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THE PERFORMANCE EFFECT OF CORPORATE BOARD OF DIRECTORS

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ABSTRACT

This paper examines the relationship between the board-member independence, family control, and financial performance in Swedish listed firms. The degree of independence is defined with respect to the principal owners, the management of the firm, and the employees. The definition of independence, as applied by the Swedish Code of Corporate Governance, together with good accessibility of detailed data on corporate governance variables, makes it possible to apply a precise measure of board-member independency.

The analysis indicates that directors, dependent on the management of the firm dominates the board of director. Board-member independency is found positively affect a firm's financial performance. The negative effect of board-member dependency originates from the firm-related directors whereas dependency on principal owners, families, and employees does not have any impact on the firm investment performance. The results are important in the contemporary political debate about the role of the board of directors as well as its composition. The analysis shows that the definition of independency is important when discussing the board of directors; directors, independent of the firm, not on principal owners, influence the firm investment performance positively.

Keywords: Board Dependency, Family Control, Returns on Investment, Marginal q .

JEL Codes: G30, L20, L21, L22, L25.

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1. INTRODUCTION

Corporate scandals in recent decades have put the role and functioning of boards of directors in the spotlight.¹ To prevent future scandals, regulators in Europe and North America have introduced codes and recommendations for the board practices of public firms. Despite a lack of empirical evidence, many policy makers, journalists, and scholars believe that independent directors improve the quality of governance and, in the longer-run, firm performance (Bhagat & Black, 1999; 2002; Hermalin & Weisbach, 2003; van der Walt & Ingley, 2003). Tirole (2006:30) defines a director as independent “*if she is not employed by the firm, does not supply services to the firm, or more generally does not have a conflict of interest in the accomplishment of her overnight mission*”.²

Theoretical arguments can be used to question the importance of independent directors. *External* corporate governance mechanisms, such as competition on factor and product markets, the market for corporate control, and the managerial labor market, and internal control mechanisms, such as ownership structure and auditing, demand economic discipline in the management of a firm (Anderson & Reeb, 2004). Thus, the question can be formulated in one of two ways: are dependent directors problematic, or do independent directors add any extra value to a firm (Byrd & Hickman, 1992)?

Empirical studies have shown that external corporate governance mechanisms are less effective in family firms.³ Hence, compared to independent directors in non-family firms, those in family firms are likely to play a greater role in monitoring the management and the majority owners. Anderson and Reeb (2004) showed that the board control of families often exceeds their ownership and that a moderate degree of board independence positively affects the performance of US-based firms.

This study examined the relationship between board-member independence, family control, and financial performance for firms listed on the Stockholm Stock Exchange for the 2006-2008 period. Two questions were addressed:

- 1) Does board-member independence improve the financial performance of a firm?*
- 2) Do family-independent directors have a larger influence on financial performance than family-dependent directors?*

Board members were classified into four distinct groups: i) principal owners, ii) firm managers, iii) employee elected, and iv) independent directors. Directors, who can represent the principal owners of a firm, were divided into two groups: family owners and non-family owners. According to the Swedish Code of Corporate Governance (2011), a director is considered to represent a firm's management team if he or she is an employee, has extensive business connections with the firm, is part of the management team, is or has been an employee in the auditing firm, or has been a director for more than 12 years (the definition of director independence is further discussed in Section 5.2). Swedish corporate law states that employees in large firms have the right to elect a certain number of representatives depending on the size of the firm. Independent directors are considered to be directors who are not elected by the employees and who has no dependence on the management team or the owners.

The basic assumption is that dependent directors act in the interest of those on whom they depend, whereas independent directors act on behalf of every shareholder of a firm. In family firms, independent directors can limit the ability of shareholders to expropriate wealth from the firm. Independent directors in firms with a controlling owner help minority shareholders to monitor not only the management team of a firm but also the family (controlling) owner.

The results of this study on director independence contribute to the literature on boards of directors. Previous research is extended by surveying a detailed measurement of board-

member independence. The definition of independence and the accessibility of detailed data on corporate governance variables enable the effects of different types of director independence to be separated. The results of the analysis show that the definition of board-member independence is significant. Independent directors significantly and positively affect firm financial performance. Management-related directors show a statistically significant negative effect on performance, whereas dependence on principal owners, families, or employees does not affect a firm's investment performance. The results agree with the managerial entrenchment hypothesis, which states that managers should be monitored to ensure that their behavior is in accordance with the expectations of shareholders.

The alternative measure of firm performance (marginal q) used in this study is a methodological contribution to the literature on boards of directors. Marginal q is essentially a marginal version of the commonly used Tobin's q , and it measures how a firm's investments affect the market value of the firm. Marginal q , developed by Mueller and Reardon (1993), is derived from the net present value rule, which states that a value-maximizing firm should invest in projects with a positive net present value. That is, given efficient capital markets, the marginal q measure facilitates investigation of a firm's management to determine if it is value maximizing.

The empirical analysis results show that board-member independence improved the financial performance of firms. In agreement with the managerial entrenchment hypothesis, the results show that firm-related directors considerably reduce investment performance. Estimated marginal q values that are substantially less than one indicate inefficient investment policies. The results also show that neither owner-dependent board members nor employee-elected members statistically affect the marginal returns on investment and that the definition of board-member independence is crucial in these types of analyses.

The remainder of the paper is organized as follows. The next section contains a survey of institutional settings in Sweden. Section 3 presents a brief survey of how board independence is depicted in the literature. A presentation of the theoretical and empirical evidence for the relationship between board-member independence, family control, and firm performance follows. Section 4 develops the tested hypotheses. Section 5 presents the model and method, the applied measures of firm performance, and a description of the variables and data used. Descriptive statistics and regression results are also presented and discussed in Section 5. Section 6 summarizes the study and draws conclusions.

2. THE SWEDISH CORPORATE GOVERNANCE MODEL

The Swedish corporate governance model has traditionally been closely related to the German model. However, recent developments in the capital market have pushed Sweden closer to America's capital market and corporate governance structure (Randøy & Jenssen, 2004). However, there are at least three important differences between the Swedish and Anglo-American corporate governance models (The Swedish Code of Governance, 2004).

First, Swedish listed firms are characterized by concentrated ownership and family control. The Swedish Code of Corporate Governance addresses this feature by defining dependent directors with respect to a firm's management team and principal owners. The code regulates how many of the directors can be related to the largest owner in terms of both direct and indirect ownership. It also suggests that a majority of the directors should be independent. At least two of these independent directors should also be independent of the largest owner of the firm.⁴

A second difference is that the governing body and the executive power are separated in Swedish firms. This implies, for example, that the chairman of the board (COB) and the chief

executive officer (CEO) cannot be the same person and that only one member from the management team can be a member of the board of directors. Unlike the boards of Anglo-Saxon firms, the boards of Swedish listed firms consist mainly of non-executive directors.

Third, the election procedures for new directors differ between the models. In Anglo-Saxon firms, the management team has the power to nominate new directors, whereas in Sweden, shareholder representatives should make up a larger part of the nomination committee. At least one member should represent the minority owners. Only the COB may participate in the nomination committee; other directors or representatives of the management team are not allowed to be members. Thus, the Swedish code differs substantially from the US code and assigns the nomination procedure to the principal owners (Aguilera, 2005; Swedish Code of Corporate Governance, 2004). The method for nominating directors is of great importance because it indicates on whom the directors are dependent and to whom they are accountable.

3. CHARACTERISTICS OF INDEPENDENT DIRECTORS

Although no empirical evidence clearly shows a relationship between board-member independence and firm performance, many countries have codes, inspired by the British Cadbury Report (Cadbury, 1992), specifying that a majority of the directors should be independent (Bartram & Zakaria, 2008).⁵

These guidelines are based on the assumption that the directors who represent the firm and the owners can be expected to have a substantial amount of firm-specific knowledge, whereas independent directors can be expected to contribute to the monitoring of the management team with expertise and objectivity. Therefore, independent directors are seen as especially important to good governance practices (Byrd & Hickman, 1992). In continental European firms for which board dependence involves dependence on the principal owners, independent

directors can mitigate potential principal-agent conflicts between majority and minority shareholders. In such firms, independent directors are seen as a mechanism for protecting the interest of all shareholders and reducing the risks of minority expropriation.

Common measures of board-member independence in the literature refer to *outsider* and *insider* directors (Bhagat & Black, 2002; Byrd & Hickman, 1992; Hermalin & Weisbach, 2003). Insider directors are directors who are or have been employed by a firm, whereas outsiders are directors who have not been employed by the firm. Further, *affiliated* or *gray* directors have long-term business relationships with a firm; they can be attorneys, accountants, or other business people. Due to the dispersed ownership structure and the nomination procedure for new directors in Anglo-Saxon firms, the relationship between shareholders and directors is often not examined in studies using Anglo-Saxon data.

In this study, the degree of board-member independence was defined in relation to the principal owners, the firm management team, and the employees. The definition is an extension of the one suggested in the Swedish Code of Corporate Governance (2004). Both Saito and Dutra (2006) and Bhagat and Black (2002) used a similar definition for Brazilian and U.S. firms, respectively. Neither of these studies incorporated employee-elected directors in the definition of board dependence. Because the aim of this study was to investigate the effects of board-member independence, the inclusion of employee-elected directors was essential. Additionally, the marginal q approach was used to measure the effects of managerial performance. A marginal q value of one indicates efficient investment strategies, whereas a marginal q value of less than one implies over-investment and inefficient governance structures. Deviations are often due to managerial entrenchment. Thus, the size of the board of directors was included when estimating the efficiency of a firm.

According to Swedish legislation, firms with a certain number of employees are required to have employee representatives on the board of directors. In firms with at least 25 employees,

Swedish law stipulates that employees have the right to elect two directors. In firms with at least 100 employees, employees can elect three directors.

The applied definition differs somewhat from previous research on Swedish boards of directors. Randøy and Jenssen (2004) analyzed board independence in Swedish listed firms during the second part of the 1990s. They applied traditional outsider and insider definitions and excluded employee-elected directors in their definition of independent directors. During the study period, the law required listed firms with more than 500 employees to have at least two employee-elected directors. Strøm (2009) investigated the effects of having employees on boards for a sample of Norwegian firms. Employee-elected directors were found to negatively affect firm performance. Bøhren and Strøm (2007) presented a similar result and showed a positive effect for CEO-directors. In a Swedish study, Eklund, Palmberg, and Wiberg (2009) found that CEO-directors had a negative and significant effect on the investment performance of Swedish listed firms. The effect disappeared when board size was included in the model.

4. BOARD INDEPENDENCE AND FINANCIAL PERFORMANCE

The board of directors stipulates a firm's internal governance structure, formulates corporate strategic plans, defines and approves investment projects, hires and fires CEOs, and sets executive compensation levels. It is also in charge of risk management and firm audits.⁶ Many of these tasks involve monitoring of the management team, making it likely that independent boards of directors will achieve the tasks more efficiently than dependent boards.

4.1. Board-Member Independence

Behavioral explanations can be useful when discussing the importance of increasing board independence. Morck (2008) argued that misplaced loyalty may explain many recent corporate scandals. Often, damage could have been avoided or limited if the directors in the

misgoverned firms had forced CEOs and management teams to take responsibility for their actions, asked questions, and demanded answers from managers.

Following the work of Milgram (1963, 1974) and others, social psychology scholars argue that “*humans have an innate disposition to obey authorities*” (Morck 2008:179), a factor that helps to explain directors’ obedience to CEOs. Behavioral studies have shown that “*dissenting peers, conflicting authorities, or distant authorities*” (Morck 2008:179) disrupt this innate propensity to obey authority. This finding is applicable to discussions of boards because independent directors can be seen as dissenting peers or alternative authority figures in a group.

The lack of empirical evidence on the effects of board dependence implies that applied definitions, in general, are too subtle to capture all aspects of dependence (Morck, 2008). Therefore, by applying a more stringent definition of dependence, the effects on firm performance may evolve. Considering the above discussion, hypothesis one was formulated as follows:

Hypothesis 1: Board-member independence improves the financial performance of a firm.

4.2. Independent Directors in Family-Controlled Firms

Family firms that have a controlling owner suffer from a different type of agency problem compared to firms with dispersed ownership (Villalonga & Amit, 2006, 2009). The principal-agent conflict in these firms is not necessarily between the managers and the owners but rather between different groups of shareholders. In these firms, there is a potential conflict between controlling and minority owners (Andres, 2008; Bertrand & Schoar, 2006; Le Breton-Miller & Miller, 2006). The controlling owner has a considerable impact on the

composition of the board and its operations, and involvement in board activities gives the controlling owner the power to influence firm decisions (Dyck & Zingales, 2004; Perkins, Morck, & Yeung, 2008). Controlling families often control a disproportionate percentage of the board (seats) based on their ownership stake (Anderson and Reeb, 2005). The importance of having independent directors on the board can therefore be assumed to be greater in family-controlled firms. Thus, accounting for controlling families when analyzing the effects of board independence is especially important in Swedish listed firms because the principal owners are represented in the nomination committee (see *The Swedish Corporate Governance Model* for further discussion).

The existing literature on board-member dependence in family firms is mostly limited to Anglo-American firms. The effects of board dependence in family-controlled firms in continental Europe and Sweden have received less attention. Anderson and Reeb (2004) studied the effect of board dependence in founding-family firms and found a positive effect for independent directors. Filatotchev, Lien, and Piesse (2005) and Chen and Hsu (2009) confirmed these findings for Taiwanese family firms.

Shareholders who control a large share of a firm's voting and cash flow rights often have both the incentive and the ability to control and influence the firm's management team (Shleifer & Vishny, 1986). Conventional external corporate governance mechanisms, which are used to mitigate the agency problem between the management and the owners, have proven to be less effective in family firms than in firms with dispersed ownership (Anderson & Reeb, 2004). The literature on family firms shows that commonly used mechanisms such as takeover threats, institutional ownership, and incentive-based compensation are used less in family firms than in non-family firms (Gomez-Mejia, Nuñez-Nickel, & Gutierrez, 2001; Gomez-Mejia, Larrazza-Kintana, & Makri, 2003; Shivdasani, 1993).⁷ Thus, the board plays a particularly important role in family firms.⁸

In family firms, independent directors help minority shareholders to monitor not only the management of the firm but also the family/controlling owner. Thus, independent directors can limit the controlling shareholders' ability to expropriate wealth from a firm. Previous authors (Andres, 2008; Villalonga & Amit, 2009) have argued that family owners have stronger incentives both to control the management team and to extract private benefits from the control of a firm. Control-enhancing mechanisms, such as vote differentiation, pyramiding, and cross-ownership, enable families to extract the private benefits of control without bearing its full cost (Bjuggren & Palmberg, 2010; Faccio, Lang, & Young, 2001).

In a study of S&P 500 firms, Anderson and Reeb (2004) showed that independent directors positively affected firm performance in family firms. They concluded that a "moderate" share of independent directors balances the power of the family and has positive implications on a firm's value. Thus, by fostering critical debates on boardroom issues, independent directors can alter the obedience that dependent directors show toward the CEO and the owners of the firm (Morck, 2008).

Therefore, given the high level of ownership concentration and family control in Sweden, board dependence was expected to negatively affect the investment performance of firm. Due to increased possibilities of extracting private benefits of control, the negative effects of board dependence on investment performance can be assumed to be stronger in family-controlled firms. The above discussion leads to hypothesis 2:

Hypothesis 2: Family-independent directors have a more positive effect on firm investment performance than other independent directors do.

5. MODEL AND METHOD

To measure the effects of board-member independence and the efficiency of a firm, an outcome measure is needed. Tobin's q , which measures the ratio between the market value of

equity and debt and the replacement cost of capital, is one of the most common measures of firm performance.⁹ Theoretically, Tobin's q can be used to assess the degree to which management actions maximize shareholder value, the principal objective of a firm. However, in practice, Tobin's q is a questionable measure of firm performance. First, average measures of firm performance have the disadvantage of mixing infra-marginal and marginal returns on capital. For example, the Tobin's q value includes distorted effects on returns on capital given imperfect competition conditions. Therefore, the effect of managerial performance, which is the point of interest, cannot be measured. For further discussion, see Gugler, Mueller, and Yurtoglu (2004b: 513).

Second, due to problems in specifying a full structural model, analyses using average measures as dependent variables often have problems associated with omitted variables, reverse causality, or endogeneity. By evaluating the marginal effect of an investment on the market value of a firm, a marginal performance measure can be applied to avoid these problems (Gugler & Yurtoglu, 2003). With the marginal q methodology, the problems of endogeneity are less severe. The levels of investment and the returns on investment are determined by the managers' incentive to invest. The causality in this situation is not bi-directional; that is, the levels of investment do not determine ownership or management (Gugler, Mueller, & Yurtoglu, 2008). Ownership may be endogenous to the "*nature of investment opportunities of a firm*" (Gugler et al., 2008:691), implying that certain types of owners may be attracted to invest in companies in specific industries or with different risk levels. Financial theory, however, assumes that the cost of capital reflects the risk level. Accordingly, all wealth-maximizing firms will have a "*predicted ratio of returns on investment to cost of capital*" (Gugler et al., 2008:691) of one or slightly greater than one. This means that firms that do not apply wealth-maximizing investment strategies achieve marginal q values that deviate from the optimum value of one. These deviations are due to

managerial entrenchment. To determine the severity of this entrenchment, the marginal q values must be calculated first.

Another advantage of the marginal q approach is that estimating the marginal q value is sufficient to investigate the quality of a governance structure. A value less than one indicates over-investment, a phenomenon that occurs when the cost of capital exceeds the return on investment, and inefficient corporate governance structures. A marginal q value of greater than one indicates under-investment, a situation in which a firm can theoretically increase shareholder value by increasing its investments. Finally, a marginal q value of one or slightly greater than one indicates that the management team is value-maximizing and has efficient governance structures (Gugler & Yurtoglu, 2003; Mueller & Reardon, 1993).

5.1. Marginal q

As developed by Mueller and Reardon (1993), the marginal q method is based on the net present value rule (NPV_t), which states that value-maximizing firms should invest in projects associated with a positive net present value and continue until the value equals zero. Marginal q is the ratio of the present value of the investment projects at time t (PV_t) to the cost of the investments (I_t). A firm's market value is maximized when the cost of the projects equals the return: $qm = PV_t/I_t = 1$. Equation (1) is used to estimate marginal q :

$$\frac{M_t - M_{t-1}}{M_{t-1}} = -\delta + q_m \frac{I_t}{M_{t-1}} + \frac{\mu_t}{M_{t-1}}, \quad (1)$$

where M_t is the total market value in period t , defined as the total value of outstanding shares plus total debt; M_{t-1} is the market value at time $t-1$; the intercept (δ) is the depreciation in the value of a firm's capital stock; I_t is the amount of investments in period t ; and μ_t is the

residual. Given the assumption of efficient capital markets (future cash flows are unbiased estimates), the term μ_t/M_{t-1} approaches zero as t increases.

To study the effects of corporate governance interaction terms, variables that account for board-member dependence and board size were constructed. Operationally, the term I_t/M_{t-1} from equation (1) was interacted with the explanatory variable of interest to generate an empirically testable model with the following form:

$$\frac{M_t - M_{t-1}}{M_{t-1}} = -\delta + \beta_1 \frac{I_t}{M_{t-1}} + \beta_2 Z_1 \frac{I_t}{M_{t-1}} + \dots + \beta_{i+1} Z_i \frac{I_t}{M_{t-1}} + \frac{\mu_t}{M_{t-1}^i},$$

for $i= 1, 2, 3, \dots, n$,

(2)

where Z represents the explanatory variables. The different dummy variables for board-member dependence were expected to negatively impact marginal q , indicating a negative effect on managerial efficiency. The second hypothesis suggests that this negative effect will be larger for family-dependent directors.

Marginal q equals the sum of the marginal effects in models 1-7 (Table 4), or $q_m = \beta_1 + \beta_2 * Z_1 + \dots + \beta_n * Z_{n+1}$. If the net present value rule is followed, the sum of the marginal effects will be one or slightly greater than one; that is, the cost of capital is equal to the return on capital.

5.2. Variables and Data

The data used were for firms listed on the Stockholm Stock Exchange during the 2005-2008 period.¹⁰ Only non-financial firms with data for at least three consecutive years were included

in the study. Data on board dependence have only been systematically recorded since 2006, implying that the panel covered a relatively short period (three years).

The financial and accounting data were collected from *Standard and Poor's Compustat Global* database. Due to outliers in the accounting and financial data, the first and last percentiles with respect to change in market value and investment intensity were removed from the sample. The same procedure has been applied in a number of studies, including Bjuggren and Palmberg (2010) and Gugler et al. (2003, 2004a, 2004b, 2008). The dependent variable was defined as the difference in market value as a fraction of the market value at the start of period t . Following Mueller and Reardon (1993), investment intensity was defined as the total investments divided by the market value at the start of the period (I_t/M_{t-1}), and investments were defined as the sum of *After Tax Profit + Depreciation - Dividends + Δ Equity + R&D + Advertisements*. Model 1 in Table 4 was used to test equation 1 in the absence of variables accounting for board-member dependence. This specification was used as the baseline model.

The data on board dependence were collected from *Directors and Auditors in Sweden's Listed Companies* and *Owners and Power in Sweden's Listed Firms* by SIS Ownership Data Corporation. The definition of board-member dependence (the share of dependent directors) used in this study is a function of ownership, firm-management, and employment. A director was defined as dependent if he or she was an owner of the firm with at least 10 percent of the shares (capital or votes) in the firm. Direct and indirect ownership were both considered.¹¹ Models 4, 5, and 8 in Tables 4 and 5 were used to test different specifications of board-member dependence with respect to ownership. A director was considered dependent on a firm if he or she was an employee, had extensive business connections with the firm, was part of the management team, was or had been an employee in the auditing firm, or had been a director for more than 12 years (see Models 3, 5, and 8 in Tables 4 and 5). Employee-elected

directors were considered to be closely related to the firm or its employees; that is, they were considered dependent.¹²

Model 6 was used to test the effects of employee-elected directors separately. Model 8 was used to test total board-member dependence, which included the share of employee-elected directors. The strict definition of board dependence implied that the remaining (independent) directors included only those directors who had no direct relationship with either the firm or the firm's owner except for a seat on the board. Table 1 presents the variables included in the empirical investigation.

Insert Table 1 about here

Previous studies (Eklund et al., 2009) have identified a negative effect when board size deviates from its optimal level. To control for this effect, board size, defined as the number of directors elected by both the annual meeting and the employees, was included.

6. EMPIRICAL ANALYSIS

Table 2 displays descriptive statistics for boards of directors in Swedish listed firms. For comparison, Tobin's q was also used as a performance measure (see Table 2 and Table 5). On average, boards of directors had seven to eight members, with a minimum of three and a maximum of thirteen. The degree of board independence ranged from zero to one hundred percent. Only five companies had a completely independent board of directors. On average, 56 percent of directors were dependent on either the firm management team or the principal owners of the firm, making them dependent according to the definition used in the Swedish Code of Corporate Governance. The Code recommends that a majority of all directors should

be independent. To meet this requirement, Swedish listed firms, in general, should reduce the degree of board dependence.

Insert Table 2 about here

The descriptive statistics also show that directors were mostly related to the management team (43 percent) and that only 11 percent were related to the owners of the firm. Given the high level of ownership concentration and family ownership among Swedish listed firms, the number of owner-dependent directors was low. The Swedish Code of Corporate Governance recommends that nomination committees should have a majority of representatives from the principal owner. Given the Swedish way of organizing nomination procedures, the boards of directors were expected to have a higher share of owner-dependent directors.

The share of employee-elected directors was also relatively low. Employees elected approximately 10 percent of all directors. Thus, one-third of all directors could be considered independent of the firm management team, the owners of the firm, and the employees.

Table 2 shows accounting and financial data for the sample firms. The average change in market value during the 2006-2008 period was negative and equal to 7 percent. Compared to previous studies, the level of investment and the investment intensity (I_t/M_{t-1}) were relatively low due to the 2008 financial crisis in Sweden.

6.1. Correlation

Table 3 presents the correlation coefficients for the variables used in the regression analysis. Column 1 shows the negative correlation between management-related directors and directors related to the largest owner and the controlling family owner. Management dependence was positively correlated to total dependence. A positive and statistically significant correlation

was observed between ownership concentration and family- and owner-dependent directors. The correlation matrix reveals a substantial correlation between owner- and family-dependent directors (0.94), indicating that mostly families had representatives on boards.

Insert Table 3 about here

6.2. Regression Analysis

To test the effect of board member dependence on marginal q , a two-way fixed effect model that controlled for both industry and time effects was used. Panel data methodology was used to analyze the effects of board structure across industries and over time. The marginal q methodology combined with the fixed-effect regression model gives each firm an industry-specific cost of capital. As a robustness check, all hypotheses were tested with Tobin's q as a dependent variable. Sales and growth in sales were included as control variables in Tobin's q estimates. The variables served as proxies for firm size and growth.

Table 4 presents the regression results for the marginal q estimates. Model 1, the baseline model, included only investment intensity and yielded an average marginal q of 0.61 (p-value <0.01). This result indicates that Swedish firms, on average, have inefficient investment strategies, and firms invest in projects for which the marginal cost of capital is higher than the marginal return. This estimated marginal q value agrees with previous research for Sweden. Bjuggren and Palmberg (2010) reported an average marginal q of 0.73 for Swedish listed firms for the 2000-2005 period. Model 2 incorporates board size as a control variable. Previous studies (cf. Andres, Azofra & Lopez, 2005) have identified a negative effect when the board size deviates from its optimal level. However, in this study, the variable was statistically insignificant in all models except for Model 5.

To test Hypothesis 1, which states that board independence positively influences a firm's investment performance, variables measuring the four types of directors were introduced in the model. Models 3 - 8 represent the six different specifications of board dependence. Model 7 was used to test Hypothesis 2, which states that directors related to the controlling family have a greater positive impact on a firm's investment performance in family-controlled firms. The results support Hypothesis 1 and suggest that board independence has a statistically significant and positive effect on investment performance ($Mq-1$: $\beta=-0.50$, $p<0.01$ and model $Mq-8$, $\beta=-0.53$, $p<0.01$). Using the different definitions of directors, the negative effect of dependence originates from directors related to a firm's management team.

Insert Table 4 about here

None of the variables measuring owner dependence ($Mq-4$, $\beta=-0.34$, $p>0.1$), employee-elected directors ($Mq-6$, $\beta=0.06$, $p>0.1$), and family dependence ($Mq-7$, $\beta=-0.15$, $p>0.1$), were statistically significant when tested separately (Models 4, 6, and 7). Hence, the findings do not support Hypothesis 2, which states that family-dependent directors have a stronger negative effect on investment performance compared to non-family dependent directors. The results agree with the managerial entrenchment argument.

Table 5 reports the regression results using Tobin's q as a performance measure. The results are in accordance with the marginal q estimates.

Insert Table 5 about here

Directors related to a firm's management team showed a statistically significant negative effect on firm performance ($Tq-3$, $\beta=-0.3$, $p<0.05$), whereas dependence on the principal owners ($Tq-4$, $\beta=-0.44$, $p>0.1$) and family owners ($Tq-7$, $\beta=-0.73$, $p>0.1$) had no statistically significant effect on firm value.

Employee-elected directors showed a negative and significant impact on Tobin's q ($Tq-6$, $\beta=-1.13$, $p<0.1$). The control variable of firm size was statistically insignificant, whereas growth in firm value was positive and significant in all specifications. The magnitude of the coefficient was approximately 0.22-0.25, indicating that this variable was robust for different specifications.

In summary, both the marginal q and Tobin's q estimates support Hypothesis 1 (board independence positively impacts firm performance). Dependence on principal owners and family owners did not affect investment performance. The negative effect of dependence was shown to originate from directors related to the management team, in agreement with the managerial entrenchment hypothesis. The results are robust for different measures of firm performance.

7. CONCLUSIONS

In this study, the effect of board independence on firm performance in Swedish listed firms was investigated. The Swedish corporate governance model is characterized by ownership concentration and high levels of family control. Board directors were classified into four distinct groups depending on their relation to the principal owners, the management of the firm, and other employees. Both marginal q , which measures the marginal return on capital, and Tobin's q were used as performance measures.

The results indicate that board independence had a statistically significant and positive effect on a firm's investment performance. With the more detailed classification of directors,

the negative effect of dependence was shown to result from directors dependent on a firm's management team. Directors related to the principal owners and families were statistically insignificant when tested separately. Furthermore, employee-elected directors showed no statistically significant effect on investment performance. Thus, the results suggest that directors independent of a firm's management and owners positively and significantly affected returns on investment. The results support the managerial entrenchment hypothesis.

The findings of this study are important in the contemporary political debate about the role and composition of boards of directors. This paper shows that the definition of dependence is important when discussing boards of directors. Dependence on a firm's management team, not on the principal owners, negatively influenced the investment performance of firms.

ENDNOTES

¹ See, for example, Jonsson, Greve and Greve (2010) for a discussion of the role of the board of directors when a firm (Scandia AB) is affected by scandals. From 2000-2004, Scandia AB was involved in two major scandals.

² Section 3 discusses alternative definitions and the characteristics of independent directors.

³ Anderson and Reeb (2004) discuss effects of corporate governance mechanisms in family firms and differences from those in other firms. Saito and Dutra (2006) discuss how external governance mechanisms function in firms with concentrated ownership.

⁴ The Swedish Code of Corporate Governance applies the rule “*comply or explain*” (i.e., firms can deviate from the Code but then have to explain the reason for this deviation).

⁵ Table 1.2 in Bartram and Zakaria (2008) provides an overview of how the Cadbury Code has been implemented in European Corporate Governance codes. Table 1.B (Appendix) in the same chapter provides an overview of corporate governance codes in Europe.

⁶ See Aguilera (2005) for a discussion on the role of board of directors in different institutional settings.

⁷ Palmberg (2010) shows that Swedish family-controlled firms to a lesser extent than non-family controlled firms use variable compensation such as bonuses and stock options.

⁸ See, for example, Sjögren (2005; 2006) and Lindgren (2002) for a discussion of management strategies applied by the Swedish family business group Wallenberg.

⁹ See Bhagat and Black (2002) for a survey of the literature on board independence and the use of performance measures.

¹⁰ The year 2005 is left out in the estimations since both the dependent and the independent variables include lagged market values (see equation 1).

¹¹ The Swedish Code of Corporate Governance (2004, p. 27) defines indirect ownership in this way: “*If one company has more than 50 per cent of the capital or votes in a second company, the first company is considered to have indirect control of the second company's ownership in other companies*”.

¹² See Section 3 in the Swedish Code of Corporate Governance (2004) for further information regarding the definition of a dependent board of directors.

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TABLE 1 Definition of variables

Variables	Description
Total market value (M_t)	Market value at the end of period t . Defined as the total value of outstanding shares plus total debt. (Compustat mnemonic item numbers: MKVAL + DT).
Investments (I_t)	Investment in period t . $I = \text{After tax profit} + \text{Depreciation} - \text{Dividends} + \Delta\text{Debt} + \Delta\text{Equity} + \text{R\&D} + \text{ADV}$ (Compustat mnemonic item numbers: IB + DP - DVC + Δ DT + SSTK - PRSTKC + XRD + XSGA).
Tobin's q	Total market value divided by total assets (M/AT).
Board size	Number of board members.
Management dependence	Percentage share of directors who were dependent on the management of the firm.
Owner dependence	Percentage share of directors who were dependent on the principal owners of the firm. Owners were defined as principal owners if they had at least 10 percent of capital or voting rights. Indirect ownership was also considered. The principal owner must then control at least 50 percent of the second company (both capital and voting rights were considered).
Management and owner dependence	The percentage share of directors who were dependent on the management of the firm and principal shareholders (i.e., management dependent directors + owner dependent directors). This is the definition suggested by the Swedish Code of Corporate Governance.
Employee-elected directors	Percentage share of directors who were elected by the employees of the company.
Family dependence	Percentage share of directors who were dependent on families and individuals owning at least 10 percent of capital or voting rights in the firm.
Total board dependence	Percentage share of directors who were dependent on the principal owners, firm management, or employees.

Note: The financial and accounting data come from Standard and Poor's Compustat Global. The data on board composition and ownership structure were collected from Directors and Auditors in Sweden's Listed Companies and Owners and Powers in Sweden's Listed Companies SIS Ownership Data Corporation; 2006-2008). Definitions of dependent directors and principal owners are based on the definition suggested by the Swedish Code of Corporate Governance (2004).

TABLE 2 Descriptive statistics

	Mean	Median	Max.	Min	Std.
Board size	8	7	13	3	2
Management dependence	43	38	100	0	31
Owner dependence	11	11	50	0	12
Manag. & own. dependence	56	50	100	1	31
Employee-elected	11	0	33	0	12
Family dependence	11	10	50	0	12
Total dependence	67	67	100	0	30
$\Delta M_t/M_{t-1}$	-7	-13	212	-82	42
I_t/M_{t-1}	0.25	0.21	1.37	-0.56	0.23
Tobin's q	1.38	1.05	4.96	0.11	0.92

Note: Board size is the number of directors on a board. Dependence is measured as a percentage share of the total board size. Total dependence includes all three types of dependence: firm-, owner-, and employee-elected directors. $\Delta M_t/M_{t-1}$ is expressed as a percentage.

TABLE 3 Correlation

	Management	Owner	Family	Employee- elected	Total dependence	Ownership concentration	$\Delta M_t /$ M_{t-1}	I_t / M_{t-1}
Management dependence	1							
Owner dependence	-0.14**	1						
Family dependence	-0.12*	0.94**	1					
Employee- elected directors	-0.29**	-0.05	-0.03	1				
Total dependence	0.81**	0.22**	0.22**	0.06	1			
Ownership concentration	-0.07	0.41**	0.40**	0.05	0.09	1		
$\Delta M_t / M_{t-1}$	0.02	-0.01	-0.03	-0.00	-0.01	0.02	1	
I_t / M_{t-1}	0.06	0.04	0.03	0.12**	0.10*	0.01	0.19**	1

Note: ** Correlations considered significant at the 0.01 level (2-tailed). * Correlations considered significant at the 0.05 level (2-tailed).

TABLE 4 Board of directors, dependence, and returns on investment

Dependent variable (ΔM_t)/ M_{t-1}	<i>Mq-1</i>	<i>Mq-2</i>	<i>Mq-3</i>	<i>Mq-4</i>	<i>Mq-5</i>	<i>Mq-6</i>	<i>Mq-7</i>	<i>Mq-8</i>
I_t / M_{t-1}	0.61*** (7.66)	0.72*** (3.63)	1.12*** (4.54)	0.80*** (3.53)	1.30*** (4.61)	0.73*** (3.29)	0.75*** (3.39)	1.19*** (4.59)
Board size		-0.01 (-0.56)	-0.04 (-1.31)	-0.02 (-0.75)	-0.05* -1.69	-0.02 (-0.47)	-0.02 (-0.63)	-0.03 (-1.02)
Management dependence			-0.50*** (-2.70)					
Owner dependence				-0.34 (-0.74)				
Owner & management dependence					-0.55** (-2.87)			
Employee-elected						0.06 (0.09)		
Family dependence							-0.15 (-0.33)	
Total dependence								-0.53*** (-2.84)
Constant	-0.26*** (-7.69)	-0.26*** (-7.54)	-0.28*** (-7.95)	-0.26*** (-7.48)	-0.28*** (-7.97)	-0.26*** (-7.52)	-0.26*** (-7.48)	-0.27*** (-7.92)
Adj. R-square	0.36	0.36	0.37	0.36	0.36	0.36	0.36	0.37
F-value	7.23	6.98	7.09	6.82	7.13	6.80	6.81	7.12
No. of obs.	455	454	454	454	454	454	454	454
No. of firms	154	154	154	154	154	154	154	154

Note: Equation (2) was estimated. T-statistics in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. All explanatory variables interacted with the term I_t/M_{t-1} . A two-way fixed effect model controlling for time and industry effects was applied. To save space, values for year and industry dummies are not reported. Industry codes are specified on a two-digit level. All values are deflated and expressed at 2005 price levels. The period used in this study was relatively short; in 2008, the global financial crisis hit the Swedish stock exchange. Thus, the estimated intercepts cannot be interpreted as rates of depreciation. As a robustness check, control variables such as voting rights of the largest owner, a dummy for dual class-shares, and excess votes were included in the above specifications. The results did not change considerably.

TABLE 5: Tobin's q – board dependence

Dependent variable: Tobin's q	Tq-1	Tq-2	Tq-3q	Tq-4	Tq-5	Tq-6	Tq-7	Tq-8
Sales	-0.00* (-1.68)	-0.00 (-1.29)	-0.00 (-1.43)	-0.00 (-1.33)	-0.00 (-1.49)	-0.00 (-1.39)	-0.00 (-1.34)	-0.00 (-1.58)
Growth sale	0.25** (2.14)	0.24** (2.10)	0.24** (2.11)	0.24** (2.08)	0.22* (1.91)	0.24** (2.11)	0.24** (2.08)	0.21* (1.87)
Board size		-0.01 (-0.36)	-0.01 (-0.51)	-0.01 (-0.46)	-0.02 (-0.76)	0.03 (0.80)	-0.01 (-0.52)	-0.01 (-0.21)
Management dependence			-0.33** (-1.98)					
Owner dependence				-0.44 (-0.97)				
Owner & manag. dependence					-0.43** (-2.48)			
Employee elected						-1.13* (-1.88)		
Family dependence							-0.73 (-1.60)	
Total dependence								- 0.53** *
Constant	1.42*** (15.33)	1.49*** (7.13)	1.70*** (7.24)	1.55*** (7.08)	1.86*** (7.26)	1.33*** (5.93)	1.59*** (7.30)	1.88** *
Adj. R-square	0.30	0.30	0.30	0.30	0.31	0.30	0.30	0.31
F-value	5.99	5.81	5.81	5.68	5.90	5.79	5.75	6.04
No. of obs.	409	409	409	409	409	409	409	409
No. of firms	143	143	143	143	143	143	143	143

Note: The estimated model is $Tobin's\ q_{j,i,t} = \alpha_{j,1} + \alpha_{j,2} * sales_{j,i,t} + \alpha_{j,3} * (growth\ in\ sales_{j,i,t}) + \varepsilon_{j,i}$, where $j = 1-8$ and denotes the different specifications in Table 5. T-statistics in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. A two-way fixed effect model controlling for time and industry effects was applied. To save space, values for year and industry dummies are not reported. Industry codes are specified on a two-digit level. All values are deflated and expressed at 2005 price levels. See Table 1 for definitions of board dependence. As a robustness check, control variables such as voting rights of the largest owner, a dummy for dual class-shares, and excess votes were included in the above specifications. The results did not change considerably.