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EMPLOYEE SHARE OWNERSHIP AND COMPANY PERFORMANCE

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ABSTRACT

Popularity of employee share ownership and employee share ownership plans has been growing in Europe through past decades. Their relationship with company performance has been of interest to businesses, academics, and policymakers. Findings on the topic generally suggest a positive relationship between performance and employee share ownership. However, contradictory evidence exists. This raises the question, does employee share ownership improve company performance? To further examine the relationship, author draws a sample of 180 large European listed companies with significant broad-based employee share ownership in 2018, and examines the relationship with performance from 2011 to 2018.

To answer the research question, a regression analysis was performed. Analysis includes ROA, ROE, profit margin, and EV/EBITDA as dependent variables. Three different regression models were created and tested for each dependent variable. Employee share ownership is included as independent variable and additional control variables are included in two of the models. Findings suggest, that while employee share ownership is positively associated with company profitability measures ROA and ROE, it has a negative relationship with relative valuation method of EV/EBITDA. The findings support the theoretical view of employee share ownership reducing agency costs, but can only be used as evidence for large European listed companies with significant non-executive employee share ownership.

Keywords: employee share ownership, profitability, valuation, ESOP

INTRODUCTION

Employee share ownership has been a topic of interest to businesses, academics and policymakers in the past decades. One point of interest has been its relationship with company performance. Employee share ownership is believed to increase productivity and profitability, through reduced labor turnover and increased motivation among employees. Fundamentally, employee share ownership grants employees additional rights to those normally given to employees, i.e. access to financial and operational information, right to participate in management of the company, and right to share of the company's profit (Kaarsemaker 2006, 315).

The popularity of employee ownership has been growing in Europe in the past decades (Mathieu 2018a). Employee share ownership in Europe has been promoted by the European Commission since the 1990's (Poutsma, Nijs 2003, 863). The aim of this paper is to examine the relationship between employee share ownership and company performance, focusing on large European companies with existing broad-based employee ownership structure. Results provide evidence on how growing employee share ownership affects performance in companies, which already have significant existing non-executive employee share ownership. To achieve this, the study focuses on the question: Does employee share ownership improve company performance? Company performance measures used are divided into two categories, profitability and valuation. Profitability is measured by financial ratios return on assets, return on equity, and profit margin. For valuation, relative valuation ratio EV/EBITDA is used.

The theoretical views on the topic include contending frameworks. Most of the previous studies have started with a principal-agent problem (Martes 2012, 15). Necessary incentives to reduce agency costs should be provided by compensation, which is linked to company performance. ESO may reduce agency costs in multiple ways. Employees may experience increased feeling of direct interest to the performance of the company, which may enhance employee commitment and productivity. As ESO should align employees interest to those of the company, monitoring cost may be lowered (Landau et al. 2007, 39). Employee compensation that varies with share price, also means that improvement in company performance increases variable pay (O'Boyle, 2016, 428-430). Some differing theoretical views have also been presented. Hansmann (2000, 62) suggests that conflicts may increase among the owners of the company. Increased risk aversion among employees has also been suggested (O'Boyle 2016, 426). Mentioned theroretical views and

alternative frameworks for increased performance are presented in the paper. To test these theoretical views, following hypotheses was formulated.

Hypotheses:
H1: Employee share ownership is associated with improved company profitability
H2: Employee share ownership is associated with improved company valuation

In order to assess the relationship between employee share ownership and company performance, a regression analysis based on panel data is conducted. The employee ownership data used in the research is derived from the 2019 version of the European Federation of Employee Share Ownership database. Data for financial ratios is obtained from Orbis and Eikon databases. Additional data for control variables is obtained from World bank and Yahoo Finance webpages, and Eikon database. Data from all sources is manually combined into one database, which is added to the paper as appendix 1.

The paper is divided into three main chapters. First chapter "Employee share ownership" contains three sub-chapters, where background information and terminology are introduced. The following sub-chapters consist of theoretical views and previous empirical research on the topic. Second chapter presents data sources and methods used in the research. In the third chapter, data analysis, results, and discussion are provided.

Throughout the writing process, author received a great support from the thesis supervisor Kalle Ahi, and would like to acknowledge his part in completing the paper.

1. Employee Share Ownership

This chapter, divided into three sub-chapters, provides background information about employee share ownership. After background discussion theoretical views and previous empirical research on the topic are presented.

1.1. Background discussion and terminology

Employee share ownership (ESO) refers to a situation in which employees own portion of the company they are employed by. It is generally believed to be beneficial for both employees and employers, through increased motivation and productivity (Kurtulus, Kruse 2017, 1). Compensation that varies with company performance should, in theory, provide incentives for employees to improve company performance. There is diversity in form and extent of ESO. Some companies have significant ESO, but only executives and/or managers hold shares. Employee share ownership plans (ESOPs) make share privileges are available to larger selection of employees. Broad-based ESOPs are defined as being available to the whole workforce. In 2018, 87.3% of large European companies had some form of ESOPs, but only 52.3% had broad-based plans in place (Mathieu 2018a). ESO is more prevalent in large and very large companies (Juncker 2009, 24).

Table 1. Data about employee share ownership 2011-2018

% of large European Companies	2018	2017	2016	2015	2014	2013	2012	2011
Having ESO	94,2%	93,0%	92,3%	90,5%	89,0%	87,3%	85,2%	83,5%
Having ESOP	87,3%	85,5%	83,6%	81,0%	77,9%	75,5%	74,0%	71,9%
Having broad-based ESOP	52,3%	50,7%	48,9%	47,1%	45,0%	43,8%	43,0%	41,8%

Source: Mathieu (2018a, 24)

Employee ownership has been promoted by European Commission since 1990's, under the heading Promotion of Employee Participation in Profit and Enterprise Results (PEPPER). The European Commission has varying motives to promoting ESO in Europe. Motives vary from accomplishing wider distribution of wealth generated by companies, to enhacing competitiveness of the European economy (Poutsma, Nijs 2003, 863). Popularity of employee ownership in Europe has kept growing throughout the 21st century. Close to €400 billion in value was held by employees in 2018. The number of companies with ESOP has, on average, risen 3 to 4% per year since 2006

(Mathieu 2018a, 8-12). Below table illustrates the growth in employee share ownership from 2011 to 2018, in percentages and in euros.

Table 2. Employee share ownership in Europe 2011-2018

Description	2018	2017	2016	2015	2014	2013	2012	2011
ESO (%)	3,11%	3,20%	3,20%	3,14%	3,09%	3,08%	2,84%	2,96%
ESO(bn €)	384 €	382 €	317 €	360 €	304 €	266 €	197 €	233 €
% Variation	+0,5%	+20,4%	-11,9%	+18,6%	+14,5%	+34,7%	-15,4%	+19,1%

Source: Mathieu (2018a, 21)

Eventhough employee ownership and ESOPs have increased in popularity, Europe would need six times more employee owners to be comparable to USA (Mathieu 2018b, 10). Studies focusing on the company performance aspect of ESO have most often used return on assets (ROA), return on equity (ROE), and sales as measures of performance. Only a few studies have included measures of capital market performance to the analysis (e.g. Richter and Schrader 2017). Most studies done on the company performance aspect of ESOPs conclude positive relationship (Kurtulus, Kruse 2017, 7). This paper aims to examine the relationship between company performance and employee ownership, focusing on companies with significant broad-based employee share ownership. Author defines companies with significant broad-based ESO as companies which have broad-based ESOPs in place, with non-executive ESO of above 1%.

1.2. Theoretical views on the topic

There are contending frameworks on why performance should be improved by employee share ownership. Most of the previous works have started with a principal-agent problem, which is found in most employer-employee relationships. It emerges due to separation between owners of the firm and those who have effective control over the firm (Martes 2012, 15-16). The stated separation of ownership and control creates agency costs for the organization, as the interest of agents (employees) may conflict with that of principals (shareholders). Information asymmetry and imperfect monitoring may lead to agents maximizing their own utility at the expense of principals (Richter, Schrader 2017, 397).

Employee compensation linked to company performance should provide necessary incentives to reduce the agency costs and improve financial performance. ESO can reduce agency costs in multiple ways. Employee's productivity may increase due to increased feeling of direct interest to

the performance of the company, which in turn enhances commitment to the objectives of the company. Monitoring costs can be lowered through ESO, as employees interests are aligned with those of the firm (Landau et al 2007, 39). ESO provides employees incentives to work harder to better communication and cooperation with colleagues and management. Increased employee cohesion could appear as eagerness to develop new skills and lowered turnover rate, which decreases turnover costs for the firm (Martes 2012, 16).

Alternative theoretical views for increased company performance have also been suggested. Property rights approach suggests that employees are unwilling to invest in firm-specific capital unless they have residual rights to assets, meaning the rights to control over and profit from company's underlying assets. Necessary incentives to improve performance might be provided by residual rights to assets. Incentive contracts theory ties increasing company performance to increasing variable pay. As part of employees compensation varies with the stock price, improvement in company performance increases variable pay (O'Boyle, 2016, 428-430). Studies on employee compensation, comparing ESOP and non-ESOP companies, have found that regular compensation is generally on the samel level in ESOP and non-ESOP companies. ESOP compensation seems to come on top of regular compensation (Kruse et al. 2008, 4).

Previous empirical research has found positive relationship between employee ownership and company performance measures, such as return on assets and return on equity, which supports above-mentioned theoretical standpoints. In order to test these theoretical views, following hypotheses was formulated.

Hypotheses:

H1: Employee share ownership is associated with improved company profitability
H2: Employee share ownership is associated with improved company valuation

Even though most studies suggest a positive relationship between company performance and ESO, some have suggested that employee ownership can have adverse effects on company performance. Conflicts among the employees may be increased due to differing perceptions of inputs and abilities among the heterogeneous set of employees. This suggests that ESO is more efficient with homogeneous set of employees (Hansmann 2000, 62). Risk aversion of employees could also be increased. As ESO increases, the preference for company stability among employees may increase,

as employees have more capital tied to the company (O'Boyle 2016, 430). Shirking is common in principal-agent relationship, and standard economics assume that rational agents shirk (Frey 1993, 1). Many companies also subsidize employee purchases through ESOPs, e.g. employee uses 5% of salary for company stock and company doubles this amount to 10% of salary. As purchases are made from the market, this costs additional money to companies and is out of cash balance. This cash could be used for other purposes. It could also be argued, that ESO is not really tied down to levels of effort exerted by the employee. Some have argued that owning only small proportions of the company shares exposes employees to the risks of ownership but not the gains (Kaarsemaker 2006).

1.3 Previous empirical research

There is sizable amount of empirical research assessing the relationship between employee ownership and organisational performance. Most of the previous research has focused on US and UK (Martes 2012, 7). Douglas Kruse is one the most significant authors on the topic of employee ownership, and has been an author or a co-author on multiple studies on the topic. In 1995, he published a paper together with Joseph Blasi, reviewing 27 studies on the topic of employee ownership and company performance. They determined that while most studies indicate better performance under higher levels of ESO, almost no studies found worse performance (Kruse, Blasi 1995). In 2017, he co-authored a research together with Fidan Ana Kurtulus. In literature review of this research, it was concluded that two-thirds of 129 studies reviewed found favorable effects relating to ESO, while only one-tenth found negative effects (Kurtulus, Kruse 2017, 9). So relatively few studies have found that ESO negatively affects company performance. One example is study done by Elhayek and Petrovic-Lazarevic (2005), who found that companies with lower ESOP participation rates exhibited higher profitability and better share performance, contradicting existing literature. More recent finding of negative effect comes from Martes (2012). In his research, Martes looked at six performance measures (ROA, ROE, sales, profit margin, productivity, R&D) and their relationship to ESO. Martes found negative relationship with productivity and profit margin, which he determined as contradictory findings. In his study, ROA and ROE had positive relationship with ESO. In some of the studies ESO means the percentage held by all employees (including executives), or alternatively just non-executive employees. The relationship with executive compensation and company performance has been extensively studied in the past, and has been found to be significantly associated (Sun et al. 2013, 263). Park and Song

(1995, 63) suggest that the improvement in performance of ESOP companies is limited to companies with large outside shareholders.

Multiple studies have found country specific differences on ESO usage and effects. Richter and Schrader (2017) found differences in broad based ESO usage, ESO being most common in UK. While they established positive relationship with ROA and negative relationship with sales per employee, they also found that low levels of ESO were associated with adverse effects in many countries, while positive effects came into effect at higher levels of ESO. In Italy, the positive effects were already noticeable at low levels of ESO. Kim and Patel (2016) analysed a set of 1797 European companies from 2006 to 2014. They found small but significant effects on ROA, conditional on country.

Generally, literature on the topic has found that ESO is positively associated with company performance. This paper aims to provide further evidence on ESO and performance in Europe. There is a number of existing research on the topic of ESO and company performance, but this paper looks into how performance measures response to changing levels ESO in companies which already have significant broad-based ESO.

2. Data and Methodology

This chapter describes the data and methods used in the study. The employee ownership data being used is from the 2019 version of European Federation of Employee Share Ownership (EFES) database. The financial performance data is sourced from Orbis and Eikon databases. For the purposes of the paper, ESO is used as independent variable and company performance measures as dependent variables. Data for control variables was obtained from multiple sources, and are briefly described under "Data" sub-chapter, and further explored under "Methods" sub-chapter. Full database used for the calculations can be found in Appendix 1.

2.1. Data

Relevant ESO data was gathered from 2019 version of EFES database. EFES database consists of 2747 European companies, including all publicly traded companies with market capitalization of €200 million or higher. These listed companies represent 25% of all listed European companies, but 99% in terms of market capitalization. The database gathers both qualitative and quantitative data, of which quantitative data is used in this paper. Quantitative data used includes total employee share ownership and capitalization held by non-executive employees. The data is timely and highly accurate, as it is produced by companies in their annual reports and has been annually updated since 2006 (Mathieu 2018a, 37). Past versions of the EFES database have been used by previously mentioned Martes (2012), Richter and Schrader (2017), and Kim and Patel (2017), among others. Martes used a sample of 100 largest firms listed while Richter and Schrader focused on top five largest economies in Europe. Kim and Patel used a broader sample of 1797 companies from 31 countries.

As UK has one of the highest ESO usage rates in Europe, UK companies have taken a large part of the sample in many of the previous studies done (e.g. Richter, Schrader 2017). Previous research has also found country specific differences on how ESO reflects on performance and there is a possibility of UK skewing the results. Therefore, this study uses data only from current EU member states. EFES separates ESO to five categories based on the amount of total market capitalization held by employees: 1. Insignificant (ESO<1%) 2. Significant (ESO>1%), 3. Strategic (ESO>6%), 4. Determining (ESO>20%), 5. Controlling (ESO>50%) (Mathieu 2018a,

26). As mentioned in the first chapter, amount of companies having ESO is much larger than amount of companies having broad-based ESOPs and the effects of ESO differ depending on the level and structure of ownership. Only companies with significant non-executive ESO in 2018 were included in the final sample of this study, in order to test how broader selection of employee owners affects company performance. Furthermore, only companies which had some form of ESOP in place before the period of the study were considered. The period of the study is from 2011 to 2018. All industries, but financial industry, were included. After above mentioned criteria, 208 companies were left.

The financial ratios chosen to measure company profitability were ROA, ROE, profit margin. Company valuation is measured by EV/EBITDA. Ratios were imported from Orbis database, which is a global database with information on over 65 million companies around the world (van Dijk 2011, 1). This was done by entering ISIN codes of selected companies from EFES dataset to Orbis, and exporting the data as an Excel file. File was then combined with EFES data by the author. Ratios were not available for all of the 208 companies, which further reduced the sample size to 180 companies. ROA (net income/total assets) was chosen because it describes how profitable a company is in relation to its total assets, which means it is not as dependent on company leverage as ROE. Most of previous research on the topic has included ROA or ROE as a company performance measure (e.g. Martes 2012, Richter and Schrader 2017, Kim and Patel 2016). Previous research has concluded that ESO has positive impact on ROA and this paper aims to further examine this relationship. Second performance measure, ROE (net income/shareholder's equity), is included in the paper because it depicts company performance in relation to equity held by shareholders. For the purposes of the paper, this is relevant performance measure, as it depicts profitability from investors' (i.e. employee owners) point of view. Profit margin (net income/revenue) was the last profitability ratio chosen to measure company performance. Martes (2012) found that ESO has negative effects on profit margin. Profit margin describes the amount of profit company makes per euro of sales, and is expressed as percentage. In order to measure company valuation, EV/EBITDA ratio was chosen. This ratio compares company's value to its cash earnings. EV/EBITDA was chosen instead of EV/EBIT as Nissim (2019, 14) mentions that companies may manipulate interest capitalization which affects EBIT calculation. EBITDA excludes depreciation and thus avoids these misinterpretations. Valuation ratio was included in the paper as most of the previous studies done on the subject have focused on profitability ratios. With ESO, part of employees salary varies with stock price, so it is expected that higher ESO associates with higher relative valuation. There is also some empiricial support for positive relationship with

relative valuation ratios (e.g. Richter, Schrader 2017, Park and Song 1995). Typology of the companies in the final sample is presented in the following figure.

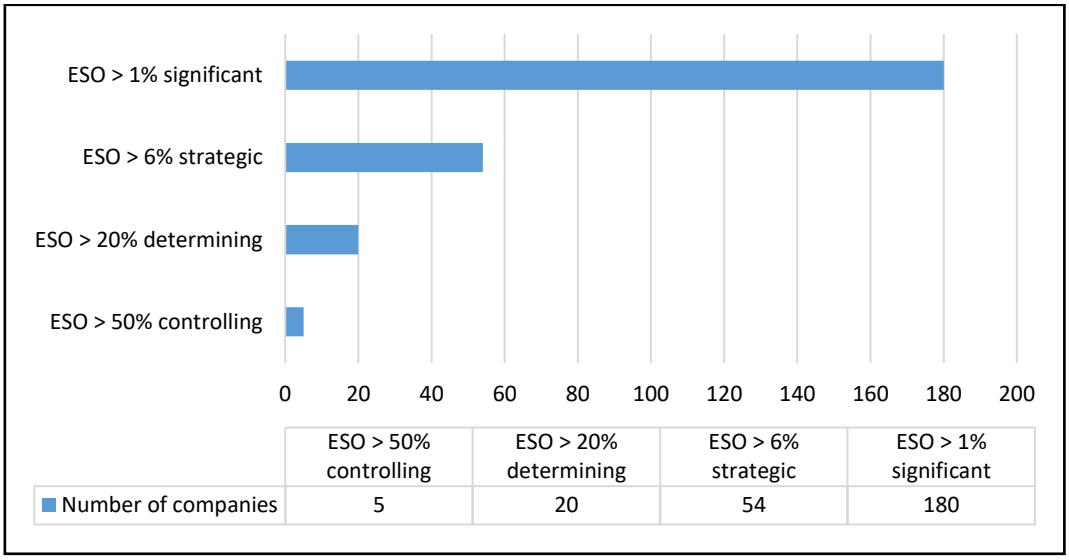

Figure 1. Typology of companies in the final sample
Source: European Federation of Employee Share Ownership 2019 Database

As seen from the figure, large majority (70%) of the companies in the sample have ESO between 1% and 6%. 18.88% of companies have strategic ESO, while 8.33% have determining ESO. Sample includes five companies which have controlling ESO in 2018. Kruse and Blasi (1995, 3) define the term "employee owned company" as employees owning over 51% of shares of the company. Therefore, these five companies are the only employee owned companies in the sample. Sample includes only one company which had controlling non-executive ESO. Mentioned company lacked non-executive ownership data for 2018, but 2016 figures are described below.

Table. 3. Controlling ESO percentages

Company	ESO	Non-executive ESO
1	74.95% (2016)	63.68% (2016)
2	71.39%	5.04%
3	65.50%	2.59%
4	63.09%	4.27%
5	54.21%	1.45%

Source. European Federation of Employee Share Ownership 2019 Database

In his paper, Aguinis (2013, 279-280) defines 20 methods of handling outliers. Removing them was chosen by the author. Values above 50% and below -50% were removed for ROA, whereas

for ROE respective values were 100% and -100%. For EV/EBITDA, observations above 30 were removed. For profit margin, observations above 50% and below -50% were removed. For the regression analysis, additional control variables were needed. Control variables include market index returns, GDP growth, company size, debt to equity ratio, and current ratio. Furthermore, dummy variables for country, industry, and dividends paid were used in the analysis, but are not presented in the descriptive statistics. "INDEX" is Euronext 100 stock index that lists 100 largest companies traded in Euronext exchange and "GDP" is EU GDP growth. Index and GDP data was sourced from Yahoo Finance (Finance 2020) and the World Bank (Bank 2020) webpages respectively. Other control variables include company size measured with market capitalization (MCAP), debt to equity ratio (D/E), and current ratio (CURRENT). For D/E ratio, observations above 10 and below -10 were removed as outliers. All variables considered, total of 95 observations were removed from the dataset. After removing outliers, descriptive statistics for the data were calculated. Descriptive statistics include mean, median, standard deviation, minimum and maximum values. Average value of the dataset is described by mean, whereas median is the middle value of the dataset. Variability of the dataset is described by standard deviation (St.dev). Descriptive statistics were compiled by the author and are described in the below table.

Table 4. Descriptive statistics

-	Mean	Median	St.Dev	Min	Max
ESO	9.66	3.21	15.16	0.01	93.26
ROA	4.27	4.07	6.64	-45.49	49.82
ROE	9.82	10.49	14.72	-99.41	90.17
PM	7.73	6.76	8.96	-34.64	47.26
EVEBITDA	8.80	7.89	4.40	0.52	28.63
INDEX	2.8	6.77	11.47	-17.26	15.92
GDP	1.49	1.95	1.15	-0.74	2.73
MCAP	8576.1	1813.77	17970.31	0.90	142762.2
D/E	1.82	1.45	1.51	-8.00	9.19
CURRENT	1.62	1.35	1.47	0.23	27.49
Observations					15283

Source. Author's calculation based on data from Appendix 1
Notes.

1. Market capitalization measured in thousands (€)
2. Index and GDP are expressed as growth percentages

As seen from the table, the range of ESO is quite large. The average ESO is 9.66%, which is higher than 2018 average ESO of 3.11% in large European listed companies (Mathieu 2018a, 21). Median of the dataset is close to the average ESO of European companies. Reason why average ESO is

significantly higher for the sample may be the criteria used for the sample. As only companies with significant non-executive ESO is included, higher average ESO is expected. EFES database only includes listed companies with over 200 million euros of current market capitalization. Sample includes companies which have gained significant value during the study period. For this reason, the range and standard deviation are quite high for market capitalization. For most variables, mean and median are close to each other, which implies a symmetrical distribution.

Highly correlated independent variables should not be included in same statistical model due to multicollinearity issues that may arise. Multicollinearity presents a threat to appropriate specification and effective estimation of causal relationship generally looked for through the use of regression approach (Farrar, Glauber 1967, 93). Correlation coefficient of one means that variables are perfectly linearly correlated. Closer to zero the weaker the correlation. Correlation coefficient can also be a negative number, meaning that the variables have negative relationship. Taylor (1990, 37) clasifies correlation coefficients as in following table.

Table. 5. Correlation classification

low or weak correlation	≤ 0.35
modest or moderate correlation	0.36 – 0.67
strong or high correlation	0.68 – 0.9
very high correlation	0.9 – 1

Source. Taylor 1990, 37

Correlation coefficient matrix was compiled by the author, in order to test correlations between independent variables. Descriptive statistics include market capitalization as a monetary value, but the variable used in the data analysis is logarithm of market capitalization. Therefore, correlation coefficient was calculated for logarithm of market capitalization.

Table. 6. Correlation coefficient matrix

-	ESO	INDEX	GDP	MCAP	CURRENT	D/E
ESO	1	-	-	-	-	-
INDEX	0.01	1	-	-	-	-
GDP	-0.014	-0.412	1	-	-	-
MCAP	-0.278	0.032	0.111	1	-	-
CURRENT	-0.022	0.0148	0.051	-0.183	1	
D/E	0.069	-0.009	-0.009	0.115	-0.262	1

Source. Author's calculation based on data from Appendix 1

Generally, variables with low to modest correlation with each other can be included in the same model. As can be seen from table. 6., market index returns and GDP growth both have similar relationship with D/E ratio. However, market index returns and GDP growth have only modest correlation, which means that they can be included in the same model. Out of the control variables, GDP, market capitalization, and current ratio have negative correlation with ESO. Market capitalization has the highest negative correlation coefficient. It can interpreted that when company size increases, the average capital held by employees decreases, for the companies included in the sample. It could also be interpreted that as ESO increases, company valuation decreases. Other interesting result is that GDP growth and market index returns have a negative correlation during the period of the study. As all variables have only low or modest correlation between each other, all of them can be included in the same regression model.

2.2. Methods

For the purposes of this paper, a regression analysis was conducted to examine the relationship between ESO and company performance. Regression analysis is a statistical, predictive modelling technique used to study the relationship between a dependent (response) variable and one or more independent (explanatory) variables (Chatterjee, Hadi, 2015, 1). In this paper, a multiple regression analysis is conducted. Panel data, which is used in this paper, is typically set in long format (Brüderl 2015, 328). It is most commonly analysed with either fixed effects (FE) model or random effects (RE) model. One of the conditions to use RE model is that random sample must be taken from the population (Sheytanova 2014, 8-9). This study uses selected sample, and therefore FE model is used to analyse the data. In addition, Hausman test also pointed to the use of FE model.

One factor that supports usage of FE model, is that it can deal with unobserved heterogeneity (Sheytanova 2014). Results of FE model are not generalization of full population, only the sample chosen. FE model includes stable subject specific component α_i, which are unobserved by the researcher. FE estimation builds on below model, where it is assumed that dependent variable Y_{it} is continuous, and independent variables $X_1,\ldots,X_K$ can be measured on any range. Y_{it} stands for observed outcome of subject i at time t. Intercept α, used in standard regression models, is dropped due to collinearity with subject-specific errors α_i. Error term ε_{it} varies over time and across subjects. Such error term decomposition is formally always possible, but can only be identified

when panel data is available. This is due to subject-specific characteristics, which may only be inferred from repeated observations (Brüderl 2015, 328).

$$Y_{it} = x_{it}\beta_i + \alpha_i + \varepsilon_{it} \quad (1)$$

where
Y_{it} = Dependent variable (i = subject, t = time index)
X_{it} = Vector of independent covariates
β_1 = Vector of corresponding estimated parameters
α_i = Subject-specific errors (e.g. fixed effects)
ε_{it} = Idiosyncratic error term

For the purposes of this paper, ESO is used as an independent variable and company performance measures as dependent variables. Several control variables were also added to the model, in order to isolate the true effect of ESO on company performance. Market index returns (Euronext100), is included to account for overall market sentiment, and the effect it may have on company performance, especially EV/EBITDA. GDP is included to capture overall economic cycle and its impact on company performance. Country may have significant effect on performance or ESO usage, due to differences in market characteristics, legislation or the existence of supporting organizations (Richter, Schrader 2017, 14). Country dummies were used to account for country specific differences. Employee ownership is common in France and EFES is French organization, due to which the sample of the study is heavily occupied by French companies (109/180). France was used as a base for country dummies, meaning dummies were created for each country except for France. This was done to avoid perfect multicollinearity.

In order to properly test the hypotheses, additional company specific control variables were included in the model. Company size may have significant effect on company performance, due to economics of scale and market power reasons (Richter, Schrader 2017, 13), and it was added to control for its effect on company performance. For the purposes of the analysis, company size is measured with logarithm of market capitalization. Another factor which may significantly influence company performance is company profile. Dummy variable for dividends was added to keep track of company profile, whether it is a growth stock or value stock company. Dummy variable has a value of 0 for years when company did not pay out dividends, and value of 1 for years when company paid dividends. Debt to equity ratio was included as a control variable, as high levels of debt may influence financial ratios (Richter, Schrader 2017, 13). Current ratio, which measures company liquidity by dividing its current assets with its current liabilities, was used to

control for company liquidity. Furthermore, dummy variables for industry were included. The full empirical specification of the fixed effects model, in terms of this study, is presented below.

$$\text{Company performance}_t = \alpha_i + \beta_{i1}\text{ESO}_{it} + \text{INDEX}_{it}, \text{ GDP, MCAP, D/E, CURRENT, DIVIDENDS, COUNTRY, INDUSTRY} + \varepsilon_{it} \quad (2)$$

where
Company performance = ROA, ROE, PM, EV/EBITDA (t = time index)
α_i = Constant
β_{i1} = Coefficient (i = company)
ESO = Independent variable
ε = Error term

In order to accurately assess the regression results, a significance level needed to be determined. Level of significance, or alpha level, was chosen as less than 0.10 by the author. This means that if the p-value of the determinant was below 0.10, determinant was statistically significant for the model. The issue of endogeneity was also accounted for in the study. Endogeneity may occur when a predictor variable in the model is correlated with the error term. Generally it can appear in three forms, simultaneity, omitted variables and measurement error. Omitted variable means that error term, a variable not included in the analysis, is correlated with one of the regressors. Measurement error is when there is a measurement error in at least one the regressors. Simultaneity implies that dependent variable and at least one of the independent variables are simultaneously determined in the system (Wooldridge, 2009, 512-554). There may be a problem of simultaneity with ESO and performance measures, as they are not expected to have a concurrent effect. Therefore, ESO values are lagged by one year.

3. Analysis and Discussion

This part of the paper presents and discusses the results of the data analysis. First sub-chapter consists of the results of the data analysis and second includes discussion on the results. Database used for regression analysis can be found in Appendix 1.

3.1 Data analysis and results

This study uses four different dependent variables and estimates three different regression models for each dependent variable. Due to this, altogether 12 regression models were estimated. FE model was used to estimate the results, which are presented in this chapter. First model (M1) has ESO as independent variable and specific performance measure as dependent variable. Second model (M2) includes market index returns, GDP growth, and country as additional independent variables. Variables are included to account for overall macro and country level effects on company performance. In the third model (M3), company specific independent variables are included. Variables include company size, D/E ratio, current ratio, dividends paid, and industry. All control variables are included to isolate the true effect ESO has on performance. Country, industry, and dividends are included as dummy variables, while ESO is included as lagged value.

Coefficients show relationship between two variables, in this case between specific independent variable and chosen company performance measure. In case of M1, the coefficient value has little meaning, other than being positive or negative. In case of M2 and M3, with multiple independent variables, the coefficient values give indication on which variables have the strongest effect on performance measures. Positive coefficient implies a positive relationship, i.e. when independent variable increases so does the dependent variable. Statistical significance, or p-value, indicates whether conclusions can be drawn from the results. As mentioned in previous chapter, level of significance chosen by the author is 0.10. This means that p-value of less than or equal to 0.10 for ESO indicates evidence in favour of alternative hypotheses. For specific determinants, p-value is presented by significance codes after the slash sign. P-value corresponding to f-statistic expresses the significance of the entire model. R squared (R2) is a number between 0 and 1 that represents the proportion of variance in dependent variable that is explained by independent variables. R2 value equal to one, would mean that the independent variables can be associated with 100% of the change in the dependent variable.

ROA was chosen as a company profitability measure, as it describes how profitable company is in relation to its total assets. Following table presents the regression results for ROA. Most of previous literature that have used ROA, have determined a positive relationship with ESO. E.g. previously mentioned Richter and Schrader (2017), Kim and Patel (2016), and Martes (2012).

Table. 7. Regression results ROA

-	ROA		
-	M1	M2	M3
Constant	4.764/***	4.152/***	-1.683
ESO	0.019/*	0.020/**	0.014
INDEX	-	-0.004	-0.007
GDP	-	0.072	-0.014
MCAP	-	-	0.194/**
D/E	-	-	-1.025/***
CURRENT	-	-	1.456/***
DIV	-	-	2.05/***
COUNTRY	-	Yes	Yes
INDUSTRY	-	-	Yes
R2	0.002	0.073	0.286
F-Statistic	3.84/*	7.57/***	18.18/***
Companies			168

Source. Author's calculation based on data from Appendix 1
Notes.

1. Coef. / sign. refers coefficient of the variable and statistical significance of the result
2. See 1.1 and 2.1 for other abbreviations
3. Significance codes: *** p<0.01, ** p<0.05, * p<0.1

First model, with just ESO as independent variable, shows a positive relationship between the variables. R squared value indicates that changes in ESO can be associated to 0.2% of changes in ROA. P-value corresponding to f-statistic is less than 0.10, which indicates evidence in support of alternative hypothesis. Second model provides similar, but more significant, results as the first model. With GDP growth, market index growth and country dummies added as independent variables, the model shows that variables included can be associated with 7.3% of ROA variation. P-value for ESO is 0.01, and for the whole model it is close to zero. This provides further evidence that ESO is associated with ROA. However, in the third model, with company specific control variables added the association becomes insignificant. The association of ESO and company performance seems to be more driven by company specific variables added in the M3. The p-value for ESO in M3 is 0.14, only slightly above the significance level. R2 value of M3 implies that the

variables in the model can be associated with 28.6% of ROA variation. The parameters for ESO across different regression models do not have high variation, which can be generally considered a positive sign. First two models provided statistically significant evidence that ESO is associated with ROA and as the results of M3 are marginally insignificant, some support for H_1 can be drawn from the results. However, the evidence cannot be determined as conclusive. In order to determine association with ESO and company performance, more variables need to be analysed. Results for second company profitability method (ROE), are presented in the following table.

Table. 8. Regression results ROE

-	ROE		
Constant	10.902/***	9.366/***	-3.128
-	M1	M2	M3
ESO	0.033	0.022	0.036/*
INDEX	-	0.03	-0.005
GDP	-	0.297/*	0.316
MCAP	-	-	0.438/**
D/E	-	-	-0.608/*
CURRENT	-	-	0.935/*
DIV	-	-	5.29/***
COUNTRY	-	Yes	Yes
INDUSTRY	-	-	Yes
R2	0.001	0.056	0.133
F-statistics	2.28	5.96/***	7.59/***
Companies			163

Source. Author's calculation based on data from Appendix 1
Notes.

1. Coef. / sign. refers coefficient of the variable and statistical significance of the result
2. See 1.1 and 2.1 for other abbreviations
3. Significance codes: *** p<0.01, ** p<0.05, * p<0.1

ROE was chosen as company profitability, due to it describing the company profitability from investors point of view, i.e. also employee owners' point of view. The first model shows a positive relationship between ESO and ROE. R2 value implies that ESO could be associated with 0.1% of ROE variation. However, the model did not provide statistically significant results, which means that the results cannot be used to draw conclusions about the relationship. The second model also shows a positive relationship, but the results for ROE are not statistically significant. However, the results for entire model provide p-value of less than 0.01. This means that some other variables in the model can be associated with variation of ROE. GDP and some countries returned statistically significant results. The third model adds more variables to the regression. The results show a small

but significant positive relationship between ESO and ROE, with similar parameter value as the previous models. Third model as a whole provides statistically significant results, with R2 value indicating that the components in the model can be associated with up to 13.3% of ROE variation. Company profile, whether it paid dividends or not, has the largest association with ROE. This is expected, as dividends are mostly paid in profitable years. The results for ESO indicate small but positive association with ROE. Therefore, support for H_1 can be drawn from the results of M3.

Table. 9. Regression results for profit margin (PM)

-	PM		
Constant	8.292/***	9.102/***	-6.487/***
-	M1	M2	M3
ESO	0.001	-0.019	0.007
INDEX	-	-0.012	-0.019
GDP	-	0.061	-0.203
MCAP	-	-	1.111/***
D/E	-	-	-1.588 /***
CURRENT	-	-	2.694/***
DIV	-	-	3.17/***
COUNTRY	-	Yes	Yes
INDUSTRY	-	-	Yes
R2	-0.001	0.039	0.346
F-statistics	0.001	4.35/***	23.62/***
Companies			153

Source. Author's calculation based on data from Appendix 1
Notes.

1. Coef. / sign. refers coefficient of the variable and statistical significance of the result
2. See 1.1 and 2.1 for other abbreviations
3. Significance codes: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Profit margin was the third profitability measure that was analysed. Previously, Martes (2012), has found significant and negative relationship between profit margin and ESO. As the table illustrates, this study does not find significant association between ESO and profit margin. The parameter values vary between negative and positive across the models, and p-value for ESO parameter shows statistically insignificant results for each model. What can be concluded from the results, is that company location added in M2 and company specific control variables added in M3, do have a significant effect on PM, as both models provide statistically significant f-statistic. With additional control variables in M3, R2 value increases from 3.9% in M2, to 34.6% in M3. This is more significant increase between R2 value in M2 and M3, as for any other dependent variable. As the model is statistically significant, it can be said that variables in the M3, are associated with

34.6% of profit margin variation. However, no conclusions on association between ESO and profit margin can be made.

Table. 10. Regression results EV/EBITDA

-	EVEBITDA		
Constant	9.023/***	7.356/***	3.416/***
-	M1	M2	M3
ESO	-0.03/***	-0.027/***	-0.021/**
INDEX	-	0.012/***	0.078/***
GDP	-	0.115/***	0.708/***
MCAP	-	-	0.634/***
D/E	-	-	-0.458/***
CURRENT	-	-	0.608/***
DIV	-	-	-1.88/***
COUNTRY	-	Yes	Yes
INDUSTRY	-	-	Yes
R2	0.009	0.122	0.248
F- statistics	12.02/***	12.63/***	15.16/***
Companies			157

Source. Author's calculation based on data from Appendix 1
Notes.

1. Coef. / sign. refers coefficient of the variable and statistical significance of the result
2. See 1.1 and 2.1 for other abbreviations
3. Significance codes: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

EV/EBITDA ratio was chosen to assess association between company valuation and ESO. Each of the three models provide statistically significant evidence of negative association between ESO and EV/EBITDA, with similar parameter values. M1 provides statistically significant results, and it can be said that ESO alone is associated with 0.9% of change in EV/EBITDA. With control variables added in M2 the R2 value rises to 12.2%. Both GDP and index are positively associated with EV/EBITDA. Out of the variables added, GDP is most associated with EV/EBITDA. All of the variables added also return highly significant results. Variables added in M3 further increase R2 value to 24.8%, and again all the variables have statistical significance. ESO, D/E ratio, and dividends show a negative relationship, while other variables have positive relationship with EV/EBITDA. Results are highly significant and conclusions can be drawn from them. These results provide evidence against H2.

Following table summarizes expected and actual effects that ESO has on company performance, based on the panel data analysis. While hypothesis was that ESO has positive relationship with each of the variables, regression analysis returns differing results for some variables.

Table. 11. Summary of ESO effects

-	Hypothesis	M1	M2	M3
ROA	+	+/*	+/**	+/n.s.
ROE	+	+/n.s.	+/n.s.	+/*
PM	+	+/n.s.	-/n.s.	+/n.s.
EV/EBITDA	+	-/***	-/***	-/***

Source. Author's calculation based on data from Appendix 1
Notes:

1. Not significant abbreviated as n.s.

Six out of the 12 estimated models provided statistically significant results. Results of the analysis provide some empirical support for the theory of higher share of ESO enhancing company performance in terms of profitability. Results for EV/EBITDA are most robust out of the measures chosen. Results indicate that ESO is associated with relatively lower valuation in companies which already have significant ESO. This implies that at higher levels of ESO, ESO has negative relationship with relative valuation. Based on the results, it can be conluded that variation of dependent variables, with the exception of PM, can be partially associated to changes in ESO.

3.2 Discussion

The empirical results of the models were presented in the previous sub-chapter, and results have similarities with findings of Elhayek and Petrovic-Lazarevic (2005), Kruse and Kurtulus (2017), and Martes (2012) among others. The analysis, which is focused on large European listed companies with significant employee share ownership, provides insight on the relationship between ESO and company performance. Each hypothesis is discussed separately.

H1: Employee ownership is associated with improved company profitability

As table. 7. and table. 8. illustrate, ESO has positive effect on ROA and ROE. The results show statistically significant positive relationship with ROA and ESO in M1 and M2. However, with company specific variables added in M3, the association becomes insignificant. The p-value for ESO in M3 was only slightly above the significance level, so some support for H1 can be drawn

from the results. For ROE, the association with ESO is not significant in M1 and M2, but M3 with company specific control variables added provides positive parameter value with statistical significance. Small but significant association between ESO and ROE can be concluded from the results of the analysis. These results are similar to findings of Martes (2012), Richter and Schrader (2016), and Kim and Patel (2016) among others. Even though this study does not find evidence of association between ESO and profit margin, conclusions can be drawn from other results. Based on estimated parameter values found in the data analysis, it can be concluded that ESO has small but significant effect on company profitability, measured by ROA and ROE. However, conclusion is only valid for companies in the sample, i.e. companies with significant broad-based ESO.

H2: Employee ownership is associated with improved company valuation

Data analysis shows a negative relationship between ESO and EV/EBITDA, which contradicts the hypothesis. Results are also highly significant and provide evidence based on which H2 can be rejected. This is surprising finding, as it supports results found by Elhayek and Petrovic-Lazarevic (2005), whose research has been criticized in previous literature. The study has been said to be unconvincing and based on flawed methodology (Laudau et al. 2007). It is notable that this comment came from the president of Australian Employee Ownership Association. Previous literatures, as well as this study's findings, on ROA and ROE, suggest that ESO has positive impact on profitability. As EV/EBITDA is a relative valuation ratio, it can be the case that while ESO may impact profitability (and perhaps EBITDA) positively, these impacts are not seen on similar level in share performance.

As the regression results indicate a significant relationship for three of the dependent variables, it can be confidently determined, that ESO is associated with company performance. As is the case with all studies, this study has its limitations. Due to a selected sample, conclusions can only be drawn for large European listed companies, which have significant broad-based employee share ownership. However, the results are similar to what have been found by previously mentioned academics, who have used a broader sample. Contradictory finding of negative association with EV/EBITDA is something that should be studied further. As mentioned, the positive effect ESO has on profitability, may not show in similar levels on share performance, which may show on EV/EBITDA. Elhayek and Petrovic-Lazarevic (2005), found that companies with lower ESOP participation rates exhibited superior profitability and share performance. Findings of this study, cannot be used robust evidence of negative effect to share performance, as EV/EBITDA is a

relative valuation method. However, the relationship should be studied further. Other studies have found positive relationship with relative company valuation. E.g. Richter and Schrader (2017) found positive relationship between ESO and company valuation ratio Tobin's Q, which is measured by dividing the market value of the company with the replacement value of its assets. The topic of employee share ownership and company valuation requires further research. Study which uses both relative and absolute valuation methods could be in place.

CONCLUSION

The topic of employee share ownership and company performance has been of interest to academics, policymakers, and businesses over the past decades. It is believed to reduce agency costs through aligning interests of the employees to those of the company. This raises the question, does employee share ownership improve company performance? Company performance was measured by profitability and valuation ratios. The aim of this paper was to study the relationship between employee share ownership and company performance, focusing on large European companies with existing significant broad-based employee share ownership.

Main theoretical views concerning employee share ownership and performance were presented in the paper. Most commonly used theoretical framework on why employee share ownership should improve company performance is located in agency theory. Employee share ownership should, in theory, reduce agency costs and improve organizational performance. Alternative theoretical views suggested include property rights theory and incentice contracts theory. Based on theoretical views on the topic, following hypotheses were created.

H1: Employee ownership is associated with improved company profitability
H2: Employee ownership is associated with improved company valuation

In order to assess the relationship between employee share ownerhsip and company performance, panel data analysis was performed. Employee share ownership data was obtained from European Federation of Employee Share Ownership 2019 database, financial ratios were gathered from Orbis and Eikon databases, and GDP and market index growth data was obtained from World Bank and Yahoo Finance webpages respectively. The study includes 180 companies and the period is 2011-2018.

To accurately estimate the effect of employee share ownership, three different profitability ratios and valuation ratios were analysed. Chosen profitability ratios were return on assets, return on equity and profit margin. For valuation, EV/EBITDA ratio was used. Out of the performance measures, ROE showed strongest positive association with ESO, but only one of the three models provided statistically significant results. ROA also showed slightly lower positive relationship, with two of the models providing statistically significant results. Data analysis did not provide

evidence of relationship between profit margin and ESO. For EV/EBITDA, the analysis showed a negative and statistically signicant relationship with all three models. As EV/EBITDA is relative valuation method, which compares enterprise value to its earnings, it can be the case that positive relationship observed between employee share ownership and profitability is not seen on the same level in company valuation, or at all. ESO may also have negative effect on share price. The author encourages academics to further look into the relationship between employee share ownership and company valuation. Author hopes to see more studies on ESO and valuation, with broader sample and multiple valuation measures. Even though the topic has been looked at from many perspectives, there is still more to study about employee share ownership.

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APPENDICES

Appendix 1. Dataset for empirical study

https://www.dropbox.com/scl/fi/w81w4wc0yboaoff84mil4/EMPLOYEE-SHARE-OWNERSHIP-AND-COMPANY-PERFORMANCE_DATABASE_ELMERI-MAKKONEN.xlsx?dl=0&rlkey=magffhobcvokffn372kuwxo10

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