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The prevalence and antecedents of Employee Stock Ownership in Denmark

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Abstract

Based on a survey among the 500 biggest companies in Denmark the author tests the prevalence and antecedents of Employee stock ownership (ESO). The study finds that the use of ESO has increased in Denmark to 35 % of all large companies, but reports at the same time, that while the use of narrow-based ESO schemes has increased, the number of companies employing broad-based schemes has declined. The study tests the antecedents of three different types of ESO, a general definition including all companies with more than one employee owning stocks in the company and a broad-based and narrow-based type including subsequently a majority of the employees or only key employees. Large differences were found in the antecedents of the three types concluding that different kinds of companies employ different kinds of ESO. The antecedents were divided into external factors outside management control and internal factors that could be effected by management. The analysis of the external factors showed, that while stock listing were a significant positive antecedents of all three types, the financial and information and telecommunication sector were negative antecedents of both companies employing the general type of ESO and the narrow-based type. The study also reveals that young companies implement ESO more often than old companies. The test of the internal factors found that companies using individual incentive systems are more willing to implement the general and narrow-based ESO type, while group incentives suggest the use of broad-based schemes, the study also suggest that companies distributing decision authority to employees or emphasis on formal planning tend to use ESO more often than others.

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INTRODUCTION

The use of employee stock ownership plans (ESOP) in companies has increased dramatically during the last three decades both supported by government actions (i.e. tax benefits) and based on a managerial view on employee stock ownership (ESO) as an effective mean for increasing motivation within firms. However, whereas the positive effects of ESO have been analyzed empirically for a number of different geographical locations, the use and prevalence of ESO has in general received less attention and is mainly analyzed for the U.S. market (Blasi et. al, 2003). Among the few studies looking at ESO use outside the U.S. context are the PEPPER I, II and III studies conducted by the European Union's commission (EU) and the investigation by Pendelton et al. (2001) based on the CRANET data.

Given that the use of ESO plans is often considered to increase growth, profitability and survival rates of firms, differences in ESO adoption rates may have impacts on the competitive balance between different countries within the EU as well as between the EU states, reluctant in use of ESO, and the U.S.(Blasi et al. 2003).

Further investigation of the spreading of ESO both at a company and sector level but also of the prevalence among the workers at individual companies and the antecedents determining the (non-)adoption of ESO seems thus highly warranted.

The present paper aims at contributing to our understanding of the prevalence and the determinants of use of ESO in Europe. It investigates the prevalence and antecedents of use in Denmark based on a survey conducted in winter 2009 on the 500 biggest Danish companies as measured by numbers of employees. Results suggest that the use of ESO in general has increased among Danish companies, but also reveals that while a large increase in the use of narrow-based ESO plans is found, the use of broad-based schemes has declined since 2001. The paper also suggests that the antecedents of ESO-companies depend on the type of ESOP employed by the company. It thus

contributes to our understanding of the prevalence and antecedents of ESO in companies. The antecedents of ESO-employing companies are tested using a number of logistic regression models. The paper is structured as follows: It starts out with summarizing and reviewing the existing literature on ESO usage and its antecedents. This basis allows identifying the factors that can be hypothesized to impact ESO adoption among firms. Afterwards, it describes the method used for collecting and analyzing the empirical data. Next, the paper presents the results obtained. It closes with a discussion of the results and conclusions for further research.

DEFINITION OF ESO

Definitions of employee stock ownership (ESO) and employee stock ownership plans (ESOP) are used in a variety of ways throughout the literature. Distinctions are made between who initiate the scheme the employee or the company or the scheme being individual or collective. Some scholars also look at schemes, where a certain share of employees is covered by the scheme or where different organizational levels are covered. Finally some studies define ESOP's based on the share of the company owned by the employees, and on the inclusion or delimitation of different kinds of profit-sharing plans, stock options or warrants.

In listed companies employees can freely buy stocks in the company and exercise their normal ownership rights, while in unlisted companies, trading of company shares can be limited and restricted by stockowner agreements limiting the circulation of stocks. Since individual stock purchase in listed companies is random and normally not registered by the companies and stock ownership in unlisted companies always are initiated by the company or a limited group of owners, research is usually done on ESO initiated by the company either freely or restricted by government laws and *set up with the explicit intension of providing employees with an additional source of income related to enterprise results* (i.e. Pendleton et al. 2001). ESO can be individual, where the

shares are owned by the individual employee or collective, where an employee benefit trust is set up to hold the company stocks and exercise the ownership rights through a trustee (Poutsma et al., 1999).

The share of employees covered by the scheme can either define the level of coverage by the percentage of employees covered by the scheme, or the groups of employees covered by the scheme. Sengupta et al. (2007) uses both a wide definition of ESO including all companies with more than one employee receiving payments from an ESOP but also uses a tighter measure initially used by Robinson and Zhang (2005), where a majority (60 % to 100 %) of the non-managerial employees participates in the scheme. Pendleton et al. (2001) defines two kinds of ESO a narrow-based and broad-based type, where the broad-based theoretically covers the entire workforce, but they set the point at 50 % coverage since most schemes never have 100 % coverage at any given time since participation in the scheme calls for a minimum employment period. The purpose of the narrow-based scheme is to attract and keep key employees in the company and is thereby defined as schemes where less than 50 % of the employees are covered by the scheme. Kabst et al. (2006) makes a distinction between different employee groups covered by the scheme, defined as management, white-collar and blue-collar employees.

Hammer and Stern (1980) differentiated between the number of shares owned by the employees and also distinguished ESO based on different employee groups testing the effect on perception of ownership.

Depending on the purpose of the ESOP it can be argued that similar or enhanced effects could be reached by different kinds of incentives, profit sharing, stock options, stock based pays, warrents and some scholars have investigated inclusive definitions on ESO or different or combined effects of different schemes (Pendleton et al. 2001; Kabst et al. 2006; Robinson and Wilson, 2006).

Prevalence of ESO.

The prevalence of ESO has been analyzed in a number of studies during the last two decades, using a number of different definitions of ESO, and restricting the analysis to specific countries, specific sectors and some analysis restrict the survey to large companies or listed companies. The prevalence in the U.S. has been tested in a large number of different surveys, Kruse et al. (2008) list 15 different analysis since 1993 both on the employee and firm level. Freeman and Rogers (1999) reported that 24 % of US employees in 1994/95 participated in an ESOP, while Kruse (1998) using NLSY-data (National Longitudinal Survey of Youth) found that 21 % of US employees in 1993 owned company stock. Kruse et al (2008) using the GSS surveys from 2002 and 2006 found that 21 % in 2002 and 18 % in 2006 of US own company stock.

In the European Union the PEPPER II study looking at the situation in the “old” EU member states in 1995/96 reported rather low usage rates in the EU: the UK was at the top with 11 percent of companies using ESO and the bottom were France (1%), Sweden (1%), Italy (2%), Portugal (2%), Germany (3%), Ireland (3%), The Netherlands (3%) and Denmark (5 %) (Blasi et al. 2003). The ESO definition in PEPPER II were though restricted to schemes open to all employees similar to the definition of broad-based schemes. Higher values were obtained by a later study conducted in 1999/2000 on the use of share ownership schemes in companies across 30 countries including 14 member states of the EU (Pendelton et al., 2001): This study states that the use of ESO in the 14 states has increased to 31 %, but still with big diversification among the member states. The UK were still in top with 45 % (of companies with more than 100 employees), with Portugal (5%), Austria (9 %), Italy (15 %), Spain (19 %), Germany (20 %) and Denmark (21 %) at the bottom. The numbers are though not directly comparable with the PEPPER II figures since the 1999/2000

survey included both narrow-based and broad based schemes. Finally, the PEPPER III report commissioned by the EU on the use of ESO in the new member states in the eastern and central part of Europe states, that while a majority of companies became employee owned after 1989, the percentage has dropped and is now across the countries on 38 % (PEPPER III, 2006). This is though still much higher than the percentages reported from the “old” member states in the PEPPER II report from 1996 and higher than the analysis based on the CRANET data from 1999/2000. In studies comparable with the US studies, Del Boca et al. (1999) and Jones and Kato (1995) reported that between 10 % and 15 % of employees in France, Great Britain, Italy and Japan were covered by employee stock ownership. In China Tseo (1996) and in Russia Blasi et al. (1997) reported on a low but growing level of ESO.

The prevalence of (broad-based) ESO can be found to have a cyclic pattern partly determined by the environment on the financial markets. A rapidly growth has been reported through the 1980's and 1990's in the U.S., while Kruse (2008) reports a decline in the use of broad-based ESO schemes from 2002 to 2006, i.e. after the collapse of the IT-bubble in 2000. A similar effect was seen after the stock market collapse in 1929 (D'Art and Turner, 2006). In the EU an increase has been reported in most countries since 1991 to 2000 (Pendleton et al. 2001), while D'Art and Turner (2006) found a decline in Ireland since 2000 indicating the same cyclic pattern.

Characteristics of ESO companies.

The findings on the characteristics of ESO companies have been diversified in significance, methodology and definitions. Among the aspects reported are the importance of size (Pendleton, 1997; Wächter and Koch, 1993, Weyer, 1978; Poutsma et al., 2006), listing (Pendleton et al. 2001), sector (Poutsma and Huijgen, 1999; Festing et al, 1999; Gaugler et al, 1983), union density (Cheadle, 1989; Festing et al. , 1999; Kabst et al. 2006; Heywood et al. 1997), workforce

specialization and skills (Pendleton, 1997; Kabst et al. 2006), age (Pendleton et al. 2001; Poole and Jenkins, 1990), participative organizations (Wächter and Koch, 1993; Becker, 1993; Mez, 1991; FitzRoy and Kraft, 1987) and geographical market (Festing et al., 1999).

Firm size: Poutsma et al. (2006) tested the use of a number of incentives in listed companies in Finland, Germany, the Netherlands and UK and found an increased use of broad-based ESO schemes in large companies. Pendleton et al. (2001) also reported an increase in the use of broad-based schemes in the “old” EU-member states, but with large differences between countries and in some countries no or even a negative size effect where found. No size-effect where found in the use of narrow-based schemes. Kruse et al. (2008) used the GSS 2002 and 2006 surveys to analyze US firms and found that while only 9 % of small companies used ESO, 37 % of large companies (more than 1000 employees) had an ESO scheme. The theoretical argument of the positive size effect can be found in the agency theory arguing that as firm size increase information asymmetries about work processes may increase as well as monitoring costs encouraging management to organize work and production most effectively. The conflict of interest between the two parties and the asymmetric distribution of information allow for pre- and post-contractual agency problems; hidden characteristics leading to adverse selection ex ante and hidden actions by the agent resulting in moral hazard ex post (Holmstrom, 1979; Eisenhardt, 1989). Some authors have suggested that collective incentive programs like profit sharing or employee ownership may reduce the agency costs by aligning employee interest with those of the firm (Baiman, 1990; Lambert, 2001). Equally, the larger the company, the higher is the risk of a “free-rider” effect, suggesting that the individual incentive effect of ESO is reduced in large organization while on the other hand monitoring by colleagues will increase reducing the free rider risk.

Stock listing: A number of studies have found a positive connection between stock listing and ESO (Pendleton et al. 2001; Kabst et al., 2006). The costs of introducing and maintaining an ESO

program is much smaller in a listed company, since the trading of the stocks and the valuation of the stock can be executed in an efficient market, and the company can buy the necessary stocks needed for the scheme. In unlisted companies, the company needs to create the market place itself, set the rules for trading, value the stocks and create the necessary funds to handle the trading. Especially in a financially turbulent period it can be difficult to set a fair and continued market price and avoid insider trading of the stocks.

Workforce unionization: Kabst et al. (2006) reported a positive connection between union density and ESOP in companies on both white and blue collar employees. The opposite finding was reported by Festing et al. (1999), who found a significant negative effect of union density tested on companies in Germany, France, Great Britain, and Sweden. The theoretical argument on the union density factor is two-fold based on the argument that ESO schemes are introduced by the company to avoid influence of the union and reduce the worker/employer conflict (Ackers et al. 1992; Gates, 1998), while another argument is promoted, that strongly unionized companies are more likely to adopt ESO plans, to increase union and worker influence on the company and to partly distribute the surplus of the company to the workers (Cheadle, 1989; Festing et al., 1999; Kabst et al. 2006; Heywood et al. 1997; Kruse, 1996).

Sector: The connection between sector and the level of workforce skills and specialization is highly correlated. Poole (1989) found that broad-based ESO schemes were more common in the finance sector than in the service and retail sector. Pendleton et al. (2001) argued that financial participation would be more widespread in the financial sector due to the higher knowledge of the characteristics of the schemes, and more generally in sectors with a higher concentration of non-manual employees, who may be more familiar with the use and concept of stock savings. In sectors and work situations, where individual output and performance is hard to measure because of the complexity and interdependency of work tasks (Alchian and Demsetz, 1972; Ben-Ner et al. 2000)

the use of ESO could be more prevalent. This has been observed in advanced manufacturing companies and some service and creative companies (Fama, 1991, Pérotin and Fakhfakh, 1993).

Firm age: The use of ESO has been argued to be higher in young and growing companies to support the need for commitment and growth in the company (Poole and Jenkins, 1990). Young companies might also use ESO to reduce labor costs or as a tool to attract key employees that would normally demand a high salary, but might be persuaded by a combination of a (low) salary and part ownership. While Poole and Jenkins (1990) reported a negative age effect, Pendleton et al. (2001) found no age effect, but stated that due to the restriction on company size in the survey, young and small companies (like IT companies who often uses ESO) were excluded from the survey.

Employee participation: Participative companies have been found as more likely to adopt ESO to increase worker motivation and participation (Wächter and Koch, 1993; Becker, 1993; Mez, 1991; FitzRoy and Kraft, 1987). A number of analysis indicates that the company can't achieve the motivation and participation affect without the financial participation, as referred to in Blasi, Kruse and Bernstein (2003:176) "*telling employees to take ownership of their jobs rings hollow if management doesn't offer actual financial ownership or some share in the improved performance... without wealth sharing in some form, it feels like the company is just trying to con you into working harder*".

Geographical markets. Festing et al (1999) found that companies with export activities had a higher use of ESO than companies only addressing the domestic market.

Whereas previous research on ESO usage and its antecedents thus has already considerably increased our understanding of the phenomenon, some gaps remain as the preceding discussion has shown:

Firstly, whereas the positive effects of ESO have been analyzed empirically for a number of different geographical locations, the use and antecedents of ESO has in general received less attention and is mainly analyzed for the U.S. market (Blasi et. al, 2003). Since our understanding of the ESO phenomenon can at best be partial without better understanding of usage and antecedents outside the U.S. context, this situation calls for further investigation.

Secondly, most of the existing research on prevalence of ESO outside the U.S. context is dated by now due to the cyclic pattern in the use of ESO. Given that the use of ESO plans is often considered to increase growth, profitability and survival rates of firms, and given that differences in ESO adoption rates therefore may have impact on the competitive balance between different countries, the lack of newer evidence on ESO usage in the “old” EU member states is even more dissatisfying. It seems thus of high importance to gain insights into the current prevalence of ESO usage and to further our understanding of the antecedents of adoption/non-adoption by companies. The present paper therefore presents a set of hypotheses on ESO usage and tests these on empirical data collected in one of the “old” EU member states: Denmark.

HYPOTHESIS ON ANTECEDENTS OF ESO USAGE.

The prevalence of ESO schemes has increased during the 1980s and 1990s in Denmark indicated by the two PEPPER reports from the EU (1991,1996) and the CRANET survey (1999/2000) reporting an increase in the use from 5 % to 21 % from 1991 to 1996, while the development from 1996 to 2000 was more flat. From 1996 to 2000 an increase in share schemes for management increased from 19 to 22 percent, professional staff stayed at 17 % while both clerical and manual personnel decreased the percentage from 17 to 16 percent for clerical and from 12 to 10 percent for manual personnel (Pendleton et al. 2001). In the PEPPER II report it is argued that it is the goal of the European Commission to increase the use of ESO and to encourage the member states to reduce

legislation that might reduce or prevent implementation of ESO schemes. It is also questioned if it is a desirable policy if an increase in the use of ESO is restricted to subgroups of the workforce in the company, due to the fact that it will “*increase rather than reduce existing inequalities of income and wealth*” (Pendleton et al.: pp. 12). The analysis of the Irish market by D’Art and Turner (2006) showed a cyclic pattern in the use of ESO, revealing a decline in the use in Ireland since 2000. This can be explained by the collapse of the IT-bubble in nov. 2000 and indicate that the development on the stock market could be a predictor on the use of ESO, especially the broad-based schemes. It can there for be expected both an increase in the use of ESO in general and especially on broad-based schemes based on the political wish to increase the use of ESO and it can be expected that a decline in the use has occurred especially among broad-based schemes caused by the recent development on the stock market., leading to hypotheses 1.1 and 1.2:

Hypothesis 1.1 : The use of ESO in Denmark has increased since 2000.

Hypothesis 1.2 : The increase in the use of ESO is mainly among broad-based schemes

The antecedents of ESO can be divided into external factors determining the use of ESO set by the environment of general characteristics of the company outside management control, and internal factors determined by management. The external factors stock-listing, age, size, sector and dynamism will be addressed first, followed by planning, involvement, autonomy and incentives as the internal factors. The factors union density and geographical markets will not be tested due to the characteristics of the Danish markets: More than 75 % of all workers are in a union (2005 figures), and more than 88 % of the top 1.000 companies have export activities due to the small domestic market according to the national Danish statistical bureau.

A number of studies have tested the effect of being listed on the use of ESO (Pendleton et al. 2001) and reported that while 21 % of Danish companies in general used ESO 33 % of the listed companies had an ESO scheme. Out of the 33 % of the listed companies having an ESO scheme 76 % were broad-based while only 70 % of the companies in general used broad based schemes. Kabst et al. (2006) tested the use of ESO in Britain, France, and Germany and found that stocklisting were a significant indicator on the use of ESO. As listed companies in general more cost efficient can introduce ESO schemes, and the fact that Denmark in general increases its stock investment culture also among non-managerial workers, the use and introduction of ESO schemes can be expected to be higher among listed companies.

Hypothesis 2.1 : ESO is more prevalent among listed companies.

The frequency and use of ESO has been seen to be higher in young and growing companies (Poole and Jenkins, 1990). This has been explained by the need for higher commitment to support the growth (Pendleton et al. 2001) and by the need for attracting high quality workers without dramatically increasing the salaries.

Hypothesis 2.2: ESO is more prevalent among young companies.

Pendleton (1997) found a strong relationship between size and ESO also after controlling for stock listing, since a positive relationship between stock listing and size can be expected based on the WIRS3 data, this conclusion where supported by the CRANET data in 2000 (Pendleton et al. 2001). The positive relationship is mainly expected to be found in the broad-based schemes, since the use

of narrow based schemes can be expected to be more evenly distributed between large and medium sized companies (Pendleton et al. 2001; Robinson and Zhang, 2005).

Hypothesis 2.3 : ESO is more prevalent among large companies.

The use of ESO has been found to be more prevalent in some sectors than other. Poole (1989) found a higher concentration in the financial sector and a relatively lower concentration in the manufacturing sector (Pendleton, 1997). In sectors with high-specialized workers, or where individual output can be hard to measure, or where monitoring costs are high, a higher percentage of ESO companies are expected to be found. Some sectors can be expected to have a higher level of broad-based ESO schemes due to the need of a general increase in worker commitment, while other sectors have a higher level of narrow based schemes due to the need of securing key employees and focusing on management performance.

Hypothesis 2.4 : ESO is more prevalent in some sectors than others.

In period with high dynamism on the stock markets the use of ESO schemes has been seen to decline. This has been reported in the US after the crash in 1929 (D'Art and Turner, 2006) and in Ireland after the crash of the IT-bubble in 2000 (D'Art and Turner, 2006). Based on the expectation of risk-averse workers, time periods or companies with high dynamism can be expected to have a negative effect on the use of ESO schemes. It has also been argued, that from an investment point of view, investing in the company where the worker is employed doubles the risk of the workers in recessions, facing both unemployment and losses on the investment. It can there for be expected

that there will be a negative connection between dynamism and the use of ESO schemes especially between broad-based schemes and dynamism.

Hypothesis 2.5 : Companies in dynamic environments have a smaller proportion of ESOP's, than companies in more stable environments.

The internal factors, planning, involvement and incentives are antecedents that are under management control.

Companies with a high focus on planning and formalization can be expected also to have a higher use of HRM incentives like ESO, especially narrow ESO to keep key employees in the company (Robinson and Zhang, 2005), and thereby secure the investment in these employees. The higher level of formalization and structure in the planning process indicate the use of more formalized incentive structures like ESO to create a sense of ownership to the company, increase commitment and loyalty and reduce agency costs.

Hypothesis 3.1 : ESO is more prevalent in companies employing a high level of formalized planning.

The involvement of middle managers in the strategy process can either be by allowing middle managers to advocate their ideas to the top managers and try to get them to incorporate these ideas in the overall strategy of the company, in the literature referred to as participation in decisions (Andersen, 2004, Mintzberg, 1973; Hart, 1992; Ansoff, 1987) or the strategic decision-making authority can be distributed to the employees referred to as autonomy (Burgelman and Grove, 2007; Bourgeois and Broadwin, 1984; Nonaka, 1988). To motivate the employees to participate in

the decisions, or to prevent them from moral hazard in the use of autonomy, incentives like ESO can be employed. It can therefore be expected, that participative companies employing participation and autonomy would have a higher use of ESO.

Hypothesis 3.2: ESO is more prevalent in companies involving employees in decisions.

Hypothesis 3.3: ESO is more prevalent in companies distributing decision authority to employees.

Most of the theory on ESO is rooted in the agency theory (Pendleton, 2006; Holmstrom, 1979; Eisenhart, 1989), where the interest of the utility-maximizing employees are not congruent with those of the firm (Pendleton, 2006) and where they have the possibility for discretionary behaviour, moral hazard and adverse selection (Holmstrom, 1979; Eisenhardt, 1989). In the literature collective incentives like ESO have been seen as an alternative to individual incentive programs and are in some studies found to be a weaker incentive than individual incentives due to the risk of free riders and the weak connection between the individual performance and the pay. The collective incentives have though been advocated in companies, where the individual employee performance is costly to observe because of the type of job design or work organization (Cheadle, 1989; Kruse, 1996; Jones, Kato and Pliskin, 1997) or if individual incentives are costly to operate (Jones and Pliskin, 1997). Some studies have analyzed the combined effect of individual and collective incentives and found that a combination of both might reduce some of the distortion effects (Prendergast, 1999). Distortion effects arise when employees have multiple tasks with different levels of measurability and the use of ESO will encourage the employees to focus on a broader range of outcomes and factors than incorporated in an individual incentive program focusing on short term financial and output goals (Kaplan and Norton, 1996). It can therefore be expected, that there would be a higher percentage of ESO companies among companies using different kinds of

other incentives. It can though also be expected, that while narrow-based schemes might use group incentives the broad-based schemes can be expected to have a higher use of individual based incentives to complement in both situations the individual and collective incentives.

Hypothesis 3.4 : Companies employing different incentive schemes have a higher prevalence of ESO schemes.

Hypothesis 3.5 : Individual incentives are more prevalent in companies employing broad-based ESO schemes

Hypothesis 3.6 : Group incentives are more prevalent in companies employing narrow based ESO schemes.

METHODS AND DATA COLLECTION.

Data for the present study was collected by means of a cross-sectional mail survey as part of a larger research project. The 500 largest Danish firms as measured by the number of employees listed in the “Kobmands-Database” were approached with a two-page survey instrument in late November 2009. The 500 firms cover a broad set of industries, including basic material, manufacturing, utilities, retailing, financial services, and other services and have at least 225 full-time employees. Besides the number of employees, the database also provides for the firm’s financial figures from 2004 to 2008, information on the industry of their main business, stock listing, and founding year.

In a first step the respective firm’s CFO or head of accounting were contacted by a personalized cover-letter and a questionnaire instrument capturing organizational slack, top-management’s leadership style, and some additional questions which serve for control purposes in the present

analysis (see below). About a week later, a second letter with the questionnaire was sent to the ones that had not yet responded to the initial mailing. These two waves produced a total of 149 responses. In a third step in December, the remaining individuals that had not reacted to our mailed survey were contacted by phone and asked to participate in the survey. Out of these 167 were willing to participate and responded to the questionnaire items on the phone. Careful inspection for completeness and plausibility of the responses led to the elimination of nineteen answers (one firm actually had received and answered the questionnaire twice, one firm was in the process of liquidation, three firms had severely reduced the number of employees during fall 2009, thus no longer exhibiting the required number of employees, the other responses were severely incomplete or implausible). Thus a total of 297 answers from a broad set of industries were retained (i.e. response rate of 59.4 %).

Measures

The study builds on existing scales from literature as far as possible. Furthermore, all measurement instruments were pretested with a sample of managers from 57 firms (not included in the main dataset) prior to the main study in September 2009.

ESO usage: Following the different definitions of ESO usage found in literature, multiple items were used to capture firm's practices. A binary item asked firms for whether they use any kind of ESO for at least one person inside the firm that is not part of the executive committee. This item thus captures the broad definition of ESO use found in literature (Sengupta et al., 2007). A second set of questions, using a 5 scale measuring the level of stock ownership among top management, middle management and non-managerial workers, measured by : none, some, half, majority or all. (value 1 to 5). The definition of ESO is based on previous definitions regarding a company with at least one employee receiving payment from employee share ownership schemes as an ESO employing company (Sengupta et al. 2007) or it may be based on a more restricted definition

requiring that a majority (60%-100%) of the non-managerial employees to participate in the schemes for the company to be considered ESO employing (Robinson and Zhang, 2005). The characteristics of the companies using ESO in general, a narrow-based or a broadbased can be found to differ (Pendleton et al. 2001). We intend to initially use the Sengupta definition and thus include all companies in which at least one employee (not the CEO) receives payment from an ESO scheme, to identify the general characteristics of ESO-companies. The article will also test if any differences in characteristics can be found between companies with a narrow-based or a broad-based scheme. A similar definition as used by Pendleton et al (2001) will be applied, defining the cutting point at 50 % coverage. 50 % coverage will be defined as a company where minimum 50 % of the non-managerial employees are included in the scheme, or a company, where a majority of middle managers and top managers plus some of the non-managerial owns stocks in the company. The argument is that it is normally seen that the coverage drops at the lower levels in the organization, so if 50 % of the non-managerial employees own stocks in the company a 50 % coverage is expected. Additionally if the majority (or all) middle managers and top managers owns stocks in the company and some of the non-managerial employees owns stocks in the company, it can be expected that in total 50 % of the workforce is covered by the scheme. It can also be argued that based on the CRANET analysis, the majority of ESO companies either had more than 80 % coverage or less than 40 %, so most ESO companies will either be broad-based or very narrow-based, supporting the above distinction.

Stocklisting: Information on whether a firm is stock listed or not was obtained from the Kobmands-Database (CD-direct) used for identifying respondents. It is a binary variable (no stock listing = 0; stocklisting = 1). No differentiation was made for whether the respective firm's stocks are part of a larger indices, like e.g. the index of the 20 largest Danish firms.

Firm size: Firm size is measured by the number of employees, dividing the 297 companies into three categories (large, medium and small), with one third of the companies in each categories. Other findings have used the log of the number of employees (Poutsma et al. 2006; Pendleton, 1997) or a dummy variable for large firms (more than 2.500 employees) (Cheadle, 1989).

Sector: The respective standard industry code (NACE) digits for each of the firms in the sample were taken from Kobmands-Database (CD-direct). The digit codes where divided into 9 sectors, where sector 9 is public companies or organizations, respondents from sector 9 were removed from the dataset leaving 8 different sectors (see table 1). No companies were reported in sector 1, leaving sector 2 – 8 for the analysis in the models.

Table 1 around here

Emphasis on Formal Planning. CFO's were asked to assess their organizations emphasis on formal planning using an existing five item scale from literature. This scale has been used before by Andersen (2004) and Andersen & Nielsen (2009) and exhibited good quality with prior datasets (Cronbach's alpha of .84 in the Andersen & Nielsen, 2009, dataset). Responses were collected using 7-point Likert scales (1=no emphasis; 7=strong emphasis). For our dataset the revised scale exhibited a Cronbach alpha of 0,753 and factor analysis identified a single factor with eigenvalue of 2,012.

Participation and autonomy. 7-point Likert scales were used on five different activities, were the middle managers could be either involved in the decision (participation) or were allowed to take

decision without prior approval by top management (autonomy). The two factors had a Cronbach's alpha on 0,889 and 0,892 respectively and high factor loadings on all five items.

Table 2 around here

Use of Reward Systems for Innovative and Adaptive Behavior: Respondents were asked to indicate their firm's use of two types of rewards for innovative and adaptive behavior: individual-based financial rewards and group-based financial rewards. The two variables were registered as a dummy variable.

Environmental turbulence: Environmental turbulence can be measured both as a subjective measure based on the respondents perception (Andersen, 2004) or as the standard error on the regression coefficient in the regression on sales over a five year period (Dess and Robinson, 1984; Keats and Hitt, 1988). Here the turbulence is measured as the latter. The regression coefficient needs to be standardized to be comparable between companies. The standardization can be done calculating a z-score on the sales figures on the individual company, dividing the yearly sales with the average sales of the company or creating an index, where the first year is index=100. Since the use of ESO is measured on the company level, it is also the company dynamism that is calculated. Other studies have calculated industry dynamism using industry sales (Andersen, 2007). Here the dynamism is calculated in index figures using year 2004 as index (=100), even though it is noted that the choice of standardization method will change the relative dynamism among companies.

Firm age: is calculated as the number of years since the company was founded.

Methods

In line with previous research (e.g. Chen and Hennart, 2002) I used a binary logistic regression to test the hypothesis. Three logistic regression models were made (model 1 – 3), with each of the three dependent variables: ESO, narrow-ESO and Broad-ESO, testing the broad model using all variables. Multicollinearity between two variables were tested in the correlation matrix, with no set of variables with a correlation above 0.52 (except between the different types of ESO, which does not occur in the same equation).

RESULTS

Out of 297 companies 103 companies were having ESO scheme in the broad definition with more than one employee owning stocks in the company, giving a share on 34,68 % of Danish companies using ESO. This can be compared with a 5 % share in 1991 (PEPPER I), a 21 % share in 1996 (PEPPER II) and a 21 % share in 1999/2000 (Pendleton et al. 2001). Out of the 103 companies 74 (72 %) were narrow based and 29 (28 %) were broad based. This can also be seen as 25 % of all companies are using a narrow based ESO scheme, while 10 % is using a broad-based scheme. This indicates a decline in the use of broad-based schemes from 15 % in 2000 to 10 %, while narrow-based schemes have increased from 6 % to 25 %. This supports hypothesis 1.1 that there has been an increase in the use of ESO schemes in Denmark, but not hypothesis 1.2, that the increase is mainly in broad-based schemes.

Table 3 around here

The correlation matrix in table 3 shows a significant positive connection between both the broad definition of ESO and the broad-based ESO scheme and stock listing. This support earlier findings (Pendleton et al., 2001; Kabst et al. 2006) that listed companies are more prevalent in using ESO than unlisted companies. No significant connection where found between the narrow-based ESO schemes and stock listing indicating that narrow-based schemes are more evenly distributed among companies. Table 3 indicates that the antecedents of the broad definition of ESO can be expected to be: Stocklisting, Participation, construction, individual and group bonuses, participation and planning. All of the variables are significantly positively correlated with broad based ESO. The antecedents of the narrow-based ESO scheme can be expected to be Finance sector, individual bonus and planning where individual bonuses and planning are significantly positively correlated, while the finance sector is negatively correlated with the use of narrow-based ESO schemes. Based on table 3, the antecedents of the broad-based ESO schemes can be expected to be : stock listing, size, financial sector, participation, autonomy and age. All of the variables are significantly positive correlated with broad-based ESO schemes.

Table 3 indicates a low risk of multi-collinearity. The table indicates a number of additional findings. The financial sector is significantly positive correlated with stock listing and the significantly positive correlation between age and listing suggest, that old companies has a higher change of being listed, than young companies. Listed companies also are more participative and the significance between formal planning and individual bonus system, indicates, that companies focusing on formal planning also need to have the registration system to support the planning, and that this system also gives the necessary information to support an individual incentive system.

The table also indicates that companies in the transport and information telecommunication sector tend to be small companies. Large companies also have a higher use of individual incentive systems. A significantly negative connection is found between the use of individual bonuses and

construction and group bonuses and the financial sector while group bonuses are more frequently used in the production sector. A significantly positive correlation is found between the finance sector and environmental dynamism, indicating a higher use of ESO and the finance sector as also reported in earlier studies (Poole, 1989)

Table 4 around here

The three models shows a large difference in the significant variables and a large difference in R^2 suggesting that the type of ESO plays a significant role in defining the antecedents of ESO and that the model describing the antecedents of a broad-based ESO scheme is more significant, than models describing a narrow-based or a more broad definition, due to a higher variance in the characteristic of these companies.

The three models all support hypothesis 2.1 that ESO are more prevalent among listed companies, due to the lower administration cost of the scheme. The significance levels though indicate that there is a stronger connection between broad-based and broad defined types of ESO and stock listing. A significant negative connection where found between age and the broad definition of ESO supporting hypothesis 2.2, while a similar connection couldn't be found with the narrow and broad-based types. Pendleton et al. (2001) found a positive connection between size and ESO, which is also supported by table 3 regarding the broad-based types. None of the three models can though support these findings, and hypothesis 2.3 can then be rejected.

It was expected that some sectors would have a higher use of ESO, as reported by Poole (1989) finding a higher concentration in the finance sector. While a significant positive correlation where

found between the finance sector and broad based ESO in table three, a significant negative connection where reported in table 4. This can be explained with the high positive correlation between finance sector and stock listing, but the conclusion of table four is, that after controlling for the effect of stock listing the finance sector and the Information and telecommunication sector has a significant negative effect on the use of both the broad definition of ESO and narrow-based schemes. No sectors were significantly over or under represented in the use of broad based ESO schemes. The above is supporting hypothesis 2.4. none of the models in table four can support hypothesis 2.5 that ESO is less prevalent in dynamic environments.

The test of the internal antecedents in the three models also reports that the antecedents of ESO are dependent on the type of ESO. As expected in hypothesis 3.1 companies emphasizing on formal planning can be more expected to employee ESO in the broad definition, while similar effects on the narrow-based and broad-based types couldn't be supported. Participatory companies were expected to have a higher employment of ESO, to motivate employees to participate in the decisions, and to avoid moral hazard when distributing decision authority. While hypothesis 3.2 wasn't supported by the models indicating a higher use of ESO in companies with involvement of employees in decisions, hypothesis 3.3 where supported by model three. This support the expected connection, that companies who distribute decision authority need to reduce the potential agency cost, by aligning the interest of the employees with the interest of the company.

The combinations of different incentive systems, where the effects of the different incentives complement each other have been found to increase company performance. This suggests that companies with narrow-based ESO schemes would complement the scheme with a broad based incentive system, while a company employing a broad-based ESO scheme, would complement this with individual incentive systems. The opposite findings were reported in model two and three, suggesting that companies using individual incentive systems also tend to employee narrow-based

ESO schemes, while companies using broad-based incentive systems, are more willing to employee broad-based ESO schemes. Thus we have to reject hypothesis 3.5 and 3.6, while hypothesis 3.4 is supported.

DISCUSSION AND CONCLUSION.

The present paper contributes to our understanding of the prevalence and antecedents of employee stock ownership in Denmark, and thereby enriches our understanding of the characteristics of ESO companies. A survey among the 500 largest companies in Denmark showed that 35 % of the companies were involved in some kind of an ESO scheme, with 25 % narrow based and 10 % broad-based. The distinction between broad and narrow-based followed the definition by Pendleton et al. (2001), where broad-based schemes covers more than 50 % of the employees in the company and the narrow-based less than 50 %. This prevalence reveals that the use of ESO in Denmark has increased since 2000, where 21 % of the companies employed an ESO scheme, but it also shows that while the use of narrow-based schemes has increased from 6 to 25 percent, the broad-based schemes has decreased from 15 to 10 percent of the companies.

A number of types of ESO exist in the literature, from a broad definition by Sengupta et al. (2007) to a distinction between broad-based and narrow-based schemes (Pendleton et al. 2001; Robinson and Zhang, 2005). The findings of this article demonstrate that the type of ESO has a significant effect on the antecedents of companies employing ESO. This can explain some of the differences found in earlier articles investigating antecedents of ESO companies.

Stock listing has been found as a strong antecedent of ESO companies (Pendleton et al. 2001) and been used in a number of studies. Our models show, that in all three types of ESO stock listing is a

significant positive predictor of ESO, even though the effect is found to be higher on broad-based and general types of ESO than on narrow-based types.

Formal planning was a significant positive antecedent of the general definition of ESO companies, suggesting that companies focusing on planning and structure are more willing to introduce ESO schemes. Companies focusing on formal planning are in general more positive in the use of incentive schemes, since a significant positive relationship was found between formal planning and individual bonus schemes. Formal planning showed no significance as an antecedent of companies employing both narrow and broad-based schemes indicating that it is not a strong antecedent.

Earlier studies have suggested that ESO were more prevalent among young and growing companies (Poole and Jenkins, 1990, Pendleton et al., 2001). This could only be supported by the broad defined ESO type while it was not supported by the models using narrow-based and broad-based ESO types.

As expected the different sectors were antecedents of ESO, but while earlier findings by Poole (1989) indicated a higher prevalence in the finance sector, this study reports that after controlling for stock listing, a significant negative effect of both the financial sector and the information and telecommunication sector were revealed.

The internal factors as different incentive systems, formal planning and involvement/autonomy all were significant antecedents on different types of ESO, but while individual bonuses and formal planning were antecedents of the broad defined type of ESO, individual bonuses were the only antecedents of narrow-based ESO schemes, while group bonuses and autonomy showed significant positive effects on companies employing broad-based ESO schemes. This indicates that companies with a high emphasis on formal planning, also include incentive systems to support growth, and that companies implementing individual incentives also are more willing to employ ESO. The expected connection between incentive systems and ESO schemes showed the opposite findings

than anticipated, suggesting, that companies employing individual bonus systems also use a narrow-based ESO scheme, while companies using group bonuses employee broad-based ESOP schemes. The opposite findings were expected due to earlier findings reporting that combining incentive systems that complement each other (i.e. both group based and individual systems) increases company performance.

Companies who distribute decision authority to employees to increase responsiveness also uses broad-based ESO schemes to avoid moral hazard and other agency costs, by aligning the interest of the employees with the interest of the company.

The contribution of these findings must be seen in context. The sample is made on large Danish companies and cannot be expected to automatically be valid on small and medium sized companies. The use of ESO in companies have been seen as a dynamic process (D'Art and Turner, 2006), indicating that the use will change over time and is there for a statement on the current situation on the Danish market. A number of studies (PEPPER II, Pendleton et al, 2001; Logue and Yates, 1999; Pendleton, 1997; Kabst et al. 2006) showed large diversification between countries and regions, suggesting that the found antecedents in this study can only be employed on the Danish marked, since other antecedents can be expected in other countries and regions.

As many of the current findings on antecedents of ESO companies are currently dated, a more extensive analysis of the prevalence and antecedents of ESO companies at the current financial situation in other countries seems necessary, focusing in particular on the issue of different definition of ESO.

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TABLES

TABLE 1: SECTORS BASED ON NACE CODES

Sector	Sector number	NACE codes
Raw material	1	0100 - 0999
Production	2	1000 - 3400
Electricity and supply	3	3500 - 3999
Construction	4	4000 - 4499
Transport	5	4500 - 5499
Information and telecommunication	6	5500 - 6399
Financial services	7	6400 - 6899
Servicesector	8	6900 - 8399 + 9000 - 9899
Public companies	9	8400 - 8999

TABLE 2: FACTOR LOADINGS AND RELIABILITIES

Dimensiens and variables	n	Cronbach's alpha	Extracted variance	Factor loadings
Planning	297,00	0,753	67,12%	
Formulating company mission				0,812
Defining financial goals				0,792
Evaluating strategic goals				0,852
Participation in decisions	297,00	0,889	69,54%	
Activities to increase market share				0,861
Sales to new segments or market				0,870
Development of important new products				0,823
Development of new competences in the organization				0,838
Development of new procedures/routines				0,773
Autonomy (MM can take decisions alone without prior approval)	297,00	0,892	69,89%	
Activities to increase market share				0,806
Sales to new segments or market				0,849
Development of important new products				0,832
Development of new competences in the organization				0,860
Development of new procedures/routines				0,833

TABLE 3: DESCRIPTIVE STATISTICS AND CORRELATIONS

Variable	Mean	SD	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 ESO	0,35	0,48	0,00	1,00	1																
2 Narrow_ESO	0,25	0,43	0,00	1,00	,79 ***	1															
3 Broad_ESO	0,10	0,30	0,00	1,00	,45 ***	-,19 ***	1														
4 Dynamism	1,63	11,99	0,01	183,96	-,05	-,04	-,03	1													
5 Age	1,99	0,82	1,00	3,00	,04	-,03	,10 *	,01	1												
6 Listed	0,09	0,29	0,00	1,00	,35 ***	,03	,52 ***	,16 ***	,20 ***	1											
7 Sector_2	0,38	0,49	0,00	1,00	-,05	-,02	-,05	-,08	,14 **	-,04	1										
8 Sector_3	0,01	0,12	0,00	1,00	-,09	-,07	-,04	-,01	-,03	-,04	-,09	1									
9 Sector_4	0,06	0,23	0,00	1,00	,13 **	,09	,07	,01	-,03	-,30	-,19 ***	-,03	1								
10 Sector_5	0,25	0,43	0,00	1,00	,01	,01	-,01	-,04	-,09	-,03	-,45 ***	-,07	-,14 **	1							
11 Sector_6	0,08	0,28	0,00	1,00	-,09	-,06	-,06	,01	-,14 **	-,02	-,24 ***	-,04	-,08	-,18 ***	1						
12 Sector_7	0,08	0,27	0,00	1,00	,03	-,11 *	,20 ***	,19 ***	,11 *	,34 ***	-,23 ***	-,03	-,07	-,17 ***	-,09	1					
13 Bonus Individ.	0,40	0,49	0,00	1,00	,17 ***	,15 **	,05	,07	-,02	-,01	,01	,02	-,11 *	,02	-,03	-,03	1				
14 Bonus Group	0,31	0,46	0,00	1,00	,12 **	,08	,07	-,06	,08	,01	,15 ***	-,02	-,04	-,02	-,02	-,11 *	,33 ***	1			
15 Participation	0,00	1,00	-3,34	1,52	,12 **	,02	,17 ***	-,06	,12 **	,20 ***	-,02	,09	,06	-,12 **	-,05	,11 *	,16 ***	,04	1		
16 Autonomy	0,00	1,00	-1,62	2,56	,03	-,06	,14 **	-,02	,03	,08	-,04	,00	,08	,03	-,06	-,07	,01	-,08	,45 ***	1	
17 Planning	0,00	1,00	-3,47	1,39	,13 **	,10 *	,06	-,06	-,05	,01	-,03	,03	,02	-,02	,01	,06	,14 **	,03	,36 ***	,10 *	1
18 Size	0,20	0,40	0,00	1,00	,04	-,02	,10 *	,04	,03	,05	,06	-,03	,00	-,11 *	-,10 *	,08	,13 **	,04	-,01	,03	,03

n = 297. Significance of correlations: *** p < .01; ** p < .05; * p < .10 (two-tailed test).

TABLE 4: LOGISTIC REGRESSION

Dependent variable	Model 1		Model 2		Model 3	
	ESO		Narrow ESO		Broad ESO	
Dimensions and variables	B	Wald test	B	Wald test	B	Wald test
Dynamism	-0,026	1,609	-0,010	0,181	-0,031	0,203
Age	-0,347 *	2,850	-0,242	1,418	-0,348	0,963
Listed	3,799 ***	24,707	1,001 *	3,493	3,393 ***	25,707
Sector 2	-0,798	2,592	-0,689	1,869	-0,725	0,596
Sector 3	-21,114	0,000	-20,899	0,000	-18,790	0,000
Sector 4	0,737	1,171	0,428	0,401	0,811	0,563
Sector 5	-0,736	2,018	-0,693	1,764	-0,067	0,005
Sector 6	-1,729 **	5,144	-1,468 **	3,947	-1,577	1,035
Sector 7	-1,569 *	3,193	-1,796 *	3,778	0,170	0,021
Bonus_individual	1,003 ***	8,568	0,911 ***	6,993	0,103	0,031
Bonus_Group	0,541	2,345	0,211	0,352	1,001 *	2,877
Participation	-0,113	0,338	-0,061	0,109	0,136	0,155
Autonomy	0,049	0,072	-0,186	1,097	0,520 *	3,393
Planning	0,350 **	3,865	0,283	2,643	0,207	0,451
Size	-0,005	0,001	-0,182	0,875	0,470	1,883
Intercept	-1,687 **	4,286	-1,297	2,560	-4,657 ***	8,769
N	258		258		258	
Chi-square	74,14		29,50		56,07	
d.f.	15		15		15	
Significance	0,000		0,014		0,000	
Nagelkerne R2	0,344		0,160		0,407	
Cox & Snell R2	0,250		0,108		0,195	
Percentage correct	75,20		76,00		90,70	

Significancelevels: *** $p < .01$; ** $p < .05$; * $p < .10$ (two-tailed test).