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Psychological ownership and financial firm performance: The interplay of employee stock ownership and participative leadership

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Abstract

Based on a survey among 295 of the top 500 Danish companies, we develop and test an integrated model of the simultaneous effects of employee stock ownership (ESO) and a participative leadership style (PLS) on the creation of psychological ownership (PO) and link this to financial firm performance. While the effect of PO on employee behaviour and attitudes is widely recognised, our study finds a significant positive effect on financial performance, emphasising the importance and relevance of enhancing PO. Our results also show that while PLS supporting employee involvement and empowerment as well as incentives in the form of formal ownership (i.e. ESO) individually supports the creation of PO, combining the two may lead to a crowding-out effect. This suggests that the combination of different human resource management (HRM) practices might impede rather than enhance performance, highlighting the need for more research into the combined effects of bundles of HRM practices.

JEL Classification: **M14** , **M54**

Keywords

Psychological ownership, crowding out, employee stock ownership, participative leadership, performance

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I. Introduction

Due to its expected positive influence on employee attitudes and work outcomes, which, in turn, have been linked to enhanced organisational and financial performance, employee motivation has been a central part of the fields of management and organisational behaviour (e.g. Olafsen et al., 2015). One construct in particular, namely, that of psychological ownership (PO), where employees feel as ‘if the target of ownership (or a piece of that target) is theirs’ (Pierce et al., 2003: 86), has received much scholarly attention (Dawkins et al., 2015; Jussila et al., 2015; Mayhew et al., 2007). Yet, despite decades of research on PO, the majority of studies employ an individual-level focus, often relying on single-source data (Dawkins et al., 2015). PO is usually regarded as a personal experience; thus, as a logical consequence, its antecedents and outcomes are typically theorised at the individual level. However, a person’s organisational experience is inherently an outcome of the organisational context within which the experience takes place. What happens at a higher level of analysis when a psychological sense of ownership among individuals forms a shared mindset at the organisational level, such as one’s work team or organisational subunit, is an important yet relatively neglected area of PO research (Liu et al., 2012). Individuals are embedded in specific organisational settings, and such settings may be paramount in both motivating individuals to feel a sense of ownership and helping firms extract organisational value as a result (e.g. Liu et al., 2012; Pierce et al., 2001). While individual-level PO research has found PO to positively influence employee attitudes like organisational commitment (Han et al., 2010), job satisfaction (Avey et al., 2012; Liu et al., 2012), organisation-based self-esteem (Liu et al., 2012), work engagement (Ramos et al., 2014) and intention to stay (Zhu et al., 2013), as well as organisational citizenship behaviour, stewardship and helping behaviour (Ramos et al., 2014; Zhu et al., 2013), more research is needed on higher order outcomes such as efficiency, innovation and financial performance (Dawkins et al., 2015; Jussila et al., 2015).

Similarly, while a number of studies have investigated several antecedents of PO, such as transformational and ethical leadership (Avey et al., 2012; Bernhard and O’Driscoll, 2011), employee participation in decision-making (Chi and Han, 2008; Han et al., 2010) and autonomy (Henssen et al., 2014; Mayhew et al., 2007), and employee participation in employee stock ownership (ESO) plans or profit-sharing schemes (Chi and Han, 2008; Chiu et al., 2007), the combination of these antecedents has largely been overlooked. This is despite the fact that several antecedents often co-exist in most organisations.

This study responds to recent calls to investigate how PO affects organisational outcomes in the form of financial performance using lagged financial data, thereby reducing the risk of single-source bias (Dawkins et al., 2015). A number of studies have tested the impact of PO on the development of positive employee attitudes and behaviours like commitment, organisational citizenship behaviour (OCB) and work engagement (e.g. Liu et al., 2012; Ramos et al., 2014; Zhu et al., 2013), emphasising the importance of these attitudes and behaviours as potential drivers of innovation and financial performance. However, this study is among the first to formally test whether PO significantly enhances financial performance, presumably mediated by the above-mentioned attitudes and behaviours. Moreover, we also test the combined influence of financial incentives in the form of ESO plans and a leadership style that supports employee involvement in decisions. While both antecedents have been found to significantly support the development of PO, our study is the first to evaluate the simultaneous influence of the two antecedents with important crowding-out implications.

The study contributes to our knowledge in three ways. First, we test the individual and combined influences of two generally accepted antecedents of PO, namely, ESO and a participative leadership style (PLS), on the creation of PO. Our study reveals as-yet undiscovered potential crowding-out associations between these two mechanisms. Second, we respond to recent calls for more research on the organisational-level outcomes of PO. Specifically, we show how ESO and a PLS only influence a firm’s financial performance when mediated through PO. Third, we test our

model on a unique dataset utilising multiple sources of data, thereby responding to the methodological concerns raised by Dawkins et al. (2015).

2. Theory and hypotheses

2.1. Theory of PO

Research on Psychological Ownership (PO) explores three main areas: (1) the roots of PO, defined as the human motives for creating a sense of PO towards an object or an idea; (2) the personal and organisational determinants or mechanisms, and (3) the personal and organisational influences of increasing the level of PO. Consistent with Pierce et al. (1991) and Wagner et al. (2003), PO is developed through ownership rights (influence, information and profit sharing) and thereby theorised to mediate the impact of both formal ownership and participative leadership (influence and information) on financial performance outcomes. The concept of ownership is 'not a simple concept' (Tannenbaum, 1983: 232) and is often seen as partly formal and partly internal (Pierce et al., 1991). Whereas the formal ownership form is based on a legal right that gives access to ownership rights like information, influence and profit sharing (Rousseau and Shperling, 2003), PO is an experience within individuals towards an organisation, group or even a physical product that can emerge through access to formal ownership rights.

This study examines the combined influence on the creation of PO of formal ownership and economic incentives in the form of ESO, and a PLS that promotes involvement, shows confidence in the employee and supports accountability. Subsequently, we test the influence of PO on financial performance. Focusing on the combination of antecedents and their indirect impact on firm performance through PO provides important insights into the mechanisms through which such influences are manifested within organisations. These relationships are outlined in Figure 1 below.

The issue of how economic incentives (via ESO) and behavioural incentives (via PLS) interact within an organisation remains under-researched despite the simultaneous prevalence of both in most, if not all, organisations. Neither the ESO literature (primarily focused on explaining the motivational effects of aligning goals through ownership) nor the leadership literature (focused on the motivational effects of participation and influence in decision-making) has attempted to address this. Even though agency theory suggests that combining a formal reward system (i.e. ESO) with supportive organisational settings should enhance employee effort, and the literature on PO sees both factors as supporting the creation of PO, the combined impact is yet to be empirically tested. Scholars within the ownership literature have theorised that combining ownership rights can enhance the influence of each individual right (Rousseau and Shperling, 2003). However, the human resource management (HRM) literature suggests that bundles of HRM practices like involvement and incentives might in fact crowd out each other (Lengnick-Hall et al., 2009). Yet, little empirical evidence supporting a crowding-out effect exists from real workplace settings (Rynes et al., 2005). This puts a premium on empirical studies that investigate the consequences of combining these two mechanisms within real-life organisations in order to tease out whether ESO and PLS complement or undermine each other. This is an issue of great practical importance, because if managers use both ESO and PLS without understanding how they interact, they may in fact diminish each other's benefits, should a crowding-out effect exist.

2.2. Antecedents of PO

The concept of ownership is often seen as dual, partly formal and partly internal. While formal ownership is grounded on ownership rights (information, influence and profit sharing), the emergence of PO can be supported by allowing employees to experience similar rights in the work setting. According to Pierce et al. (2001, 2003), PO emerges through three distinct yet related mechanisms: (1) greater knowledge of and familiarity with the object, (2) opportunities to feel in

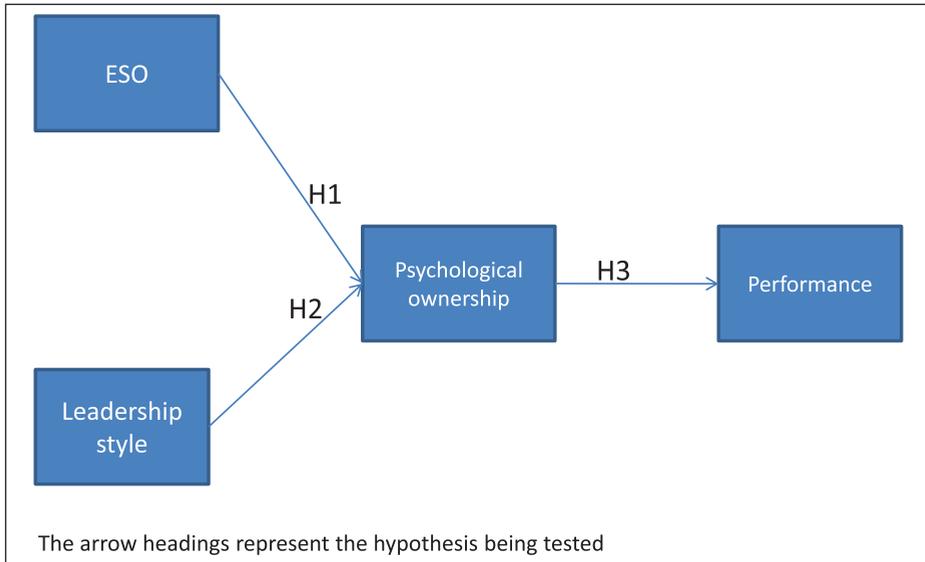


Figure 1. Structural equation model.

control of the object, and (3) opportunities to create and invest the self in the object. In the following, we develop specific hypotheses regarding the interplay between two antecedents of PO: ESO (economic incentives via profit sharing) and PLS (supporting employee influence on decisions and information about the organisation).

2.3. ESO

While most of the literature assumes that economic incentives such as ESO lead to higher performance, it has been debated whether the effect of ESO is caused by the mere ownership, the intrinsic motivation of exercising formal ownership rights like involvement and information, or the potential financial reward of the stocks (Pendleton, 2010). Not surprisingly, empirical findings linking ESO to company performance are mixed (Blasi et al., 2003; Lenne et al., 2006). For instance, studies have shown that the size of the employees' equity stake in the company has no influence on the level of motivation and commitment (Hammer and Stern, 1980). Furthermore, Chi and Han (2008) found the relationship between employee profit sharing and PO to be fully mediated through distributive justice. Together, this suggests that the expected positive influence of ESO on company performance is created not through a reduction of agency costs, but rather through the creation of a sense of PO facilitated by self-investment. To this end, Pierce et al. (1991) hypothesised that ESO as a key ownership right supports the creation of PO. Similarly, in their study of Chinese workers, Chiu et al. (2007) found that participation in an ESO programme enhanced the level of PO. We expect economic incentives in the form of ESO to enhance the feeling of PO in organisations:

Hypothesis 1: Employee stock ownership is positively related to PO.

2.4. PLS

Despite PO being linked to organisational factors such as work environment structure (Pierce et al., 2004), a climate of self-determination (Wagner et al., 2003) or self-management (Liu et al., 2012),

and a culture of participative decision-making (Martins et al., 2008), there is still a lack of understanding of the contextual factors that enable organisations to foster PO among their members (Druskat and Pescosolido, 2002). While it is well-established that leadership style can have an impact on employees' attitudes and behaviours (Farrell, 2000), the causal mechanisms that link leadership to outcomes are more elusive in the literature. However, as noted by Avey et al. (2009), 'leaders may be able to create conditions to enhance psychological ownership' (p. 186). Thus, leadership style may be linked to firm performance through the creation of PO.

A PLS is found to exert a significant influence on organisational culture and the perception of competence, accountability and influence. As such, it may create the organisational setting required to feel supported, appreciated and empowered, and thus enhance the feeling of PO. According to Mantere and Vaara (2008), this can be accomplished by providing intelligible information on how employees can participate, by increasing information sharing and by allowing for an open-minded, eye-to-eye discussion about plans and decisions. Similarly, Emery (1995) suggests that the creation of an organisational setting that provides for – and values and expects – the opinions of employees may produce a sense of ownership, which leads to better firm performance. In addition, the leadership style should support the personal development of employees by allowing them to extend their capabilities through interesting and challenging tasks. According to Wagner et al. (2003), this may create a 'climate of self-determination', which is conducive to the creation of PO. Hence, if top management applies a PLS that provides employees with greater discretion, attention and autonomy, as well as input into – and influence on – strategic decision-making, the feeling of PO is likely to be enhanced (Thomas and Velthouse, 1990). While PLS in general is expected to generate positive employee actions and attitudes, a significant body of research has focused on the importance of middle managers as a gateway to better strategy implementation, higher levels of innovation and enhanced financial performance. This research suggests that the middle manager is a crucial link between top management and lower level employees (e.g. Andersen and Nielsen, 2009; Burgelman and Grove, 2006), thereby highlighting the importance of supporting involvement among middle managers.

Empirical evidence shows that participative leadership, often defined as joint decision-making or at least shared influence in decision-making by a superior and his or her employees, tends to transmit its effects on work performance through psychological empowerment. For instance, Koberg et al. (1999) considered leader approachability to be positively related to psychological empowerment, which led to increased self-rated productivity, while Chung (2017) found a mediating effect of perceived organisational support on the creation of organisational citizenship behaviour. Similarly, Huang et al. (2010) argued that the link between superiors' participative leadership behaviour and managerial subordinates' task performance and organisational citizenship behaviour was mediated by psychological empowerment.

These observations are in keeping with the roots of PO, suggesting that efficacy (control) and accountability (being included in the decision process) promote the creation of PO (Pierce et al., 2001). PLS strengthens a person's sense of ownership, because it implies authority sharing through involvement in the decision-making process (Han et al., 2010; Pierce and Rogers, 2004). A PLS conveys the message that employees are owners of the organisation as well, since they have input to offer in terms of the management and the future of the organisation, thereby contributing to their sense of PO. Hence

Hypothesis 2: A participative leadership style is positively related to PO.

2.5. Crowding-out effects of ESO and PLS

While the introduction of both ESO and PLS might enhance the level of PO individually, the combined effect might be less than the sum of the parts. In the motivational crowding theory (Gagne and Deci,

2005), it is argued that under particular conditions (e.g. if the introduction of a monetary reward amplifies a sense of distrust from top management), monetary rewards can undermine intrinsic motivation. Despite a number of laboratory and field experiments supporting a possible crowding-out effect, Rynes et al. (2005) concluded that '[e]vidence regarding CET's (Cognitive Evaluation Theory) presumptions of a negative relationship between rewards and intrinsic interest is still a matter of debate, with support for the theory being mixed at best'. (p. 576) Moreover, the majority of CET studies were conducted in laboratories or areas that differ substantially from real work settings (Rynes et al., 2005).

In their meta-analysis, Deci et al. (1999) pointed to a number of potential ways to diminish the crowding-out effect. If the monetary incentive was given independently of a specific task or unexpectedly, no undermining effect was found. Similarly, Ryan et al. (1983) found that if the interpersonal context was considered supportive rather than controlling and pressuring, enhanced intrinsic motivation was measured compared to a non-reward-based or non-supportive leadership style. Fang and Gerhart (2012) found that individual performance pay had a positive effect on intrinsic motivation only if the company first grouped employees according to whether they were motivated by individual performance pay. Yet, despite a body of research investigating bundles of HRM practices and their outcomes, studies of potentially 'negative synergistic effects' (Lengnick-Hall et al., 2009: 66) seem all but absent in the literature.

An ESO scheme can be introduced based on a desire to manifest the importance of the employees in the company's success as owners, or as a monetary incentive where the shares (often bought at a discount price) become an integrated part of the salary package. If the incentive is strictly monetary, as is often the case in developed economies, the combined effect of ESO and PLS may cause a crowding-out effect. If the employee senses that top management does not trust his or her commitment, and the company thus feels a need to introduce a monetary incentive, this lack of trust may negatively impact the level of intrinsic motivation, while the reward increases the extrinsic motivation.

Rewards in the form of ESO plans may guide employee actions and enhance collegiate control. It is, however, precisely this experience of control that may potentially hamper self-determination and with it, the creation of PO. Since the reward created by an ESO plan is tied to company performance and often seen as a part of the salary package, a negative influence on self-motivation can be expected. We propose a crowding-out effect between economic incentives via ESO and a self-motivating organisational setting orchestrated by PLS that enhances employee involvement. This crowding-out effect occurs due to a negative impact caused by the introduction of a monetary extrinsic reward that signals lack of trust and an increasing degree of surveillance, control and evaluation (Deci et al., 1999). Increasing reliance on one type of organisational arrangement tends to damage the operation and effectiveness of the other type, thus undermining any combined effects. Hence, the use of financial rewards via ESO undermines the benefits associated with a PLS:

Hypothesis 3: Employee stock ownership crowds out the positive influence of a participatory leadership style on the creation of PO.

2.6. PO and firm performance

Rooted in the psychology literature and extended to organisational research, PO has been linked to a number of attitudinal effects, including increased organisation-based self-esteem, affective commitment, intent to stay, and organisational citizenship behaviour (e.g. Avey et al., 2009; Pierce et al., 2004; Wagner et al., 2003). Pierce et al. (2003) define PO as 'the state in which individuals feel as though the target of ownership or a piece of that target is theirs' (p. 86), indicating an alignment between personal and organisational goals. When employees experience PO, they will be likely to invest themselves in the organisation and act as if the organisation was theirs;

consequently, they are prone to act in the best interest of the company. PO in organisations is thus linked to increased organisational commitment and stewardship (Pierce et al., 2003) and, more recently, enhanced company performance (Sieger et al., 2013).

Based on three field studies involving more than 800 employees, Van Dyne and Pierce (2004) found that PO had a positive influence on employee attitudes (organisational commitment, job satisfaction and organisation-based self-esteem) as well as work behaviour (performance and organisational citizenship). Other positive individual-level outcomes of PO, such as stewardship, personal sacrifice and risk, promotion of organisational change and caring and protective behaviour towards the target of ownership, have been proposed by Pierce et al. (2001, 2003) and supported by recent findings (e.g. Avey et al., 2012; Bernhard and O'Driscoll, 2011; Han et al., 2010). Mayhew et al. (2007), however, found no significant influence of PO on behavioural outcomes, highlighting the need for more research on organisational-level outcomes.

PO in the organisation represents possessiveness towards the organisation and a sense of shared responsibility for its success. When individuals feel ownership towards a social entity such as their organisation, they are concerned with the outcomes of the organisation. Therefore, they are willing to exert extra effort in helping the organisation become efficient and effective. A sense of PO imbues individuals with the internal drive to protect that which is psychologically owned (Avey et al., 2009; Pierce et al., 2003). Thus, PO of the organisation induces employees to adopt the protection of its welfare as an internal motive and subjugate their personal interests to ensure the ongoing welfare of the organisation. Essentially, the employees become vested in the organisation and are thus motivated to promote organisational performance; improved organisational performance contributes to a positive self-image (Pierce and Rodgers, 2004).

Essentially, PO is an antecedent of organisational commitment (an indicator of an employee's sense of responsibility and shared interests), which in turn has been shown to be positively related to organisational performance (e.g. Meyer et al., 2002). Yet, while the (generally positive) behavioural influences of PO are addressed in a number of studies, little research has examined the direct association with financial firm performance. Among the few studies, Wagner et al. (2003) found support for a positive association between PO and financial (work group) performance, measured as a composite of sales over a year-long period. Kostova (1998) found a positive correlation between feelings of ownership and several performance indicators, including output per production employee, earnings per employee and return on assets (ROA). More recently, Sieger et al. (2013) found a positive influence on self-reported performance measures in a study of 714 senior managers from Germany and Switzerland, while Brown et al. (2014) found PO to mediate the relationship between job complexity and sales performance.

Based on agency theory, it is expected that PO will align the interests of the employee with the interests of the company, thus enhancing financial performance. Similarly, based on a motivational argument, it can also be expected that employees feeling PO towards the company put more effort into their work and tend to be more innovative and less prone to slack and free-rider problems, which improves financial performance. We therefore expect the behavioural effects of PO to be positively associated with overall financial firm performance:

Hypothesis 4: PO is positively related to financial firm performance.

3. Method

3.1. Sample and data

Data for the study were collected by means of a cross-sectional mail survey as part of a larger research project. The 500 largest Danish firms, measured by the number of employees, were

approached with a two-page survey instrument in late November 2009. The 500 firms have at least 225 full-time employees and cover a broad set of industries, including basic material, manufacturing, utilities, retailing, financial and other services. In addition to the number of employees, a national database also provided information about the firms' financial figures and the industry code of their main business. The questionnaire was initially tested on three middle managers to receive an impression of how the questions were perceived. Subsequently, the questionnaire was tested on a sample of 87 managers from 57 firms (not included in the main dataset) to test the robustness of the constructs. The pre-tests raised no concerns.

In a first step, the chief financial officer (CFO) of the sample firms was approached by means of a personalised cover letter and a questionnaire instrument addressing ESO usage, involvement, leadership style and sense of psychological commitment and ownership. The CFO was chosen based on (1) his or her distinct knowledge of the use of ESO in the organisation, membership of the top management team and the resulting knowledge of the leadership style, and (2) influence on strategic and organisational processes. A week later, a second letter with the questionnaire was sent to the companies that had not yet responded to the initial mailing. These two waves produced a total of 149 responses. In a third step, the remaining companies that had not reacted to our mailed survey were contacted by phone and asked to participate in the survey. Of these, 167 responded to the questionnaire on the phone. Careful inspection for completeness and plausibility of the responses led to the elimination of 21 answers. Thus, a total of 295 answers were retained (i.e. a response rate of 59%). Tests for non-response bias were conducted on sector, size, turnover, age, capital structure, legal form, employee growth and a number of other financial data comparing the 295 respondents with the population of the 500 largest companies in Denmark. None of the tests gave rise to concern. For control purposes and to address potential problems of single-response bias, a second response was collected from the head of marketing in each company.

3.2. Variables

3.2.1. ESO. Hammer and Stern (1980) show that the size of the employees' equity stake has no influence on their motivation and commitment, indicating that it is merely the share of managers included in the ESO programme that is expected to enhance the level of PO throughout the organisation. As a result, the ESO variable was operationalised by two 5-item Likert-type scales measuring the proportion of top managers and middle managers owning shares in the company (none, some, half, the majority or all (values 1 to 5)). A total score was then calculated by adding up the two values and standardising the result.

3.2.2. PLS. The assessment of top management's leadership style was based on Choi (2004). The instrument focuses specifically on the PLS, leaving aside other aspects of (a more broadly defined) leadership climate, such as individual work effort, work duration or the like. The resulting four-item measure asked the managers to rate the degree to which top management was open to middle managers' ideas and willing to let middle managers experiment with new concepts or products on a 7-point Likert-type scale (1 = fully disagree; 7 = fully agree).

3.2.3. PO. It was adapted from Van Dyne and Pierce (2004) and measured by four questions regarding both the respondents' perception of PO to the company and the level of PO throughout the organisation to ensure an organisational-level construct. The original scale developed by Van Dyne and Pierce included seven items, but in their test, 'modification indices indicated that the model could be improved by dropping the last three items' (Van Dyne and Pierce, 2004: 448), thus leaving four items to be used in the rest of the tests. Other studies have also used the Van Dyne and Pierce

scale, but reduced the number of items. Bernhard and O'Driscoll (2011), for instance, found that the removal of item 6 ('Most of the people that work for this organisation feel as though they own the company') was logical from a content validity perspective. A 7-point Likert-type scale (1 = fully disagree; 7 = fully agree) was employed, and the high level of internal consistency suggested a high correlation between the individual and the organisational sense of PO. To further ensure the robustness of the construct as an organisational-level construct, comparative tests were performed on both the item and construct level using a response from another (middle) manager in the companies. The results confirmed our general model as the *t*-tests were not significant. A second robustness check was conducted, creating a higher order formative construct formed by two lower level latent variables, one based on the answers from the CFO and the other on the answers from the other (middle) manager. This model also confirmed our findings. Finally, the robustness was tested using an aggregate construct with answers from both the CFO and the other manager from the approximately 200 companies. The results confirmed the loadings of our model, but with less significant *p* values due to the smaller sample size.

3.2.4. Company performance. It was measured by ROA. Since the primary data were collected in late 2009/spring 2010, the financial performance data were for the fiscal year 2010. To adjust for sector, a standardised residual was calculated with ROA 2010 as a dependent variable and sector dummies as independent variables.

3.2.5. Control variables. Based on eight different sectors, we controlled for industry sector using the national NACE (Nomenclature of Economic Activities) codes. PO was controlled for tenure of the respondents, as a long tenure may indicate a high level of self-investment in the organisation. The effect of HRM practices on company performance has been questioned, since the effect often seems to disappear when controlling for past performance (Kaufman, 2015). To address this concern, past performance measured by ROA 2007 was used as a control variable, which raised no concern and alleviated reverse causality issues.

3.3. Analysis

All latent constructs were measured with multiple items, thereby increasing construct validity. Moreover, we matched the level of theory with the level of analysis (Nielsen, 2013), as all items and constructs were designed to measure organisational-level phenomena surrounding PO. Internal consistency and reliability were assessed by Cronbach's alpha, factor loadings, composite reliability (CR) and average variance extracted (AVE) for all latent constructs, as shown in Table 1.

As reported in Table 1, the constructs display high levels of reliability, indicated by composite reliabilities (CRs) above 0.85 and AVE ranging from 0.59 to 0.74 (Fornell and Larcker, 1981). The latent constructs meet the convergent criteria with each loading being significantly related to its underlying factor. Likewise, a series of chi-square difference tests on the factor correlations show that the degree to which the constructs differ from each other (discriminant validity) is achieved (Anderson and Gerbing, 1988). Finally, a test of normality was conducted as recommended by Hult et al. (2006). Both variables were significantly normally distributed within the 0.001 level, using the Kolmogorov–Smirnov test of normality.

3.4. Common method issues

We employed a number of *ex ante* procedural and *ex post* statistical steps in order to examine the potential for common method bias in our data. First, in the survey instrument, we varied anchors

Table 1. Factor loadings and reliabilities.

Dimensions and variables	<i>n</i>	Cronbach's alpha	Construct reliability	AVE	Factor loadings	Indicator reliability
Leadership style	295	0.86	0.86	0.59		
Top management actively seeks MM opinions and ideas on strategic decisions					0.86	0.75
Top management are open to new ideas and initiatives from all					0.83	0.69
Top management appreciates that MM experiments with new ideas					0.81	0.66
Top management ensures that the interests of MM are considered when making strategic decisions					0.85	0.72
Psychological ownership	295	0.86	0.86	0.62		
I feel that this is MY company					0.93	0.86
The majority of employees feel that this is OUR company					0.81	0.65
I feel an ownership of and responsibility for the development					0.77	0.59
I find it hard to think about this as MY company (reversed-coded)					0.86	0.73

AVE: average variance extracted; MM: middle managers.

and scales of items related to the various constructs. In addition, we reversed several items and physically separated related constructs from each other. Together, these steps minimise the effects of consistency artefacts (Chang et al., 2010). Second, Harman's one-factor test was conducted on all items underlying the latent factors with variance explained between 9.0% and 44.6%, confirming the validity of the constructs. Since no single factor accounted for the majority of the covariance in the independent and criterion variables, and items related to perceptual measures all loaded on distinct factors with eigenvalues exceeding one, we find no evidence of common method variance (Podsakoff et al., 2012). Moreover, by collecting data from a second respondent in the companies and comparing responses, we reduced concerns about single-respondent bias. Finally, a lagged dependent variable from a secondary source further reduced common method bias concerns (Podsakoff et al., 2003).

3.5. Analytical procedure

The hypotheses were tested in a structural equation model using AMOS 20 SEM software in a two-stage procedure recommended by Anderson and Gerbing (1988). The first stage involved estimation of the measurement model using confirmatory factor analysis (CFA) to determine convergent and discriminant validity. The second stage compared the theoretical model with the measurement model. Based on the results of the test, the structural model was used to provide path coefficients for hypothesis testing. Additional fit measures like the goodness-of-fit index (GFI) and the root mean square residual (root mean square error approximation (RMSEA)) were calculated to test the model fit, as recommended by Gerbing and Anderson (1992). A sequence of nested (competing) structural models was evaluated in order to determine which model represented the best fit between the hypothesised relationships and the observed variance in the data.

Table 2. Descriptive statistics and correlations.

Variable	Mean	SD	1	2	3	4
1. Leadership style	0.00	1.00	1			
2. ESO	0.00	1.00	0.12*	1		
3. PO	0.00	1.00	0.61***	0.15**	1	
4. Performance	0.00	1.00	0.08	0.15*	0.22***	1

ESO: employee stock ownership; PO: psychological ownership; SD: standard deviation.
 n = 295.

Significance of correlations: ****p* < 0.001, ***p* < 0.01 and **p* < 0.05 (two-tailed test).

4. Results

Table 2 shows the means, the standard deviations and the correlations of all constructs. All correlations between constructs representing different latent variables are below 0.65, raising no concern for multicollinearity. Also, tests for variance inflation factors (VIF) on all items were below 1.5.

As recommended by Hult et al. (2006), the fit of the models was tested using the root mean square error of approximation (RMSEA) and the global comparative fit index (CFI) in addition to the normed fit index (NFI) and the Tucker–Lewis index (TLI). The CFI (Bentler, 1980) takes into consideration sample size, and values of 0.90 or better indicate a model with a good fit. The root mean square error of approximation (RMSEA) is sensitive to the number of estimated parameters in the model, as it considers the error of approximation in the population; values below 0.08 indicate a good fit. The fit characteristics of the measurement model indicated a model that fits the data very well (NFI=0.96, TLI=0.96, CFI=0.98 and RMSEA=0.06).

The ‘causal’ structures among the latent variables represented by our theoretical model were assessed in the structural model. In accordance with theory (Pierce et al., 1991; Wagner et al., 2003), we began with a model where the impact of both antecedents (ESO and PLS) on firm performance was fully mediated through PO. This model fits the data well (NFI=0.93, TLI=0.94, CFI=0.96, RMSEA=0.06 and $\chi^2=91.03$; *df*=43, *p*>0.001). Next, we used the ‘model-building’ approach (Kline, 2005) to compare a sequence of nested competing models, based on theoretical reasoning as presented above. First, theory suggests that both ESO and PLS may be directly related to firm performance (Blasi et al., 2003). Hence, in the next two steps, we added a path between ESO and PLS and firm performance, respectively. The addition of a direct path between ESO and firm performance (Model 2) exhibited only a marginally better fit to the data than the previous model. The path was significant only at the 10% level ($\beta=0.01$, *p*<0.1), and the chi-square difference test revealed only marginal model improvement ($\Delta\chi^2_{1df} = -3.45$, *p*<0.1). Similarly, including a direct path between PLS and firm performance (Model 3) did not seem to fit the data better, and the path was insignificant. Thus, we retained Model 1, and by including an interaction effect in Model 4, we continued to test the hypothesis that ESO and PLS may crowd each other out in their impact on PO. As recommended by Marsh et al. (2004), the interaction variable was created using the unconstrained approach, centring the items and using the products of the centred items as indicators of the latent interaction term. This path was significant ($\beta=-0.22$, *p*<0.05), and the fit statistics remained largely similar to Model 1 (CFI=0.95 and RMSEA=0.06) with a significant chi-square difference test ($\Delta\chi^2_{45df} = +86.49$, *p*<0.001; Table 3).

4.1. Hypothesis testing

Based on the nested model tests above, we continued to test our hypotheses via the unstandardised parameter estimates (see Figure 2). In terms of antecedents of PO, the results showed a positive

Table 3. Structural equation models (AMOS).

Model and description	χ^2	$\Delta\chi^2$	df	NFI	Δ^2	TLI	CFI	RMSEA
0 Measurement model	34.51		19	0.97	0.99	0.98	0.99	0.05
1 Leadership and ESO fully mediated by PO	91.03	56.52***	43	0.93	0.96	0.94	0.96	0.06
2 ESO partially mediated by PO	87.58	-3.45	42	0.93	0.96	0.94	0.96	0.06
3 Leadership partially mediated by PO	90.59	-0.44	42	0.93	0.96	0.94	0.96	0.06
4 Model I + moderation	177.52	86.49***	88	0.91	0.95	0.93	0.95	0.06

ESO: employee stock ownership; PO: psychological ownership; NFI: normed fit index; TLI: Tucker–Lewis index; CFI: comparative fit index; RMSEA: root mean square error approximation. Significance levels: *** $p < 0.001$; ** $p < 0.01$ and * $p < 0.05$ (two-tailed test).

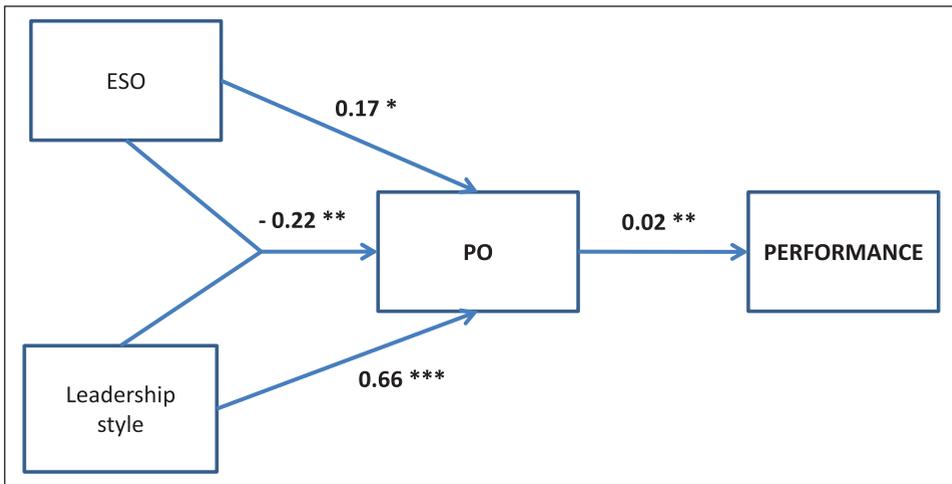


Figure 2. Structural equation model (the betas are unstandardised; * $p < 0.05$; ** $p < 0.01$ and *** $p < 0.001$).

significant relationship between economic incentives via ESO and PO ($\beta = 0.17, p < 0.05$), which is in support of Hypothesis 1. ESO was only marginally positively associated with firm performance ($\beta = 0.01, p < 0.1$). Together with our test for partial mediation, these results support the findings of Hammer and Stern (1980) and Long (1978) indicating that ESO by itself only has a weak effect on company performance; it is through the creation of PO that ESO influences company performance.

Hypothesis 2 predicted a positive relationship between a PLS and PO. Our findings provide strong support for the hypothesis ($\beta = 0.66, p < 0.001$), and the influence of PLS on performance appears to be fully mediated through PO as the direct path was insignificant. Next, we examined the interaction between ESO and PLS on PO in order to test Hypothesis 3. As indicated by the significant negative interaction ($\beta = -0.22, p < 0.05$), the negative relationship between ESO and PLS may influence the relationship of each to PO, supporting our theory that there is a crowding-out effect between these two mechanisms. Finally, we found support ($\beta = 0.02, p < 0.01$) for Hypothesis 4, proposing a positive relationship between PO and firm performance.

To test the robustness of the model with regard to firm performance, we included a number of alternative performance measures; ROA in the previous year, return on equity, gross return on asset

calculated on earnings before interest and tax (EBIT; eliminating the effect of different capital structures) and a number of subjective performance measures such as capability of exploiting new opportunities, improved processes, overall financial and non-financial success and innovations. All measures supported the general model. To address concerns about any effect being eliminated or even reversed (Kaufman, 2015) when controlling for past performance, the model was tested with past performance (ROA 2007). While the predictive effect of past performance on future performance is well-known and the positive relationship between ROA 2007 and 'future' company performance was highly significant ($p < 0.001$), neither the significance (or signs) of the relationships nor the fit of the model (CFI=0.95 and RMSEA=0.05) changed.

5. Discussion and future research

This study responds to calls for more attention on how PO affects organisational-level outcomes (Dawkins et al., 2015; Jussila et al., 2015) and the need to better understand how different antecedents of PO interact when they occur in the same organisational setting. To this end, we focus on the combined effect of ESO and PLS on the creation of PO in the organisation and on how PO subsequently affects financial performance.

5.1 Discussion

The results of our analyses show that PO is positively related to financial firm performance, supporting the often assumed but rarely tested financial effect of PO. This provides managers with important evidence that improvements in employee attitudes (organisational commitment, job satisfaction and organisation-based self-esteem), as well as work behaviour (individual and team performance and organisational citizenship) resulting from PO, can lead to tangible financial performance benefits. Our findings thus support the positive effect of HRM practices on company performance and contribute to the ongoing debate on the organisational impact of HRM practices (Kaufman, 2015). Even when controlling for past performance, we find that employee involvement via participative leadership and economic incentives in the form of ESO may improve company performance, mediated by the creation of PO, underpinning the importance of these practices.

Moreover, our results illustrate that ESO and PLS constitute two different mechanisms through which PO is generated. Specifically, our results suggest that ESO and PLS have a weak or no relationship with company performance per se, but only an indirect effect through their relationship to PO. These findings both challenge theoretical contentions of direct positive performance effects of ESO (reduced agency costs or slack) and PLS (information sharing, easier strategy implementation and empowerment) and indicate that any performance effects are created as an outcome of feelings of PO among employees. While this finding is in line with predictions by Pierce et al. (1991), our study is among the first to empirically test on a large dataset the simultaneous influences of the two mechanisms on both PO and financial performance.

In addition, our finding that ESO and PLS appear to crowd each other out in relation to generating feelings of PO provides important new insights into the different – and potentially offsetting – roles of the bundles of HRM practices often found side by side in many companies. Our study provides empirical support for the contention that crowding-out exists in real-life organisational work settings and thus underlines the importance of understanding the combined impact of different initiatives to increase motivation and performance.

The crowding-out effect can be explained by the difference in organisational focus created by the two instruments. When the level of PO is generated through ESO, the focus of the ownership feeling is output-oriented with an emphasis on the potential economic reward. By contrast,

when PO is created via PLS, the feeling of ownership is more process-oriented and focused on consensus-building and empowerment. A more process-oriented and developmental focus is often associated with long-term positive management instead of short-term financial performance. This suggests that while both ESO and PLS can be effective motivational tools in the pursuit of organisational PO and financial performance, financial incentives (such as ESO) tend to undermine or crowd out empowering HRM practices (e.g. PLS), even when such practices stimulate the same behaviour. Hence, given the different foci of the two mechanisms, more of one may impede the operation or effectiveness of the other. Thus, while our results may help justify the implementation of different incentive practices directed at generating and increasing PO, they also underscore the importance of paying careful attention to potentially offsetting effects of bundling such practices.

Together, the results of our study improve our understanding of the drivers of PO by illuminating the potential crowding-out between ESO and PLS. While any one route (i.e. ESO or PLS) may potentially result in increased feelings of PO, our findings are contrary to existing research (e.g. Pierce and Rodgers, 2004) that seems to suggest that employing multiple mechanisms simultaneously will be more effective at generating PO. In addition, our findings respond to the calls for more research into the combined effects of bundles of HRM practices, especially the study of potentially negative synergistic effects (Lengnick-Hall et al., 2009). It appears that firms must take great care in designing HRM strategies aimed at improving PO and performance, as simultaneous introduction of more than one instrument may lead to suboptimal outcomes due to crowding-out effects.

5.2. Limitations and future research

Like most research, this study suffers from a number of limitations. First, despite several robustness checks, our study only investigates the overall antecedents and effects of PO. Exploring the effect of ESO and PLS on the creation of PO across different organisational levels would enrich our understanding of the concept and allow for investigating the effectiveness of various motivational tools for different employee groups (Huang et al., 2010). Moreover, although we find a positive effect of ESO in terms of the creation of PO, our study does not test whether different economic incentive effects can be discerned among listed and unlisted companies. Future research may distinguish between not only listed and unlisted companies, but also between how bull and bear markets affect employee perception of risk. Furthermore, the study is limited to Danish companies, and different effects could be expected in different countries and cultures due to varying traditions of involvement, management attitudes or cultural characteristics such as power distance (Liu et al., 2012). In addition, despite our efforts to ensure that our measure of PO is in fact a representation of the organisational-level construct (conducting several robustness checks using a second respondent), more research is needed using multiple respondents from each company to further develop measures that capture PO at the organisational level.

Finally, common to all studies with cross-sectional designs, causality cannot be inferred and reverse and/or reciprocal causality is possible. We also note that despite its path nature, structural equation modelling does not test for causality per se, and all results must be interpreted with care. A number of steps have been taken, however, to increase the plausibility of our results. First, we employ a lagged and observed performance variable to increase validity of our predictions. Second, our theorising is based on existing research indicating that organisational mechanisms such as ESO plans and a PLS promote PO (Huang et al., 2010). Future studies may use longitudinal data to offer additional evidence for causality.

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