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Empirical study of CEO turnover derived from firm performance

– Evidence from Korean Firms –

기업성과에서 기인한 CEO 교체에 관한 실증연구: 한국 기업을 중심으로

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Graduate School of Business Administration
Seoul National University
Finance Major

Ho kyung Lew

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Examiner Kuan-Hui Lee

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Graduate School of Business Administration
Seoul National University
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Ho Kyung Lew

Confirming the master's thesis written by
Ho Kyung Lew

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Chair	Woojin Kim
Vice Chair	Kyoungwon Seo
Examiner	Kuan-Hui Lee

Abstract

This paper examines 9,392 CEO-year data of Korean manufacturing companies listed on the Korea Stock Exchange from 2000 to 2019, using two different probit models to verify the relationship of CEO turnover according to the level of firm performance.

The empirical result of the total sample shows higher performance CEOs experience less CEO turnover caused by firm performance, and especially the relationship was most significant when the firm performance evaluation period was extended to the entire period. In addition, the analysis according to the type of CEO shows that the replacement of owner-managers is not affected by firm performance, while the replacement of professional managers decreased with higher firm performance.

Keyword : Chief executive officer (CEO), CEO turnover, firm performance, owner-manager, professional manager
Student Number : 2019-25038

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Chapter 1. Introduction

CEOs are responsible for key strategic decision-making and operational planning across corporate management, which plays a critical role in the value and future of the company. Hence there is no doubt that hiring a competent CEO is crucial. What is also important, however, is the replacement of the CEO. Whether the CEO is replaced to take responsibility for poor performance is an indicator of a well-functioning corporate governance mechanism. Therefore, replacement of CEOs is a very important event that leads to major changes in terms of corporate strategy and corporate value.

While there exist of prior study that firm performance has a negative relation with CEO turnover, this paper goes one step further and studies whether turnover caused by bad performance decreases as firm performance level increases in Korea. By estimating the probability of the turnover for each performance level, we can compare the likelihood of turnover caused by poor performance. The estimation method this paper follows is the probit models introduced from Jenter and Lewellen (2020). They introduce a new concept to the relationship between firm performance and CEO turnover which is named as the "performance-induced turnover". This measure indicates turnovers derived from bad firm performance, in other words, turnovers that would not have happened had performance been good. It is a measure of probability calculated from the probit regression. A big assumption of the measure is that turnovers at sufficiently high level of firm performance are not caused by bad firm performance but because of other reasons that are not related to performance. Thus, higher turnovers at low performance level are all caused by bad firm performance. To estimate performance-induced turnover, two different probit models are used. One is a standard probit model with performance decile indicators and the other is the two-probit model. The difference between the two models is how it define the "other" turnover which is the turnover that is not

affected by performance. The first model assumes that from a certain high-performance threshold, performance is sufficiently high enough that turnovers occurred at that level are not affected by performance at all. Therefore, the highest performance level group's total turnover rate becomes the "other" turnover rate. Meanwhile, the second model assumes that the "other" turnover is not affected by performance at all thus do not make the formula of the "other" turnover as a function of performance.

When studying about CEO turnovers in Korea, one must not overlook the prominent characteristic of Korean companies. In Korea many of the firm's CEO are owner-managers. The power of their ownership can affect the decision regarding CEO replacements. Therefore, this paper examines whether there is a difference in performance-induced turnover between owner-managers and professional managers.

The empirical result confirms the negative relation between firm performance and CEO turnover which suggests the prior literature. Performance-induced turnover tends to decrease as firm performance improves, and depending on the model used for the estimation, 17% to 55% of the total turnover is in fact caused by performance. However, when examining the turnovers by dividing the sample depending on the CEO type, conflicting results are derived. While the turnover of CEOs who owns ownership (owner-manager) shows to be unrelated to firm performance, CEO who does not own ownership experience less turnover as firm performance increases. Overall, the empirical results support the literature of the prior studies.

The rest of this paper is organized as follows. Chapter 2 reviews related literature and develops the hypothesis for this study. Chapter 3 introduces the method and describes the variables. Chapter 4 describes the data and sample. Chapter 5 reports the empirical results. Chapter 6 concludes the paper.

Chapter 2. Literature Review & Hypothesis Development

Prior studies on CEO turnover can be classified as factors affecting CEO replacement and changes in companies after CEO replacement, mainly linked to firm performance.

First of all, there are prior studies that suggest that decisions of replacing a company's CEO are affected by firm performance. In particular, a company has enough incentives to lead the organization stably when the performance is good, while if the performance is poor it can be used as an opportunity to drastically change the company's strategy and organizational structure (Coughlan and Schmidt, 1985; Jensen and Murphy, 1990; Kang and Shivdasani, 1995; Warner, Watts, and Wruck, 1988). In this process, replacement of the CEO in charge of making decisions across the company's management is prioritized, and the likelihood of the board of directors to let the CEO hold responsibility of low performance by firing the CEO increases (Coughlan and Schmidt, 1985; Jensen and Murphy, 1990; Kang and Shivdasani, 1995; Warner, Watts, and Wruck, 1988). In this respect, Coughlan and Schmidt (1985) examined the relationship between managerial replacement and stock returns for 249 companies during the 1978–80 period, and argued that poor performance increases the probability of CEO replacement, which was also supported by Warner, Watts, and Wruck (1988). Weisbach (1988) also demonstrated that the worse the management performance, the higher the probability of CEO replacement, through empirical analysis during the period from 1974 to 1983. The results of this analysis were also supported by research on Korean companies such as Shin Hyun-han and Jang Jin-ho (2003), Kim Sang-kyung (2009), Jeong Dae-yong (2009), Park Jong-hoon, Sung Yeon-dal (2010).

Meanwhile, Allen and Panian (1982) argued that prior studies show that poor performance leads to replacement of CEO is limited to companies whose ownership is dispersed, whose ownership and management are separate, and that there is no correlation between

firm performance and CEO turnover for family firms whose ownership and management matches. Mork, Shleifer and Vishny (1988) also argued that companies run by the founder's family experience less management replacement or hostile takeover. This lack of consistent conclusions with prior studies in the case of family companies is believed to be due to family interests rather than management performance (Smith, Amoako-Adu, 1999). In this regard, it is an issue that needs to be empirically verified, especially considering the characteristics of most Korean companies in the form of owner-owned companies, since the change of CEO may vary between owner-managers and professional managers.

2.1. CEO turnover and firm performance

Many prior studies of CEO replacement have examined CEO replacement rates and what factors are relevant to CEO replacement (Haveman et al., 2001; Ocasio, 1994). Looking at these studies, the causes of replacement can be largely classified into cases of replacement in conjunction with performance and cases of replacement of CEO due to reasons other than performance. That is, CEO replacement due to poor management performance, and the CEO replacement regardless of management performance. It is also classified if the cause of replacement is forced or is the CEO's own voluntary will. However, even if it is forcedly replaced by such other intentions, it is very difficult for outsiders to identify whether the CEO's replacement is actually voluntary because most cases report as voluntary transfer (Weisback, 1998). This is the point where the key paper of this study, Jenter and Lewellen (2020), starts from. Considering the fact that it is hard for the outsiders to distinguish whether the cause of the replacement is forced or voluntary, Jenter and Lewellen (2020) focus on performance as the main cause of the replacement so that the researcher can estimate the turnover probability using measures clearly specified, and document a close turnover-performance link and estimate that 38%–55% of turnovers caused by bad performance. This result supports the empirical result

that 10–20% of CEO replacements are laid off by poor performance (James & Soref, 1981; Vancouver, 1987; Boeker, 1992), and many studies have shown that poor performance is a leading factor of CEO replacement (Grusk, 1963; Gamson & Scotch, 1964; Allen, Panian, Lotz, 1979) and CEOs with poor management performance were likely to be replaced (Warner, Watts, Wruck, 1988). On the other hand, for reasons other than performance, prior factors of replacement may list various variables, such as board of directors, CEO characteristics, firm size, and industrial (environmental) factors. Carroll (1984) noted that while replacement due to out-of-performance causes has many voluntary replacements by former CEO and the replacement process is routinized, performance-caused replacement creates the confusion that ensues with changes in the control structure and command structure. Based on these prior literatures this paper conducts the first hypothesis:

H1: CEO with higher performance levels experience less turnover.

2.2. CEO types and turnover (Owner-manager vs. professional manager)

The type of CEO is important to the environmental factors and suitability of the company and is also one of the main ways to adapt effectively to the needs of change in the environment it faces (Hambrick & Finkelstein, 1987). Existing research has shown that ownership of a company is a source of power to determine or replace a company's CEO (Boeker, 1992). This means if the CEO's ownership stake is high, it becomes more difficult to replace the CEO with poor performance (Denis et al., 1997). Previous research has shown interest in the ownership structure of the company, especially in the interests owned by the manager, and that the tenure of the owner manager is longer than that of other managers. Salancok and Pfeffer (1997) found that CEO tenure varies from CEO to CEO, and that there is no relation between performance and replacement in owner-managed firms. James and Soref (1981) argued that there are

differences between family firms and professional management firms. Owner-managers were found to be less affected by performance, and owners' status was found to have a buffer effect in replacing them. Theses prior literature indicates owner-manager CEOs turnover is less sensitive to firm performance than the turnover of the professional manager (James & Soref, 1981; Boeker, 1992). In Korean companies, owner-managers often exclusively carry out important corporate decision making. This condition makes it hard to restrain the CEO if he controls the board or reduces shareholder value in pursuit of private interests (Salanick & Pfeffer, 1977). Shin Hyun-han and Jang Jin-ho (2003) suggested that the characteristics of Korean companies, unlike Western companies, have a unique structure called chaebol, and that there are far more owner managers than professional managers. Therefore, considering this unique characteristic of Korean companies, it is necessary to examine owner-manager CEO and professional manager CEO separately when studying CEO turnovers. Based on these prior literatures this paper conducts the second hypothesis:

H2: Turnover probability differs in CEO types.

H2a: Owner-manager turnover is unrelated to firm performance.

H2b: Professional manager turnover is negatively related to firm performance.

Chapter 3. Method

3.1. Analysis Method

3.1.1. Performance-Induced turnover

Performance-induced turnover, the fundamental measure introduced in this paper, is the probability of a turnover that would not have occurred had performance been "good." It is solely derived from bad performance and other factors such as the board's decision does not affect the turnover. Conceptually, turnover is the sum of two independent turnovers; turnovers unrelated to firm performance and turnovers related to firm performance. In function, total turnover probability can be calculated as,

$$P_{turn}(x_t) = P_{other} + P_{perf-ind}(x_t) - P_{other} * P_{perf-ind}(x_t). \quad (1)$$

When the firm performance is given by x_t, $P_{perf-ind}(x_t)$ is the probability of the turnover caused by bad performance. Due to the basic premise that firm performance and CEO turnover is negatively correlated, the turnover goes to zero as performance goes to infinity. P_{other} is the "other" turnover unrelated to performance. The last term, $P_{other} * P_{perf-ind}(x_t)$ is the adjustment for CEOs that experience both performance-induced turnover and other in the same year. Since P_{other} and $P_{perf-ind}(x_t)$ are independent events that can occur simultaneously, the intersection is subtracted.

The main question in this paper is estimating the probability of the performance-induced turnover so when we reorder Equation (1) we get,

$$P_{perf-ind}(x_t) = \frac{P_{turn}(x_t) - P_{other}}{1 - P_{other}} \quad (2)$$

As in Equation (2) performance-induced turnover is estimated by the difference between all turnovers and those turnovers

unrelated to performance, with some turnovers caused by both processes. Thus performance-induced turnover estimation depends on how the "other" turnover is estimated. This paper uses two different approach which differs in the assumption of the "other" turnover, P_{other}. The first approach which is the standard probit model with performance decile indicators assumes that all turnovers above certain high-performance threshold is unrelated to performance and thus, would have occurred at any level of performance. Meanwhile the second approach which is the two-probit model takes the "other" turnover not affected by the performance.

3.1.2. A probit model with performance decile indicators

The first approach assumes that turnover from above sufficiently high-performance threshold $\hat{X}$ is not due to performance. In other words, if performance level increases to a certain level, turnovers are unrelated to performance and thus, would have occurred at any level of performance. Any turnover that has occurred below $\hat{X}$ is performance-induced turnover. Formally, the probability of turnovers at performance level x_t $(x_t < \hat{X})$ is,

$$P_{perf-ind}(x_t\ ,\ \hat{X}) = \frac{Max(P_{turn}(x_t) - P_{turn}(x \geq \hat{X}),\ 0)}{1 - P_{turn}(x \geq \hat{X})}. \qquad (3)$$

From Equation (3) we learn that $P_{perf-ind}(x_t\ ,\ \hat{X})$ is calculated from the difference between the total turnover probability at performance level x_t and the average turnover probability at and above the performance threshold $\hat{X}$. The numerator is set to zero if this difference is negative. As long as the estimated turnover-performance relationship is monotonically downward sloping, this never happens for $x_t < \hat{X}$ (Jenter and Lewellen 2020). However, if this assumption is violated the numerator becomes zero which makes $P_{perf-ind}(x_t\ ,\ \hat{X})$ zero.

To estimate performance-induced turnover probability we must first estimate $P_{turn}(x_t)$, the relation between the total turnover and

performance. This is estimated by using the probit model with performance-decile indicators:

$$P_{turn}(x_t) = \Phi(\beta_1 + \beta_2 \cdot Dec_2 + \cdots + \beta_n \cdot Dec_n + \gamma' \cdot Z_t) \quad (4)$$

Dec_i : indicators for performance deciles ($i = 2 \cdots n$);
Z_t : vector of controls.

All turnover in the top performance decile is assumed to be the "other" turnover. In this paper I test two different decile types. First is dividing the performance deciles into 10 deciles which makes the 90th percentile the threshold. The second way is dividing performance levels into quartiles which sets the threshold to the 4th quartile. Given these estimates, $P_{perf-ind}(x_t, \hat{X})$ is then calculated from Equation (3).

3.1.3. A two-probit model

The second approach assumes that the turnover-performance relationship comes from two independent turnover processes, one that varies with performance and one that does not. The performance measures are included only in the first probit, which delivers our estimate of performance-induced turnover. The second probit, which delivers our estimate of "other" turnover, includes three indicators for retirement age. The other control variables are the same in both terms, matching those in the standard probit. Both processes are estimated using the probit model.

$$\begin{aligned} P_{turn}(X_t) &= P_{other} + (1 - P_{other}) * P_{perf-ind}(x_t) \\ &= \Phi_{other}(\alpha_1 + \alpha_2 \cdot Z_{1t}) + \left(1 - \Phi_{other}(\alpha_1 + \alpha_2 \cdot Z_{1t})\right) \\ &\quad \times \Phi_{perf-ind}(\beta_1 + \beta_2 \cdot X_t + \gamma' \cdot Z_{2t}) \end{aligned} \quad (5)$$

X_t : vector of performance measures;
Z_{it}: vector of controls ($i = 1, 2$).

The first term which is the probability of the other turnover, P_{other}, is not a function of performance, and the latter term which includes

performance-induced turnover is a function of performance, thus two terms are estimated independently. Specifically, performance-induced departures occur with probability $P_{perf-ind} = \Phi(\beta_1 + \beta_2 \cdot x_t)$, with $\beta_2 < 0$, and "other" departures occur with constant probability $P_{other} = \Phi_{other}(\alpha_1)$.

Because both estimation methods have advantages and disadvantages, I show estimates from both methods below.

3.2. Regression and variables description

3.2.2. Regression description

The regression for the probit model with deciles is as below.

$$TURN_{i,t} = \beta_0 + \beta_1 Dec_2 + \cdots + \beta_9 Dec_{10} + \beta_{10} Age_{i,t} + \beta_{11} Age1_{i,t} + \beta_{12} Age2_{i,t} + \beta_{13} Age3_{i,t} + \beta_{14} TEN_{i,t} + \beta_{15} SIZE_{i,t} + \beta_{16} LEV_{i,t} + \beta_{17} FIRMAGE_{i,t} + \alpha_i + \epsilon_{i,t} \quad (6)$$

$TURN_{i,t}$: indicator for CEO turnover (turnover year=1, else=0);
Dec_n : indicators for performance deciles (i = 2 ⋯ n);
$Age_{i,t}$: CEO age;
$Age1_{i,t}$: CEO age from 61–63;
$Age2_{i,t}$: CEO age from 64–66;
$Age3_{i,t}$: CEO age over 66;
$TEN_{i,t}$: CEO total tenure;
$SIZE_{i,t}$: Firm size = log(assets);
$LEV_{i,t}$: Firm liability ratio = total liabilities/total assets;
$FIRMAGE_{i,t}$: From firm establishment year to tenure year *t*.

The regression for the two-probit model is as below. Equation (7) describes the regression for the first probit model which is the performance-induced turnover regression. Equation (8) describes the regression for the second probit model which is the "other" tunover regression. All variables are the same with equation (6)

except the independent variable.

$$TURN(perf-ind)_{i,t} = \beta_0 + \beta_1 ROA_{i,t} + \beta_2 Age_{i,t} + \beta_3 TEN_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 LEV_{i,t} + \beta_6 FIRMAGE_{i,t} + \alpha_i + \epsilon_{i,t} \quad (7)$$

$ROA_{i,t}$: Return on assets =operating income/book assets

$$TURN(other)_{i,t} = \beta_0 + \beta_1 Age_{i,t} + \beta_2 Age1_{i,t} + \beta_3 Age2_{i,t} + \beta_4 Age3_{i,t} + \beta_5 TEN_{i,t} + \beta_6 SIZE_{i,t} + \beta_7 LEV_{i,t} + \beta_8 FIRMAGE_{i,t} + \alpha_i + \epsilon_{i,t} \quad (8)$$

3.2.2 Variables description

Dependent variable: CEO Turnover

CEO turnover is recorded at time t if the name of the CEO is different at time t and time $t-1$. CEO turnover is measured using dummy variables. For tenure years with any type of CEO turnover it is set to one. If it remains the same it is set to zero.

Owner-manager is defined as CEO who has more than 1% of issued stocks. Professional manager is defined as CEO with who holds no issued stocks.

Independent variable: Firm performance

For standard probit model, the decile indicators (dummy variables) for the firm's stock price performance are the key independent variable. All stock performances are ranked in deciles during the regression period. For the two-probit model the performance measure value is becomes the independent variable. Unlike the probit model with decile indicators, no ranks are necessary.

For the performance measure, I use ROA as operating income divided by book assets. Considering that ROA can be affected by the industry, to adjust industry-specific performance the ROA of each firm was calculated by subtracting the annual average ROA of the same industry. Since I assume higher the performance level the lower turnover probability, the ROA coefficient is expected to be negative. Further, the higher the ROA level goes the coefficient is expected to

have smaller value.

Control Variables

The probit model in this study describes causes that affects CEO replacement, including CEO age, CEO tenure, firm size, debt ratio, firm age which are expected to affect CEO replacement in prior studies, in addition to firm performance.

In general, smaller firms achieve lower performance compared to larger firms, and are vulnerable to environmental change in many respects (Jung 1991, Haven 1993). In addition, larger firms have more distributed ownership structures than smaller firms (Demsetz and Lennon 1985, Kim Jin-soo and Kwon Ki-jung 2010). As a variable that has a significant impact on the strategic choice of the firm (Finkelstein and Hambrick, 1996: Wiersma and Bantel, 1992), firm size (SIZE) defined as the natural log of the book asset is controlled.

A high debt ratio increases the risk of bankruptcy of a firm which in turn increases the need for monitoring. Studies by Shin Hyun-han and Jang Jin-ho (2005), Choi Woong-yong and Bae Hyun-jung (2009) showed that the higher the debt ratio, the higher the probability of replacing managers. Consequently, the total liability divided by the total asset was used as a control variable for the liability ratio (*LEV*), which is expected to be positively correlated with the replacement of the CEO.

In order to control the effects of the firm's life, firm age (*FIRMAGE*) is included calculated by the differences in the year of its establishment were calculated on an annual basis.

CEO characteristics that are also found to affect the turnover, which are CEO age and CEO tenure, are also controlled. CEO age is again separated into three retirement age groups (61–63, 64–66, and 66+).

Chapter 4. Sample and Data

The study is conducted on manufacture firms listed in the Korea Stock Exchange market from 2000 through 2019. All data should meet the following criteria:

(1)December 31 fiscal year end firms
(2)CEO-year with CEO turnover and types of CEO turnover
(3)CEO-year with no missing financial data
(4)CEO with at least 3 years of performance data

CEO data is collected through TS2000 database. Financial statement comes from the FnGuide database. The resultant sample has 9,392 CEO-years in 430 firms and 1,367 CEOs.

Table 1
Distribution of turnovers by CEO type

Turnover / CEO type		0		1		Total	
owner	0	4,557	(48.52%)	1,006	(10.71%)	5,563	(59.23%)
	1	3,468	(36.93%)	361	(3.84%)	3,829	(40.77%)
	Total	8,025	(85.45%)	1,367	(14.55%)	9,392	(100.00%)
professional	0	5,795	(61.70%)	847	(9.02%)	6,642	(70.72%)
	1	2,230	(23.74%)	520	(5.54%)	2,750	(29.28%)
	Total	8,025	(85.45%)	1,367	(14.55%)	9,392	(100.00%)

Table 1 describes the distribution of the turnover types. Out of 1,367 turnovers 361 was owner-manager turnovers and 520 was professional managers. 486 turnovers were neither owner nor professional managers. In other words, in the total sample, the replacement ratio of CEOs is 14.55%, of which the probability of replacing the owner of the controlling shareholder is 3.84%, and the probability of replacing the professional manager is 5.54%. The probability shows professional manager replacements occurs relatively more frequently than the owner-manager replacements.

Table 2
Descriptive statistics

A. All sample

	Mean	Median	P10	P90	STD
CEO characteristic variables					
CEO age	57.81	58.00	46.00	68.00	8.63
CEO tenure	9.87	8.00	4.00	20.00	5.63
CEO turnover	0.15	0.00	0.00	1.00	0.35
Financial performance variables					
ROA	0.00	0.00	−0.06	0.07	0.06
Firm characteristic variables					
SIZE	13.07	12.60	11.20	15.82	1.88
LEV	0.47	0.47	0.21	0.72	0.20
FIRMAGE	38.40	39.00	13.00	58.00	16.82

B. Owner−manager

	Mean	Median	P10	P90	STD
CEO characteristic variables					
CEO age	57.01	57.00	43.00	72.00	10.81
CEO tenure	13.87	15.00	5.00	20.00	5.47
CEO turnover	0.09	0.00	0.00	0.00	0.29
Financial performance variables					
ROA	0.00	−0.01	−0.06	0.07	0.06
Firm characteristic variables					
SIZE	12.34	12.22	10.97	13.75	1.16
LEV	0.44	0.44	0.18	0.69	0.19
FIRMAGE	40.10	40.00	21.00	59.00	15.37

C. Professional manager

	Mean	Median	P10	P90	STD
CEO characteristic variables					
CEO age	58.39	59.00	49.00	66.00	7.01
CEO tenure	6.89	6.00	3.00	13.00	3.87
CEO turnover	0.19	0.00	0.00	1.00	0.39
Financial performance variables					
ROA	0.00	0.00	−0.07	0.08	0.06
Firm characteristic variables					
SIZE	13.28	12.69	11.20	17.00	2.13
LEV	0.49	0.48	0.23	0.74	0.20
FIRMAGE	37.40	39.00	10.00	57.00	16.83

The sample consists of 430 firms from 2000 to 2019 with 1,367 CEOs, 1,367 CEO−spells, and 9,392 CEO−years. CEO tenure is the total tenure until the turnover. SIZE is in billions of won. ROA is operating income on book assets. LEV is liability ratio calculated by total liability divided by the total asset. SIZE, ROA, and LEV are lagged by 1 year. ROA is winsorized at the 1% level.

Table 2 shows descriptive statistics for the sample data. Panel A

shows statistics of the total sample, Panel B and C is for owner-manager and professional manager respectively. In Panel A, the average value of the turnover 0.15 indicates 15% of the CEOs were replaced during the sample period. The average of CEO age is 58 years old which is younger than the retirement age. The average and median of size and liability ratio of the company used as a control variable do not differ much, which indicates that the manufacturing industry in Korea overall does not show a significant deviation in dependence on borrowed capital is not significant. In panel B and C, both owner and professional managers does not show big difference in financial and firm characteristics. However, owner manager clearly shows lower average turnover rate and longer tenure compare to professional managers.

Chapter 5. Results

In this section I test the relation between turnover and firm performance using two different probit models and estimate the probability of performance-induced turnover, and whether there is difference between CEO who are owner-managers and CEO who are professional managers. I measure four different performance period since it is not priori known how much history period the board uses when assessing CEO performance. Regression (1) to (3) measures firm performance from tenure year -1, -2, and -3 through year zero (the turnover year), respectively. The fourth regression measures firm performance over the CEO's entire tenure up to and including the turnover year.

5.1. Standard probit model with decile indicators

Table 3 shows the results for the standard probit model with 10 performance decile indicators. Using equation (6) each coefficient for the independent and control variables are estimated (Panel A). Then by putting coefficient values from Panel A to equation (4) the total turnover probability is estimated. Lastly, performance-induced turnover probability is calculated by using equation (3). The model implied probabilities are showed in Panel B. To calculate the probability of each performance decile, each observation's performance is set to the desired decile, all control variables left at their actual values, the implied probabilities across all observations are averaged. The "other" turnover probability is calculated by setting performance to the top decile for each observation. In Table 3, "other" turnover decile is decile 10 which makes the total turnover probability of the 10^{th} decile the probability of the "other" turnover.

Table 3
Performance-induced turnover using a standard probit model with performance decile indicators
A. Probit regressions

	(1) ROA t=[-1, 0]			(2) ROA t=[-2, 0]			(3) ROA t=[-3, 0]			(4) ROA t=[tenure start, 0]		
	β	Wald χ^2	Pr>χ^2	β	Wald χ^2	Pr>χ^2	β	Wald χ^2	Pr>χ^2	β	Wald χ^2	Pr>χ^2
Decile 1												
2	-0.083	1.155	0.282	-0.114	2.210	0.137	**-0.162****	4.211	0.040	-0.106	1.830	0.176
3	-0.050	0.430	0.512	-0.072	0.887	0.346	-0.126	2.531	0.112	-0.124	2.580	0.108
4	-0.123	2.584	0.108	-0.115	2.235	0.135	-0.117	2.176	0.140	-0.125	2.596	0.107
5	-0.124	2.597	0.107	-0.117	2.308	0.129	**-0.199****	6.285	0.012	**-0.145***	3.476	0.062
6	-0.118	2.337	0.126	**-0.127***	2.748	0.097	**-0.173****	4.680	0.031	**-0.144***	3.457	0.063
7	-0.102	1.787	0.181	**-0.152****	3.908	0.048	**-0.155***	3.838	0.050	**-0.170****	4.829	0.028
8	**-0.129***	2.792	0.095	-0.116	2.274	0.132	**-0.162****	4.180	0.041	**-0.169****	4.689	0.030
9	-0.131	2.711	0.100	**-0.143***	3.281	0.070	**-0.187****	5.203	0.023	**-0.145***	3.225	0.073
Decile 10	**-0.136***	2.880	0.090	**-0.157***	3.685	0.055	**-0.201****	5.661	0.017	**-0.241*****	7.994	0.005
Age	0.012***	11.853	0.001	0.012***	11.887	0.001	0.013***	13.278	0.000	0.013***	12.381	0.000
Age1	0.235***	19.257	0.000	0.236***	19.306	0.000	0.237***	18.584	0.000	0.235***	19.296	0.000
Age2	0.222***	9.939	0.002	0.221***	9.892	0.002	0.220***	9.321	0.002	0.219***	9.729	0.002
Age3	0.266***	10.132	0.001	0.265***	10.149	0.001	0.259***	9.214	0.002	0.264***	10.052	0.002
TEN	-0.077***	419.485	0.000	-0.077***	420.823	0.000	-0.074***	371.668	0.000	-0.076***	407.766	0.000
SIZE	0.044***	22.522	0.000	0.044***	22.462	0.000	0.049***	26.098	0.000	0.048***	25.623	0.000
LEV	-0.291***	10.642	0.001	-0.296***	10.785	0.001	-0.314***	10.881	0.001	-0.328***	12.504	0.000
FIRMAGE	0.004***	14.896	0.000	0.004***	15.006	0.000	0.004***	16.773	0.000	0.004***	13.533	0.000
Constant	-1.690***	60.345	0.000	-1.676***	59.339	0.000	-1.816***	65.534	0.000	-1.710***	61.428	0.000
N	9392			9392			9110			9392		

B. Implied turnover probabilities

	(1)	(2)	(3)	(4)
	Total Turnover			
Decile 1	16.74%	17.01%	**17.23%**	**17.63%**
2	14.93%	14.52%	13.74%	15.25%
3	15.62%	15.40%	14.46%	14.86%

4	14.09%	14.49%	**14.65%**	14.84%
5	14.06%	14.45%	**12.99%**	**14.41%**
6	14.20%	14.25%	**13.51%**	**14.44%**
7	14.52%	13.74%	**13.86%**	**13.90%**
8	13.97%	14.46%	**13.73%**	**13.92%**
9	13.92%	13.92%	**13.22%**	**14.43%**
Decile 10	13.83%	13.64%	**12.95%**	**12.53%**
All	14.59%	14.59%	14.03%	14.62%
	Performance-induced Turnover			
Decile 1	3.60%	4.14%	**5.21%**	**6.16%**
2	1.36%	1.08%	0.96%	3.30%
3	2.21%	2.16%	1.85%	2.83%
4	0.33%	1.05%	**2.08%**	2.80%
5	0.29%	1.00%	**0.05%**	**2.28%**
6	0.46%	0.75%	**0.68%**	**2.32%**
7	0.86%	0.12%	**1.11%**	**1.67%**
8	0.17%	1.01%	**0.94%**	**1.69%**
9	0.11%	0.35%	**0.33%**	**2.31%**
Decile 10	0.00%	0.00%	**0.00%**	**0.00%**
All	0.94%	1.17%	1.32%	2.54%
"Other" turnover	13.83%	13.64%	**12.95%**	**12.53%**

Panel A shows probit regressions of an indicator for CEO turnover on indicator variable for deciles of performance distribution. Performance is measured as industry adjusted ROA. Regression (1) to (3) measures ROA from tenure year −1, −2, and −3 through year zero (the turnover year), respectively. Regression (4) measures ROA over the entire tenure up to and including the turnover year. Panel B shows model-implied turnover probabilities. The probabilities are calculated by setting performance to the desired decile, leaving all control variable at their actual values, and averaging the implied probabilities across all observations. The probability of "other" turnover is calculated by setting performance to the top decile for each observation. Performance-induced turnover probability is calculated for each observation using Equation (3). "other" turnover probability is calculated as the implied probability of the Pother term. *p<.1; **p<.05; ***p<.01;

Panel A verifies if CEO turnover decreases as performance improves. As a result, I found statistically significant results from model 3 and model 4 where performance is measured for 4 years and the entire tenure year. When performance was measured for 2-3 years window, the coefficients overall for the performance deciles were not statistically significant. However, when performance was measured from 3 years before the turnover year and from the tenure start, although not monotonically, a statistically significant trend of turnover decreasing as performance level increases is found. Especially the top decile from both model 3 and model 4 showed largest negative relation with the turnover. It confirms that as for highest decile firms, turnover decreases compared to any other deciles.

In panel B model 4 the total turnover probability of the top decile is 12.53% and increases to 17.63% at the lowest decile. Performance-induced turnover probability is by construction 0% at the top decile but increases to 6.16% at the bottom decile. Lengthening the performance window increases the probability of performance-induced turnover; extending it to the full CEO tenure increases the estimate to 2.54%. Compared to a total turnover rate of 14.62%, 17.4% of the total turnover is performance induced.

If performance level is spaced more widely, for example as performance quartiles instead of deciles, the estimations become even smaller as shown in Appendix Table A1. This is because every observation at higher performance level than the fourth quartile are all treated as turnovers irrelevant to performance. This underestimates the performance-induced turnover.

5.2. Two-probit model

Table 4 reports the result for the two-probit model. From equation (7) and (8) coefficients of performance-induced turnover regression (Pperf-ind) and "other" turnover regression (Pother) are estimated separately. As in equation (7) and (8) Pperf-ind is a function of firm performance while Pother is not a function of firm

performance and only includes the control variables. Using the estimated coefficients, the probability of each turnover is estimated. After, the probability of the total turnover is calculated from equation (5).

Panel A confirms that performance-induced turnover decreases in firm performance. The significance increases as the performance measurement window expands. We can also find that older and shorter tenure CEOs and bigger and more borrowed capital dependent firms experience more both performance-induced turnover and "other" turnover. Panel B shows the model implied probabilities. It reports that turnover probabilities decrease as performance improves. Measuring performance over the entire tenure years, the performance-induced turnover rate is 12.81% at the 95^{th} performance percentile, rises to 16.44% at the 5^{th} percentile, and averages 14.59% per year. Across all models around 55% of all turnovers are derived from performance. Compared to the rate of Table 3 model (4), the two-probit model clearly estimates more performance-implied turnover probability.

To sum up the results of Table 3 and 4, a negative relation between firm performance and CEO turnover clearly exists and gets stronger as lengthening the period of the performance measurement. This supports the prior literature that evaluation and selection of CEOs is generally made with the long-term performance and interest in the survival of the company rather than short-term performance (Kim Il-kyung and Lee Ho-wook, 2013). However, the probability of turnovers caused by poor performance does not drastically decrease by performance levels.

Table 4
Performance-induced turnover using the two-probit model
A. Two-probit regressions

	(1) ROA t=[-1, 0]			(2) ROA t=[-2, 0]			(3) ROA t=[-3, 0]			(4) ROA t=[tenure start, 0]		
	β	Wald χ^2	Pr>χ^2	β	Wald χ^2	Pr>χ^2	β	Wald χ^2	Pr>χ^2	β	Wald χ^2	Pr>χ^2
Pperf-ind												
ROAt	**-0.829****	0.346	0.016	**-0.912****	0.364	0.012	**-1.020*****	0.393	0.009	**-1.139*****	0.413	0.006
Age	0.023***	0.002	0.000	0.023***	0.002	0.000	0.024***	0.002	0.000	0.023***	0.002	0.000
TEN	-0.076***	0.004	0.000	-0.076***	0.004	0.000	-0.074***	0.004	0.000	-0.076***	0.004	0.000
SIZE	0.042***	0.009	0.000	0.042***	0.009	0.000	0.046***	0.009	0.000	0.044***	0.009	0.000
LEV	-0.305***	0.089	0.001	-0.312***	0.090	0.000	-0.333***	0.094	0.000	-0.335***	0.092	0.000
FIRMAGE	0.004***	0.001	0.000	0.004***	0.001	0.000	0.004***	0.001	0.000	0.004***	0.001	0.000
Constant	-2.304***	0.176	0.000	-2.307	0.176	0.000	-2.429***	0.181	0.000	-2.327***	0.177	0.000
Pother												
Age	0.012***	0.004	0.001	0.012***	0.004	0.001	0.012***	0.004	0.001	0.012***	0.004	0.001
Age1	0.241***	0.053	0.000	0.241***	0.053	0.000	0.244***	0.055	0.000	0.241***	0.053	0.000
Age2	0.226***	0.070	0.001	0.226***	0.070	0.001	0.226***	0.072	0.002	0.226***	0.070	0.001
Age3	0.270***	0.083	0.001	0.270***	0.083	0.001	0.266***	0.085	0.002	0.270***	0.083	0.001
TEN	-0.077***	0.004	0.000	-0.077***	0.004	0.000	-0.075***	0.004	0.000	-0.077***	0.004	0.000

SIZE	0.038***	0.009	0.000	0.038***	0.009	0.000	0.041***	0.009	0.000	0.038***	0.009	0.000
LEV	−0.247***	0.086	0.004	−0.247***	0.086	0.004	−0.256***	0.090	0.004	−0.247***	0.086	0.004
FIRMAGE	0.004***	0.001	0.000	0.004***	0.001	0.000	0.004***	0.001	0.000	0.004***	0.001	0.000
Constant	−1.716***	0.217	0.000	−1.716***	0.217	0.000	−1.836***	0.223	0.000	−1.716***	0.217	0.000
N	9392			9392			9110			9392		

B. Implied turnover probabilities

	(1)	(2)	(3)	(4)
Percentile	**Total Turnover**			
5th	27.32%	27.42%	26.50%	27.64%
15th	26.74%	26.80%	25.92%	26.89%
25th	26.52%	26.55%	25.67%	26.62%
35th	26.38%	26.39%	25.47%	26.40%
45th	26.23%	26.25%	25.32%	26.23%
55th	26.10%	26.11%	25.16%	26.07%
65th	25.95%	25.93%	24.96%	25.89%
75th	25.75%	25.73%	24.73%	25.67%
85th	25.44%	25.38%	24.42%	25.31%
95th	24.89%	24.87%	23.76%	24.69%
All	26.13%	26.14%	25.19%	26.14%

	Performance-induced Turnover			
5th	16.03%	16.16%	15.60%	16.44%
15th	15.32%	15.39%	14.89%	15.51%
25th	15.05%	15.10%	14.58%	15.18%
35th	14.89%	14.90%	14.34%	14.91%
45th	14.70%	14.72%	14.16%	14.70%
55th	14.54%	14.55%	13.96%	14.50%
65th	14.35%	14.32%	13.72%	14.28%
75th	14.11%	14.08%	13.44%	14.01%
85th	13.72%	13.65%	13.06%	13.57%
95th	13.04%	13.02%	12.25%	12.81%
All	14.58%	14.59%	14.00%	14.59%
"Other" turnover	14.55%	14.55%	13.97%	14.55%

Panel A shows two-probit regressions of an indicator for CEO turnover on firm performance and controls. Performance is measured as industry adjusted ROA. Regression (1) to (3) measures ROA from tenure year -1, -2, and -3 through year zero (the turnover year), respectively. Regression (4) measures ROA over the entire tenure up to and including the turnover year. Year 0 is the year of the CEO turnover. Panel B shows model-implied turnover probabilities. The probabilities are calculated by setting performance to the desired percentile, leaving all control variable at their actual values, and averaging the implied probabilities across all observations. Performance-induced turnover probability is calculated as the implied porbability of the Pperf-ind term. "other" turnover probability is calculated as the implied probability of the Pother term. *p<.1; **p<.05; ***p<.01;

5.3. Owner manager vs. professional manager

Considering the characteristic of Korea firms, I test the two-probit model once again, but sorting the total sample into two groups; owner-manager CEOs and professional manager CEOs. Owner-managers are classified as the experimental group and professional managers are classified as the control group.

Table 5 and Table 6 Panel A shows the results for the two-probit model regression for owner-manager CEO and professional manager CEO, respectively. The results indicate that owner-manager turnover is not affected by firm performance. On the other hand, professional manager turnover is significantly negatively related to performance. These results support the second hypothesis that turnover probability will differ depending on the type of the CEO. It is also consistent with the prior literature that when the CEO is an owner-manager, the possibility of replacement can be reduced in advance because the CEO can exercise the right to vote in a favorable direction for him.

Further, From Table 6 Panel B the difference of performance-induced turnover between the top and the bottom performance level (6.99%) is even bigger than that of the total sample (3.63%). This can be interpreted as for professional-manager firms, the tendency of the performance-induced turnover increasing as performance level improves gets stronger.

Table 5
Owner-manager two-probit regressions

	(1) t=[-1,0]			(2) t= [-2,0]			(3) t= [-3,0]			(4) t=[tenure start,0]		
	β	Wald χ^2	Pr>χ^2	β	Wald χ^2	Pr>χ^2	β	Wald χ^2	Pr>χ^2	β	Wald χ^2	Pr>χ^2
Pperf-ind												
ROAt	-0.560	0.645	0.385	-0.612	0.676	0.365	-0.716	0.712	0.315	-0.838	0.810	0.301
Age	0.022***	0.003	0.000	0.022***	0.003	0.000	0.023***	0.003	0.000	0.022***	0.003	0.000
TEN	-0.075***	0.006	0.000	-0.075***	0.006	0.000	-0.073***	0.006	0.000	-0.075***	0.006	0.000
SIZE	0.131***	0.026	0.000	0.131***	0.026	0.000	0.133***	0.026	0.000	0.135***	0.027	0.000
LEV	-0.267*	0.159	0.093	-0.271*	0.160	0.090	-0.270*	0.164	0.100	-0.288*	0.163	0.077
FIRMAGE	0.009***	0.002	0.000	0.009***	0.002	0.000	0.009***	0.002	0.000	0.009***	0.002	0.000
Constant	-3.531***	0.366	0.000	-3.536***	0.366	0.000	-3.643***	0.371	0.000	-3.568***	0.370	0.000
Pother												
Age	0.019***	0.006	0.001	0.019***	0.006	0.001	0.020***	0.006	0.000	0.019***	0.006	0.001
Age1	0.163	0.117	0.166	0.163	0.117	0.166	0.173	0.118	0.142	0.163	0.117	0.166
Age2	0.152	0.136	0.263	0.152	0.136	0.263	0.158	0.136	0.246	0.152	0.136	0.263
Age3	0.052	0.145	0.718	0.052	0.145	0.718	0.058	0.147	0.696	0.052	0.145	0.718
TEN	-0.075***	0.006	0.000	-0.075***	0.006	0.000	-0.073***	0.006	0.000	-0.075***	0.006	0.000
SIZE	0.126***	0.025	0.000	0.126***	0.025	0.000	0.126***	0.026	0.000	0.126***	0.025	0.000
LEV	-0.239	0.157	0.128	-0.239	0.157	0.128	-0.230	0.160	0.151	-0.239	0.157	0.128
FIRMAGE	0.009***	0.002	0.000	0.009***	0.002	0.000	0.010***	0.002	0.000	0.009***	0.002	0.000
Constant	-3.382***	0.425	0.000	-3.382***	0.425	0.000	-3.475***	0.431	0.000	-3.382***	0.425	0.000
N	3829			3829			3793			3829		

Panel A shows two-probit regressions of an indicator for CEO turnover on firm performance and controls. Performance is measured as industry adjusted ROA. Regression (1) to (3) measures ROA from tenure year -1, -2, and -3 through year zero (the turnover year), respectively. Regression (4) measures ROA over the entire tenure up to and including the turnover year. Year 0 is the year of the CEO turnover. *p<.1; **p<.05; ***p<.01;

Table 6
Professional manager regressions
A. Two-probit regressions

	(1) t=[-1,0]			(2) t= [-2,0]			(3) t= [-3,0]			(4) t=[tenure start,0]		
	β	Wald χ^2	Pr>χ^2	β	Wald χ^2	Pr>χ^2	β	Wald χ^2	Pr>χ^2	β	Wald χ^2	Pr>χ^2
Pperf-ind												
ROAt	**-0.928***	0.563	0.099	**-1.087***	0.605	0.072	**-1.250***	0.682	0.067	**-1.408****	0.663	0.034
Age	0.024***	0.004	0.000	0.024***	0.004	0.000	0.025***	0.005	0.000	0.024***	0.004	0.000
TEN	-0.099***	0.010	0.000	-0.099***	0.010	0.000	-0.095***	0.010	0.000	-0.099***	0.010	0.000
SIZE	0.027*	0.014	0.054	0.029**	0.014	0.044	0.032**	0.015	0.033	0.032**	0.014	0.029
LEV	-0.341**	0.152	0.025	-0.358**	0.154	0.020	-0.392**	0.166	0.018	-0.388**	0.156	0.013
FIRMAGE	0.001	0.002	0.407	0.001	0.002	0.414	0.002	0.002	0.367	0.001	0.002	0.498
Constant	-1.904***	0.328	0.000	-1.920***	0.328	0.000	-2.052***	0.343	0.000	-1.970***	0.332	0.000
Pother												
Age	0.009***	0.007	0.194	0.009***	0.007	0.194	0.010	0.007	0.164	0.009***	0.007	0.194
Age1	0.243***	0.088	0.006	0.243***	0.088	0.006	0.249***	0.092	0.007	0.243***	0.088	0.006
Age2	0.227*	0.118	0.053	0.227*	0.118	0.053	0.227*	0.122	0.063	0.227*	0.118	0.053
Age3	0.299**	0.149	0.044	0.299**	0.149	0.044	0.296*	0.154	0.055	0.299**	0.149	0.044
TEN	-0.103***	0.010	0.000	-0.103***	0.010	0.000	-0.100***	0.010	0.000	-0.103***	0.010	0.000
SIZE	0.022*	0.013	0.096	0.022*	0.013	0.096	0.024*	0.014	0.081	0.022*	0.013	0.096
LEV	-0.283*	0.146	0.053	-0.283*	0.146	0.053	-0.291*	0.155	0.060	-0.283*	0.146	0.053
FIRMAGE	0.002	0.002	0.337	0.002	0.002	0.337	0.002	0.002	0.295	0.002	0.002	0.337

Constant	−1.101***	0.421	0.009	−1.101***	0.421	0.009	−1.234***	0.442	0.005	−1.101***	0.421	0.009
N	2750			2750			2591			2750		

B. Implied turnover probabilities

	(1)	(2)	(3)	(4)
Percentile	**Total Turnover**			
5th	35.19%	35.42%	34.17%	35.87%
15th	34.31%	34.45%	33.22%	34.78%
25th	34.00%	34.05%	32.77%	34.21%
35th	33.79%	33.82%	32.47%	33.91%
45th	33.58%	33.63%	32.24%	33.66%
55th	33.39%	33.39%	31.94%	33.37%
65th	33.06%	33.10%	31.72%	33.05%
75th	32.82%	32.72%	31.25%	32.63%
85th	32.38%	32.22%	30.76%	31.98%
95th	31.63%	31.49%	29.99%	31.19%
All	33.41%	33.43%	32.05%	33.47%
	Performance−induced Turnover			
5th	21.17%	21.47%	20.73%	22.06%
15th	20.04%	20.23%	19.53%	20.67%

25th	19.64%	19.72%	18.96%	19.94%
35th	19.38%	19.42%	18.59%	19.55%
45th	19.11%	19.18%	18.30%	19.24%
55th	18.86%	18.87%	17.91%	18.86%
65th	18.45%	18.50%	17.63%	18.45%
75th	18.14%	18.01%	17.04%	17.91%
85th	17.57%	17.37%	16.42%	17.07%
95th	16.61%	16.43%	15.44%	16.06%
All	18.90%	18.92%	18.05%	18.98%
"Other" turnover	18.91%	18.91%	18.02%	18.91%

Panel A shows two-probit regressions of an indicator for CEO turnover on firm performance and controls. Performance is measured as industry adjusted ROA. Regression (1) to (3) measures ROA from tenure year -1, -2, and -3 through year zero (the turnover year), respectively. Regression (4) measures ROA over the entire tenure up to and including the turnover year. Year 0 is the year of the CEO turnover. Panel B shows model-implied turnover probabilities. The probabilities are calculated by setting performance to the desired percentile, leaving all control variable at their actual values, and averaging the implied probabilities across all observations. Performance-induced turnover probability is calculated as the implied probability of the Pperf-ind term. "other" turnover probability is calculated as the implied probability of the Pother term. *p<.1; **p<.05; ***p<.01;

Chapter 6. Conclusion

This paper studies the empirical relationship between CEO turnover and firm performance in Korea conducted on manufacture firms listed in the Korea Stock Exchange market from 2000 through 2019. The study examines whether the turnover caused by poor performance decrease in performance level and considering the characteristics of Korean companies, look at the difference between owner-managers and professional managers.

The results show that negative relation between firm performance and CEO turnover exist and performance-induced turnover tend to decrease nonmonotonically as firm performance level increases. Especially the relation gets stronger as lengthening the measurement period which suggest that board consider long-term performances when it comes to turnover decisions. The results can motivate the CEOs to improve firm performance and value, and manage the firm with a long-term perspective. Also, the results show that owner-managers turnovers are not affected by performance while professional managers turnover decreases in firm performance.

The limitations of this study and future research directions are as follows. First, in this study the types of CEO replacements were analyzed without distinguishing them. The impact of firm performance variables may vary depending on whether the CEO replacement is voluntary or forced due to poor management performance, and whether the new manager is internal or external. Therefore, segmenting the type of CEO replacement would provide more sophisticated results. Furthermore, expanding the sample to more various industries and including other firm performance measure will derive more robust results.

Appendix

Table A1
Performance-induced turnover using a standard probit model with performance quartile indicators
A. Probit regressions

	(1) ROA t=[−2, 0]			(2) ROA t=[−3, 0]			(3) ROA t=[tenure start, 0]		
	β	Wald χ^2	Pr>χ^2	β	Wald χ^2	Pr>χ^2	β	Wald χ^2	Pr>χ^2
Decile 1									
2	−0.047	0.946	0.331	−0.064	1.682	0.195	−0.053	1.184	0.277
3	−0.066	1.883	0.170	−0.066	1.747	0.186	**−0.084**	2.946	0.086
4	**−0.088**	2.916	0.088	**−0.099**	3.519	0.061	**−0.103**	3.675	0.055
Age	0.012	11.293	0.001	0.013	11.903	0.001	0.012	11.185	0.001
Age1	0.237	19.580	0.000	0.240	19.029	0.000	0.238	19.697	0.000
Age2	0.224	10.197	0.001	0.226	9.887	0.002	0.227	10.442	0.001
Age3	0.269	10.464	0.001	0.268	9.886	0.002	0.270	10.558	0.001
TEN	−0.077	423.132	0.000	−0.075	378.625	0.000	−0.077	417.240	0.000
SIZE	0.043	21.655	0.000	0.046	23.749	0.000	0.044	22.657	0.000
LEV	−0.289	10.471	0.001	−0.306	10.621	0.001	−0.306	11.080	0.001
FIRMAGE	0.004	14.337	0.000	0.004	16.565	0.000	0.004	13.782	0.000
Constant	−1.703	61.626	0.000	−1.821	65.983	0.000	−1.703	61.515	0.000
N	9392			9110			9392		

Table A1
(continued)
B. Implied turnover probabilities

	(1)	(2)	(3)
Total Turnover			
Decile 1	15.64%	15.18%	15.85%
2	14.63%	13.84%	14.71%
3	14.23%	13.80%	14.08%
4	13.79%	13.15%	13.70%
All	14.57%	13.99%	14.59%
Performance-induced Turnover			
Decile 1	2.28%	2.48%	2.65%
2	1.04%	0.85%	1.25%
3	0.55%	0.81%	0.47%
4	0.00%	0.00%	0.00%
All	0.97%	1.04%	1.09%
"Other" turnover	13.79%	13.15%	13.70%

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Abstract

본 연구는 2000년부터 2019년까지 한국증권거래소에 상장되어 있는 우리나라 제조기업을 표본으로 하여 총 9,392개의 CEO-연도 자료를 대상으로 기업성과 수준에 따른 최고경영자 교체의 관계를 두 가지의 프로빗 모델을 사용하여 검증하고 소유경영자와 전문경영자의 기업성과에 의한 교체의 차이를 실증분석 하였다.

연구결과, 전체 표본에서 기업성과가 좋을수록 기업성과에 기인한 CEO 교체는 감소하는 것이 확인되었으며, 특히 기업성과 평가 기간을 전체 기간으로 확장했을 때 그 관계가 가장 유의하였다. 또한, 경영자 유형에 따라 분석을 실시한 결과 소유경영자의 교체는 경영성과에 영향을 받지 않는 반면 전문경영자의 교체는 경영성과가 높을수록 감소하는 것을 확인하였다.

주요어 : 최고경영자, 최고경영자 교체, 기업성과, 소유경영자, 전문경영자
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