                   |

*Table 5: Employee ownership's effect on carbon disclosure transparency level.*

*This table presents the results of a mixed-effect ordered probit regression of carbon disclosure transparency level on employee ownership proxies and control variables. Variables are defined in Table 1.*

*Heteroscedasticity-consistent standard errors are used to calculate the standard errors.*

*\*, \*\*, \*\*\* denote the 10%, 5%, and 1% significance levels, respectively.*

| VARIABLES                    |   | CDP-SCORE             | CDP-SCORE             |
|------------------------------|---|-----------------------|-----------------------|
| <i>Independent Variables</i> |   |                       |                       |
| ESO                          | + | -0.0107<br>(0.0134)   |                       |
| ESO-BOARD                    | + |                       | -0.00340<br>(0.00435) |
| <i>Control Variables</i>     |   |                       |                       |
| SIZE                         | + | 0.144***<br>(0.0201)  | 0.140***<br>(0.0190)  |
| PTBV                         | + | 0.0232<br>(0.0213)    | 0.0285<br>(0.0210)    |
| ROA                          | + | 0.00142<br>(0.00531)  | 0.00153<br>(0.00530)  |
| INDEPENDENCE                 | + | 0.00110<br>(0.00112)  | 0.00104<br>(0.00111)  |
| WOMEN-PERCENTAGE             | + | -0.00113<br>(0.00174) | -0.00133<br>(0.00172) |
| CONCENTRATED                 | - | 0.00163<br>(0.0357)   | 0.00395<br>(0.0357)   |
| HIGH CARBON                  | + | -0.00388<br>(0.0472)  | -0.00268<br>(0.0470)  |
| Constant                     |   | 1.247***<br>(0.366)   | 1.291***<br>(0.355)   |
| Year Fixed Effect            |   | Yes                   | Yes                   |
| Log-likelihood               |   | -1819.13              | -1827.38              |
| Wald Chi <sup>2</sup>        |   | 409.02                | 410.28                |
| Prob Chi <sup>2</sup>        |   | 0.000                 | 0.000                 |
| Observations                 |   | 435                   | 437                   |
| N                            |   | 85                    | 85                    |

Table 6: Employee ownership's effect on carbon disclosure quality.

This table presents the results of a negative binomial regression of carbon disclosure quality on employee ownership proxies and control variables. Variables are defined in Table 1.

Heteroscedasticity-consistent standard errors are used to calculate the standard errors.

\*, \*\*, \*\*\* denote the 10%, 5%, and 1% significance levels, respectively.

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<sup>1</sup> Bernstein, J. (2020), Why Aren't There More? Assessing Barriers to ESOP Creation, Report commissioned by the Employee-Owned S Corporations of America available here: <https://esca.us/wp-content/uploads/2021/01/Why-Arent-There-More-by-Jared-Bernstein-January-2020.pdf>

<sup>2</sup><https://www.agefi.fr/asset-management/actualites/quotidien/20171215/bruno-maire-veut-entreprises-detenues-a-10-leurs-235275>

<sup>3</sup> <https://employeeownership.co.uk/resources/what-the-evidence-tells-us/>

<sup>4</sup>[https://uk.practicallaw.thomsonreuters.com/9-507-4557?transitionType=Default&contextData=\(sc.Default\)&firstPage=true](https://uk.practicallaw.thomsonreuters.com/9-507-4557?transitionType=Default&contextData=(sc.Default)&firstPage=true)

<sup>5</sup> <https://employeeownership.co.uk/resources/what-the-evidence-tells-us/>

<sup>6</sup> The summary of the survey is available here: <https://www.credit-agricole.com/chaines-d-infos/toutes-les-chaines-d-info-du-groupe-credit-agricole/communiqués-de-presse/barometre-amundi-2021-de-l-actionariat-salarie-appetence-confirmee-pour-l-actionariat-salarie3>. Amundi is the largest European institutional investor and the first employee-ownership plan administrator.

<sup>7</sup> [Le Bulletin de la Banque de France n°231: Article 4: La détention par les non-résidents des actions des sociétés françaises du CAC 40 à fin 2019 et début 2020.](#)

<sup>8</sup> Further details about the French financial participation system and its reform in 2019 are presented by Aubert and Bernheim (2020).

<sup>9</sup> The representation of employee shareholders on the board of directors is mandatory in France when employees hold at least 3% of the company's capital. Nekhili et al. (2020) do not directly include employee ownership as an independent variable because of its strong correlation (0.7) with employee shareholder representation.

<sup>10</sup> We were not able to find the percentage of ESO in nine firm-year observations and, therefore, when studying ESO the sample was reduced to 842 observations.

<sup>11</sup><https://guidance.cdp.net/en/guidance?cid=13&ctype=theme&idtype=ThemeID&incchild=1&microsite=0&otype=Guidance&page=1&tags=TAG-646,TAG-605,TAG-600>

<sup>12</sup> As a robustness test, we also ran a tobit regression and the results remained the same.