Do ESOPs affect Firm Performance and ESG?

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Abstract

I study the effects of Employee Stock Ownership Plans (ESOPs) on firm performance and Environmental, Social, and Governance (ESG) scores using multiple measures of ESOPs. I use Coarsened Exact Matching to match firms with ESOPs to similar firms without ESOPs. I find evidence of ESOPs having a positive effect on firm performance, particularly for Tobin's Q, a market based measure of firm performance. I find evidence of a positive effect on ESG for large firms and for firms in the transportation and construction industries, but little evidence of a net effect for all types of firms.

1 Introduction

One strategy that firms have used to motivate and engage employees is employee ownership. Employee ownership refers to any arrangement in which a company's employees, especially non-executives, own shares in their company. The most prominent form of employee ownership in the United States are Employee Stock Ownership Plans (ESOPs) which are a type of retirement plan, similar to a 401(k), that invests primarily in company stock and holds its assets in a trust for employees. ESOP participants accrue shares in the plan

over time, and are paid out by having their shares bought back, typically after they leave the company. ESOPs are found in both privately held and publicly traded firms. In 2020, 580 publicly traded companies had ESOPs that covered approximately 12 million workers, about 7.3% of workers in the United States.[1] Although the the number of publicly traded companies with ESOPs has declined over the past decade from 786 in 2014 to 580 in 2020, some states have recently passed laws promoting the creation of ESOPs. In 2021 Colorado passed a law providing tax credits to fund the professional service costs of converting to an ESOP or another form of employee ownership. In 2022 the California Employee Ownership Act was passed with bipartisan support. This bill established the California Employee Ownership Hub within the California Office of Small Business with the goal of increasing awareness of employee ownership and reducing barriers for business owners converting to employee ownership.

Proponents of ESOPs, such as the National Center for Employee Ownership, claim that they are commonly implemented to "support a high-involvement work culture where employees are given the opportunity to think and act like owners".[2] The idea is that by giving employees a financial stake in their company's performance they will be more engaged with their work and identify more closely with the company as they stand to benefit if the company does well. This agreement between the firm and employees can form a cooperative workplace culture in which workers increase their efforts and are more engaged in the workplace. There have been studies that have shown a positive association between measures of work life quality such as worker intent to stay, lower turnover, and higher job satisfaction (Blasi et al., 2016; Kruse et al., 2010). These suggest that there may be some truth to the idea of "ownership culture".

Much of the previous academic literature on employee ownership focuses on the link between employee ownership and firm performance. There are a number of studies that have

[1] https://www.nceo.org/articles/employee-ownership-by-the-numbers
[2] https://www.nceo.org/what-is-employee-ownership

found a positive association between employee ownership and firm performance (O'Boyle et al., 2016; Oxera Consulting, 2007; Kim and Ouimet, 2010). This suggests that that ESOPs may be able to generate value through aligning the goals of employees and shareholders. Many of these studies of employee ownership in the U.S. focus on firms prior to 2005. Given the decline in ESOPs in public companies over the past decade there may be reason to believe that ESOPs may not be as effective as they once were. I expand upon these studies by providing more recent results of the effect of ESOPs on firm performance.

Another topic of interest that has not been widely studied is the relationship between ESOPs and Environmental, Social, and Governance (ESG) scores. The focus of how firms impact social welfare has received an increasing amount of attention over the last decade. Firm actions around this idea are referred as ESG or Corporate Social Responsibility (CSR).[3] The Governance & Accountability Institute reported that 92% of S&P 500 firms released sustainability or corporate responsibility reports in 2020, compared to 20% in 2011, a clear indication of firm interest in ESG.[4] Investors have also shown interest; net flows in mutual funds with ESG mandates rose quickly from $5.5 billion in 2018 to $70 billion in 2021.[5] Given this recent emphasis on ESG it is clear that firms are looking for ways to increase their ESG and be able to effectively implement ESG policies. Employee engagement is one channel that is important for implementing effective ESG policies (Collier and Esteban, 2007; Chen and Hung-Baesecke, 2014). Employee participation in ESG activities can be crucial for certain ESG activities such as corporate volunteer programs and corporate philanthropic donations. Additionally the success of environmental programs often depends on employees' behaviors (Robertson and Barling, 2013). Some have suggested that that employee ownership may

[3] I will use the term ESG throughout this paper. The terms ESG and CSR are generally treated as interchangeable, for example see Gillan et al. (2021).

[4] https://www.ga-institute.com/nc/storage/press-releases/article/92-of-sp-500r-companies-and-70-of-russell-1000r-companies-published-sustainability-reports-in-202.html

[5] It should also be noted that netflows dropped to only $3.1 billion in 2022, although part of this large decline can be explained by the fact that U.S. funds suffered more than $370 billion in withdrawals (Stankiewicz, 2023).

increase ESG through this channel of increasing employee participation and engagement in ESG policies (Stahl et al., 2020). I will be the first, as far as I am aware, to study the effect of ESOPs on ESG in the United States.

In this paper, I study the effect of Employee Stock Ownership Plans (ESOPs) on firm performance and Environmental, Social, and Governance (ESG) scores in publicly traded firms in the United States. I use data from Standard and Poor's Industrial CompuStat, the Department of Labor's Form 5500 data set, and MSCI KLD ESG Stats for data on publicly traded firms, ESOPs, and ESG scores. Using these data sources I am able to create two samples of firm-year level data of publicly traded companies. The Full sample contains publicly traded companies from 1999-2019 on which I study firm performance measures. The ESG sample is a subsample of the Full sample and contains publicly traded firms that are in the MSCI KLD ESG stats data set from 1999-2008. I use three measures of ESOPs: a dummy variable of whether or not a firm has an ESOP in a given year, the amount of ESOP assets per participant, and ESOP participants per employee. I then use OLS methods to run regressions to study if there a link between ESOPs and firm performance or ESG. To reduce selection bias I use Coarsened Exact Matching (CEM) to match firms with employee ownership to firms without employee ownership on observable characteristics. I expand the literature by providing more recent results of the effect of ESOPs on firm performance and being the first to study the effect of ESOPs on ESG in the United States.

I find evidence of ESOPs having a general positive effect on firm performance. The evidence for the accounting based measures of firm performance like ROA or sales are more mixed, but the effect of ESOP assets per participant on Tobin's Q, a market based measure, is particularly robust. This suggests that this financial incentive is important for ESOPs increasing firm performance. There is little evidence of ESOPs having a net effect on ESG, but there is some evidence that ESOPs increase ESG for the largest firms and for firms in the construction and transportation industry. In particular ESOP participants per employee and the ESOP dummy variable are more important for these ESG effects suggesting that

ESOPs increase ESG scores primarily by increasing broad employee identification with a company.

The rest of the paper is structured as follows: Section 2 explores the relationship between ESOPs, firm performance, and ESG in more detail, Section 3 explains the data and methodology, Section 4 presents the results, and Section 5 discusses firm heterogeneity, Section 6 presents robustness checks, and Section 7 concludes.

2 ESOPs, Firm Performance, and ESG

Much of the previous literature on employee ownership has focused on firm performance with most finding a positive relationship. A meta analysis of studies, with 102 samples covering 56,984 firms, found a small but significant association between employee ownership and firm performance (O'Boyle et al., 2016). In an example of an individual study, Kim and Ouimet (2010) used a sample of publicly traded firms from 1980 and 2004, and found that firms with ESOPs have a 8.12% increase in Tobin's Q relative to the industry median. Similarly Stretcher et al. (2006) matched publicly traded firms with ESOPs to similar firms without ESOPs over a period of 1998-2004. They found increases in return on assets, net profit margin, and return on equity. There have also been similar studies for private firms, for example Blasi et al. (2013) examined 300 privately held firms in the United States that set up ESOPs between 1988 and 1994, comparing each ESOP firm to a similar company of the same size and in the same industry without an ESOP. This study found that ESOP firms have significantly higher sales growth and higher sales per worker than matched firms without ESOPs. There have also been a variety of studies studying employee ownership outside of the United States. Oxera Consulting (2007) studied broad-based employee ownership in the United Kingdom and Jones and Kato (1995) studied ESOPs in Japan; both found increases in a variety of firm performance measures improved firm performance measures of value-added and turnover. Additionally, Meng et al. (2011) studied ESOPs in China and found no

increases of firm performance. This paper adds to this literature by providing more recent estimates of the effect of employee ownership on firm performance in the United States.

Many papers explain a mechanism for why employee ownership might improve firm performance by turning to agency theory. Agency theory says that the interests of agents (i.e. employees) are not necessarily aligned with the interests of the principals (i.e. shareholders) (Fama and Jensen, 1983). Shareholders want to maximize firm value while employees that are on a salary do not see the benefit of the increased value. By giving the employees a stake in the company they stand to benefit when firm value increases. Employee ownership then helps to align the interests of the employees with those of the shareholders. Under the assumption that increased worker motivation and engagement can lead to an increase in firm performance then ESOPs should lead to an increase in firm performance. It should be expected that workers with more company stock should have a stronger tie to the company. I expect ESOP assets per plan participant have a positive effect on financial performance. Similarly, if ESOP participants only comprise a small percentage of the total number of employees within a firm they are unlikely to increase their motivation if they believe that they are unable to increase firm performance by themselves. For this reason I also expect ESOP participants per employee to also have a positive effect on firm performance.

There is evidence of employee ownership affecting employee attitudes. For example, Cramton et al. (2008) found that unionized firms that adopted ESOPs were less likely to strike. Another study analyzing the "Great Place to Work" data set, which includes more than 700 firms and 230,000 workers, showed that worker intent to stay with the company is higher in ESOP companies than in non-ESOP companies (Blasi et al., 2016). Similarly Blasi et al. (2008) found that employees at firms with employee ownership report lower turnover, more willingness to work hard, and more loyalty to the company. Employee ownership has also been linked to other positive firm outcomes such as job security and firm survival, as well as more broadly shared prosperity (Blair et al., 2000; Kurtulus and Kruse, 2018; Kim and Ouimet, 2014; Buchele et al., 2010).

Very few papers, however, have examined the link between employee ownership and ESG, and the few that have have studied firms outside of the U.S. (Dam and Scholtens, 2012; Orazayeva and Arslan, 2022; Zhou et al., 2022). I contribute to this literature by being the first, as far as I am aware, to study the effect of ESOPs on ESG among U.S. firms. It has been documented that employees play an important role in the efficacy of a firm's ESG strategies (Collier and Esteban, 2007; Strandberg, 2009). Some have even claimed that "substantive [ESG] activities, such as attempts to improve working conditions along the supply chain, efforts to reduce the carbon footprint, or corporate volunteering and service assignments all require high levels of employee commitment and engagement" (Stahl et al., 2020, pg.4).[6] Similarly Afsar et al. (2018) argues that environmental sustainability at the organizational level is shaped by individual-level pro-environmental behavior. Employees can even play a role in suggesting and developing ESG policies (Ramus, 2002).

ESOPs may increase particpation in ESG for multiple reasons. As previously discussed employee ownership has been linked to increased company loyalty and identification with a firm. This increased association with a firm may lead employees to care more about a firm's reputation. There is evidence of a positive relationship of ESG and firm reputation (Bear et al., 2010). Employees then may participate in ESG policies in an attempt to increase firm reputation. Also there may once again be a financial incentive that can be explained through the lens of agency theory. Some papers have linked increased ESG to higher firm value (Fatemi et al., 2018; Servaes and Tamayo, 2013). Since ESOP participants own company stock they have a financial incentive to participate in ESG activities and attempt to increase company ESG. I once again predict that firms with more ESOP assets per participant and more ESOP participants per employee will have more motivation and engagement with the firm and will then result in higher ESG.

[6]They use the term CSR (Corporate Social Responsibility) instead of ESG here.

3 Data and Empirical Strategy

3.1 Data

I use data from three sources: Standard and Poor's Industrial CompuStat database on publicly traded companies, the Form 5500 employee benefit plan data collected by the US Department of Labor, and MSCI ESG KLD Stats.

The CompuStat data contains annual financial information on the universe of publicly traded firms in the United States, including information on the number of employees. I use Standard Industrial Classification (SIC) codes to examine the industry classification of each firm. I am also able to create measures of firm performance such as sales, Return on Assets (ROA), and Tobin's Q, which is a measure of a firm's total market value to its total asset value. I only include firms with that are not missing an Employer Identification Number (EIN) as I need this to merge with the DoL Form 5500 data. Many of the firms with missing EIN are financial firms, in particular Unit Investment Trusts (SIC 6726) and Management Investment Offices (SIC 6722).

Following Kurtulus and Kruse (2018) I use the DoL Form 5500 for information on ESOPs. All firms with employee benefit plans, including pension plans, are required to submit the Form 5500 annually. The DoL Form 5500 contains information on if the plan is an ESOP, the amount of employer securities in the plan, the number of plan participants, and if the plan is a result of collective bargaining. See Appendix A.2 for an example of the first page of a Form 5500. I merge the Form 5500 data with CompuStat on each firm's unique EIN.

I use MSCI KLD ESG Stats, often referred to as KLD Stats, for data on ESG scores. This dataset is used in many other papers studying ESG (see Abeysekera and Fernando (2020); Borghesi et al. (2014); Oikonomou et al. (2012)). This dataset was originally created by KLD Research & Analytics, Inc., but in 2010 MSCI acquired KLD. After the acquisition there were many changes to how they measured ESG scores making it difficult to study

ESG scores after 2010. Due to this and the financial crisis in 2009 I only use the KLD Stats data from 1999-2008. KLD Stats contains scores for seven "Qualitative Issue Areas" including: Community, Corporate Governance, Diversity, Employee Relations, Environment, Human Rights, and Product. I do not include the Human Rights category as most of the individual scores in this category are not included for the full time frame of my analysis. Each category is broken into strengths and concerns with each of these being comprised of individual binary ratings. For example, within the Employee Relationship category there are a number of strength and concerns ratings. One strength rating is "Health and Safety Strength" and if the firm meets the KLD's requirements for the year they get a score of 1 otherwise they receive a 0. The companies covered by KLD stats over the time frame of this analysis is shown in Table 3.1. I merge KLD Stats to CompuStat using the CUSIP code.

Table 3.1: MSCI ESG KLD Stats Coverage, 1999-2008

Coverage Universe	**1999-2000**	**2001**	**2002**	**2003-2008**
S&P 500 Index	X	X	X	X
Domini 400 Social Index	X	X	X	X
1000 Largest US Companies		X	X	X
Large Cap Social Index			X	X
200 Small Cap US Companies				X
Broad Market Social Index				X
Approximate Total Number of Companies Covered	650	1100	1100	3100

Source: RiskMetrics (2010)

Due to the restricted time frame of the ESG data I create two different samples. The first sample, which I call the Full sample, is a firm-year level data set from 1999-2019 which is created by merging the CompuStat and Form 5500 data. I use the Full sample to study the effect of ESOPs on firm performance. To study the effect of ESOps on ESG scores I create an ESG sample which is a subsample of the Full sample created merging the Full sample with the KLD Stats data. This ESG sample is comprised of the CompuStat-Form 5500-KLD Stats merged data from 1999-2008. Initial summary statistics of the Full sample

and ESG Sample are included in Table 3.2 and Table 3.3, respectively. In both samples the firms with ESOPs have more total assets and employees. And firms with ESOPs have larger share of financial firms and lower share of services.

Table 3.2: Full Sample Summary Statistics

	No ESOP			ESOP		
	Mean	SD	N	Mean	SD	N
ESOP	0.00	(0.00)	134106	1.00	(0.00)	9968
ESOP Assets per Participant (Ten Thousand)	0.00	(0.00)	134106	2.29	(2.39)	8805
ESOP Participants per Employee	0.00	(0.00)	134106	0.74	(0.29)	9968
Sales (Millions)	1428.96	(6783.16)	128526	9994.60	(30935.93)	9947
Tobin's Q	3.38	(4.62)	97496	1.72	(1.17)	6013
ROA	-0.34	(1.09)	127803	0.03	(0.14)	9944
Total Assets (Millions)	4249.10	(48027.80)	129253	31660.94	(149756.31)	9947
Number of Employees	4927.95	(23547.24)	117184	27749.21	(104762.26)	9574
Collective Bargaining	0.06	(0.23)	134106	0.31	(0.46)	9968
Agriculture, Forestry, Fishing	0.00	(0.05)	134104	0.01	(0.08)	9968
Mining	0.05	(0.22)	134104	0.02	(0.13)	9968
Construction	0.01	(0.10)	134104	0.01	(0.08)	9968
Manufacturing	0.36	(0.48)	134104	0.33	(0.47)	9968
Transportation, Communications, Utilities	0.09	(0.28)	134104	0.14	(0.34)	9968
Wholesale Trade	0.03	(0.17)	134104	0.03	(0.16)	9968
Retail Trade	0.05	(0.22)	134104	0.04	(0.20)	9968
Finance, Insurance, Real Estate	0.21	(0.40)	134104	0.37	(0.48)	9968
Services	0.18	(0.39)	134104	0.06	(0.25)	9968
Public Administration	0.02	(0.14)	134104	0.00	(0.06)	9968
Observations	134,106			9,968		

Notes: Full Sample contains firm-year level observations from 1999-2019. ESOP Assets Per Participant and Tobin's Q are winsorized at the 95th percentile. ROA is winsorized at the 2.5th percentile and 97.5th percentile.

A comparison of the means between the ESG and Full Sample can be found in Appendix A.3. There are a few differences between the ESG sample and the Full sample: the observations in the ESG sample have more assets, employees, and a larger percentage of ESOPs than the Full sample. This is to be expected as KLD Stats only includes some of the largest firms.

The goal is to examine the effect of ESOPs on ESG scores and firm performance. I use three measures of ESOPs:

1. ESOP_{it} = dummy variable equalling 1 if firm i reported having an ESOP in year t.

Table 3.3: ESG Sample Summary Statistics

	No ESOP			ESOP		
	Mean	SD	N	Mean	SD	N
ESOP	0.00	(0.00)	13546	1.00	(0.00)	2406
ESOP Assets per Participant (Ten Thousand)	0.00	(0.00)	13546	2.32	(2.41)	2398
ESOP Participants per Employee	0.00	(0.00)	13546	0.77	(0.26)	2406
Total ESG Strength	-0.11	(0.84)	13546	0.61	(1.47)	2406
Total ESG Con	-0.12	(0.83)	13546	0.57	(1.51)	2406
Total ESG Score	0.01	(0.92)	13546	0.03	(1.35)	2406
Total Assets (Millions)	7545.55	(52947.12)	13536	36582.57	(131129.93)	2405
Number of Employees	10491.15	(36494.84)	13372	37771.17	(117046.37)	2378
Collective Bargaining	0.12	(0.32)	13546	0.40	(0.49)	2406
Agriculture, Forestry, Fishing	0.00	(0.04)	13546	0.01	(0.08)	2406
Mining	0.04	(0.20)	13546	0.01	(0.11)	2406
Construction	0.01	(0.11)	13546	0.01	(0.10)	2406
Manufacturing	0.39	(0.49)	13546	0.36	(0.48)	2406
Transportation, Communications, Utilities	0.08	(0.27)	13546	0.15	(0.36)	2406
Wholesale Trade	0.02	(0.15)	13546	0.03	(0.17)	2406
Retail Trade	0.07	(0.25)	13546	0.05	(0.22)	2406
Finance, Insurance, Real Estate	0.21	(0.41)	13546	0.31	(0.46)	2406
Services	0.17	(0.38)	13546	0.06	(0.24)	2406
Public Administration	0.00	(0.06)	13546	0.01	(0.09)	2406
Observations	13,546			2,406		

Notes: ESG sample contains firm-year level observations included in both CompuStat and KLD Stats in 1999-2008. ESOP Assets Per Participant is winsorized at the 95th percentile.

2. ESOP Assets Per Participant$_{it}$ = value of employer securities in ESOP per ESOP participant of firm i in year t.

3. ESOP Participants per Employee$_{it}$ = Share of workers at firm i participating in an ESOP in year t.

These three measures allow for studying the effect of ESOPs in three different ways. The ESOP dummy variable examines the effect of ESOPs on the extensive margin. The ESOP Assets per Participant measures how large an ESOP is on a financial margin. The ESOP participants per employee measure examines how large an ESOP is in terms of how broad the coverage is.

For the Full sample the main outcomes of interest are measures of firm performance including: sales, return on assets (ROA), and Tobin's Q. I also briefly examine some labor specific measures such as labor to capital expense ratio and labor share.

For the ESG sample the main outcomes of interest are total ESG strengths, total ESG cons, and a total ESG score. The total ESG strengths (cons) variable is created by adding the total number of strengths (cons) within each of the six categories, standardizing them, adding up all of the standardized scores for each category, and then standardizing the final result. The total ESG score is created by taking subtracting the total ESG cons from the total ESG strengths and then standardizing the result. For each category, except Employee Relations, I included all possible individual ESG ratings that were available for the entire period of 1999-2008. For the Employee Relations category I did not include "Employee Involvement" in the strengths or "Retirement Benefits Concern" in the cons. The "Employee Involvement" rating takes into account stock ownership so having an ESOP will make this rating higher by definition. Also forms of employee ownership are forms of pension plans so they will have a direct impact on the "Retirement Benefits Concern". Specific details on the construction of the ESOP measures and outcome variables are included in Appendix A.1.

3.2 Empirical Strategy

In order to examine the effect of ESOPs on ESG scores and firm performance I run OLS regressions. The main OLS regression that I run is

$$\text{Outcome}_{it} = \beta_0 + \beta_1 \cdot \text{ESOP}_{it} + X_{it}\Gamma + \alpha_t + \alpha_i + \varepsilon_{it}$$

where Outcome_{it} is a firm performance outcome (log sales, ROA, Tobin's Q) or an ESG outcome (Total ESG Strengths, Total ESG Cons, or Total ESG) of firm i in year t. ESOP_{it} is one of three ESOP measurement (a dummy for having an ESOP, ESOP assets per participant, or ESOP participants per employee). X_{it} is a vector of firm, year level controls including the log number of employees, log total assets, and an indicator for if there is a collectively bargained employee benefit plan (to control for union status). The α_t are year fixed effects and the α_i are firm fixed effects. When examining the firm performance outcomes I

run the regression on the Full sample and when examining the ESG score outcomes I run the regression on the ESG sample.

It must be noted that the result of these regressions should not be interpreted as causal as there is most likely selection bias since firms choose whether or not they have an ESOP. Importantly I am unable to control for management; there is a possibility that management that implement ESOPs are also more cognisant of ESG scores and will also push to improve their ESG ratings in other ways. If this is the case then the OLS estimates for the ESG scores will be biased upwards. There could also be a similar story for firm performance as management that implements ESOPs might also be knowledgeable about other management practices that can increase firm performance and so the OLS estimates might be biased.

Following other papers that study the effect of ESOPs on firm performance I attempt to deal with this selection bias by matching firms with ESOPs to similar firms without ESOPs (Blasi et al., 2013; Stretcher et al., 2006). I use Coursened Exact Matching (CEM) on observable characteristics of firms; specifically, I match on log total assets, log employees, an indicator of a collectively bargained employee benefit plan, industry, state, and year. A table comparing the means of the matched and unmatched samples is included in Table 3.4. CEM works by matching firms with treatment to similar observations without treatment into strata. Overall this reduces imbalance of covariates between the treated and untreated groups (see Appendix A.4 for tables of covariate balance). Some argue that CEM is advantageous to other matching methods, such as propensity score matching (Iacus et al., 2008). I still report the OLS of the unmatched samples.

Table 3.4: Comparing Unmatched to Matched Samples

	Full	Matched Full	ESG	Matched ESG
ESOP	0.07	0.29	0.15	0.36
ESOP Assets per Participant (Ten Thousand)	0.14	0.55	0.35	0.92
ESOP Participants per Employee	0.05	0.21	0.12	0.28
Total Assets (Millions)	6207.91	8045.92	11926.33	11158.15
Number of Employees	6651.63	11930.97	14610.00	13017.76
Collective Bargaining	0.07	0.27	0.16	0.24
Agriculture, Forestry, Fishing	0.00	0.00	0.00	0.00
Mining	0.05	0.03	0.04	0.01
Construction	0.01	0.00	0.01	0.01
Manufacturing	0.36	0.64	0.39	0.44
Transportation, Communications, Utilities	0.09	0.05	0.09	0.04
Wholesale Trade	0.03	0.01	0.03	0.01
Retail Trade	0.05	0.05	0.07	0.03
Finance, Insurance, Real Estate	0.22	0.08	0.22	0.39
Services	0.18	0.12	0.15	0.07
Public Administration	0.02	0.00	0.00	0.00
Observations	144,074	7,381	15,952	1,891

Notes: Means for each of the variables are reported for different samples. ESOP Assets per Participant is winsorized at the 95th percentile. The matched samples are matched using CEM. The means for the matched sample are weighted using weights created from the CEM.

4 Results

4.1 Firm Performance Results

I first discuss the firm performance results. I examine three measures of firm performance: sales, ROA, and Tobin's Q. The first two measures are accounting based firm performance measures while Tobin's Q is a measure of market performance. The accounting based measures are measures of how a firm is doing in terms of actual sales and income in a given year which reflects short term performance. The market based performance measure is a measure of how much the firm is valued on the market compared to its total assets. If investors have a high market valuation for a firm this may reflect that a firm is expected to do well in the long term. The regression results for the Full unmatched sample are included in Table 4.1.

These initial results for firm performance are mixed. The ESOP measures are small

Table 4.1: Firm Performance Measures - Unmatched Full Sample

	Sales (Log) (1)	ROA (2)	Tobin's Q (3)
Panel A: ESOP			
ESOP	-0.020***	-0.003	0.041
	(0.006)	(0.005)	(0.034)
Observations	116576	121709	95886
R-squared	0.967	0.749	0.748
Panel B: ESOP Assets per Participant			
ESOP Assets per Participant (Ten Thousand)	-0.001	-0.002**	0.099***
	(0.002)	(0.001)	(0.009)
Observations	115568	120696	95394
R-squared	0.966	0.749	0.748
Panel C: ESOP Participants per Employee			
ESOP Participants per Employee	-0.002	-0.004	0.087**
	(0.008)	(0.006)	(0.040)
Observations	116576	121709	95886
R-squared	0.967	0.749	0.748

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each coefficient is a different regression. The regressions are run on the Full sample. Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee ownership plans.

and negative for accounting based performance measures, but Tobin's Q is positive and statistically significant for ESOP assets per participant and ESOP participants per employee. These results may be biased so I focus on the results from the matched sample.

The results from the matched sample are found in Table 4.2. All statistically significant results for the matched sample are positive. The ESOP dummy variable is not statistically significant for any of the firm performance outcomes. ESOP assets per participant is statistically significant and positive for ROA and Tobin's Q. The median ESOP assets per participant for firms with ESOPs in the sample is $1.08 in tens of thousands of dollars. The results then predict that the median firm with an ESOP will have an increase of 0.0097 in

Table 4.2: Firm Performance Measures - Matched Full sample

	Sales (Log) (1)	ROA (2)	Tobin's Q (3)
Panel A: ESOP			
ESOP	-0.014	-0.008	0.034
	(0.017)	(0.011)	(0.062)
Observations	7381	7381	7381
R-squared	0.993	0.639	0.796
Panel B: ESOP Assets per Participant			
ESOP Assets per Participant (Ten Thousand)	0.005	0.009***	0.134***
	(0.004)	(0.003)	(0.020)
Observations	7381	7381	7381
R-squared	0.993	0.640	0.800
Panel C: ESOP Participants per Employee			
ESOP Participants per Employee	0.046**	-0.008	0.096
	(0.020)	(0.015)	(0.069)
Observations	7381	7381	7381
R-squared	0.993	0.639	0.796

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each coefficient is a different regression. The regressions are run on the matched Full sample. Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee ownership plans.

ROA which is a 2.9% increase compared to the median ROA of 0.33 in the matched sample. Similarly this suggests an increase of 0.144 in Tobin's Q which is an increase of 10% compared to the median of 1.426. For ESOP participants per employee only the effect on sales is statistically significant. The median ESOP participants per employee for firms with ESOPs is 0.77 which means that sales are predicted to increase by 3.5%. Overall these are large increases in firm performance measures. Furthermore this suggests that just having an ESOP is not enough to increase firm performance; the channels of financial motivation and broadness of ESOP plan are needed to see increases.

To study the effect of ESOP assets per participant and ESOP particpants per employee

within firms with ESOPs I run regressions including both ESOP assets per participant and ESOP participants per employee on the matched sample restricted to the firms with ESOPs. The results of these regressions are in Appendix A.5. ESOP assets per participant and ESOP participants per employee are positive and significant for all firm performance measures, the only exception being ESOP participants per employee not being significant for ROA. This suggests that ESOPs are important on both financial and participation margins.

I also examine firm performance of ESOPs on the matched ESG sample. I use CEM to match observations in the ESG sample that are not missing any of the three firm performance measures. The results can be found in Appendix A.6. All results for the matched ESG sample are statistically insignificant. Since most of the firms in the ESG sample are larger firms, this may suggest that ESOPs have a larger effect on smaller firms. This will be examined more closely in the heterogeneity analysis.

Finally I look into the effect of ESOPs on some labor measures such as Labor to Capital Expenditures and labor share to income. The issue is that the CompuStat variable of total staff expense is missing for most observations. I examine firm performance and labor measures for the reduced sample of observations that are not missing this variable. Summary statistics of this labor sample can be found in Appendix A.3. In this labor sample 71% of observations are in the Finance, Insurance, and Real Estate industry whereas only 22% of the main sample are financial firms. The results of ESOPs on firm performance and labor measures are shown in Appendix A.7. Overall there are mixed results on both firm performance measures and labor measures. The table shows a general negative effect on sales and ROA. There is a statistically significant negative effect of ESOPs on capital expense for the ESOP dummy and ESOP participants per employee, but a statistically significant and positive effect for ESOP assets per participant. The effects of ESOPs on the labor to capital expense ratio, labor share, and labor expense are either statistically insignificant or very small and positive. There is no evidence that ESOPs decrease labor expense which is consistent with findings that ESOPs are not a substitute for wages but really are an added bonus (Kim

and Ouimet, 2010). I do CEM on this labor sample in the same way that I match for the full sample. All results of the matched labor sample are statistically insignificant. This may be partially due to the fact that there is a poor CEM match and so there are only eighty-six observations in the matched labor sample.

4.2 ESG Results

Next I examine the effect of ESOPs on ESG scores using the ESG sample. The regression results on the unmatched ESG sample are reported in Table 4.3. These results show a positive association between ESOPs and total ESG strengths that is statistically significant at the 10% level. All other coefficients are statistically insignificant.

Table 4.3: ESG Outcomes - Unmatched ESG Sample

	Total ESG Strengths (1)	Total ESG Cons (2)	Total ESG Score (3)
Panel A: ESOP			
ESOP	0.075*	0.005	0.061
	(0.042)	(0.040)	(0.048)
Observations	15705	15705	15705
R-squared	0.823	0.825	0.750
Panel B: ESOP Assets per Participant			
ESOP Assets per Participant (Ten Thousand)	0.008	-0.014	0.019
	(0.011)	(0.011)	(0.013)
Observations	15697	15697	15697
R-squared	0.823	0.826	0.750
Panel C: ESOP Participants per Employee			
ESOP Participants per Employee	-0.008	-0.058	0.044
	(0.045)	(0.046)	(0.055)
Observations	15705	15705	15705
R-squared	0.823	0.826	0.750

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each coefficient is a different regression. The regressions are run on the ESG sample. Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee benefit plans.

Now we look at the results for the CEM matched ESG sample which are included in

Table 4.4. The coefficients for almost all of the ESOP measures are pointing in the direction of being beneficial to ESG, but only the ESOP participants per employee is precise enough to be statistically significant at a 10% level. The median value of ESOP participants per employee among firms with ESOPs in this matched ESG sample is 0.86. Taken at face value this indicates that a firm with the median ESOP participants per employee has total ESG score of 0.279 standard deviations higher than the same firm with no ESOP participants per employee. This is essentially equivalent from moving from Coca-Cola in 2005 (Total ESG of -0.039) to Columbia Sportswear Co from 2003-2008 (Total ESG of 0.247). In 2005 Coca-Cola's Mexican unit, Coca-Cola Export Corporation, was fined $68 million dollars for unfair commercial practices.[7] Columbia Sportswear Co remained out of controversy during that period.

I additionally look include both ESOP assets per participant and ESOP participants per employee together in a single regression on just the firms with ESOPs from the matched ESG sample. The results are shown in Appendix A.5. The only statistically significant effect is ESOP participants per employee having a negative effect on total ESG cons which is consistent with the matched results. This suggests that how broadness of the ESOP is important for ESG while the financial assets of the ESOP are not.

Now to examine the effect of ESOPs on the individual categories that comprise the total ESG scores. The results for the unmatched ESG sample are included in Appendix A.8. The regressions for the unmatched ESG sample indicate that there are positive and statistically significant effects for diversity strengths and environmental strengths. As well as negative and statistically significant effects for corporate governance and product concerns. However, there are also positive and statistically significant effects of ESOP measures on the employee relations concerns category. It is important to remember that I did not include the "Retirement Benefits" concern in this category. It might be the case that there is a tradeoff between focusing on retirement benefits in the form of ESOPs vs. other employee relations.

[7] http://news.bbc.co.uk/2/hi/business/4445086.stm

Table 4.4: ESG Outcomes - Matched ESG Sample

	Total ESG Strengths (1)	Total ESG Cons (2)	Total ESG Score (3)
Panel A: ESOP			
ESOP	0.238	-0.070	0.269
	(0.183)	(0.157)	(0.188)
Observations	1891	1891	1891
R-squared	0.898	0.880	0.867
Panel B: ESOP Assets per Participant			
ESOP Assets per Participant (Ten Thousand)	-0.015	-0.019	0.004
	(0.027)	(0.021)	(0.029)
Observations	1891	1891	1891
R-squared	0.897	0.880	0.866
Panel C: ESOP Participants per Employee			
ESOP Participants per Employee	0.216	-0.154	0.324*
	(0.137)	(0.182)	(0.191)
Observations	1891	1891	1891
R-squared	0.897	0.880	0.867

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each coefficient is a different regression. The regressions are run on the matched ESG sample. Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee benefit plans.

Regression results for the matched ESG sample on individual ESG categories are shown in Tables 4.5 and 4.6. The only statistically significant result is the ESOP dummy on product strength which is only significant at the 10% level. The coefficients for the ESOP measures appear to point in the direction of being beneficial for ESG, but the coefficients are just too imprecise to be statistically significant.

Overall there is very little evidence that ESOPs have any net positive effect on ESG scores for all kinds of firms. Initial OLS shows a positive correlation, but the matched sample provides only a few statistically significant positive results. I will explore different types of firms in the heterogeneity analysis.

Table 4.5: Individual ESG Categories Part 1 - Matched ESG Sample

	Diversity Strength (1)	Diversity Cons (2)	Employee Strength (3)	Employee Con (4)	Env Strength (5)	Env Con (6)
Panel A: ESOP						
ESOP	0.134	0.047	0.085	-0.064	0.153	-0.156
	(0.132)	(0.105)	(0.267)	(0.150)	(0.135)	(0.211)
Observations	1891	1891	1891	1891	1891	1891
R-squared	0.917	0.809	0.778	0.776	0.871	0.915
Panel B: ESOP Assets per Participant						
ESOP Assets per Participant (Ten Thousand)	0.005	0.011	0.003	0.001	-0.029	-0.030
	(0.023)	(0.017)	(0.040)	(0.027)	(0.028)	(0.020)
Observations	1891	1891	1891	1891	1891	1891
R-squared	0.916	0.809	0.777	0.776	0.871	0.915
Panel C: ESOP Participants per Employee						
ESOP Participants per Employee	0.095	0.023	0.129	-0.096	0.168	-0.311
	(0.124)	(0.130)	(0.203)	(0.167)	(0.108)	(0.243)
Observations	1891	1891	1891	1891	1891	1891
R-squared	0.916	0.809	0.778	0.776	0.871	0.916

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each coefficient is a different regression. The regressions are run on the matched ESG sample. Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee benefit plans.

Table 4.6: Individual ESG Categories Part 2 - Matched ESG Sample

	CGov Strength (1)	CGov Con (2)	Community Strength (3)	Community Con (4)	Product Strength (5)	Product Con (6)
Panel A: ESOP						
ESOP	0.047	0.016	0.134	0.028	0.233*	-0.105
	(0.155)	(0.138)	(0.131)	(0.290)	(0.121)	(0.223)
Observations	1891	1891	1891	1891	1891	1891
R-squared	0.763	0.782	0.847	0.778	0.920	0.858
Panel B: ESOP Assets per Participant						
ESOP Assets per Participant (Ten Thousand)	0.018	-0.018	-0.043	-0.009	-0.003	-0.021
	(0.026)	(0.023)	(0.027)	(0.029)	(0.026)	(0.032)
Observations	1891	1891	1891	1891	1891	1891
R-squared	0.763	0.782	0.848	0.778	0.919	0.858
Panel C: ESOP Participants per Employee						
ESOP Participants per Employee	0.013	-0.182	0.136	-0.013	0.170	0.065
	(0.191)	(0.169)	(0.102)	(0.352)	(0.122)	(0.265)
Observations	1891	1891	1891	1891	1891	1891
R-squared	0.763	0.782	0.847	0.778	0.919	0.858

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each coefficient is a different regression. The regressions are run on the matched ESG sample. Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee benefit plans.

5 Heterogeneity

5.1 Firm Size Heterogeneity

This section analyzes the effect of ESOPs on different size firms. I create four groups of firm size based on the quartiles of the number of employee that a firm has. The first quartile contains firms with $0 - 77$ employees, the second quartile with $78 - 449$, the third quartile with $450 - 2910$, and the fourth quartile with 2911 or more employees. A comparison of means of the full sample by firm size is shown in Table 5.1. A comparison of the means of the ESG sample by firm size shown in Appendix A.9.

Table 5.1: Full Sample by Firm Size

	All	Q1	Q2	Q3	Q4
ESOP	0.07	0.01	0.05	0.07	0.17
ESOP Assets per Participant (Ten Thousand)	0.14	0.00	0.10	0.16	0.35
ESOP Participants per Employee	0.05	0.01	0.04	0.06	0.12
Sales (Millions)	2044.26	103.26	107.00	613.89	7826.97
Tobin's Q	3.29	6.13	2.41	1.90	1.79
ROA	-0.32	-1.05	-0.13	-0.01	0.03
Total Assets (Millions)	6207.91	444.39	609.35	2036.18	22860.93
Number of Employees	6651.63	23.36	214.55	1300.21	25071.75
Collective Bargaining	0.07	0.00	0.02	0.09	0.21
Agriculture, Forestry, Fishing	0.00	0.00	0.00	0.00	0.00
Mining	0.05	0.09	0.04	0.03	0.02
Construction	0.01	0.00	0.01	0.01	0.01
Manufacturing	0.36	0.38	0.36	0.35	0.36
Transportation, Communications, Utilities	0.09	0.05	0.05	0.13	0.12
Wholesale Trade	0.03	0.02	0.02	0.03	0.04
Retail Trade	0.05	0.01	0.02	0.04	0.13
Finance, Insurance, Real Estate	0.22	0.22	0.33	0.21	0.11
Services	0.18	0.15	0.17	0.19	0.18
Public Administration	0.02	0.05	0.01	0.00	0.01
Observations	14,4074	31,854	31,539	31,678	31,687

Notes: Means for each of the variables are reported for each firm size quartile. ESOP Assets per Participant and Tobin's Q are winsorized at the 5% level. ROA is winsorized at the 2.5th percentile and 97.5th percentile. Firms that have missing values of number of employees are not included in any of the quartiles.

For the matched results I used CEM within each size quartile sample to match firms

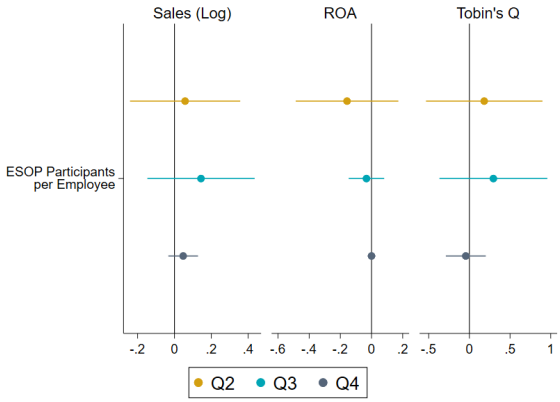
with ESOPs to similar firms without ESOPs. The matched firm performance and ESG score results are shown in Figures 1 and 2. The unmatched results are in Appendices A.10 and A.11.

Figure 1: Firm Performance by Size - Matched Full Sample

(a) ESOP

(b) ESOP Assets per Participant

(c) ESOP Participants per Employee



Notes: Each figure shows the plotted coefficients and 95% confidence interval. Size quartile 1 is not included due to lack of observations. Each coefficient is a different regression. The regressions are run on an size specific subsample of the Full sample that has been matched. Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee ownership plans.

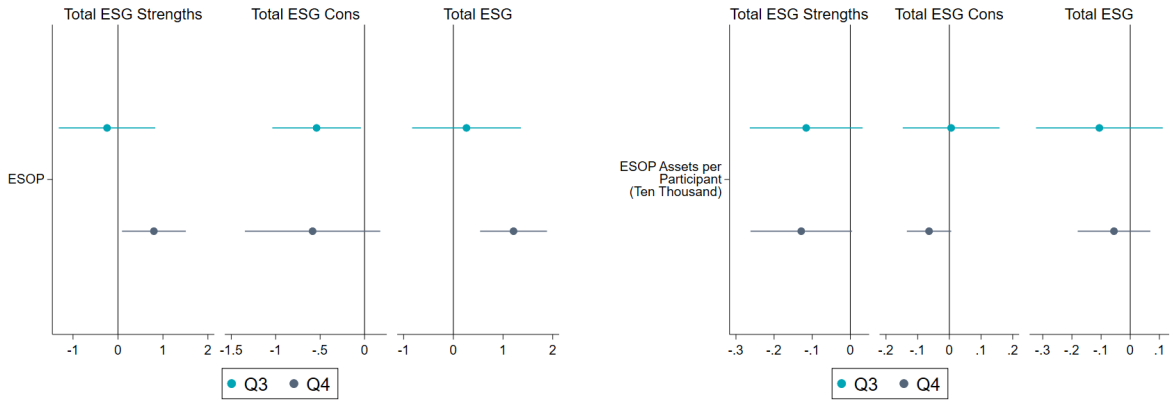
For the firm performance outcomes the firm size quartile 1 is not included due to a lack of observations. Very few companies in the bottom quartile of firm size have ESOPs. This makes sense because it is not worth the time and effort to set up an ESOP for a small number of employees. The results show no statistically significant effects of any ESOP measure on

sales and ROA. ESOP assets per participant has a statistically significant positive effect on Tobin's Q for firms in the second and fourth firm size quartiles. The coefficient for the third size quartile is positive, but statistically insignificant. However, ROA is positive and significant for the third size quartile. In the unmatched sample Tobin's Q is positive, but decreasing by firm size quartile for ESOP assets for participant. This is somewhat consistent with the matched sample results, except for the Tobin's Q being statistically insignificant for size quartile 3.

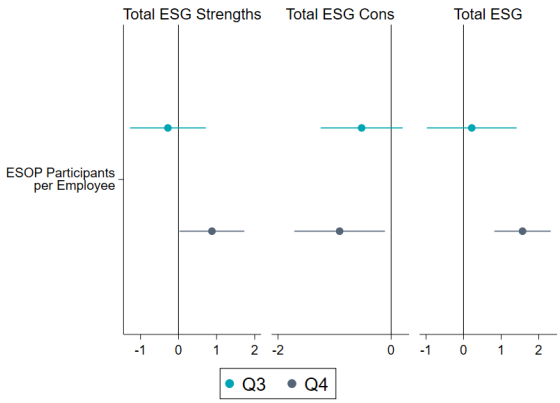
Figure 2: ESG by Size - Matched ESG Sample

(a) ESOP

(b) ESOP Assets per Participant



(c) ESOP Participants per Employee



Notes: Each figure shows the plotted coefficients and 95% confidence interval. Size quartiles 1 and 2 are not included due to a lack of observations. Each coefficient is a different regression. The regressions are run on an size specific subsample of the ESG sample that has been matched. Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee ownership plans.

For the matched ESG scores only the third and fourth size quartiles are reported as most of the firms in the ESG sample are large firms. There is no statistically significant effect of ESOP assets per participant on ESG scores for firms in the third or fourth quartile. The ESOP dummy variable and ESOP participants per employee both have positive and statistically significant effects on total ESG strengths and total ESG score for firms in the fourth size quartile. There is no statistically significant effect of ESOP measures for the third size quartile. These results are generally consistent with the results of the unmatched industry heterogeneity which also find larger effects of ESOP measures on ESG outcomes for larger firms. This may seem somewhat counter intuitive since it would be expected that ESOPs would have a larger effect in smaller firms since each individual employee would be able to make a larger relative impact on the company. It could however be the case that smaller firms do not have the ability to focus on ESG scores, and instead are using ESOPs just for firm performance. Perhaps some types of ESG activities that are most complimentary with employee engagement require significant resources that smaller firms do not have. Appendix A.12 includes results of the matched size 4 quartile ESG sample on individual ESG strengths and weaknesses. For the ESOP dummy variable the corporate governance and product con categories are negative while the diversity strength is positive. For the ESOP participants per employee the product con is negative and the employee strength is category is positive.

5.2 Industry Heterogeneity

This section explores the effect of ESOPs on ESG and firm performance within industries. I break the industries into four different categories: Finance & Services, Manufacturing, Wholesale & Retail Trade (Trades), and Transportation & Construction (C-Tran). Table 5.2 gives a comparison of means between these industry categories for the full sample. A comparison for the ESG sample is available in Appendix A.13.

I do CEM within each of the four industry categories for both the ESG and full samples

Table 5.2: Full Sample by Industry

	Full	Fin-Serv	Manu.	Trades	C-Tran
ESOP	0.07	0.08	0.06	0.06	0.10
ESOP Assets per Participant (Ten Thousand)	0.14	0.14	0.13	0.07	0.30
ESOP Participants per Employee	0.05	0.06	0.04	0.04	0.09
Sales (Millions)	2044.26	1353.41	1835.15	5041.56	3366.05
Tobin's Q	3.29	3.28	3.49	2.35	2.29
ROA	-0.32	-0.23	-0.44	-0.13	-0.14
Total Assets (Millions)	6207.91	10635.73	2193.45	2415.63	7521.79
Number of Employees	6651.63	4798.21	5037.97	23222.33	8837.78
Collective Bargaining	0.07	0.01	0.12	0.06	0.19
Agriculture, Forestry, Fishing	0.00	0.00	0.00	0.00	0.00
Mining	0.05	0.00	0.00	0.00	0.00
Construction	0.01	0.00	0.00	0.00	0.09
Manufacturing	0.36	0.00	1.00	0.00	0.00
Transportation, Communications, Utilities	0.09	0.00	0.00	0.00	0.91
Wholesale Trade	0.03	0.00	0.00	0.36	0.00
Retail Trade	0.05	0.00	0.00	0.64	0.00
Finance, Insurance, Real Estate	0.22	0.55	0.00	0.00	0.00
Services	0.18	0.45	0.00	0.00	0.00
Public Administration	0.02	0.00	0.00	0.00	0.00
Observations	144,074	56,634	51,892	11,299	14,200

Notes: Means for each of the variables are reported. ESOP Assets per Participant and Tobin's Q are winsorized at the 95th percentile. ROA is winsorized at the 2.5th and 97.5th percentiles.

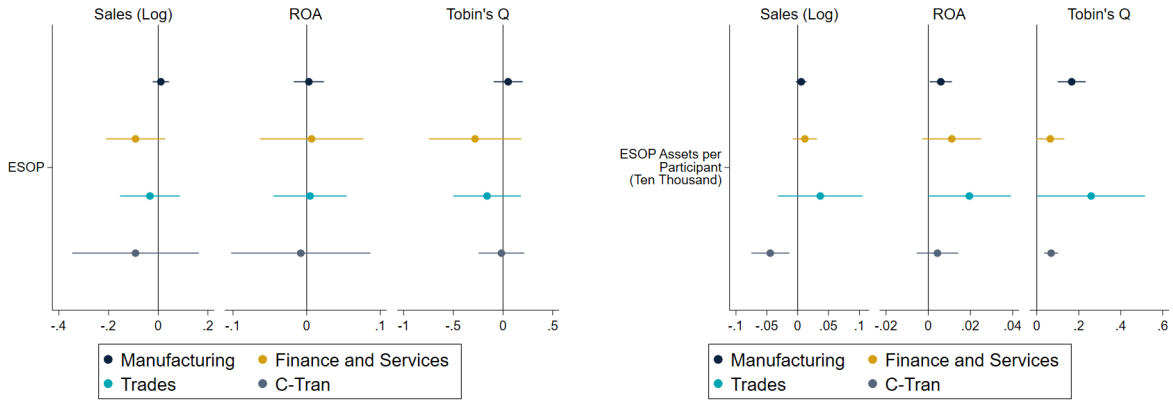
to match firms with ESOPs to similar firms without ESOPs within each industry. Results for the effect of ESOP measures on firm performance and ESG scores are shown in Figures 3 and 4, respectively. The results for the unmatched samples are included in Appendices A.14 and A.15.

For the firm performance outcomes there is more evidence that ESOP assets per participant has a positive effect on Tobin's Q as there are positive effects for all industry categories. Interestingly ESOP assets per participant has a negative effect on sales for firms in the construction and transportation industries. For firms in this matched transportation & construction sample the median ESOP assets per participant is \$3.02 in tens of thousands of dollars. Given that the sales estimate is -0.05 this means that the median with an ESOP is predicted to have approximately 15% fewer sales than a firm with no ESOP. This

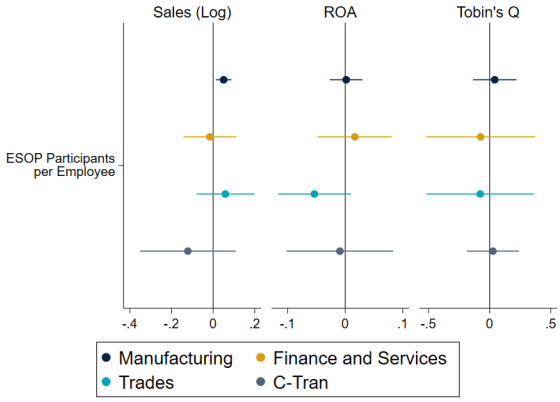
Figure 3: Firm Performance by Industry - Matched Full Sample

(a) ESOP

(b) ESOP Assets per Participant



(c) ESOP Participants per Employee



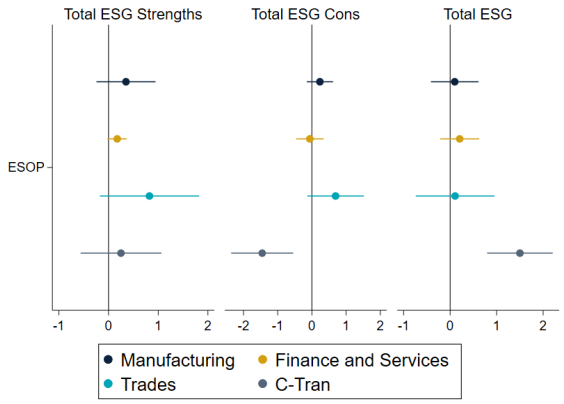
Notes: Each figure shows the plotted coefficients and 95% confidence interval. Each coefficient is a different regression. The regressions are run on an industry specific subsample of the Full sample that has been matched. Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee ownership plans.

is clearly a very large decrease in predicted sales. The ESOP dummy variable and ESOP participants per employee do not have almost any statistically significant effects on any of the firm performance measures. The exception is that ESOP participants per employee has a small positive effect on sales for manufacturing firms.

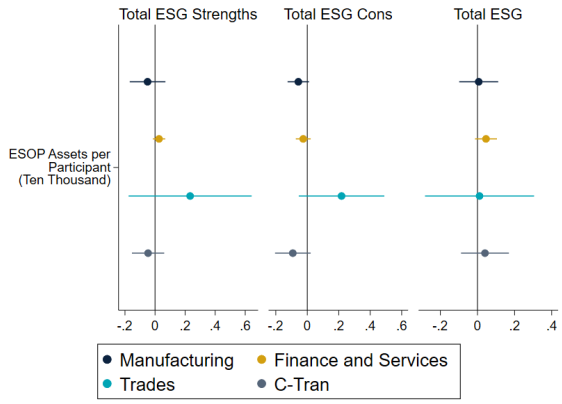
For ESG scores the results show that there is no statistically significant effect of ESOPs on ESG except for the transportation and construction industries. This is fairly consistent with the results of the unmatched sample with the exception being that there was a negative

Figure 4: ESG by Industry - Matched ESG Sample

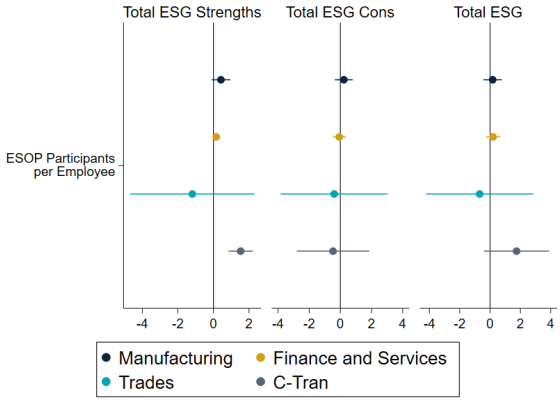
(a) ESOP



(b) ESOP Assets per Participant



(c) ESOP Participants per Employee



Notes: Each figure shows the plotted coefficients and 95% confidence interval. Each coefficient is a different regression. The regressions are run on industry specific subsample of the ESG sample that has been matched. Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee ownership plans.

effect of ESOPs on ESG for trades. For the matched sample the ESOP dummy variable is a very large 1.5 standard deviations for the total ESG score. This is driven by the reduction of ESG concerns as the ESOP dummy variable is large and negative for Total ESG cons. ESOP participants per employee has a statistically significant positive effect on Total ESG strengths, but the Total ESG score is not statistically significant. Appendix A.16 shows results for regressions of the matched transportation and construction ESG sample on individual ESG strengths and cons. Employee, environmental, and product con categories

are all negative while community strengths are positive. There are a few reasons ESOPs may have a different effect in transportation and construction industries. Individual employees may have more power in these industries as shown by the fact that these industries are more likely to have unions (as proxied by having collectively bargained employee benefit plans). There might also be more room for employees to have a say over certain types of ESG such as environmental measures that target reductions in waste per employee.

6 Robustness

6.1 Propensity Score Matching

As a first robustness check I match firms using propensity score matching instead of CEM. Many argue that CEM is better than propensity score matching, but some papers studying ESG still use propensity score matching (see Abeysekera and Fernando (2020)). Propensity score matching works by running a logit regression of each of the variables on the ESOP dummy variable. It then uses the probability scores from each of these variables to create propensity scores for each observation. Finally observations with ESOPs are matched to another observation that has the closest propensity score and does not have an ESOP. I run propensity score matching for both the ESG and full samples. I match on the same variables as I did in the CEM matching: log total assets, log employees, an indicator of a collectively bargained employee benefit plan, industry, state, and year. A table comparing the CEM matched samples to the propensity score matched samples is include in Appendix A.17 and tables showing the covariate balances of the propensity scored samples are included in Appendix A.18. The propensity score matching did result in balanced covariates, but there are differences between the CEM matched and propensity score matched samples. The biggest difference is that there are more observations in the propensity score matched samples which indicates that the matching was not as strict as CEM. Additionally he propensity score

matched observations are much larger in terms of both employees and total assets as well as have a smaller share of manufacturing firms and a larger share of transportation firms.

Results of ESOP measures on firm performance are included in Table 6.1. The ESOP dummy variable is positive and statistically significant at the 10% level for ROA, but is statistically significant and negative for Tobin's Q. ESOP assets per participant are once again positive and significant for Tobin's Q. ESOP participants per employee is positive for sales but insignificant for the other firm performance measures.

Table 6.1: Firm Performance -Propensity Score Matched Full Sample

	Sales (Log) (1)	ROA (2)	Tobin's Q (3)
Panel A: ESOP			
ESOP	-0.012	0.007*	-0.084**
	(0.010)	(0.004)	(0.036)
Observations	10814	10814	10814
R-squared	0.994	0.699	0.798
Panel B: ESOP Assets per Participant			
ESOP Assets per Participant (Ten Thousand)	0.004	0.007***	0.083***
	(0.002)	(0.001)	(0.010)
Observations	10814	10814	10814
R-squared	0.994	0.700	0.802
Panel C: ESOP Participants per Employee			
ESOP Participants per Employee	0.024**	0.007	-0.034
	(0.012)	(0.005)	(0.036)
Observations	10814	10814	10814
R-squared	0.994	0.699	0.798

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each coefficient is a different regression. Regressions are run on a propensity score matched full sample. Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee benefit plans.

Results of ESOP measures on ESG scores are included in Table 6.2. The propensity score matching finds statistically significant and positive effects of all three ESOP measures

on total ESG score. This is interesting since the CEM matched sample only found one result that was statistically significant. This could be partially due to there being a higher share of transportation firms in the propensity matched samples as the heterogeneity analysis found there were larger effects of ESOPs on ESG in construction and transportation firms.

Table 6.2: ESG Outcomes - Propensity Score Matched ESG Sample

	Total ESG Strengths (1)	Total ESG Cons (2)	Total ESG Score (3)
Panel A: ESOP			
ESOP	0.182***	-0.146***	0.288***
	(0.064)	(0.056)	(0.072)
Observations	4730	4730	4730
R-squared	0.872	0.883	0.795
Panel B: ESOP Assets per Participant			
ESOP Assets per Participant (Ten Thousand)	0.027*	-0.023**	0.044***
	(0.014)	(0.011)	(0.016)
Observations	4730	4730	4730
R-squared	0.871	0.883	0.794
Panel C: ESOP Participants per Employee			
ESOP Participants per Employee	0.050	-0.206***	0.226***
	(0.067)	(0.065)	(0.079)
Observations	4730	4730	4730
R-squared	0.871	0.883	0.794

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each coefficient is a different regression. Regressions are run on a propensity score matched ESG sample Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee benefit plans.

Overall these results are quite different than the CEM matching results, especially for the ESG score. This may be due to the fact that propensity score matching may match different firms from each other. There is no real guarantee that the firms that are matched together using propensity score matching are similar as firms that are quite different from each other might have similar propensity scores.

6.2 Alternate Specifications

As additional robustness checks I look at some regressions with alternate specifications. First I add controls for industry specific time trends, Industry*t and Industry*t^2 where t is the year, to the regression on the matched samples. The results can be found in Appendices A.19 and A.20. The results are very similar to the matched results without the industry time trends.

As another robustness check I try CEM matching on state divisions instead of exactly by state. There might be some concern that matching exactly on state is too strict and might be dropping too many observations. Matching on state divisions relaxes the geographic cutoff. I break states into nine state divisions based off of the U.S. Census State divisions. I do CEM matching on these state divisions instead of exact state for both the ESG and full sample. The results for firm performance and ESG scores can be found in Appendices A.21 and A.22. None of the ESOP measures are statistically significant for any of the ESG measures. The firm performance measures are mostly unchanged.

As a final robustness check I examine the firm performance measures for 1999-2009 and 2009-2019 separately. I use CEM to match for firm performance on each of time frames. The results can be found in Appendices A.23 and A.24. The 1999-2009 sample has small and/or statistically insignificant results for sales and ROA. The Tobin's Q results are all statistically significant, but are mixed. ESOP Assets per participant is positive as has been the usual case; however, the ESOP dummy variable and ESOP participants per employee are negative. In the 2010-2019 sample Tobin's Q is positive for all ESOP measures. Sales and ROA are mostly small and/or statistically significant for the ESOP measures. All effects of ESOPs from 2010-2019 appear to be beneficial to firms. Potentially this could be due the decline in the number of ESOPs; perhaps only the ones that firms deem to be effective are the ones that remain. Still this would suggest that ESOPs can increase firm performance, but they may not be the right fit for every company or need to be implemented properly.

7 Conclusion

I studied the effects of three ESOP measures on firm performance and ESG. The effect of ESOPs on firm performance measures were generally positive. The effect on Tobin's Q, a market based measure, was particularly robust for ESOP assets per employee. This could be explained by employees with more company stock attempting to increase company value from ways other than just traditional firm performance, or it could just be that investors believe ESOPs with a large amount of money per participant to be signs that a firm has a long term value.

For the effects on ESG there is little evidence of there being any net increase in ESG for all firms. However, there is evidence of increases in ESG for firms in the transportation and construction industries and for large firms. More research is needed to understand exactly why this is the case. It may seem counterintuitive that large firms see larger increases in ESG from ESOPs since each individual employee would be more likely to have a larger impact in smaller firms. Perhaps only the largest firms are able to implement bold ESG strategies in which the incentives of an ESOP would benefit them the most. For the construction and transportation industries it may be the case that individual employees have more individual power than other industries. Additionally the channel through which ESOPs affect ESG seems to be through the ESOP dummy variable and ESOP participants per employee. This suggests that employees are motivated to increase ESG by a broad identification to their company and not just a financial incentive.

Overall I find mostly beneficial effects of ESOPs on firm performance and ESG. These positive effects stand contrary to the recent decline in the number of ESOPs in publicly traded companies. Perhaps the increases in firm performance and ESG are not worth the costs to firms. Perhaps not all firms are able to effectively implement ESOPs. More research needs to be done to explain this trend.

There are a few important limitations of this paper. The biggest issue is trying to

address whether the effects of ESOPs are just correlations or are actually causal. I used matching to reduce selection bias as well as use a variety of robustness checks; however, future studies would benefit from a stronger identification strategy. Perhaps recent state activities promoting employee ownership could provide a natural experiment. Another limitation is that the ESG data is only from 1999-2008. ESG has become much more popular over the last decade and my analysis does not cover this period. A final limitation of firm performance is that I only study publicly traded companies. ESOPs may have a different effect on firm performance measures in privately held companies.

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A Appendix

A.1 Variable Construction

ESOP Measures

- ESOP: Dummy variable if firm listed codes 2O (ESOP other than leveraged ESOP) or 2P (Leveraged ESOP) under the Pension Benefits code in the Form 5500.
- ESOP Assets Per Participant: Value of employer securities at the end of year divided by the number of plan participants at the end of year.
- ESOP Participants per Employee: Number of plan participants at the end of year divided by the total number of employees reported in CompuStat.

Firm Performance and Labor Variables

- Sales: CompuStat variable SALE
- ROA (Return on Assets): Net Income divided by total assets. In CompuStat, NI divided by AT
- Tobin's Q: Ratio of the market value of the firm divided by the replacement cost of the assets. This is calculated by $\frac{\text{Total Assets+Market Equity−Book Equity}}{\text{Total Assets}}$ where Market Equity = PRCC_C ×CSHO, Book Equity = SEQ + TXDB + ITCB − Prefered Stock, and Prefered Stock = coalesce$(PSTKRV, PSTKL, PSTK)$.
  - PRCC_C is the stock price at the calendar year end
  - CSHO is common shares outstanding
  - SEQ is shareholder equity
  - TXDC is deferred taxes
  - ITCB is Investment Tax Credit
  - PSTKRV is Preferred stock - redemption value
  - PSTKRV is Preferred stock - liquidating value
  - PSTKRV is Preferred stock - carrying value
- Labor Expense: This is total staff expense minus pension costs if pension costs are non-missing. In CompuStat XLR-XPR.
- Labor to Capital Expense: Labor Expense divided by Capital Expenditures (CAPX)
- Labor Share: Labor Expense divided by Sales

ESG Variables

- Diversity Strength: CEO, Promotion, Board of Directors, Work-Life Benefits, Women and Minority Contracting, Employment of the Disabled, and Other Strengths
- Diversity Con: Workforce Diversity, Non-Representation, Other Concerns
- Employee Strength: Union Relations, Cash Profit Sharing, and Employee Relations Other Strength
- Employee Con: Union Relations, Employee Health & Safety, Workforce Reductions, and Labor-Management Relations
- Environmental Strength: Environmental Opportunities, Waste Management, Packaging Materials & Waste, Climate Change, Other Strengths
- Environmental Con: Hazardous Waste, Regulatory Compliance, Ozone Depleting, Toxic Spills & Releases, Agriculture Chemicals, Climate Change, Other Concerns
- Corporate Governance Pro: Limited Compensation, Ownership Strength, Reporting Quality, and Other Strengths
- Corporate Governance Con: High Compensation, Ownership Concern, and Other Concerns
- Community Pro: Charitable Giving, Innovative Giving, Support for Housing, Support for Education, Non-US Charitable Giving, and Other Strengths
- Community Con: Investment Controversies, Community Impact, Tax Disputes, and Other Concerns
- Product Pro: Quality, R+D, Innovation, Social Opportunities, Other Strengths
- Product Con: Product Quality & Safety, Marketing & Advertising, Anti-competitive Practices, Other Concerns
- Total ESG Strength: Standardize each of the strength categories, add them together, and then standardize
- Total ESG Cons: Standardize each of the con categories, add them together, and then standardize
- Total ESG: Total ESG Strengths minus Total ESG Cons and then standardize

A.2 Form 5500 Example

Form 5500

Department of the Treasury
Internal Revenue Service

Department of Labor
Employee Benefits Security Administration

Pension Benefit Guaranty Corporation

Annual Return/Report of Employee Benefit Plan

This form is required to be filed for employee benefit plans under sections 104 and 4065 of the Employee Retirement Income Security Act of 1974 (ERISA) and sections 6057(b) and 6058(a) of the Internal Revenue Code (the Code).

▶ **Complete all entries in accordance with the instructions to the Form 5500.**

OMB Nos. 1210-0110
1210-0089

2017

This Form is Open to Public Inspection

Part I Annual Report Identification Information

For calendar plan year 2017 or fiscal plan year beginning 01/01/2017 and ending 12/31/2017

A This return/report is for:
- ☐ a multiemployer plan
- ☐ a multiple-employer plan (Filers checking this box must attach a list of participating employer information in accordance with the form instructions.)
- ☒ a single-employer plan
- ☐ a DFE (specify) ___

B This return/report is:
- ☐ the first return/report
- ☐ the final return/report
- ☐ an amended return/report
- ☐ a short plan year return/report (less than 12 months)

C If the plan is a collectively-bargained plan, check here. . . . . ▶ ☐

D Check box if filing under:
- ☐ Form 5558
- ☐ automatic extension
- ☐ the DFVC program
- ☐ special extension (enter description)

Part II Basic Plan Information—enter all requested information

1a Name of plan
MICROSOFT CORPORATION SAVINGS PLUS 401(K) PLAN

1b Three-digit plan number (PN) ▶ 001

1c Effective date of plan 01/01/1987

2a Plan sponsor's name (employer, if for a single-employer plan)
Mailing address (include room, apt., suite no. and street, or P.O. Box)
City or town, state or province, country, and ZIP or foreign postal code (if foreign, see instructions)
MICROSOFT CORPORATION

ONE MICROSOFT WAY
REDMOND, WA 90852-6399

2b Employer Identification Number (EIN) 91-1144442

2c Plan Sponsor's telephone number 425-882-8080

2d Business code (see instructions) 511210

Caution: A penalty for the late or incomplete filing of this return/report will be assessed unless reasonable cause is established.

Under penalties of perjury and other penalties set forth in the instructions, I declare that I have examined this return/report, including accompanying schedules, statements and attachments, as well as the electronic version of this return/report, and to the best of my knowledge and belief, it is true, correct, and complete.

SIGN HERE	Filed with authorized/valid electronic signature.	07/24/2018	DANIEL GOFF
	Signature of plan administrator	Date	Enter name of individual signing as plan administrator
SIGN HERE	Filed with authorized/valid electronic signature.	07/24/2018	FRED THIELE
	Signature of employer/plan sponsor	Date	Enter name of individual signing as employer or plan sponsor
SIGN HERE			
	Signature of DFE	Date	Enter name of individual signing as DFE

For Paperwork Reduction Act Notice, see the Instructions for Form 5500. **Form 5500 (2017) v. 170203**

Notes: This is the first page of a 2017 Form 5500 for a Microsoft employee benefit plan. This particular plan has an ESOP component. Firms with employee benefit plans, including ESOPs and other plans with employee ownership, are required to fill out the Form 5500 annually. Financial information of the plans are reported in either schedule H or schedule I.

A.3 Comparing Means of Different Samples

	Full	ESG	Labor
Total Assets (Millions)	6207.91	11926.33	15946.23
Number of Employees	6651.63	14610.00	7308.85
Collective Bargaining	0.03	0.06	0.01
ESOP	0.07	0.15	0.13
ESOP Assets (Thousands)	150.66	361.96	275.74
ESOP Participants	33.28	85.58	52.32
Agriculture, Forestry, Fishing	0.00	0.00	0.00
Mining	0.05	0.04	0.02
Construction	0.01	0.01	0.00
Manufacturing	0.36	0.39	0.07
Transportation, Communications, Utilities	0.09	0.09	0.06
Wholesale Trade	0.03	0.03	0.01
Retail Trade	0.05	0.07	0.04
Finance, Insurance, Real Estate	0.22	0.22	0.71
Services	0.18	0.15	0.09
Public Administration	0.02	0.00	0.01
Observations	14,4074	15,952	26,460

Notes: Means for each of the variables are reported. ESOP Assets and ESOP participants are winsorized at the 5% level. The Full Sample refers to the entire 1999-2019 CompuStat-Form 5500 merged data set. The ESG sample refers to the 1999-2008 Compustat-Form 5500-MSCI KLD ESG Stats merged data set. The Labor sample refers to the Full Sample restricted to observations that contain non-missing values of Labor Expense.

A.4 CEM Matching Covariate Balance

CEM Matched Full Sample

	No ESOPs	ESOPs	Difference
Total Assets (Log)	6.93	6.94	0.0096
			(0.058)
Employees (Log)	8.11	8.13	0.019
			(0.049)
Collective Bargaining	0.27	0.27	7.5e-18
			(0.013)
Observations	5,262	2,119	7,381

CEM Matched ESG Sample

	No ESOPs	ESOPs	Difference
Total Assets (Log)	7.91	7.92	0.0088
			(0.077)
Employees (Log)	8.16	8.20	0.040
			(0.083)
Collective Bargaining	0.24	0.24	-1.5e-16
			(0.023)
Observations	1,207	684	1,891

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each mean and difference is weighted by CEM matching weight.

A.5 Multiple ESOP measures - Matched Samples with ESOPs

Firm Performance - Matched Full Sample

	Sales (Log) (1)	ROA (2)	Tobin's Q (3)
ESOP Assets per Participant (Ten Thousand)	0.010**	0.013***	0.187***
	(0.004)	(0.004)	(0.023)
ESOP Participants per Employee	0.232***	0.025	0.556***
	(0.037)	(0.029)	(0.138)
Observations	2119	2119	2119
R-squared	0.994	0.438	0.826

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each column is a different regression. Regressions are run on the matched Full sample restricted to observations that have ESOPs. Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee benefit plans.

ESG Outcomes - Matched ESG Sample

	Total ESG Strengths (1)	Total ESG Cons (2)	Total ESG Score (3)
ESOP Assets per Participant (Ten Thousand)	-0.039	-0.029	-0.008
	(0.026)	(0.021)	(0.030)
ESOP Participants per Employee	-0.112	-0.604**	0.436
	(0.297)	(0.236)	(0.360)
Observations	684	684	684
R-squared	0.913	0.908	0.864

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each column is a different regression. Regressions are run on the matched ESG sample restricted to observations that have ESOPs. Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee benefit plans.

A.6 Firm Performance - Matched ESG Sample

	Sales (Log)	ROA	Tobin's Q
	(1)	(2)	(3)
Panel A: ESOP			
ESOP	-0.018	-0.001	-0.101
	(0.032)	(0.013)	(0.182)
Observations	1049	1049	1049
R-squared	0.996	0.788	0.935
Panel B: ESOP Assets per Participant			
ESOP Assets per Participant (Ten Thousand)	0.001	0.002	0.040
	(0.007)	(0.002)	(0.033)
Observations	1049	1049	1049
R-squared	0.996	0.789	0.936
Panel C: ESOP Participants per Employee			
ESOP Participants per Employee	-0.014	-0.000	-0.043
	(0.043)	(0.018)	(0.218)
Observations	1049	1049	1049
R-squared	0.996	0.788	0.935

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each coefficient is a different regression. Regressions are run on the Full sample. Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee benefit plans.

A.7 Labor Sample Results

Unmatched Labor Sample

	Sales (Log) (1)	ROA (2)	Tobin's Q (3)	L-K expense (4)	Labor Share (5)	Labor (Log) (6)	Capital (Log) (7)
Panel A: ESOP							
ESOP	-0.023***	-0.014***	0.001	0.154	0.003	-0.001	-0.082**
	(0.008)	(0.005)	(0.074)	(0.689)	(0.003)	(0.008)	(0.036)
Observations	22349	22903	8903	17866	22349	22832	17866
R-squared	0.983	0.832	0.826	0.597	0.820	0.986	0.925
Panel B: ESOP Assets per Participant							
ESOP Assets per Participant (Ten Thousand)	-0.001	-0.001	0.035	-0.259	-0.000	0.002	0.033***
	(0.002)	(0.001)	(0.024)	(0.171)	(0.001)	(0.002)	(0.010)
Observations	21833	22387	8856	17601	21833	22317	17601
R-squared	0.983	0.832	0.826	0.598	0.819	0.986	0.924
Panel C: ESOP Participants per Employee							
ESOP Participants per Employee	-0.016*	-0.017***	0.047	0.587	0.006*	0.029***	-0.106***
	(0.009)	(0.006)	(0.084)	(0.772)	(0.003)	(0.009)	(0.041)
Observations	22349	22903	8903	17866	22349	22832	17866
R-squared	0.983	0.832	0.826	0.597	0.820	0.986	0.925

Matched Labor Sample

	Sales (Log) (1)	ROA (2)	Tobin's Q (3)	L-K expense (4)	Labor Share (5)	Labor (Log) (6)	Capital (Log) (7)
Panel A: ESOP							
ESOP	-0.073	-0.006	0.560	14.735	-0.019	-0.134	-0.515
	(0.118)	(0.047)	(0.595)	(14.598)	(0.043)	(0.109)	(0.654)
Observations	86	86	86	77	86	86	77
R-squared	0.998	0.591	0.786	0.898	0.943	0.998	0.974
Panel B: ESOP Assets per Participant							
ESOP Assets per Participant (Ten Thousand)	0.002	0.007	0.114	0.934	-0.028	-0.035	-0.031
	(0.020)	(0.010)	(0.123)	(2.349)	(0.017)	(0.023)	(0.089)
Observations	86	86	86	77	86	86	77
R-squared	0.998	0.593	0.789	0.894	0.952	0.998	0.974
Panel C: ESOP Participants per Employee							
ESOP Participants per Employee	-0.021	0.046	1.359	22.887	-0.011	-0.079	-1.447
	(0.131)	(0.067)	(0.836)	(15.796)	(0.046)	(0.128)	(1.016)
Observations	86	86	86	77	86	86	77
R-squared	0.998	0.593	0.805	0.903	0.943	0.998	0.978

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each coefficient is a different regression. Labor sample refers to observations in full sample with non missing total staff expense (CompuStat variable XLR). Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee benefit plans.

A.8 Individual ESG Categories - Unmatched ESG Sample

Part 1

	Diversity Strength	Diversity Cons	Employee Strength	Employee Con	Env Strength	Env Con
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: ESOP						
ESOP	0.072*	0.014	-0.079	0.078*	0.133**	0.039
	(0.039)	(0.040)	(0.055)	(0.043)	(0.053)	(0.040)
Observations	15705	15705	15705	15705	15705	15705
R-squared	0.844	0.701	0.712	0.673	0.713	0.881
Panel B: ESOP Assets per Participant						
ESOP Assets per Participant (Ten Thousand)	0.022**	0.004	0.011	0.023**	-0.015	-0.005
	(0.011)	(0.009)	(0.013)	(0.011)	(0.014)	(0.011)
Observations	15697	15697	15697	15697	15697	15697
R-squared	0.844	0.701	0.711	0.673	0.712	0.881
Panel C: ESOP Participants per Employee						
ESOP Participants per Employee	0.042	-0.002	-0.074	0.010	0.047	0.049
	(0.043)	(0.048)	(0.063)	(0.050)	(0.054)	(0.045)
Observations	15705	15705	15705	15705	15705	15705
R-squared	0.844	0.701	0.712	0.673	0.712	0.881

Part 2

	CGov Strength	CGov Con	Community Strength	Community Con	Product Strength	Product Con
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: ESOP						
ESOP	0.066	-0.073	0.028	0.074	0.028	-0.117**
	(0.049)	(0.050)	(0.049)	(0.060)	(0.046)	(0.052)
Observations	15705	15705	15705	15705	15705	15705
R-squared	0.626	0.636	0.787	0.700	0.771	0.815
Panel B: ESOP Assets per Participant						
ESOP Assets per Participant (Ten Thousand)	0.022	-0.033***	-0.012	-0.007	-0.002	-0.029*
	(0.015)	(0.012)	(0.014)	(0.016)	(0.013)	(0.015)
Observations	15697	15697	15697	15697	15697	15697
R-squared	0.627	0.636	0.787	0.700	0.771	0.815
Panel C: ESOP Participants per Employee						
ESOP Participants per Employee	0.029	-0.141**	-0.028	0.044	-0.044	-0.154***
	(0.056)	(0.059)	(0.054)	(0.071)	(0.047)	(0.059)
Observations	15705	15705	15705	15705	15705	15705
R-squared	0.626	0.636	0.787	0.700	0.771	0.815

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each coefficient is a different regression. Regressions are run on the ESG sample. Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee benefit plans.

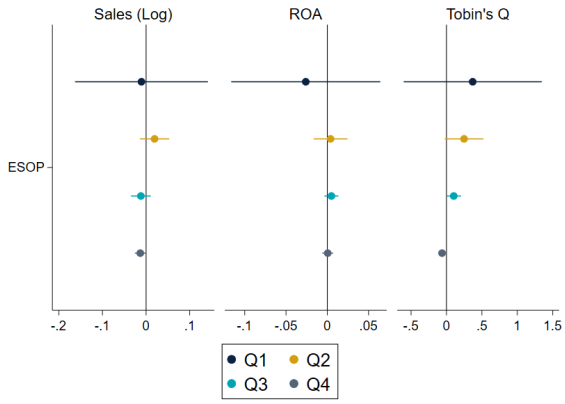
A.9 Comparing ESG Sample by Size

	ESG	Q2	Q3	Q4
ESOP	0.15	0.04	0.11	0.22
ESOP Assets per Participant (Ten Thousand)	0.35	0.13	0.27	0.49
ESOP Participants per Employee	0.12	0.04	0.09	0.16
Total ESG Strength	0.00	-0.25	-0.20	0.24
Total ESG Con	-0.02	-0.41	-0.26	0.30
Total ESG Score	0.01	0.14	0.06	-0.06
Total Assets (Millions)	11926.33	902.14	2135.44	21930.49
Number of Employees	14610.00	263.46	1370.15	28907.74
Collective Bargaining	0.16	0.01	0.08	0.27
Agriculture, Forestry, Fishing	0.00	0.00	0.00	0.00
Mining	0.04	0.05	0.03	0.03
Construction	0.01	0.00	0.01	0.02
Manufacturing	0.39	0.41	0.37	0.41
Transportation, Communications, Utilities	0.09	0.04	0.09	0.11
Wholesale Trade	0.03	0.01	0.02	0.04
Retail Trade	0.07	0.01	0.02	0.12
Finance, Insurance, Real Estate	0.22	0.33	0.29	0.12
Services	0.15	0.14	0.17	0.15
Public Administration	0.00	0.01	0.00	0.00
Observations	15,952	2,192	5,390	7,684

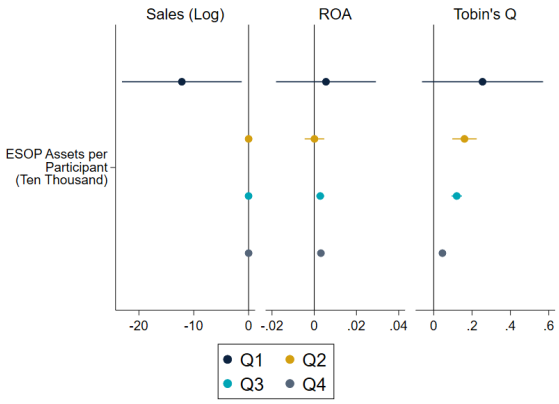
Notes: Means for each of the variables are reported for different size quartiles of the ESG sample. ESOP Assets per Participant is winsorized at the 95th percentile.

A.10 Firm Performance by Size - Unmatched Full Sample

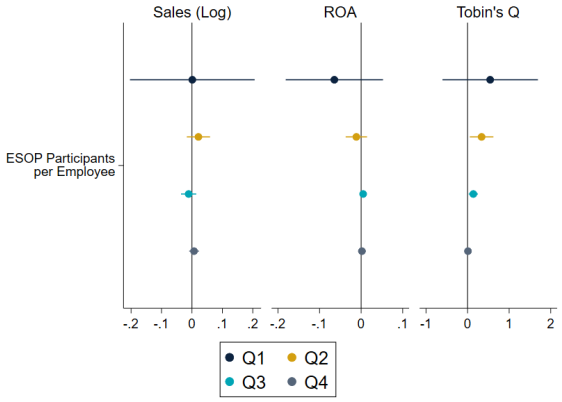
(a) ESOP



(b) ESOP Assets per Participant



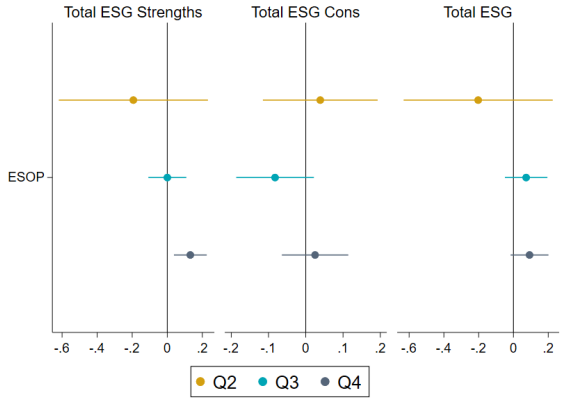
(c) ESOP Participants as a % of Employees



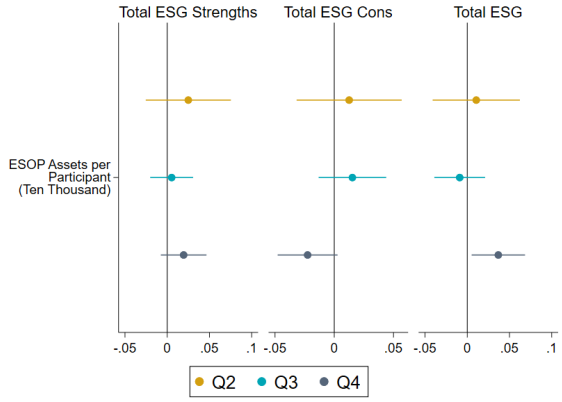
Notes: Each figure shows the plotted coefficients and 95% confidence interval. Each coefficient is a different regression. The regressions are run on a size quartile subsample of the Full sample. Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee ownership plans.

A.11 ESG Outcomes by Size - Unmatched ESG Sample

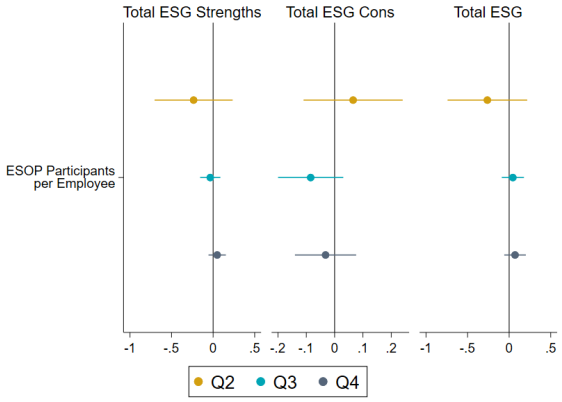
(a) ESOP



(b) ESOP Assets per Participant



(c) ESOP Participants as a % of Employees



Notes: Each figure shows the plotted coefficients and 95% confidence interval. Size quartile 1 is not included due to a lack of observations. Each coefficient is a different regression. The regressions are run on a size quartile subsample of the ESG sample. Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee ownership plans.

A.12 Individual ESG Categories - Matched Size Quartile 4 ESG Sample

Part 1

	Diversity Strength (1)	Diversity Cons (2)	Employee Strength (3)	Employee Con (4)	Env Strength (5)	Env Con (6)
Panel A: ESOP						
ESOP	1.248**	0.550	0.991	0.767	-0.083	-0.213
	(0.537)	(0.348)	(0.606)	(0.849)	(0.578)	(0.313)
Observations	472	472	472	472	472	472
R-squared	0.934	0.824	0.837	0.821	0.870	0.914
Panel B: ESOP Assets per Participant						
ESOP Assets per Participant (Ten Thousand)	0.026	0.009	-0.071	-0.007	-0.099	-0.077
	(0.069)	(0.037)	(0.109)	(0.059)	(0.069)	(0.082)
Observations	472	472	472	472	472	472
R-squared	0.928	0.821	0.835	0.818	0.873	0.915
Panel C: ESOP Participants per Employee						
ESOP Participants per Employee	0.412	0.147	1.805**	0.131	0.425	-0.479
	(0.394)	(0.245)	(0.815)	(0.732)	(0.301)	(0.429)
Observations	472	472	472	472	472	472
R-squared	0.928	0.821	0.841	0.818	0.871	0.915

Part 2

	CGov Strength (1)	CGov Con (2)	Community Strength (3)	Community Con (4)	Product Strength (5)	Product Con (6)
Panel A: ESOP						
ESOP	0.764	-0.895*	-0.204	-0.774	-0.081	-1.387***
	(0.699)	(0.493)	(0.465)	(0.800)	(0.075)	(0.531)
Observations	472	472	472	472	472	472
R-squared	0.796	0.794	0.840	0.865	0.919	0.830
Panel B: ESOP Assets per Participant						
ESOP Assets per Participant (Ten Thousand)	-0.028	-0.120	-0.196**	-0.040	-0.057	0.021
	(0.069)	(0.079)	(0.085)	(0.060)	(0.078)	(0.066)
Observations	472	472	472	472	472	472
R-squared	0.793	0.794	0.851	0.863	0.920	0.823
Panel C: ESOP Participants per Employee						
ESOP Participants per Employee	0.327	-0.348	0.047	-1.231	-0.121	-1.262*
	(0.331)	(0.630)	(0.412)	(0.952)	(0.160)	(0.676)
Observations	472	472	472	472	472	472
R-squared	0.793	0.789	0.840	0.866	0.919	0.827

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each coefficient is a different regression. Regressions are run on a matched fourth size quartile ESG sample. Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee benefit plans. The product strength category is omitted since every singe firm in the sample had the same score.

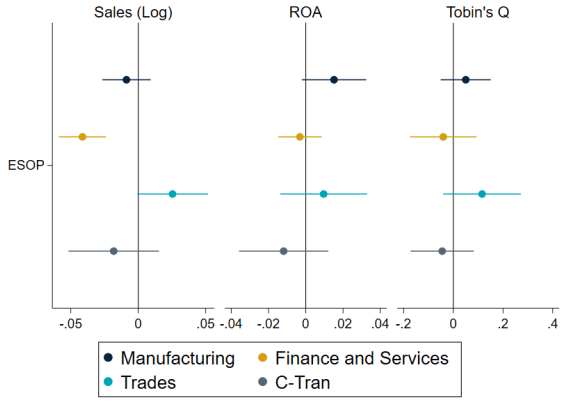
A.13 Comparing ESG Sample by Industry

	ESG	Fin-Serv	Manu.	Trades	C-Tran
ESOP	0.15	0.15	0.14	0.13	0.24
ESOP Assets per Participant (Ten Thousand)	0.35	0.31	0.34	0.14	0.70
ESOP Participants per Employee	0.12	0.13	0.09	0.10	0.21
Total ESG Strength	0.00	-0.07	0.08	-0.10	0.07
Total ESG Con	-0.02	-0.21	0.01	0.03	0.34
Total ESG Score	0.01	0.12	0.07	-0.11	-0.24
Total Assets (Millions)	11926.33	21722.26	4303.92	4408.48	10249.43
Number of Employees	14610.00	10297.23	11239.25	48341.85	14490.05
Collective Bargaining	0.16	0.03	0.26	0.12	0.31
Agriculture, Forestry, Fishing	0.00	0.00	0.00	0.00	0.00
Mining	0.04	0.00	0.00	0.00	0.00
Construction	0.01	0.00	0.00	0.00	0.12
Manufacturing	0.39	0.00	1.00	0.00	0.00
Transportation, Communications, Utilities	0.09	0.00	0.00	0.00	0.88
Wholesale Trade	0.03	0.00	0.00	0.28	0.00
Retail Trade	0.07	0.00	0.00	0.72	0.00
Finance, Insurance, Real Estate	0.22	0.59	0.00	0.00	0.00
Services	0.15	0.41	0.00	0.00	0.00
Public Administration	0.00	0.00	0.00	0.00	0.00
Observations	15,952	6,006	6,158	1,446	1,635

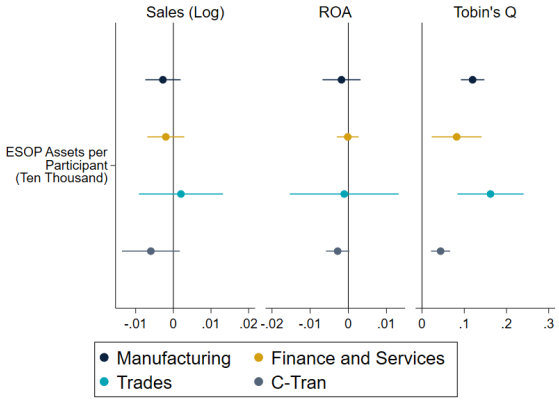
Notes: Means for each of the variables are reported for different industry groupings of the ESG sample. ESOP Assets per Participant is winsorized at the 95th percentile.

A.14 Firm Performance by Industry - Unmatched Full Sample

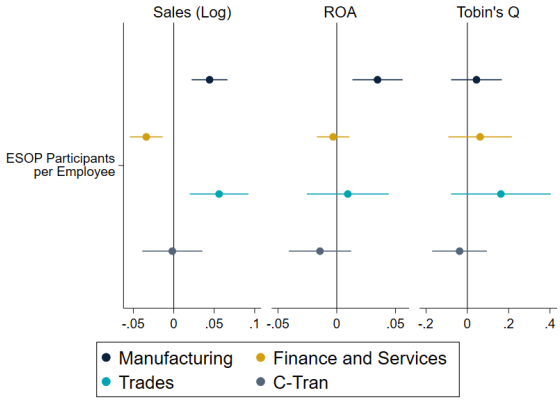
(a) ESOP



(b) ESOP Assets per Participant



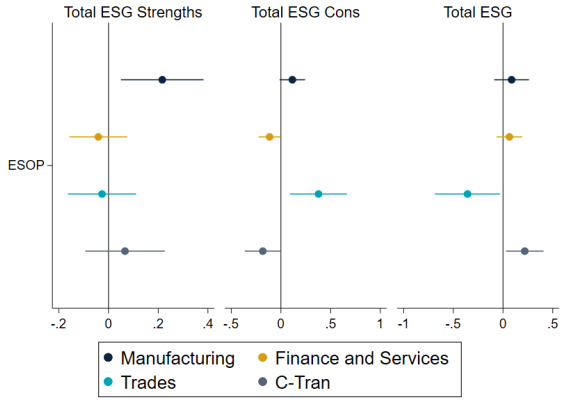
(c) ESOP Participants as a % of Employees



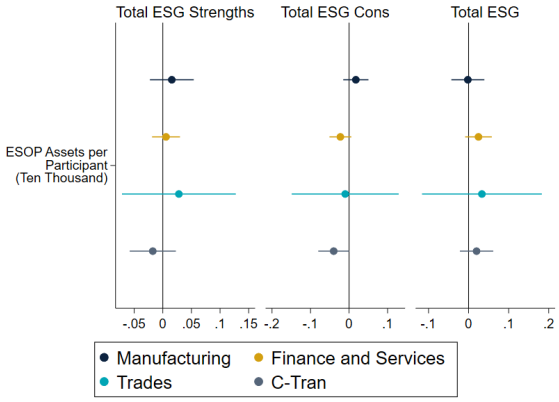
Notes: Each figure shows the plotted coefficients and 95% confidence interval. Each coefficient is a different regression. The regressions are run on an industry specific subsample of the Full sample. Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee ownership plans.

A.15 ESG Outcomes by Industry - Unmatched ESG Sample

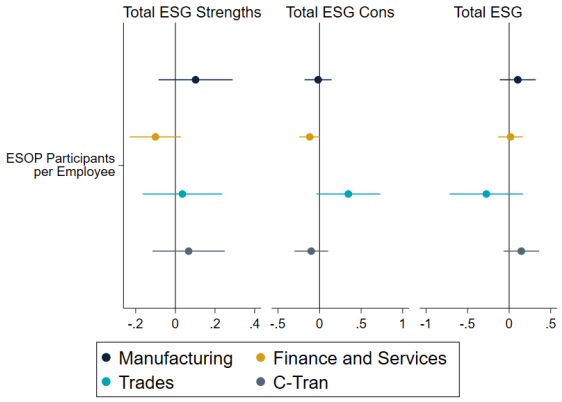
(a) ESOP



(b) ESOP Assets per Participant



(c) ESOP Participants as a % of Employees



Notes: Each figure shows the plotted coefficients and 95% confidence interval. Each coefficient is a different regression. The regressions are run on an industry specific subsample of the ESG sample. Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee ownership plans.

A.16 Individual ESG Categories - Matched Transportation & Construction ESG Sample

Part 1

	Diversity Strength (1)	Diversity Cons (2)	Employee Strength (3)	Employee Con (4)	Env Strength (5)	Env Con (6)
Panel A: ESOP						
ESOP	-0.642	-0.083	0.743	-1.893***	-1.630	-1.955**
	(0.686)	(0.116)	(0.606)	(0.662)	(1.032)	(0.813)
Observations	95	95	95	95	95	95
R-squared	0.905	0.904	0.863	0.723	0.752	0.901
Panel B: ESOP Assets per Participant						
ESOP Assets per Participant (Ten Thousand)	-0.072	-0.009	0.035	-0.145*	-0.177*	-0.176**
	(0.069)	(0.027)	(0.085)	(0.073)	(0.088)	(0.087)
Observations	95	95	95	95	95	95
R-squared	0.906	0.904	0.859	0.702	0.754	0.897
Panel C: ESOP Participants per Employee						
ESOP Participants per Employee	-0.857	0.509	3.326***	-1.024	0.129	-0.051
	(0.584)	(0.514)	(0.622)	(1.027)	(1.066)	(1.046)
Observations	95	95	95	95	95	95
R-squared	0.905	0.906	0.916	0.683	0.731	0.884

Part 2

	CGov Strength (1)	CGov Con (2)	Community Strength (3)	Community Con (4)	Product Strength (5)	Product Con (6)
Panel A: ESOP						
ESOP	0.087	0.859	2.271**	0.828	.	-2.612**
	(0.129)	(0.530)	(1.004)	(0.628)	.	(1.082)
Observations	95	95	95	95	95	95
R-squared	0.878	0.727	0.713	0.900	.	0.894
Panel B: ESOP Assets per Participant						
ESOP Assets per Participant (Ten Thousand)	0.032	0.002	0.028	0.126	.	-0.105
	(0.026)	(0.063)	(0.086)	(0.085)	.	(0.103)
Observations	95	95	95	95	95	95
R-squared	0.882	0.719	0.654	0.903	.	0.870
Panel C: ESOP Participants per Employee						
ESOP Participants per Employee	0.343	0.224	2.108**	-0.649	.	-0.574
	(0.420)	(0.814)	(0.951)	(1.675)	.	(1.011)
Observations	95	95	95	95	95	95
R-squared	0.880	0.719	0.681	0.899	.	0.867

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each coefficient is a different regression. Regressions are run on a matched transportation & construction ESG sample. Includes year and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee benefit plans. The product strength category is omitted since every singe firm in the sample had the same score.

A.17 Comparing CEM to Propensity Score Matches

	CEM Full	Propensity Full	CEM ESG	Propensity ESG
ESOP	0.29	0.50	0.36	0.50
ESOP Assets per Participant (Ten Thousand)	0.55	1.09	0.92	1.16
ESOP Participants per Employee	0.21	0.36	0.28	0.39
Total Assets (Millions)	8045.92	29247.73	11158.15	43914.63
Number of Employees	11930.97	31222.81	13017.76	34945.48
Collective Bargaining	0.27	0.41	0.24	0.40
Agriculture, Forestry, Fishing	0.00	0.01	0.00	0.01
Mining	0.03	0.02	0.01	0.01
Construction	0.00	0.01	0.01	0.01
Manufacturing	0.64	0.50	0.44	0.36
Transportation, Communications, Utilities	0.05	0.13	0.04	0.15
Wholesale Trade	0.01	0.04	0.01	0.03
Retail Trade	0.05	0.07	0.03	0.05
Finance, Insurance, Real Estate	0.08	0.12	0.39	0.32
Services	0.12	0.10	0.07	0.06
Public Administration	0.00	0.00	0.00	0.01
Observations	7,381	9,591	1,891	3,984

Notes: Means for each of the variables are reported for CEM matched and Propensity Score matched Full and ESG Samples. Means are weighted by CEM weights and Propensity Score matching weights. ESOP Assets per Participant is winsorized at the 95th percentile.

A.18 Propensity Score Matched Covariate Balance

Propensity Score Matched Full Sample

	No ESOPs	ESOPs	Difference
Total Assets (Log)	7.97	8.04	0.079
			(0.054)
Employees (Log)	8.85	8.90	0.056
			(0.045)
Collective Bargaining	0.41	0.41	-0.0022
			(0.012)
Observations	4184	5407	9591

Propensity Score Matched ESG Sample

	No ESOPs	ESOPs	Difference
Total Assets (Log)	8.79	8.77	-0.020
			(0.072)
Employees (Log)	9.08	9.08	-0.0028
			(0.065)
Collective Bargaining	0.40	0.40	0.0025
			(0.019)
Observations	1619	2365	3984

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each mean and difference is weighted by propensity weight.

A.19 Firm Performance with Industry Time Trends - Matched Full Sample

	Sales (Log) (1)	ROA (2)	Tobin's Q (3)
Panel A: ESOP			
ESOP	-0.014	-0.009	0.017
	(0.016)	(0.012)	(0.062)
Observations	7381	7381	7381
R-squared	0.993	0.644	0.797
Panel B: ESOP Assets per Participant			
ESOP Assets per Participant (Ten Thousand)	0.006	0.009***	0.129***
	(0.004)	(0.003)	(0.020)
Observations	7381	7381	7381
R-squared	0.993	0.645	0.801
Panel C: ESOP Participants per Employee			
ESOP Participants per Employee	0.042**	-0.009	0.075
	(0.019)	(0.015)	(0.069)
Observations	7381	7381	7381
R-squared	0.993	0.644	0.797

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each coefficient is a different regression. Regressions are run on the matched Full sample. Includes year fixed effects, firm fixed effects, and both linear and quadratic industry specific time trends. Controls for log number of employees, log total assets, and collective bargaining of employee benefit plans.

A.20 ESG Outcomes with Industry Time Trends - Matched ESG Sample

	Total ESG Strengths	Total ESG Cons	Total ESG Score
	(1)	(2)	(3)
Panel A: ESOP			
ESOP	0.274	-0.024	0.260
	(0.188)	(0.140)	(0.186)
Observations	1891	1891	1891
R-squared	0.900	0.889	0.872
Panel B: ESOP Assets per Participant			
ESOP Assets per Participant (Ten Thousand)	-0.015	-0.019	0.003
	(0.027)	(0.018)	(0.028)
Observations	1891	1891	1891
R-squared	0.899	0.889	0.871
Panel C: ESOP Participants per Employee			
ESOP Participants per Employee	0.284*	-0.114	0.348*
	(0.150)	(0.167)	(0.188)
Observations	1891	1891	1891
R-squared	0.900	0.889	0.872

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each coefficient is a different regression. Regressions are run on the matched ESG sample. Includes year fixed effects, firm fixed effects, and both linear and quadratic industry specific time trends. Controls for log number of employees, log total assets, and collective bargaining of employee benefit plans.

A.21 Firm Performance - State Division CEM Matched Full Sample

	Sales (Log) (1)	ROA (2)	Tobin's Q (3)
Panel A: ESOP			
ESOP	-0.012	0.000	0.050
	(0.013)	(0.006)	(0.040)
Observations	14401	14401	14401
R-squared	0.992	0.656	0.771
Panel B: ESOP Assets per Participant			
ESOP Assets per Participant (Ten Thousand)	-0.001	0.008***	0.119***
	(0.003)	(0.002)	(0.015)
Observations	14401	14401	14401
R-squared	0.992	0.656	0.775
Panel C: ESOP Participants per Employee			
ESOP Participants per Employee	0.023	-0.000	0.053
	(0.016)	(0.008)	(0.043)
Observations	14401	14401	14401
R-squared	0.992	0.656	0.771

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each coefficient is a different regression. Regressions are run on the division CEM matched Full sample. Includes year fixed effects and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee benefit plans.

A.22 ESG Outcomes - State Division CEM Matched Full Sample

	Total ESG Strengths (1)	Total ESG Cons (2)	Total ESG Score (3)
Panel A: ESOP			
ESOP	0.101	-0.062	0.143
	(0.107)	(0.090)	(0.110)
Observations	3742	3742	3742
R-squared	0.877	0.866	0.847
Panel B: ESOP Assets per Participant			
ESOP Assets per Participant (Ten Thousand)	0.001	-0.013	0.012
	(0.016)	(0.016)	(0.019)
Observations	3742	3742	3742
R-squared	0.877	0.866	0.847
Panel C: ESOP Participants per Employee			
ESOP Participants per Employee	-0.014	-0.078	0.056
	(0.095)	(0.108)	(0.124)
Observations	3742	3742	3742
R-squared	0.877	0.866	0.847

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each coefficient is a different regression. Regressions are run on the division CEM matched ESG sample. Includes year fixed effects and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee benefit plans.

A.23 Firm Performance - 1999-2009 Matched Full Sample

	Sales (Log) (1)	ROA (2)	Tobin's Q (3)
Panel A: ESOP			
ESOP	-0.043	-0.017	-0.192**
	(0.030)	(0.015)	(0.085)
Observations	5534	5534	5534
R-squared	0.993	0.590	0.762
Panel B: ESOP Assets per Participant			
ESOP Assets per Participant (Ten Thousand)	0.004	0.004	0.119***
	(0.006)	(0.003)	(0.031)
Observations	5534	5534	5534
R-squared	0.993	0.590	0.764
Panel C: ESOP Participants per Employee			
ESOP Participants per Employee	-0.017	-0.032*	-0.195*
	(0.036)	(0.019)	(0.109)
Observations	5534	5534	5534
R-squared	0.993	0.590	0.762

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each coefficient is a different regression. Regressions are run on Full sample restricted from 1999-2009 that has been matched with CEM. Includes year fixed effects and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee benefit plans.

A.24 Firm Performance - 2010-2019 Matched Full Sample

	Sales (Log)	ROA	Tobin's Q
	(1)	(2)	(3)
Panel A: ESOP			
ESOP	-0.003	-0.049	0.502***
	(0.046)	(0.067)	(0.141)
Observations	2312	2312	2312
R-squared	0.996	0.635	0.900
Panel B: ESOP Assets per Participant			
ESOP Assets per Participant (Ten Thousand)	-0.000	0.034**	0.192***
	(0.011)	(0.017)	(0.026)
Observations	2312	2312	2312
R-squared	0.996	0.638	0.903
Panel C: ESOP Participants per Employee			
ESOP Participants per Employee	0.075*	-0.017	0.410***
	(0.040)	(0.050)	(0.128)
Observations	2312	2312	2312
R-squared	0.996	0.634	0.900

Notes: *** p<0.01, ** p<0.05, * p<0.10. Each coefficient is a different regression. Regressions are run on Full sample restricted from 2010-2019 that has been matched with CEM. Includes year fixed effects and firm fixed effects. Controls for log number of employees, log total assets, and collective bargaining of employee benefit plans.