Employee ownership and firm performance

The performance of employee-owned firms in Europe

Master Thesis

The global economy will succeed……..
…….when employees feel a stake in the business.

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Title: Employee ownership and firm performance: The performance of employee-owned firms in Europe

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Abstract

Employee ownership is developing and growing in all European countries. Most studies have found that ESOP firms perform better than non-ESOP firms. These findings raised the question of whether higher share of employee ownership positively affects firm performance. This study investigated how employee share ownership affects firm performance and corporate R&D expenditures for the largest European companies who have employee ownership plans during 2006-2010 using EFES dataset. The empirical results using linear regression indicated a weak but positive association between employee ownership and firm performance, specifically for ROE and ROA. Also there was a negative association between employee ownership, profit margin and/or production growth. On the long-term using longitudinal data, employee ownership had a positive impact on ROE and ROA. But this study couldn't determine that higher share of employee ownership means higher performance of a firm. The findings were a bit differing of what was expected but still supports the argument that employee ownership alone doesn't guarantee better performance. And besides it indicate that share plans are more targeted to longer term impact.

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1. Introduction

1.1 Employee ownership developments

Over recent years there has been a considerable growth in the number of employee share ownership programs established within the EU. It is now a widespread form of employee participation in many industrialized nations. It is where employees obtain equity shares from their employer so that they become stockholders. In current years governments in North America, Europe, Australia, and Asia have promoted various forms of employee share ownership; however the numbers of schemes and the level of employee participation vary considerably between countries (Kaarsemaker & Pendleton, 2009). The increase in the popularity of such programs has been largely driven by the PEPPER reports and the introduction of government tax incentives (McCarthy and Palcic, 2011). Employee ownership is developing and growing in all European countries. France and the UK were the leading countries in this move. Today, most large companies have broad-based employee share plans in both countries. While 53.4% of companies are doing so in Europe, it is 80 to 90% in the UK and in France (EFES, 2012). The most recent numbers show that employee ownership was continuously progressing across Europe since the financial crisis. Last year 9.9 million employee owners held 232 billion Euros in their companies' shares compared to 9.5 million holding 197 billion Euros in 2010. Also according to EFES (2012) the democratization rate of employee ownership (calculated as % of employee owners / all employees) was approximately 30% in 2011, meaning that one-third of all employees are now co-owners of their company. The number of employee owners increased more in France, Spain, Sweden and Denmark, while it was decreasing in Italy, Portugal and Greece as well as in Belgium, Ireland and Germany.

1.2 Employee Ownership initiatives

Initiatives came from the European Commission and Parliament to launch in the opinion of the Economic and Social Committee of 26 February 2003, on the Commission Communication ‘a framework for the promotion of employee financial participation’. They called to submit more studies on this field. For example to explore the possibilities of financial participation in small and medium-sized enterprises and the possibility of implementing in other EU Member States share ownership schemes based on the

Employee Stock Ownership Plan (PEPPER IV, 2009). In the PEPPER III Report (2006), the EU Commission's Vice-President Mr. Verheugen claimed a stronger link between pay and performance as one possible way to improve the labor markets. Additionally the French Minister of Economy, Finances and Labor, said that France wishes to launch a European Model of financial participation supported by the member countries. Also in 2007 the European Reform Treaty was signed and thereafter approved by all EU member states in 2009. It is the first time that the EU clearly commits itself to the European Social Model as one of the pillars of its policy. In this treaty it is stated that 'the European Union shall work for the sustainable development of Europe based on a highly competitive social market economy, aiming at full employment and social progression'. And in 2010 the European Economic and Social Committee implemented the own-initiative opinion on the subject Employee Financial Participation**.**

Seeing all these notable political initiatives and the related positive developments of financial participation, it is assumed that the conditions for further developing employees' financial participation are now especially favorable for Europe. But still some important challenges remain, such as the lack of a European legal framework for financial participation to cope with the global competition, the growing demand for flexibility, the changing world of work etc. (PEPPER IV, 2009).

1.3 Research objective and importance

As already mentioned above there's recently remarkable political initiatives and also incredible growth in employee participation. This study is important for Europe since the European Commission stated that, "well-managed companies, with associated good corporate governance practices and sensitive to social and environmental issues, outperform their competitors". Europe needs more of these companies in order to generate employment and support greater long-term growth (European conference, 2009). The employee ownership structure and its European developments distinguish this research from others.

The employee ownership is a unique corporate structure when compared to most other ownership structures. So to study the relationship between employee ownership and firm performance would be outstanding. Moreover the first Annual Economic Survey of Employee Ownership in European Countries in 2007 revealed that employee ownership is progressing at a quicker rate and with greater depth across Europe than

expected. This had appeared as an unexpected development in most European countries. Most of the research on employee ownership was based in US or UK, so this is another reason why this study is distinctive since it uses updated data from the Annual Economic Survey of Employee Ownership that covers most European Countries and tests firm performance and also firm R&D expenditure.

Despite the win-win result of corporate financial success and higher compensation for employees promised by employee ownership, the concept still generates concern and challenging questions for many companies: Can it really work? Can employees be entrepreneurial? Do the employees make any money? Do firms with higher employee share ownership perform better? And so by doing this research specifically for EU firms some of these important questions will be answered.

To analyze and come with answers for above mentioned problems, interesting research questions were developed. The objective of this study is to examine empirically the relationship between firm performance (measured by annual sales growth, return on equity and profit margin) and employee ownership (measured by the percentage of stock held by employees).

There are a lot of studies done on the relationship between ownership structure and firm performance but less on the employee share ownership structure relation to performance and R&D development. While it is clear from earlier studies that employee stock ownership does affect firm performance, it is unclear how it affects firm performance. And the latter part will focus on the R&D expenditure which could explain how performance is affected. The other part would examine the relation between employee ownership and R&D expenditure. The main and sub research questions are given below.

Research question:

Does the employee share ownership positively correlate with firm performance and corporate R&D expenditures?

Sub questions:

- What is the relationship between employee-ownership, company performance and corporate R&D expenditures?
- Does increased employee-ownership lead to enhanced productivity?

To help answer the main question some interesting hypothesis were developed;
H1: Higher share of employee-ownership is positively related to company performance.
H2: Higher share of employee-ownership is positively related to more R&D expenditure.

To analyze the research question, the relation of these variables with the employee ownership will be looked at, while controlling for some other important factors.

1.4 Data Collection

The data that will be used in this research includes information about each firm employee-share-ownership, annual sales growth, ROA, ROE, profit margin, productivity and R&D expenditure for the years 2006 – 2010. This survey is possible due to a new database which enabled the collection of detailed information about employee ownership and employee share plans in each of all the largest European companies, gathered by European Federation of Employee Share Ownership (EFES). It includes 2.500 largest European companies, employing 32.6 million people, but this research will only focus on the top 100 of the largest firms in the sample. The firm financial information; R&D expenses and sales will be collected from COMPUSTAT. These datasets will be used to develop a relevant model in SPSS and Excel, and hopefully some interesting results will be found.

1.5 Thesis Structure

This paper is structured in the following order. The following chapter will begin with a theoretical background, the literature overview of past research which helps explain the theories that are forming part of this study. Here the main conclusions and interesting findings will be compared. Also the research hypothesis will be stated after the literature review. In the third chapter of this study the data collection and method will be discussed. Thereafter in chapter four the provided hypothesis will be tested by making use of regression analysis, to estimate the relationship between dependent variable (% employee-owned) and independent variables (sales growth, ROE and profit margin). Also there will be important evaluations when including the control variables (industry, or country specific or firm size variables). More detailed information about

how I calculate the statistics will be described in this section. Then in the last two sections the results will be interpreted and conclusions can be drawn. Also limitations and recommendations for future research will be given.

2. Literature Review

2.1 Introduction

Ownership structure is a worldwide debate when it comes to managing an organization properly. There are several types of ownership structures but the one which is important for this study is employee share ownership. This chapter provides a simple explanation of basic definitions for the term employee ownership, its different forms and importance.

2.2 What is employee ownership?

Employee ownership can have different meanings and is more complicated than one would think. That is why various literatures were gathered to understand what is meant with employee ownership. In fact, many people have called employee ownership different names for various situations; some only when it is pure owned by employees, others when its minority owned but still having controlling choices etc. So there is no universal definition. Employee share ownership (ESO) is a form of employee financial participation that confers on employees the right to share in the wealth of the company and, the right to exercise some degree of control over company affairs (Landau, Mitchell, O'Connell & Ramsay, 2007). And participation is defined as *"a process which allows employees to exert some influence over their work, over the conditions under which they work and over the results of their work"* (Poutsma, 2001). So when the expressions employee participation or employee ownership is used, it's meant almost the same. Employee ownership is also defined by The National Center for Employee Ownership (NCEO) as "a plan in which most of a company's employees own at least some stock in their company, even if they cannot vote it, and even if they cannot sell it till they leave the company or retire". However Kruse and Blasi (1995) define it as "ownership of common stock or partnership stakes exceeding 5% of the total market value of this equity, held by a group that includes substantially more employees than the senior executive team and key middle managers". Plus Caramelli (2004) used a more broad definition and stated that employee ownership refers to the fact that employees of a company are also stockholders of the company for which they work. Employee share ownership is identified as a means of enhancing company performance through promoting worker productivity. The theoretical basis for this reasoning is generally

located in agency theory. In the corporate governance context, agency theory has highlighted the 'corporate governance problem' arising out of the separation between 'ownership' and 'control'. Shareholders and managers may have differing interests and shareholders may find it difficult and expensive to monitor management, particularly where they hold small stakes in many different firms. Agency theory has also been used as a theoretical framework in studies of financial participation. It is discussed that agency costs arise as a result of the divergent interests between employees and other stakeholders in the company (principally managers and owners). Managers may seek to enhance these agency costs through directly monitoring employees and/or through adopting incentive-based forms of remuneration. Employee share ownership is one such incentive mechanism by which to reduce costs to the company through more closely aligning the interests of employees with those of other stakeholders in the company (Landau, Mitchell, O'Connell & Ramsay, 2007).

Workers' participation in ownership of enterprises is now large and growing phenomenon in developed economies (NCEO, 2008). Firms use employee ownership as one mechanism to increase employee commitment to the firm. Employees become owners of the company, their own personal financial performance becomes tied to the financial performance of the company and they become more committed to being productive workers within the company (Garrett, 2010). In particular, a distinction can be drawn on the control potential of financial participation and that which focuses on the productivity potential. Those who adopt the first view are concerned with the potential for employee share ownership to enhance employee control over the organizations in which they work. Those who focus on the second emphasize the effect that employee ownership may have on organizational performance, which is the main issue for this research.

2.3 Why employee ownership?

Corporate governance and ownership control have been widely discussed in different tabloids and forums due to the scandals that have taken place. The relationship between ownership structure and firm performance has become a topic of great interest. Agency theory has been widely applied to understand the shareholder–manager association. The relationship between ownership structure and economic performance is an important issue for firms, investors and regulators (Pedersen & Thomsen, 2003). It is

important for regulators/policy makers since employee ownership may be associated with increased productivity and employment in firms, which may increase the public interest and therefore justify public action to encourage the ownership structure. Also it can be seen as a promotion of other public interest objectives such as the redistribution of income and wealth, since it implies that firms share the profit and in some cases create wealth with the employees (Perotin & Robinson, 2002). Employee share ownership is regarded as a means of overcoming the perceived shortcomings in the view of maximization of shareholder interests, with employees as 'outsiders' in corporate governance. Employee share ownership can provide a means of 'internalizing the stakeholder-firm relationship (Landau, Mitchell, O'Connell & Ramsay, 2007). The idea of employee ownership has attracted support across the governmental field, often being seen as a form of economic equality that matches the political democracy.

Why now?

In today's dynamic business environment, new arrangements need to be done concerning management and employees in the workplace. The old contract which assured employees security and a decent wage in exchange for dedicated service and loyalty to the company is now gone. Yet every company needs to meet the persistent challenges of remaining competitive and profitable. So they need to retain and find ways to motivate key employees. Employee ownership plans are proved to be powerful retention and compensation strategies. These plans can have a profound positive impact on a corporation's revenue growth, continued productivity and profitability.

Employee share ownership can have an important role to play in boosting economic growth, promoting a fairer distribution of income and wealth, and giving individuals better control and autonomy over their own lives. Furthermore employee ownership offers a number of advantages to the employees themselves, spreading the ownership of capital amongst a larger cross section of society and providing savings and pensions for many in the private sector who might otherwise struggle to obtain them (Briône & Nicholson, 2012).

2.4 Forms of employee ownership

There's not just one clear simple definition of the term employee ownership, so employees can share their ownership in a company in various ways. It is important to distinguish between firms where employees own the firm (100%), share ownership where employees own a majority (25-50%) of company shares and that where employees own a small minority, typically 5% or less. In majority employee-owned firms, employees may have a strong sense of ownership, and may expect to be deeply involved in the governance and management of the firm. In modern industrialized economies, it is more common that employees own a minority of shares and this type of share ownership is concentrated in larger firms (Kaarsemaker & Pendleton, 2009). Kruse and Blasi (1995) indicated that there exist four important dimensions of employee ownership; (1) the percentage of employees who participate in ownership; (2) the percentage of ownership held within the company by employees; (3) the inequality of ownership stakes among employee-owners and (4) the privileges and rights that ownership confers upon employees. The second dimension is very important for this research since the percentage of shares owned by employees in a firm will be used to analyze the relationship among employee ownership and performance. The last dimension mostly depends upon the fact whether ownership is direct or indirect. Employee ownership enables employees to own a controlling interest in the corporation for which they work. Employees can own a corporation in various ways, directly, indirectly or mixture (Postlethwaite, Michie, Burns & Nuttall, 2005). The first involves employees becoming registered individual share owners of a majority of the shares in their firm; receiving dividends; voting at shareholder meetings (regulate its directors); and receiving sale earnings should they sell their shares. Indirect employee ownership involves shares being held on behalf of employees, normally through an employee trust. The last form is a mixture of direct and indirect ownership, thus a combination of individual and collective share ownership. So there can be several different forms of employee ownership that differ greatly, but they all share a common purpose; which is providing a capital ownership stake for labors.

The possession of shares in a company, in whole or in part, by the employees is an indication of their ownership stake. There are various forms of employee ownership that give employees a greater or lesser stake in the business. Trends in employee ownership in Europe were analyzed and different types of employee ownership were

identified. There are three core owner rights; the right to control, the right to the surplus and the right to the company's wealth. Shareholders typically have a share in all three rights; this is also the case for the *controlling employee ownership* (Mygind, 2012). As the table below shows, different types of employee financial participation give different combinations of rights to employees. For instance *profit sharing* may give employees rights to part of the surplus without control rights or rights to capital gains through share ownership. *Employee representation* in company boards means that employees have a share of the right to control without any share in the financial rights to profit or wealth. The *employee stock ownership plan* (ESOP) is when the shares are owned by an employee fund, which is often leveraged by loans with collateral in the company. The shares are then gradually transferred to the employees by contributions from the company. In general, employees do not fund their shares with wages or savings. The ESOP fund includes a collective element of ownership and facilitates the exit and entry of employee owners. The system has been supported by tax advantages. *Worker cooperatives* are usually based on cooperative principles of one vote per member and open membership to new employees. Those leaving the company are usually obliged to sell their member stakes. The sales value is often limited so the employees cannot realize capital gains. This type has been called collective ownership.

Different forms of employee participation in different owner rights

Type	*Right to control*	*Right to surplus*	*Right to wealth*
Controlling employee ownership	+	+	+
Employee stock ownership plans (ESOP)	Often limited	+	+
Minority employee ownership	Limited	+	+
Worker cooperatives	+	+	Limited
Employee representation on borad	Minority	0	0
Profit sharing	0	+	0

Source: Trends in employee ownership in Eastern Europe (2012)

There are various classifications of employee share ownership but the above table is a more comprehensive summary which includes different types of employee ownership and the participation degree of employees. There is employee savings plan or asset accumulation which offer a vehicle to allocate and invest sums received in other schemes. There's also stock option plans, individual stock purchases, pension plans (stock bonus) etc., but these types can always be categorized in one of the above forms.

The two types of financial participation that are more common in EU are the employee share/stock ownership and profit sharing (Poutsma 2001). Employee share/stock ownership is already explained above, but it is important to notice the difference that employee share/stock ownership are not directly linked to firm profits, it is associated to company profitability thus enabling members to gain indirectly from the firm's added value. Profit-sharing simply means the sharing of profits between owners and workers. Thus giving employees a variable part of income directly linked to profits or some other measure of enterprise results, in addition to their fixed wage. It can take several forms, direct or deferred. The benefits can be paid in cash, in shares or other securities, or allocated to specific funds. Profit-sharing can be categorized as cash-based profit-sharing, deferred profit-sharing, asset accumulation and savings plans. Cash and deferred profit-sharing have some common features but a cash-based profit-sharing plan is paid much sooner (almost immediately in cash) to the performance being rewarded than it is with deferred profit-sharing. Deferred profit-sharing is a form of delayed compensation under which the allocated profit share is held, usually in a trust and is not immediately available to the employee. And at last the asset accumulation and savings plans are usually contribution plans. Employees are here encouraged to set aside a portion of their wage and then receive contributions from their employer. In most cases it is invested in stocks, bonds or other investment choices. There is almost no direct incentive that might affect immediate performance.

2.5 The impact on performance

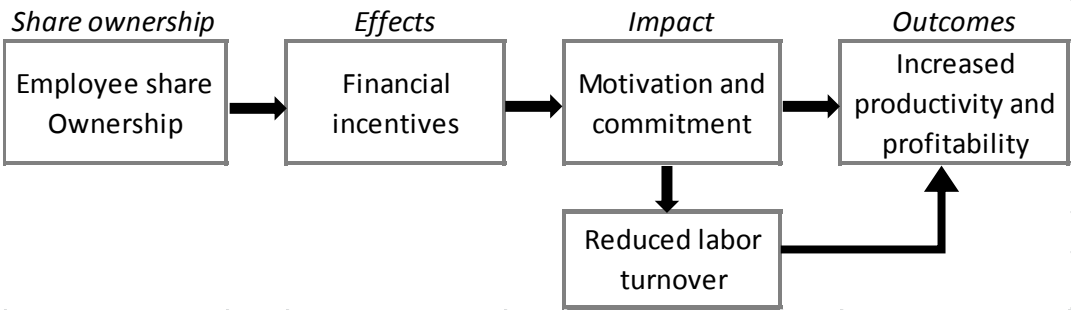
Over the last couple of years there have been many studies that have examined the performance of employee owned firms of different types using a variety of economic indicators. European studies on the impact of employee share ownership schemes on firm performance are somewhat limited (Poutsma, 2001). Research on employee share ownership can be grouped into two broad categories; the first viewpoint seeks whether employee share ownership has an impact on firm performance and the second viewpoint focuses on the industrial relations.

There are a number of studies that attempt to assess the relationship among employee share ownership and firm performance. Most of the past studies start with the principal-agent problem. This agency problem is found in most employer-employee relationships. It arises when there is an actual separation between the owners of the

firm and those who have effective control of it (Yener, 2002). Thus this occurs when shareholders (principals) hire managers (agents) to run the firm on their behalf. Both need each other since investors need specialized agents expertise and managers need funds provided by investors since they do not have their own capital to invest.

To solve this problem there are ways which employee share ownership schemes can reduce agency costs: through increased productivity as a result of employee's feeling they have a direct interest in the performance of the enterprise (thus enhancing commitment to the objectives of the firm); and through lowering monitoring costs through aligning employee interests with those of the firm (Landau, Mitchell, O'Connell & Ramsay, 2007). Furthermore Poutsma (2001) stated that firms implement financial participation systems to enhance commitment (direct participation, job satisfaction and investment orientation), resulting in improved economic performance and organizational performance (increased flexibility) and hence in improved industrial relations (reduced conflict). Thus employee ownership is thought to improve productivity by ensuring that employees' interests correspond to a certain extent with firm objectives. It provides employees with incentives to work more and better and to cooperate with colleagues and management, since their income will increase if firm performance improves. Employees are more willing to communicate information to management and to other colleagues, train junior colleagues which results in increased organizational efficiency (Perotin & Robinson, 2002). In this type of ownership, employees have extra financial motivations, more incentive to gain new skills, and want to stay longer with the firm, which would decrease turnover costs (such as costs of training new employees for firm specific skills).

Most studies conclude that employee ownership leads to higher motivation and thus higher labor productivity, but the majority of evidence suggests that employee ownership schemes alone do not improve company productivity. It is only improved where employee ownership plans are accompanied by increased employee participation in decision-making (Poutsma, 2001). The theory that employee share ownership increases motivation because employees have financial stake in a company is illustrated below.



Source: Shared Company: How employee ownership works (2005)

Then again, some literatures have argued that employee ownership can have adverse effects on firm performance for various reasons. Employee-owned firms often have problems attracting sufficient capital and problems creating an internal market for individual employee shares (Mygind, 2012). There's also the cost of joint governance; the impact of the conflict between heterogeneous groups of employees in organization with different interests and objectives on the decision making process (Hansmann 1993). It has also been argued by Landau, Mitchell, O'Connell & Ramsay (2007) that financial participation might instead cut productivity by tempting individual employees not to work hard but instead to free-ride on the effort of others because of the collective nature of the schemes. So there is significant evidence among studies across the world, indicating that financial participation has a positive or neutral effect on firm production, even though economic principle would predict that the effect could be either negative or positive. Despite all the counterpoints on the relationship between employee ownership and firm performance, this paper proposes that employee ownership may enhance firm performance. The specific hypothesis is as follows:

H1: Higher share of employee-ownership is positively related to company performance.

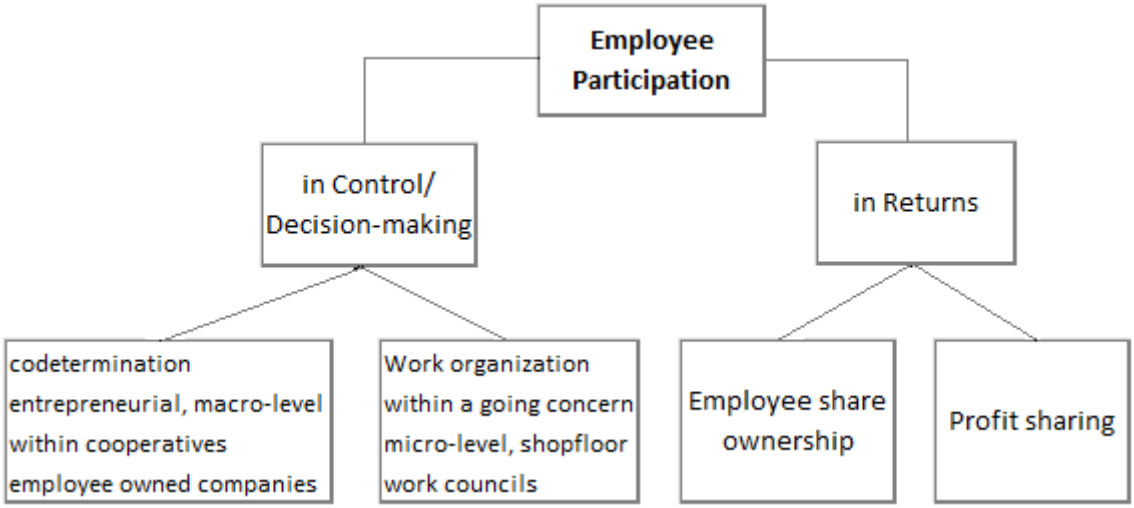
2.6 Impact on industrial relations

The second broad viewpoint focuses on the industrial relations and human resource management matters posed by employee share ownership. There's various research done on relationship between employee share ownership and participation by employees, both at the workplace level and in corporate governance; how participation affects employees behavior and attitudes; the relationship between employee share ownership and trade unions; and characteristics of companies adopting employee ownership plans etc.

A number of authors have explored the relationship between employee share ownership and participation. Employee participation can be divided into two primary categories: *work-related* and *financial* participation (Summers & Hyman, 2005). The first is concerned with the question of whether employee share ownership leads to greater levels of employee participation in decision making. Work-related participation in decision-making generally takes two forms according to (Lowitzsch, 2008); entrepreneurial co-determination and co-determination within a going concern. Entrepreneurial co-determination generally concerns strategic, macro-level decision-making in the firm and it is executed indirectly by representatives chosen by the employees. While co-determination on the other hand, consists of indirect participation through chosen representatives as well as direct participation by employees themselves. It usually involves work floor, micro-level decision-making on social questions as well as on organizational matters. But there is little evidence that employee ownership automatically lead to increased employee participation, either at the workplace or board level (Landau, Mitchell, O'Connell & Ramsay, 2007).

The second part focuses on the financial participation, which involves the distribution of shares to workers, based on the hypothesis that share ownership encourages positive attitudinal and behavioral reactions. Financial participation of employees is a form of compensation, in addition to fixed wage systems, that allows employees to participate in profits and firm results. It can take a variety of forms as seen in previous section, but the most common are employee share ownership and profit sharing, often in combination as stated by Lowitzsch (2008). Other studies on relationship between employee share ownership and industrial relations /HRM had various outcomes. As indicated by (Klein, 1987), there's three effects of financial participation schemes on attitudes and behavior of employees; First the owner effect, meaning that simply because employees get a share of company shares, they get a feeling of joint ownership. Pierce, Kostova and Dirks (2003) emphasize in this context the importance of psychological ownership. The argument is that ownership caused a change in the mindset that qualifies as psychological ownership, which in turn causes changes in attitude and behavior. Several empirical studies also show that effect (Pendleton 1999, Wagner et al, 2003). Secondly is the motivational effect, based on the expectation to achieve a beneficial outcome meaning that employees are motivated to do additional efforts since they expect that they will be rewarded with dividends or other

types of payments. And last the binding effect, in which identification with the organization and its goals takes place (interest effect); which means that employees with shares believe they have a common interest to serve management and the shareholders. Accordingly (Poutsma, 2001) employee share ownership changes employees' attitude and behavior by increasing their commitment to work, higher satisfaction (financially) and thus improving a firm's attractiveness for current and future employees. Along with these positive observations, there have been many concerns expressed about employee ownership, particularly that it can expose labors to excessive risk and may in some cases increase labor management conflict and lower economic performance (Kruse, 2002). Kruse and Blasi (1995) have studied a lot of research on employee attitudes, behavior and came to conclusion that employee ownership alone does not automatically improve employee attitudes and behavior whenever it is implemented. Also Hunt (2002) stated that without a strong feeling of participating in a joint enterprise, employee ownership will have little impact on the performance of a firm. This all is in similar to Pendleton (1999), who argued that any participation scheme have to be used in combination with other human resource instruments to have positive effects. They also found that there is no proof of decreased need or desire for union representation in employee ownership companies. The two broad parts of employee participation is illustrated in below figure.



Source: Financial Participation for a New Social Europe: A Building Block Approach (2008)

In summary the overall predictions of economic theory are uncertain, and suggestions that financial participation will affect productivity positively depend on the level of participation and design of the scheme. While the results of different studies are somewhat inconsistent, they suggest on average, that employee ownership has a

positive effect on corporate performance. They are split between favorable and neutral findings on the relationship between employee ownership and firm performance. Moreover, most of such studies explain those positive effects by changes in employee attitudes and behaviors.

2.7 Employee ownership plans in EU

As already mentioned there's a growing interest on the topic of employees' financial participation in Europe. Since 1990's is the European Commission promoting this phenomenon under the heading of PEPPER (Promotion of Employee Participation in Profit and Enterprise Results, including equity). For each country a team of economic and legal experts investigate the nature and extent of employee participation and its future prospect. There were several PEPPER reports to analyze the situation and to come with recommendations. There were recommendations given that there is more diversity than unity in the use of these employee financial participation schemes PEPPER II (1996). But the latest report PEPPER IV (2009) presents certain evidence that the past decade has seen a significant expansion of employee financial participation in Europe. Despite this positive trend it seems that financial participation has been extended to only a minority of countries. In EU employee participation has always been an important part of management and organization in firms. Many European governments have developed regulatory arrangements to stimulate the participation of employees. Recently, there's a shift from direct participation to a more indirect participation. This shift is mostly explained by global competition and increased flexibility requirements (Poutsma, 2001).

National differences between countries

The most widely used forms of financial participation in Europe are the profit-sharing and employee share ownership schemes (Poutsma, 2001). There is a discrepancy, rather than a convergence, in the way in which financial participation schemes are implemented in different European countries. According to Poutsma (2001) each country's pattern of financial participation is reflected in their *industrial relations* system, the fundamental *business/corporate culture* and the *corporate governance* system. So every country has its own characteristic and its own dominant participation

structure that reflects their industrial relations system. For example Nagelkerke and de Nijs (1998) described the reflection of working logic for UK is the logic of contract, for France the logic of opposition and for Germany the logic of cooperation. As anticipated there are large differences between countries. UK seems to be the nation with substantial use of share schemes. While France seems to be a country with mandatory profit sharing schemes. Germany established capital accumulation plans for employees, Spain with tradition of cooperatives and Finland and Holland appears to be countries with a national wage saving system.

As for the differences in business/corporate culture it's meant the social and cultural factors that influence the financial participation arrangements. These aspects determine how corporations in a country are structured and managed. Thus it is expected to have different employment relationship in corporations, in the sense that labors and bosses in different countries have different attitudes towards financial participation (Poutsma, 2001). Besides the influences of national industrial relations and cultural factors, there are corporate governance factors that influence the existence of employee participation. For corporate governance systems, a discrepancy is expected in the way which these schemes are implemented in various European countries (Poutsma, 2006). Employee share ownership schemes are part of corporate governance systems with a greater emphasis on participation by employees. According to Weimer and Pape (1999) three models of corporate governance can be distinguished; Anglo-Saxon, German and Latin. Here the capital market is very important because there's a big difference between the capital markets of typical Anglo-Saxon countries, such as USA and the UK, and those of continental Europe. In the Anglo-Saxon countries the stock market tend to represent a much larger proportion of the total employment and number of corporations while in other EU countries stock markets is dominated by institutional investors, banks and financial holdings. Below there's a table showing the countries and some of these differences in corporate governance systems.

Characteristics	Anglo-Saxon	German	Latin
	US UK Australia Canada	Germany Netherlands Switzerland Sweden Austria Denmark Norway Finland	Italy Spain France Belgium
Influence of stakeholders	Share owners	Industrial banks, employees	Financial holdings, government, families
Time-horizon of economic relations	Short term	Long term	Long term

Source: Recent trends in employee financial participation in the European Union (2001)

All those differences mentioned above determine the existence of schemes to a large extent. Also it important to mention that the most used types of financial participation in each country depends on the possible benefits provided by government policies (Poutsma, 2006). For example in US small private companies tend to adopt employee share ownership, while in EU it is more concentrated in large publicly listed firms.

2.8 Employee ownership and R&D

Relying only on performance doesn't guarantee a sustainable future of a firm in this dynamic business environment. To survive and generate profits in the modern dynamic business environment, firms need to spend continuously and heavily on research and development (R&D) to produce a steady stream of innovations (Chen & Huang, 2006). In order to achieve this more efficiently and last costly firms must solve the principal-agent problem. Agency theory assumes that owners are risk neutral because of their possibility to diversify, but isn't the case for agents who cannot diversify easily and thus are more risk averse. Agents who are risk averse will make decisions that minimize risk in order to guarantee continued employment. By providing managers (agents) with some form of ownership in a firm, it is expected that they might be more willing to take risks that optimize long-term performance of the organization. To solve agency problems associated with R&D, and thus encourage firms to make large R&D expenditures, firms need to build up an incentive alignment mechanism to change the

risk orientation of managers and encourage the desired efforts from employees. R&D projects are sometimes complex and knowledge-based which may create information asymmetry problems between employees and shareholders. This in turn increases R&D risks according to (Chen, Lee, Chien, Huang, 2009). Employee share ownership could help reduce agency conflicts between employees and investors, in turn decreasing R&D risks and agency costs. Additionally in co-owned firms the level of trust and consultation is high. Usually changes is seen as a threat , but in these kind of firms because of trust and routine communication employees see the importance of change and tend to adapt more quickly to innovations (Postlethwaite, Michie, Burns & Nuttall, 2005). Furthermore evidence from previous studies suggested that firms with bigger R&D investment face more severe agency problems and also require more use of equity-based compensation (Ryan and Wiggins, 2002; Chen, 2003). By increasing the probability of success in R&D, firms are more likely to make large expenditures on R&D. A suitable level of risk taking in a firm is important to pursue future opportunities and maintain competitive advantages (Welbourne, 1996). This paper proposes that R&D expenditure is affected by the level of employee ownership and thus the following hypothesis has been developed:

H2: Higher share of employee-ownership is positively related to more R&D expenditure.

3. Data and methods

3.1 Introduction

In this section the way the study was conducted will be described. The chapter is divided in three categories which are participants, instruments and procedures. It includes an explanation of how the data for the report were collected and also a description of the methods that were used to collect and analyze the obtained information.

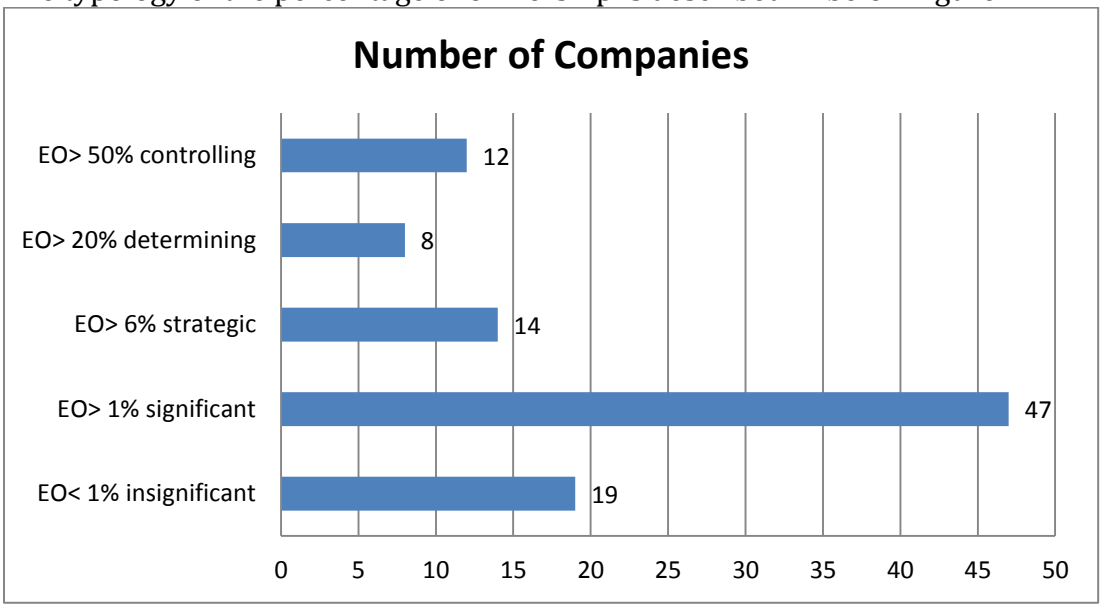
3.2 Participants (sample)

To be able to measure the relationship between employee ownership and firm performance, the top 100 largest firms were used as sample from the EFES database to drawn conclusions on the 2.500 largest European companies. The sample includes 100 largest firms excluding the financial institutions and was collected from the website of EFES. The financial performances of these firms were collected from Wharton Research Data Services (WRDS), specifically COMPUSTAT Global which contains European firms. So the information gathered from these sources is secondary data. To obtain the different performance measures for each firm their International Securities Identification Number (ISIN code) were obtained and then the needed data was collected which is the return on equity, annual sales growth and profit margin. The data were collected in two phases, first the ownership data of all the firms were collected from EFES (including firm specific variable e.g. industry) and secondly the performance variables (e.g. ROE, sales etc.) were collected manually for each firm.

The European Federation of Employee Share Ownership (EFES) act as the umbrella organization of employee owners, companies and all persons, experts, trade unions, researchers, institutions looking to promote employee ownership and participation in Europe. The EFES was recognized by the European Commission as the European Business Representative Organization in the field. There was need for better and more recent information since employee ownership was growing fast in Europe and it was not possible to obtain accurate information. There was a growing gap between companies and practitioners, and also between social and political actors. This could present an incorrect picture of this growing phenomenon. For these reasons the EFES has established a new database and the "Annual Economic Survey of Employee Ownership in European Countries". This database contains information of all the 27 countries plus

Norway and Switzerland. Furthermore they use timely information and high quality since the info is produced by companies themselves in Annual Reports. The EFES database gathers all detailed info about employee ownership and employee share plans in 2.500 largest European companies[1]. From this dataset, the European Employee Ownership Top 100 is yearly published and the companies are ranked by equity held by employees. The ranking consists of Europe's largest companies that are partly or totally employee-owned through a share purchase plan, ESOP, or other share ownership plans, or as a workers' co-operative. The 2.500 group of companies have a market capitalization of 200 million euros and more (listed firms), and the non-listed have firms that employees own 50% or more of the company, when employing 100 persons and more. The information of listed firms is more accurate but for the non-listed firms the annual report was used to compute the needed measures. Using EFES dataset, the Top 100 firms in 5 years distribution of the percentage of ownership is described below.

The typology of the percentage of ownership is described in below figure.



As seen in the above figure and applied by EFES, up to 1% employee ownership appears to be insignificant, over 1% it is becoming significant, over 6% it is strategic, over 20% it is determining, and over 50% it is controlling. It can be clearly seen that in most firms, employee ownership is still relatively low with percentage of ownership below 6% representing more than half of the sample (same as literatures suggests). Employees own more than 6% of outstanding shares in only 34 companies of the sample.

[1] www.efesonline.org **DATABASE OF EMPLOYEE OWNERSHIP IN EUROPEAN COMPANIES**

3.3 Instruments

Now the methods that were used to gather the relevant information are described. First the dataset of EFES was used to come up with the top 100 firms over 5 years. The firms that came most in the top 100 from 2006 till 2010 were analyzed and gathered. The information on the top 100 contains the company name, its Employee Ownership held capitalization in millions, Capitalization in millions, % Employee-owned, country, number of employees and industry. After analyzing the top 100 for every year, one final table (which is used for this study) was developed with the companies that came up in the top 100 the most. The most important information from this table was the percentage that employees own in a firm because this variable was used to test whether there's correlation with firm performance.

To analyze firm performance different measures can be used. Various papers were analyzed to decide which is more appropriate for this study. The measures of economic performance that were used the most are; profitability, productivity, and compensation. For instance (Blasi, Conte and Kruse, 1996) used four measures of profitability such as , profit margin, return on equity, return on total earning assets, and price/ earnings ratio. Additionally they included some productivity (sale per employee) and compensation (benefits) measures. (Meng, Ning, Zhou, Zhu, 2010) examined firm performance using measures such as ROS, ROA, ROE, Tobin's q, and productivity. More studies also used similar measures adding growth, investment, employment, EBIT or Payout ratio etc. (Chen, Lee, Chien, Huang, 2009; Catherine, 2011). So by looking at various research papers we can see some similarities in using performance measures. And to analyze and test the hypotheses developed in this study we will try to determine if employee ownership has any effect on growth, on profitability and on investments (R&D). The other variables are also important but due to time constraint, research objectives and data availability; this research will only focus on the already mentioned performance measures which are annual sales growth, ROE, ROA, profit margin, production growth and R&D.

Methodology

This paper conducts regression analysis to examine relationship using cross-sectional and longitudinal data to come up with robust results. First the average of the 5 years for both the dependent and independent variables were used to compare them against each other to test correlation and also present descriptive statistics. Thus by using univariate analysis we estimated the average of performance, ownership and control variables. The differences between the groups of employee ownership were analyzed with multivariate analysis of variance (MANOVA) since these variables are all ratio scaled. MANOVA was here useful since it is a statistical test for comparing multivariate (population) means of several groups (e.g. group means of sales, ROE, profit margin and R&D).

Another statistical test that was used is linear regression. Thus to study whether the observed differences in performance are related to the differences in employee ownership level, the following basic regression model was estimated;

$Firm\ performance = \beta o + \beta 1\ (\%\ EO) + \beta 2\ (control\ variables) + \varepsilon$

Firm performance= (Avg. Sales growth, ROE, ROA, Profit Margin, productivity and R&D)

% EO= average percentage that employees own in a firm

Control variables= Industry type, country, leverage and firm size

ε = error term

The model uses firm performance as the dependent variable. As mentioned earlier, five different proxies (sales and production growth, ROE, ROA and profit margin) are used to measure firm performance and also R&D for investment. We use (2) types of proxies to represent the percentage that employees own in a firm; significant ownership (>5%) and minority ownership (< 5%). Also it controls for two variables (industry and country).

The other part would focus on the longitudinal data for all the years using multivariate variables (repeated cross-sectional time-series) to link ownership and firm performance, thus explaining more detailed results. Thus a multivariate approach was applied using cross-sectional regression with performance and controlling for industry and firm characteristics. The same regression equation was used but now with firm and year included;

$Firm\ Performance_{it} = \beta 0 + \beta 1\ (\%\ Employee\ Ownership_{it}) + \beta 2\ (Firm\ Size_{it}) + \varepsilon_{it}$

where for firm i and year t (t=2006-2010)

3.4 Procedures

To test the developed hypotheses for this research, performance measures were observed to analyze the impact of employee ownership on firm performance using new dataset. The variables that were used to examine this relationship are classified into three categories named as dependent variable (ownership measure), independent variables (performance measures) and control variables (firm/country characteristics).

Dependent variable

Employee ownership is measured as the percentage of outstanding shares owned by the employees in a company. As already discussed employee ownership can take various forms and different outcomes, so it is important to distinguish them. In the gathered data the types of ownership found were ESOP plans, worker cooperatives, partnership and minority employee ownership. As already stated by Kaarsemaker & Pendleton (2009), it is important to distinguish between 100% ownership, majority ownership (25-50%) and minority ownership (< 5%). These categories were used to see whether higher employee ownership tends to have stronger correlation with better firm performance. All of these data were collected through the provided dataset from EFES.

Independent variables

The independent variables were collected from COMPUSTAT database and also from companies' annual reports (missing data). The first variable was sales and the data were collected for 6 years. After collecting the data from 2005-2010, the annual sales growth was computed. Here 6 years were gathered because the annual sales growth needed to be computed for the years 2006-2010. The annual sales growth is calculated as the amount a company develops from sales compared to a previous year. The variable productivity growth was calculated as the change in the ratio (Revenues)/(Number of employees). The ROE were also collected from COMPUSTAT database for the 5 years and is measured as net income/ shareholders equity. Also ROA which is (profit margin*asset turnover) were collected. The same was for profit margin collecting the net income to calculate it (net profit/ sales) and R&D expenditure to calculate the R&D ratio (R&D/total assets) for all the years 2006-2010.

Control variables

Numerous control variables are used in the analyses to account for alternative determinants of firm performance, including industry, leverage, firm size and country specific characteristics. Firm size was not of primary interest in this study since the dataset compiled information for mostly big firms with market capitalization bigger than 200 million euro, but it still have influence on firm performance and some unlisted firms. Firm industry and country characteristics, are two important factors that affect both corporate performance and incentive contracts. (Meng, Ning, Zhou, Zhu, 2010). These variables were also specified in the EFES database, and only the matching of country with corporate governance systems where compiled manually.

Industry is an important control variable for this research since it could make a difference in performance of the firms. Also the different countries with various corporate governance systems could influence the ownership structure of firms. Below there's two tables showing the industry composition and also the different countries used for the sample firms. Following the industry-classification guideline publicized by Industry Classification Benchmark (ICB), firms in our sample come from 9 different industries in total according to the (ICB)[2]. There are a couple of industries where firm number is more concentrated than other industries, such as consumer goods (23), industrials (20), and consumer services (13). Under consumer goods there's food & beverage, automobiles & parts, leisure goods etc. For industrials it is construction & materials, aerospace and defense, support services etc. And consumer services have retail, media, travel & leisure companies etc. This classification developed by Dow Jones Indexes and FTSE, contains over 60,000 firms and 65,000 securities worldwide and is used globally to divide the market into increasingly specific categories, allowing investors to compare industry trends between well-defined subsections. The

Industry Class	
Oil & Gas	7
Basic Materials	10
Industrials	20
Consumer services	13
Consumer goods	23
Health Care	6
Technology	5
Telecommunications	6
Utilities	10

[2] http://www.icbenchmark.com/

ICB categorize individual companies into subsectors, based primarily on a firm's major source of revenue.

From this table can be seen that most firms are from France and UK which is what most studies have shown and also pointed out by the EFES. In this study firms from 14 different European countries were analyzed.

Count of firms by Country			
France	33	Austria	3
UK	28	Belgium	2
Germany	8	Finland	2
Switzerland	7	Spain	1
Italy	5	Luxemburg	1
Netherlands	5	Poland	1
Ireland	3	Slovenia	1

All the variables used in our study are described in the table below.

Variable	Description	Assigned Code
Ownership measures:		
Employee Ownership	The percentage of outstanding shares owned by the employees of a company in 2006-2010. The data is provided by EFES.	
	Minority ownership (EO<5%)	EO<5%
	Significant ownership (EO>5%)	EO>5%
Performance measures:		
Revenues	Total sales in the years	
Revenue growth	Yearly growth in revenues (%)	Sales growth
ROE	Net income / shareholders' equity	ROE
Profit Margin	Net profit/ sales	Profit
ROA	Net profit/Assets	ROA
Productivity growth	Change in (Revenues/Number of employees)	Prod
R&D expenditure	Ratio of R&D expenditures to Total assets	RD
Control variables:		
Firm Size	Market capitalization	Cap
Country	14 EU Countries	Country
Industry	Firm charateristic	Industry
Leverage	Assets/Shareholders equity	Lev
Corporate Governance	Corporate governance systems	Corp

4 Empirical analysis & Discussion

4.1 Introduction

In this chapter the results of this research will be analyzed. This section is divided into four main subsections; the descriptive statistics, second the statistical methods used to find empirical findings on employee ownership and its impact on firm performance and R&D, then a panel data analysis and at last the discussion on the results.

4.2 Descriptive statistics

In this section, the description statistics will be presented. The descriptive statistics of this study is presented in tables below. Table below presents the descriptive statistics such as the mean, minimum, maximum and standard deviation. For this descriptive statistics the time-series averages for each firm was used. The second table will show the different types of employee ownership and the third table shows the correlation between variables used in the study.

Variables	Mean	Min	Max	Std. Dev
Sales Growth	7,64	-14,60	29,10	7,74
ROE	16,26	-30,20	51,90	13,20
Profit Margin	7,51	-11,50	26,10	6,90
ROA	6,10	-6,70	27,20	5,23
R&D	2,83	0,00	16,60	3,77
Productivity	3,84	-18,30	24,60	6,58
Employee Ownership	14,70	0,14	100,00	25,48
Leverage	3,34	1,43	8,72	1,66
FirmSize	28778	4,00	157000	33717

Note: Descriptive statistics is based on time series averages per firm

The descriptive results shows that the average share the employees own for our sample firms is 14.7%, the mean ROE is 16.3%, annual sales growth is 7.6%, profit margin 7.5%, ROA 6.1%, productivity growth 3.8% and R&D 2.8%. The mean leverage for the sample firms is 3.3 indicating a high leverage ratio, but this point out the fact that the sample has a lot of firms in e.g. construction, manufacturing which is an appropriate level for their industries. It is also important to note that some standard errors for the performance measures are quite high. For instance it is 25.5 for employee ownership and 13.3 for ROE.

	Corporate Governance			
	Anglo-Saxon	German	Latin	Total
Profit Sharing	15	14	30	59
ESOP	16	14	7	37
Cooperatives	0	0	4	4
	31	28	41	100

There were also three different types of employee ownership used in this study as shown in above table. Here the table shows a crosstab of the different types of employee ownership with corporate governance systems. As can be seen there was more firms with profit sharing (59) and then ESOP (37). And profit sharing was the most in countries with a Latin corporate governance system, and ESOP for an Anglo-Saxon system (e.g. UK & Ireland). There were only 4 cooperatives and all was in Latin corporate governance systems.

Another important description of the statistics is the correlations between the different variables, and below table illustrates this.

Correlations

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1 Sales growth	--											
2 ROE	0,282	--										
3 Profit Margin	0,326	0,504	--									
4 ROA	0,321	0,756	0,605	--								
5 R&D	-0,009	0,103	0,047	0,235	--							
6 Employee Ownership	0,040	0,050	-0,341	0,197	-0,018	--						
7 Productivity growth	0,312	0,161	0,300	0,163	-0,363	-0,317	--					
8 EU Countries	0,005	0,067	-0,042	0,021	0,078	0,106	0,035	--				
9 Industry Class	-0,040	-0,088	-0,048	-0,236	0,197	-0,081	-0,202	0,007	--			
10 Corporate Governance	-0,178	-0,407	-0,233	-0,351	0,009	-0,149	-0,114	-0,251	0,097	--		
11 FirmSize	0,022	0,171	0,387	0,190	0,042	-0,414	0,256	-0,158	0,019	-0,123	--	
12 Leverage	-0,113	-0,039	-0,282	-0,413	-0,090	0,011	-0,029	-0,151	0,159	0,074	-0,148	--

In table above which the correlation is presented shows that employee ownership has weak but positive correlation with sales growth, ROE and ROA. It also shows that profit margin, R&D and productivity growth has a weak but here a negative correlation with employee ownership. For the other control variables like industry, corporate governance and firm size it has a negative correlation with employee ownership and for country and leverage there is a positive correlation. Inter-correlations among other variables are not high, so for this study there's no concern about multicollinearity. Multicollinearity exists whenever two or more of the variables in a regression model are moderately or highly correlated (Farrar & Glauber, 1967).

4.3 Statistical methods

The first statistical method that were used to analyze the data was general linear model (GLM) using multivariate analysis of variance (MANOVA) to test for significant differences between two groups (EO< 5% and EO > 5%). This was to see if there are significant differences between the various performance measures from the 2 groups thus comparing low vs. high share of employee ownership.

Group means	EO < 5%	EO > 5%
Sales growth	7,62	8,30
ROE	16,43	15,65
Profit margin	9,19	5,05
ROA	5,83	6,62
R&D ratio	2,67	3,60
Productivity	5,56	1,75

The table below gives an overview of the mean differences and it can be seen that sales growth, ROA and R&D have a higher mean for the higher employee ownership. This might indicate that higher employee ownership doesn't mean higher firm performance (as seen for ROE, productivity and profit margin). But for better conclusion more statistical test is needed. It is important to note that this multivariate test has indicated that there's significant difference in mean performance between the groups. (Pillai's Trace 0.00<0.05). So the hypothesis that all mean are the same based on low vs. high employee ownership level has been rejected. Groups (EO<5% & EO>5%) differ in performance which is in equivalent of what is expected.

After conducting above comparison test, analyzing the descriptive statistics and seeing that employee ownership and firm performance has weak correlations, a regression analysis were performed including some other variables to better predict the relationship between the variables. Since there's correlation between employee ownership and the dependent variables the two developed hypothesis should be tested.

The regression equation below is to test the effect of employee share ownership on firm performance.

Firm performance = βo + β1 (% Employee Ownership) + β2 (control variables) +ε

In order to test the hypothesis that higher share of employee ownership positively relates to better firm performance, a linear regression was performed. Thus to see if there's a linear relationship between the two variables. However as shown in below table, productivity and profit margin has a significant relation with employee ownership

but it's opposite of what is expected because they have a negative coefficient (-0,092 for profit margin and -0.082 for production) indicating that higher share of EO provides lower profit margins and production growth. And here only ROA had a positive (0.064) significant relationship (p-value 0.004<0.05) with employee ownership and thus supporting the developed hypothesis. Hypothesis (H1) should be rejected that higher employee ownership positively relates to better firm performance in this study, since only one performance measure indicated this relationship.

Variables	Dependent variables											
	Sales growth	Model (including controle variables)	ROE	Model (including controle variables)	Profit margin	Model (including controle variables)	R&D	Model (including controle variables)	ROA	Model (including controle variables)	Productivity	Model (including controle variables)
Intercept	7,468	4,874	15,878	6,502	8,865	-9,725	2,857	3,262	5,536	5,877	5,039	6,35
	0,000	0,499	0,000	0,594	0,000	0,088	0,000	0,554	0,000	0,000	0,000	0,001
Avg. EO	0,012	0,028	0,026	0,078	-0,092	0,014	-0,005	-0,013	0,042	0,064	-0,082	-0,072
	0,696	0,564	0,623	0,351	0,001	0,708	0,887	0,735	0,053	0,004	0,001	0,008
Firm Size		0,689		2,342		4,279		-0,506		0,000		0,000
		0,646		0,357		0,000		0,666		0,003		0,127
Country		0,036		0,394		0,193		0,105		0,057		0,187
		0,888		0,394		0,344		0,535		0,719		0,337
Industry		-0,117		-0,464		-0,182		0,321		-0,500		-0,654
		0,736		0,430		0,504		0,107		0,024		0,016

Notes: 1. Significance Level: P*<0.05

2. Total observations is 100

Additionally the table shows that neither sales growth, ROE or R&D had significant relationship with employee ownership, nor moreover by including control variables to predict the outcome better, didn't help as much since the relationship remained insignificant. This is in parallel with the correlation coefficients shown earlier that there was a weak relation between the variables. Thus the second hypothesis should also be rejected since employee ownership has no significant correlation with R&D. (instead it has a negative coefficient (-0,013) indicating a weak and negative relation). Also these results are consistent with some literature suggesting that employee ownership alone doesn't guarantee better performance (e.g. Poutsma, 2001).

4.4 Panel data analysis

Seeing that above outcomes didn't result in a good approximation of the relation between the variables, another approach was taken and so time effects were included. A panel data methodology was employed and it addresses two issues while measuring the impact of ownership on firm performance. Panel data may have group effects, time effects, or the both, which are analyzed by fixed effect and random effect models. A fixed effect model assumes differences in intercepts across groups or time periods, while a random effect model explores differences in error variances. There's also a one-way (e.g. firm) or two-way model (e.g., firm and year). And for this study the two-way model will be used using only fixed effects since data where gathered in identical time periods. One often used model used to model these effects is multilevel modeling, called mixed linear models in SPSS. In this study the panel data analysis is used to study the behavior of firms over time. And 100 firms were analyzed for 5 years which is 100*5=500 observations per variable. So to determine the effect of employee ownership on firm performance, a two-way fixed effect approach was used. A two-way fixed effects approach (named linear mixed model or LLM) was preferred because it controls for heterogeneity which is the unobservable firm characteristics and time effects (Chen, Lee, Chien, Huang, 2009). And the following paragraphs will illustrate the results of the panel data analysis for each dependent variable.

4.4.1 Sales

To identify the effect of employee ownership on firm performance, six different performance measures were used to analyze the relation. The first variable was annual sales growth, and to see what effect employee ownership has on firm performance different regression analysis were done, every time including more variables to better predict the outcome. Thus as seen in below table 6 different regression were performed and every time including one more variable to help predict the outcome. But here it didn't help much since the effect of employee ownership on sales growth wasn't significant in none of below results. So it indicates that employee ownership doesn't have significant effect on a firm's sales growth on the long-term.

Regression Analysis results (Two-Ways Fixed-Effect)

Variables	**Dependent variable: Sales Growth**				
Intercept	(7,362) 0,000	(5,940) 0,000	(7,630) 0,000	(-2,354) 0,001	(-2,406) 0,001
EO	(0,015) 0,584	(0,036) 0,230	(0,051) 0,100	(0,025) 0,464	(0,030) 0,419
Firm Size		(0,000) 0,074	(0,000) 0,118	(0,000) 0,353	(0,000) 0,836
Leverage			(-0,462) 0,167	(-0,295) 0,396	(-0,329) 0,352
Country				(9,348) 0,057	(15,133) 0,018*
Industry					(-4,750) 0,024*

Notes: 1. Significance Level: P*<0.05
2. Beta coefficients are in brackets.

4.4.2 ROE

To assume that employee ownership favors firm performance more variables has to be analyzed. And now the other five measures will be analyzed to get a better picture of the relationship, now first return on equity. As below table shows, employee ownership have an effect on firm ROE with a positive coefficient (0.106) and p-value of 0.001<0.05. It also shows that including more variables didn't help to predict the outcome better, thus by controlling for country and industry, since than the relationship between the main variables changes to be insignificant (e.g. 0.096>0.05).

Variables	**Dependent variable: ROE**				
Intercept	(15,835) 0,000	(12,234) 0,000	(11,944) 0,000	(4,128) 0,538	(4,023) 0,533
EO	(0,048) 0,107	(0,100) 0,001*	(0,106) 0,001*	(0,065) 0,053	(0,058) 0,096
Firm Size		(0,000) 0,000*	(0,000) 0,000*	(0,000) 0,009*	(0,000) 0,041*
Leverage			(0,035) 0,918	(0,486) 0,147	(0,634) 0,058
Country				(6,201) 0,000*	(3,377) 0,000*
Industry					(2,731) 0,000*

4.4.3 Profit Margin

Profit margin was another performance measure that was used and below there's table showing the effect employee ownership has on profit margin on the long run. The table illustrates that employee ownership has a negative and significant relationship with profit margin in all regressions performed (e.g. -0.055) with p-values < 0.05. Here the included variables did help predict the dependent variable, but it doesn't support the hypothesis that higher employee ownership enhances firm performance. Instead it directs a negative relation which is unexpected in this study.

Regression Analysis results (Two-Ways Fixed-Effect)

Variables	**Dependent variable: Profit Margin**				
Intercept	(8,894) 0,000	(6,693) 0,000	(9,319) 0,000	(-5,233) 0,099	(-5,901) 0,041
EO	(-0,088) 0,000*	(-0,055) 0,001*	(-0,051) 0,001*	(-0,082) 0,000*	(-0,067) 0,000*
Firm Size		(0,000) 0,000*	(0,000) 0,000*	(0,000) 0,006*	(0,000) 0,005*
Leverage			(-0,688) 0,000*	(-0,605) 0,000*	(-0,496) 0,001*
Country				(15,908) 0,000*	(16,366) 0,000*
Industry					(-0,682) 0,000*

Notes: 1. Significance Level: P*<0.05
2. Beta coefficients are in brackets.

4.4.4 ROA

In order to test our hypothesis, ROA were also used to come up with conclusions and below table show the results. Although profit margin had a negative relation, ROA proves that employee ownership and firm ROA have positive (0.059) and significant relationship (0.00<0.05) and thus supports the research hypothesis. It is important to mention here that profit margin is a part of Return of Assets (ROA= profit margin x asset turnover) and it can be that employee ownership stimulates the asset turnover with a higher margin and thus helps ROA to contributes to a positive relation. Thus this indicates that a firm can have a high return on assets even if it has a low profit margin because it has a high asset turnover (e.g. grocery stores).

Variables	Dependent variable: ROA				
Intercept	(5,618) 0,000	(3,774) 0,000	(6,875) 0,000	(-5,615) 0,026	(-5,805) 0,015
EO	(0,033) 0,007*	(0,059) 0,000*	(0,057) 0,000*	(0,045) 0,000*	(0,043) 0,001*
Firm Size		(0,000) 0,000*	(0,000) 0,000*	(0,000) 0,002*	(0,000) 0,003*
Leverage			(-0,854) 0,000*	(-0,708) 0,000*	(-0,589) 0,000*
Country				(12,453) 0,000*	(8,870) 0,000*
Industry					(3,714) 0,000*

4.4.5 R&D

In order to test how employee ownership impacts the investment side of a firm, R&D was used to see if it supports the hypothesis that the relationship between the variables is positive. As table below shows, employee ownership have no significant relationship with R&D and even including when more variables were included in the model it didn't help. Instead there's a negative coefficient (e.g. -0,010) indicating negative relation but still it isn't significant thus the second hypothesis is rejected that higher share of employee ownership favors higher R&D.

Regression Analysis results (Two-Ways Fixed-Effect)

Variables	Dependent variable: R&D				
Intercept	(2,899) 0,000	(2,747) 0,000	(3,135) 0,000	(0,624) 0,473	(-2,605) 0,002
EO	(-0,007) 0,662	(-0,004) 0,799	(-0,006) 0,714	(-0,005) 0,694	(-0,010) 0,314
Firm Size		(0,000) 0,542	(0,000) 0,630	(0,000) 0,891	(0,000) 0,000*
Leverage			(-0,111) 0,287	(0,004) 0,961	(0,061) 0,340
Country				(2,590) 0,000*	(2,831) 0,000*
Industry					(5,021) 0,000*

Notes: 1. Significance Level: P*<0.05

2. Beta coefficients are in brackets.

4.4.6 Productivity

To identify the effect of employee ownership on productivity, the variable productivity growth has been used and is the change in the ratio (Revenues)/(Number of employees). Several previous studies also tested the firm's productivity (e.g., Cin and Smith, 2002; Hu and Zhou, 2008). And as seen in below table most of regression tests did find a statistical link between employee ownership and productivity. However the result is different of what was expected from literature since here the coefficients (e.g. -0,088) are all negative indicating a significant but negative relation between the variables.

Regression Analysis results (Two-Ways Fixed-Effect)

Variables	**Dependent variable: Productivity**				
Intercept	(4,966) 0,000	(3,652) 0,001	(4,314) 0,010	(-8,676) 0,211	(-7,893) 0,251
EO	(-0,081) 0,004*	(-0,061) 0,041*	(-0,058) 0,066	(-0,088) 0,011*	(-0,109) 0,003*
Firm Size		(0,000) 0,100	(0,000) 0,132	(0,000) 0,286	(0,000) 0,869
Leverage			(-0,159) 0,635	(-0,128) 0,712	(-0,202) 0,570
Country				(15,655) 0,015*	(17,666) 0,025*
Industry					(-2,159) 0,241

Notes: 1. Significance Level: P*<0.05

2. Beta coefficients are in brackets.

4.5 Discussion of results

The results didn't find enough evidence to support the theory that higher employee share ownership positively relates to better firm performance. And in this study three ways were used to see whether employee ownership affects firm performance:

(1)Different simple linear regressions were performed (for each dependent variable) to see if there's a positive relation between employee ownership and firm performance. (2) MANOVA was used to test for significant differences between groups, thus to see if there's significant differences between the various performance measures from the two groups (EO<5% & EO>5%). And at last (3) a linear mixed model were performed using longitudinal data to see whether employee ownership changes the effect on firm performance on the long run.

After doing all these analysis, the main findings were;

- There's no robust positive relationship between employee ownership and firm performance for most of the variables (excluding ROA).
- Employee ownership has significant positive impact on ROE and ROA when considering long term effects.
- Employee share ownership tends to have contradictory effect on profit margin and production growth.
- There was significant differences in employee ownership groups thus EO<5% and EO>5%, but not meaning that higher share of EO tend to have higher means of firm performance for all the variables.

The research findings were a bit contradictory of what was expected and it can be for different reasons. The available data was in the time period (2006-2010) were we had a global economic crisis and thus has effect on all firms' performances. Also there can be various other factors (besides the control variables included) that influenced the performance of these firms which is beyond the scope of this study. Most of the studies had compared ESOP firms with non-ESOP firms and came to conclusion that ESOP firms performed better, but these were different from this study who wanted to go even further to see if higher employee ownership relates to better performance. It is important to note that (Briône & Nicholson, 2012) stated that on the long run an ESOP firm would surpass a non-ESOP in performance if they start at the same time, which may indicate that on the long run employee ownership would have more effect and it's what we saw with ROE and ROA when doing the panel analysis.

Another interesting finding was the negative correlation between employee ownership and profit margin which may indicate that growth in revenues was realized by lowering prices or that these firms could have higher wages. Also it can be that firms with high asset turnover have low profit margins. These firms require less physical assets for each sales dollar, entry to these industries is high which leads to intense competition and thus lower profit margins. This all can explain why both the ROE and ROA had significant positive relationship with employee ownership. Since (ROE =profit margin * asset turnover * Leverage) indicating that the sample firms had a low profit margin, high turnover and high leverage ratio, which comes out to a positive ROE and ROA. But these

are just thoughts and are not conclusive since there are other ways which could explain this and also not all the findings were robust.

The relationship between employee ownership and production growth was also negative and differing from some previous literature, indicating that employee ownership alone doesn't guarantee a growth in production. Also there wasn't a significant relationship between employee ownership and R&D, demonstrating no positive association when it comes to companies investments.

Furthermore some literature suggested that employee ownership alone does not guarantee better performance (Poutsma, 2001; Landau, Mitchell, O'Connell & Ramsay, 2007; Kruse, 2002; Kruse and Blasi, 1995). They concluded that for employee ownership to work effectively it must be accompanied by increased employee participation in decision-making, thus employees need to have a strong feeling of participation. And Pendleton (1999) advised that to do this there must be a combination of participation scheme and human resource instruments to get positive effects.

5.2 Conclusions

After searching all the relevant information and conducting analysis based on the results, conclusions can be drawn. Now the research question can be answered. The initial goal of this paper was to ascertain the effect of employee share ownership on firm performance using new dataset and so to understand the current developments. After a review of the existing literature to get better understanding of the topic, a central question was developed with some hypothesis to examine empirically the relationship between employee ownership and performance. The central question was: *Does employee share ownership positively correlate with firm performance and corporate R&D expenditures?* The hypotheses that were developed for this particular study was; (1) Higher share of employee-ownership is positively related to company performance and (2) Higher share of employee-ownership is positively related to more R&D expenditure. But from the findings it can be concluded that employee ownership doesn't automatically enhance firm performance or R&D expenditure, so both hypothesis has been rejected (except for ROE and ROA).

The main results obtained from the different analysis was that there's a weak but positive correlation between employee ownership and firm performance, employee ownership has a positive impact on return on equity and return on assets on the long-term and at last that there's a difference in performance when considering the level of ownership the employees own. The finding of a negative correlation between employee ownership and profit margin or productivity growth is probably contradictory since no literature has specified this and further analysis on this effect should be done for verification. From the six performance measures only two (ROE and ROA) had significant positive relationship with employee ownership. Two of the other key variables (profit margin and productivity) had negative significant relationship with employee ownership. Plus sales growth and R&D didn't have even a significant relationship with employee ownership. So to answer the main question, it can be concluded that employee ownership has a positive correlation with firm performance for some performance measures but it's still weak. And we cannot conclude that higher share of employee ownership means higher performance of a firm. But this all is in accordance with some literature who suggested that employee ownership alone doesn't

guarantee better performance. It must be accompanied by increased employee participation in decision-making, thus employees need to have a strong feeling of participation.

5.3 Recommendations & Further Research

Since employee ownership is in a growing trend the last years it's obvious that more up to dated research is needed to cope with new developments (83% of all large companies have employee share plans now, compared to only 40% ten years ago in EU according to EFES). The financial crisis has affected mostly everything around us and thus also the political awareness on employee ownership which is one good contributor to a healthier corporate governance on long-term and stability. Now in most cases employee ownership plans are designed for all employees rather than just for a small number. Despite these positive developments it seems that financial participation has been extended to only a minority of countries in EU. Thus further research on reasoning these developments is crucial for the future. The EFES has done a great job on developing their database on employee ownership, which now can help on doing more accurate and reliable study on this topic. All these developments and changes bring more questions for exploration on the topic. For example by exploring the fact of better income distribution on the long run by increased employee share plans. Also further research on small firms (since large firms were used in this study) can also help predict outcomes of employee ownership. Perhaps empirical studies with larger sample of firms including listed and non- listed, with more broad control variables can capture the relationship better and prove more robust conclusions on this topic.

6. References

- Briône P. & Nicholson C. (2012): Employee ownership: Unlocking growth in the UK economy. Centre Forum research.

- Caramelli M. (2004): A Theoretical Cross-Cultural Study of the Attitudinal Effects of Employee Stock Ownership.

- Catherine S. (2011): Employee Ownership, Corporate Governance and Financial Performance: A review of academic literature and an analysis of French publicly-traded companies.

- Chen, C. (2003): Investment opportunities and the relation between equity value and employees' bonus. Journal of Business Finance and Accounting, 30, 941-973.

- Chen H., Lee H., Chien C., & Huang Y. (2009): R&D Investment, Assets in Place, Employee Stock Bonus and Firm Performance. International Research Journal of Finance and Economics. http://www.eurojournals.com/finance.htm

- Chen H. & Huang Y. (2006): Employee stock ownership and corporate R&D expenditures: evidence from Taiwan's information-technology industry. Springer Science and Business Media.

- Cin, B., Smith, S., 2002. Employee stock ownership and participation in South Korea: Incidence, productivity effects, and prospects. Review of Development Economics 6, 263–283.

- EFES (2012) European Federation of Employee Share Ownership http://www.efesonline.org/news.htm

- European Conference (2009): Employee financial participation for corporate governance and social dialogue. Rome 10 December 2009.

- Farrar, E., & Glauber, R. (1967): Multicollinearity in Regression Analysis: The Problem Revised. The Review of Economics and Statistics. 49, 1, 92-107.

- Garrett R. (2010): Does Employee Ownership Increase Innovation? Indiana University. New England Journal of Entrepreneurship.

- Hansmann H. (1993): Worker participation and corporate governance. University of Toronto Law Journal.

- Hunt J. (2002): The paradox of ownership: New research examines how employee share schemes affect a company's performance: Financial Times London (UK) 01 Mar 2002.

- Hu, Y., Zhou, X., 2008. The performance effect of managerial ownership: evidence from China. Journal of Banking and Finance 32, 2099–2110.

- Kaarsemaker E. & Pendleton A. (2009): Employee Share Ownership Plans: A Review. The York Management School Working Paper No. 44. Retrieved from website: http://www.york.ac.uk/management/research/working-paper/

- Klein, K. (1987): 'Employee stock ownership and employee attitudes: a test of three models.' Journal of Applied Psychology.

- Kruse D. (2002): Research Evidence on Prevalence and Effects of Employee Ownership. The National Center for Employee Ownership. www.nceo.org

- Kruse D. and Blasi J. (1995): Employee Ownership, Employee Attitudes, and Firm Performance. National Bureau of Economic Research. NBER Working Paper.

- Landau I., Mitchell R., O'Connell A. and Ramsay I. (2007): Employee Share Ownership: A Review of the Literature. Employee Share Ownership Project, Australian Research Council Discovery Project Grant.

- Lowitzsch J. (2006): The PEPPER III Report: Promotion of Employee Participation in Profits and Enterprise Results in the New Member and Candidate Countries of the European Union. Retrieved from website: http://www.eurofound.europa.eu/

- Lowitzsch J., Hashi I., and Woodward R. (2009): The PEPPER IV Report: Benchmarking of Employee Participation in Profits and Enterprise Results in the Member and Candidate Countries of the European Union. Retrieved website: www.eurofound.europa.eu/

- Lowitzsch J. (2008): Financial Participation for a New Social Europe: A Building Block Approach. Institute for Eastern European Studies, Free University of Berlin

- Mathieu M. (2010): Annual Economic Survey of Employee Ownership in European Countries. European Federation of Employee Share Ownership (EFES). Retrieved from website: www.efesonline.org

- McCarthy D. and Palcic D. (2011): The Impact of Large-scale Employee Share Ownership Plans on Labor Productivity: The Case of Eircom. Bournemouth University Research papers.

- Meng R., Ning X., Zhou X. & Zhu H. (2010): Do ESOPs enhance firm performance? Evidence from China's reform experiment. Journal of Banking & Finance.

- Mygind N. (2012): Trends in employee ownership in Eastern Europe, The International Journal of Human Resource Management, 23:8, 1611-1642.

- Nagelkerke, A.G. and de Nijs W.F. (1998): Institutional Dynamics in European Industrial Relations. Review of Labor Economics and Industrial Relations. *12*, (4), 745-772, ISSN 1121-7081

- NCEO (2008): National Center for Employee Ownership. http://nceo.org/library/widespread.html, Oakland, California.

- Pedersen T. & Thomsen S. (2003): Ownership Structure and Value of the Largest European Firms: The Importance of Owner Identity. Journal of Management and Governance 7: 27–55.

- Pendleton, A. (1999): 'Profit-sharing and employee share ownership' in Reward Systems, Thorpe and Homan (Eds.), Pitman Publishers, London.

- Pérotin V. & Robinson A. (2002): Employee Participation in Profit and Ownership: A Review of the Issues and Evidence. Leeds University Business School.

- Pepper Report II (1996): PEPPER II: Promotion of participation by employed persons in profits and enterprise results (including equity participation) in Member States. Report from the EU Commission.

- Pierce J., Kostova T. and Dirks K. (2003): 'The state of psychological ownership: Integrating and extending a century of research', Review of General Psychology.

- Postlethwaite R., Michie J., Burns P. & Nuttall G. (2005): Shared Company: How employee ownership works. Job Ownership Limited.

- Poutsma E. (2001): Recent trends in employee financial participation in the European Union. Foundation for the Improvement of Living and Working Conditions. Retrieved website: www.eurofound.europa.eu/publications/

- Poutsma E. (2006): Changing Patterns of Employee Financial Participation in Europe: A survey among listed firms in Six European Member States. Nijmegen School of Management. Participation and New Employment Relationship Research Group.

- Ryan, Jr. H. and Wiggins, R. (2002): The interactions between R&D investment decisions and compensation policy. Financial Management, 31, 5-29.

- Summers J. and Hyman J. (2005): Employee participation and company performance: A review of the literature. Joseph Rowntree Foundation.

- Wagner, S., Parker, C. and Christiansen, N. (2003). 'Employees that think and act like owners: effects of ownership beliefs and behaviors on organizational effectiveness.' Personnel Psychology.

- Weimer J. and Pape J. (1999): 'A taxonomy of Systems of Corporate Governance'. Corporate Governance: An International Review, Volume: 7 Issue: 2 pp.152-166.

- Welbourne, T. (1996): Using ownership as an incentive: Does the "too many chiefs" rule apply in initial public offering firms? (CAHRS Working Paper). Cornell University, School of Industrial and Labor Relations, Center for Advanced Human Resource Studies. Website: http://digitalcommons.ilr.cornell.edu/cahrswp/175

- Yener D. (2002): Employees as Stakeholders: The Challenges of Building an Employee Ownership Culture. OECD Corporate Governance Round Table.

Appendix

Sample firms			
Total	Carrefour	Veolia Environnement	Geox
Novartis	Volkswagen	Philips Electronics	Christian Dior
Bouygues	Arcelor - Mittal	Nestle	Lagardère
John Lewis Partnership	Arcadis	Fortum	Wolseley
Vodafone	Groupe Danone	Rolls-Royce	Rio Tinto
BP	L'Oréal	E.ON	PGNIG
GlaxoSmithKline	BASF	Marks & Spencer	Actelion
Safran	Diageo	Cadbury Schweppes	Roche
Vinci	GDF Suez	Enel	Reckitt Benckiser
France Telecom	EDF	Lafarge	Legrand
Sanofi-Aventis	TomTom	Thales	Imperial Tobacco
Eiffage	Unilever NV / plc	Lindt	STEF-TFE
Saint Gobain	British American Tobacco	BG Group	Eircom
Tesco	Vivendi	Syngenta	Mondragon Corporación Coop.
Siemens	Daimler	InBev	Auchan
Renault	Voestalpine	Alstom	Sacmi
Colruyt	EADS	LVMH	Unipart
RWE	WPP Group	BHP Billiton	CPL Concordia
Schneider Electric	British Telecom	Betandwin AG	Arup Group
Air France - KLM	Pernod Ricard	Petrofac	Consorzio Veneto Coop.
Essilor	PSA Peugeot Citroen	Indep News & Media	PA Consulting Group
Nokia	Alcatel - Lucent	Logitech	Mott MacDonald
Royal Dutch Shell	Air Liquide	National Grid	Halcrow
SAP	OMV	Ryanair Holdings	Eaga Partnership
Anglo American	Bayer	Altran	Merkur Group

MANOVA

Descriptive Statistics		
EO Low vs High		**Mean**
Sales Growth	EO < 5%	7,62
	EO > 5%	8,30
ROE	EO < 5%	16,43
	EO > 5%	15,65
Profit Margin	EO < 5%	9,19
	EO > 5%	5,05
ROA	EO < 5%	5,83
	EO > 5%	6,62
R&D ratio	EO < 5%	2,67
	EO > 5%	3,60
Productivity	EO < 5%	5,56
	EO > 5%	1,75

Multivariate Tests[a]							
Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	,657	61,354[b]	3,000	96,000	,000	,657
	Wilks' Lambda	,343	61,354[b]	3,000	96,000	,000	,657
	Hotelling's Trace	1,917	61,354[b]	3,000	96,000	,000	,657
	Roy's Largest Root	1,917	61,354[b]	3,000	96,000	,000	,657
EOclass3	Pillai's Trace	,144	5,377[b]	3,000	96,000	,002	,144
	Wilks' Lambda	,856	5,377[b]	3,000	96,000	,002	,144
	Hotelling's Trace	,168	5,377[b]	3,000	96,000	,002	,144
	Roy's Largest Root	,168	5,377[b]	3,000	96,000	,002	,144

Regression Analysis

Coefficients(a)						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	5,536	0,597		9,274	0,000
	Average EO	0,042	0,021	0,197	1,959	0,053
a. Dependent Variable: Avg. ROA						

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	5,877	1,454		4,042	0,000
	Average EO	0,064	0,022	0,303	2,926	0,004
	FirmSize	0,000	0,000	0,319	3,074	0,003
	EU Countries	0,057	0,159	0,035	0,362	0,719
	Industry Class	-0,5	0,217	-0,219	-2,3	0,024

a. Dependent Variable: Avg. ROA

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,050[a]	,002	-,008	13,24661

a. Predictors: (Constant), Average EO

Coefficients[a]

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	15,878	1,531		10,370	,000
	Average EO	,026	,052	,050	,494	,623

a. Dependent Variable: Avg. ROE

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,150[a]	,022	-,019	13,31922

a. Predictors: (Constant), Industry Class, EU Countries, Average EO, Firm Size

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	385,926	4	96,482	,544	,704[a]
	Residual	16853,159	95	177,402		
	Total	17239,085	99			

a. Predictors: (Constant), Industry Class, EU Countries, Average EO, Firm Size

b. Dependent Variable: Avg. ROE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	6,502	12,150		,535	,594
	Average EO	,078	,083	,151	,938	,351
	Firm Size	2,342	2,528	,152	,926	,357
	EU Countries	,374	,436	,091	,856	,394
	Industry Class	-,464	,586	-,081	-,792	,430

a. Dependent Variable: Avg. ROE

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	5,039	0,725		6,949	0,000
	Average EO	-0,082	0,025	-0,317	-3,309	0,001

a. Dependent Variable: Avg. Productivity

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	6,35	1,796		3,535	0,001
	Average EO	-0,072	0,027	-0,28	-2,724	0,008
	FirmSize	0,000	0	0,159	1,541	0,127
	EU Countries	0,187	0,193	0,091	0,965	0,337
	Industry Class	-0,654	0,268	-0,228	-2,442	0,016

a. Dependent Variable: Avg. Productivity

Panel data Analysis

Estimates of Fixed Effects(a)

						95% Confidence Interval	
Parameter	Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
Intercept	15,83485	0,837503	486	18,907	0,000	14,189278	17,480427
EO	0,047537	0,029398	486	1,617	0,107	-0,010225	0,105299

a. Dependent Variable: ROE.

Estimates of Fixed Effects(a)							
						95% Confidence Interval	
Parameter	Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
Intercept	12,23416	1,156184	486	10,582	0,000	9,962424	14,505896
EO	0,100225	0,031187	486	3,214	0,001	0,038947	0,161503
Cap	0,000097	0,000022	486	4,424	0,000	0,000054	0,000141
a. Dependent Variable: ROE.							

Estimates of Fixed Effects(a)							
						95% Confidence Interval	
Parameter	Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
Intercept	11,94379	1,681738	479	7,102	0,000	8,63929	15,248281
EO	0,106405	0,031474	479	3,381	0,001	0,04456	0,168249
Cap	0,000100	0,000022	479	4,517	0,000	0,000056	0,000143
Leverage	0,034742	0,337319	479	0,103	0,918	-0,628065	0,69755
a. Dependent Variable: ROE.							

Type III Tests of Fixed Effects(a)				
Source	Numerator	Denominator	F	Sig.
Intercept	1	479	24,165	0,000
EO	1	479	3,749	0,053
Cap	1	479	6,824	0,009
Leverage	1	479	2,109	0,147
Country	13	479	5,378	0,000
a. Dependent Variable: ROE.				

Type III Tests of Fixed Effects(a)				
Source	Numerator	Denominator	F	Sig.
Intercept	1	479	21,142	0,000
EO	1	479	2,776	0,096
Cap	1	479	4,198	0,041
Leverage	1	479	3,604	0,058
Country	13	479	5,922	0,000
Industry	8	479	5,18	0,000
a. Dependent Variable: ROE.				

Estimates of Fixed Effects(a)							
						95% Confidence Interval	
Parameter	Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
Intercept	5,618309	0,338006	479	16,622	0,0000	4,954152	6,282467
EO	0,032754	0,012072	479	2,713	0,007	0,009032	0,056475
a. Dependent Variable: ROA .							

			Estimates of Fixed Effects(a)				
						95% Confidence Interval	
Parameter	Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
Intercept	3,774026	0,461088	479	8,185	0,000	2,868021	4,680031
EO	0,059404	0,012594	479	4,717	0,000	0,034659	0,08415
Cap	0,000050	0,000009	479	5,677	0,000	0,000033	0,000067
a. Dependent Variable: ROA .							

			Estimates of Fixed Effects(a)				
						95% Confidence Interval	
Parameter	Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
Intercept	6,875051	0,644522	479	10,667	0,000	5,608612	8,14149
EO	0,056964	0,012062	479	4,722	0,000	0,033262	0,080666
Cap	0,000043	0,000008	479	5,089	0,000	0,0000264	0,0000596
Leverage	-0,85365	0,129277	479	-6,603	0,000	-1,107664	-0,599626
a. Dependent Variable: ROA .							

Estimates of Fixed Effects[a]

						95% Confidence Interval	
Parameter	Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
Intercept	2,898906E0	,225645	336	12,847	,000	2,455051	3,342761
EO	-,006505	,014872	336	-,437	,662	-,035759	,022748

a. Dependent Variable: R&D ratio.

Estimates of Fixed Effects[a]

						95% Confidence Interval	
Parameter	Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
Intercept	2,747325E0	,335491	336	8,189	,000	2,087398	3,407251
EO	-,003931	,015450	336	-,254	,799	-,034323	,026460
Cap	3,496939E-6	5,730157E-6	336	,610	,542	-7,774562E-6	1,476844E-5

a. Dependent Variable: R&D ratio.

Estimates of Fixed Effects[a]

Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	3,134736E0	,494276	336,000	6,342	,000	2,162472	4,107001
EO	-,005686	,015512	336	-,367	,714	-,036198	,024827
Cap	2,780780E-6	5,759826E-6	336	,483	,630	-8,549083E-6	1,411064E-5
Leverage	-,111326	,104455	336	-1,066	,287	-,316794	,094143

a. Dependent Variable: R&D ratio.

Estimates of Fixed Effects[b]

Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	,624346	,869461	336,000	,718	,473	-1,085926	2,334618
EO	-,005265	,013356	336	-,394	,694	-,031537	,021006
Cap	-7,112830E-7	5,173934E-6	336	-,137	,891	-1,088867E-5	9,466100E-6
Leverage	,004432	,089783	336	,049	,961	-,172177	,181040
[Country=1,00]	1,534380E0	,890684	336	1,723	,086	-,217639	3,286399
[Country=2,00]	3,353668E0	1,001209	336,000	3,350	,001	1,384240	5,323095
[Country=3,00]	,896044	,934929	336	,958	,339	-,943007	2,735096
[Country=4,00]	3,281186E0	1,106443	336	2,966	,003	1,104758	5,457614
[Country=5,00]	7,030919E0	1,010218	336	6,960	,000	5,043771	9,018067
[Country=6,00]	,676015	1,307237	336	,517	,605	-1,895386	3,247415
[Country=8,00]	-,507532	1,660174	336	-,306	,760	-3,773176	2,758112
[Country=9,00]	7,429604E0	1,317006	336	5,641	,000	4,838989	10,020219
[Country=10,00]	-,380384	1,662447	336	-,229	,819	-3,650499	2,889730
[Country=12,00]	0[a]	0	.	.	.	.	.

a. This parameter is set to zero because it is redundant.

b. Dependent Variable: R&D ratio.

Estimates of Fixed Effects[b]

Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	-2,604979E0	,818675	336	-3,182	,002	-4,215352	-,994605
EO	-,010038	,009964	336	-1,007	,314	-,029638	,009561
Cap	-1,493865E-5	4,108136E-6	336	-3,636	,000	-2,301955E-5	-6,857741E-6
Leverage	,061160	,064023	336	,955	,340	-,064775	,187096
[Country=1,00]	1,050438E0	,681585	336	1,541	,124	-,290273	2,391149
[Country=2,00]	4,320488E0	,758941	336	5,693	,000	2,827613	5,813364
[Country=3,00]	,887248	,672883	336	1,319	,188	-,436347	2,210842
[Country=4,00]	3,552183E0	,854251	336	4,158	,000	1,871829	5,232537
[Country=5,00]	4,492962E0	,783389	336	5,735	,000	2,951998	6,033926
[Country=6,00]	2,841432E0	,968614	336	2,934	,004	,936119	4,746744
[Country=8,00]	,645207	1,188641	336	,543	,588	-1,692908	2,983322
[Country=9,00]	7,208702E0	1,005765	336	7,167	,000	5,230313	9,187091
[Country=10,00]	,482798	1,175944	336	,411	,682	-1,830342	2,795938
[Country=12,00]	0[a]	0	.	.	.	.	.
[Industry=1]	3,865945E0	,696961	336	5,547	,000	2,494989	5,236902
[Industry=2]	2,888011E0	,566378	336	5,099	,000	1,773916	4,002105
[Industry=3]	3,755632E0	,526206	336	7,137	,000	2,720559	4,790705
[Industry=4]	2,906150E0	,744131	336	3,905	,000	1,442407	4,369893
[Industry=5]	2,458679E0	,488355	336	5,035	,000	1,498061	3,419297
[Industry=6]	1,021232E1	,631615	336	16,169	,000	8,969900	11,454734
[Industry=7]	6,267440E0	,646995	336	9,687	,000	4,994769	7,540110
[Industry=8]	7,810651E0	,637309	336	12,256	,000	6,557034	9,064269
[Industry=9]	0[a]	0	.	.	.	.	.

a. This parameter is set to zero because it is redundant.

b. Dependent Variable: R&D ratio.

Estimates of Fixed Effects(a)

Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	8,89E+00	0,423803	493	20,987	0	8,061734	9,727098
EO	-0,08765	0,014518	493	-6,037	0	-0,116173	-0,059124

a. Dependent Variable: Profit Margin.

Estimates of Fixed Effects(a)							
						95% Confidence Interval	
Parameter	Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
Intercept	6,69E+00	0,579287	493	11,553	0	5,55444	7,830793
EO	-0,05535	0,01532	493	-3,613	0	-0,08545	-0,025249
Cap	5,96E-05	1,10E-05	493	5,404	0	3,79E-05	8,13E-05
a. Dependent Variable: Profit Margin.							

Estimates of Fixed Effects(a)							
						95% Confidence Interval	
Parameter	Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
Intercept	9,32E+00	0,815592	479	11,426	0	7,71673	10,921891
EO	-0,05097	0,015264	479	-3,339	0,001	-0,080964	-0,020978
Cap	5,22E-05	1,07E-05	479	4,883	0	3,12E-05	7,33E-05
Leverage	-0,68835	0,163589	479	-4,208	0	-1,009792	-0,366909
a. Dependent Variable: Profit Margin.							

		Type III Tests of Fixed Effects(a		
Source	Numerato	Denomina	F	Sig.
Intercept	1	479	100,692	0,000
EO	1	479	26,661	0,000
Cap	1	479	7,579	0,006
Leverage	1	479	14,606	0,000
Country	13	479	7,604	0,000
a. Dependent Variable: Profit Margin.				

Estimates of Fixed Effects(a)							
						95% Confidence Interval	
Parameter	Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
Intercept	7,361696	0,804902	491	9,146	0,000	5,780218	8,943174
EO	0,015104	0,027584	491	0,548	0,584	-0,039094	0,069302
a. Dependent Variable: Sales Growth.							

Estimates of Fixed Effects(a)							
						95% Confidence Interval	
Parameter	Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
Intercept	5,94E+00	1,12922	491	5,26	0,000	3,721067	8,158466
EO	0,03583	0,029835	491	1,201	0,230	-0,02279	0,09445
Cap	3,85E-05	2,15E-05	491	1,789	0,074	-3,77E-06	8,07E-05
a. Dependent Variable: Sales Growth.							

Estimates of Fixed Effects(a)							
						95% Confidence Interval	
Parameter	Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
Intercept	7,63E+00	1,662111	477	4,59	0,000	4,363552	10,895481
EO	0,051382	0,031195	477	1,647	0,100	-0,009914	0,112678
Cap	3,41E-05	2,18E-05	477	1,566	0,118	-8,69E-06	7,70E-05
Leverage	-0,4616	0,33356	477	-1,384	0,167	-1,117029	0,193829
a. Dependent Variable: Sales Growth.							

Type III Tests of Fixed Effects(a)				
Source	Numerator	Denominator	F	Sig.
Intercept	1	477	11,316	0,001
EO	1	477	0,536	0,464
Cap	1	477	0,864	0,353
Leverage	1	477	0,722	0,396
Country	13	477	1,706	0,057
a. Dependent Variable: Sales Growth.				

Type III Tests of Fixed Effects(a)				
Source	Numerator	Denominator	F	Sig.
Intercept	1	477	11,32	0,001
EO	1	477	0,654	0,419
Cap	1	477	0,043	0,836
Leverage	1	477	0,867	0,352
Country	13	477	2,018	0,018
Industry	8	477	2,236	0,024
a. Dependent Variable: Sales Growth.				