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Master's Thesis of Business Administration

CEO Board Dynamics and Concentrated Ownership

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Abstract

CEO Board Dynamics and Concentrated Ownership

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This paper examines CEO-board dynamics in a country with concentrated ownership, using a Korean panel dataset for the period of 1998 to 2017, and a firm-year of 23,135 observations. This is the first paper to test both within firm and within CEO effects under Korean CEO-board dynamics and examines the differences of CEO-board dynamics when considering the family dimension. First, the paper finds evidence that the bargaining model and dynamic agency models are overall consistent in a market with highly concentrated ownership. CEO tenure is negatively correlated with board independence. Likewise, firm performance is negatively correlated with board independence. As CEO tenure increases by one year, chair duality and CEO pay respectively increase. Second, the same results are found in non-family firms. Third, family firms show CEO board dynamic test results to be inconsistent with the bargaining models expect for relationships between CEO tenure and Chair duality, and CEO tenure CEO pay.

Keyword : Corporate Governance, Corporate Finance, Board Dynamics

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Table of Contents

1. Introduction	1
2. Literature Review and Hypothesis	1
3. Data and Descriptive Statistics.....	5
3.1 Data	5
3.2 Descriptive Statistics	5
4. Results	8
4.1 CEO Tenure and Board Independence	8
4.2 Firm Performance and Board Independence	11
4.3 CEO Tenure, Chair Duality, and CEO Pay	13
4.4 Family Dimension of Korean CEO-Board Dynamics	14
4.5 Change in Dynamic Board After CEO Turnover	18
5. Conclusion.....	20
References	21
Abstract in Korean	22

1. Introduction

The importance of the board of directors cannot be emphasized enough in corporations around the world. The board possesses a fiduciary duty to work on behalf of shareholder value maximization. Following, some of the greatest corporate scandals such as Enron and Worldcom have held the board legally responsible for their fallouts. The two main roles of the board are acting as an advisor for external CEOs who at the point of employment is deemed to lack insider information about the firm, and actively monitoring internal CEOs who may show uncompromising firm performance or possess the possibility of becoming entrenched. However, if the monitoring intensity becomes uncontrollably high, this can handicap CEOs by restricting them from making wise and optimal decisions for the firm. Thus, changes in monitoring intensity can massively influence the corporate mechanism and values of a firm. These board structures are known to vary and theories such as bargaining models and dynamic contracting models suggest board structures may dynamically and optimally shift within a CEO's tenure in alignment with the tradeoffs above. Mainstream corporate governance literature has explicitly focused on examining these board dynamics under a widely held ownership setting. However, as La porta et al. (1999) find, except for only a few countries with great shareholder protection such as the U.S., most countries around the world have corporate structures where ownership is highly concentrated and controlled by families. Thus, it is significantly important to test whether these theories can be empirically proven in markets with concentrated ownership. This paper examines the CEO board dynamics of a country with concentrated ownership evidenced by the Korean market, and specifically contributes to the existing literature by testing whether the bargaining models and dynamic models are consistent with the Korean market considering firm fixed effects.

2. Literature Review and Hypothesis

Board structure has been found to differ over time. As Hermalin and Weisbach (1998) put into theory, successful CEOs who show great CEO ability to manage the firm must experience less board monitoring intensity in equilibrium. Consequently, when boards are optimally operating, it is predicted that there exists

a negative relationship between CEO tenure and board independence. Much empirical evidence which tests the theories regarding board structures have been found. However, a great limitation in CEO-board data has been prominent, restricting in-depth analysis of board dynamics within-firm and within-CEO. Graham et al. (2020) show the first empirical evidence of within-firm dynamics. This paper expands from the existing literature by testing the within-firm CEO-board dynamics within a country with concentrated ownership. To be precise, the paper examines the impact of CEO tenure and board independence within firms and within CEOs in a market with concentrated ownership, using Korean market data.

This paper examines the two main theories underlying CEO-board dynamics which are the bargaining models and dynamic agency models. Both models predict a negative relationship between CEO tenure and board independence. Bargaining models assert that as CEOs renew their contracts with the firm, they bargain with the board for changes in board composition and pay (Hermalin and Weisbach, 1998). In other words, unsuccessful CEOs proxied by their performance, do not survive the second round of hire and those who do survive accumulate increased bargaining power as the round of contracts develop, i.e., and their CEO tenure increases. These successful CEOs bargain for a less independent board which will monitor CEOs less intensively. In the board's perspective, such bargaining is deemed optimal since the board has less incentive to monitor the successful incumbent CEO can reduce agency costs of monitoring. Dynamic contracting models also have a similar setting. According to DeMarzo and Fishman (2010), as a CEO shows outstanding performance over time, the continuation value and salary of the CEO increase, which in turn reduces agency costs bore by the board. Many prior works of literature have tested for empirical evidence regarding the bargaining model about firm performance (Murphy and Zimmerman, 1993) and chair duality (Goyal and Park, 2002). Some papers find evidence consistent with the bargaining model. For instance, Ryan and Wiggins (2004) find evidence that as CEO tenure increases, the CEO's compensation is less impacted by equity performance due to their increase in control power over the firm. In contrast, there have been results opposite to the bargaining model, one of which is Baker and Gompers (2003) which find CEO tenure and the percentage of directors that are not from within the firm to show a positive correlation.

However, the critical limitations of such prior literature are that except for the most recent study conducted by Graham et al. (2020), all previous research conducted are based on repeated cross-sectional analysis. In other words, they have not fully considered the highly endogenous state of CEO-board dynamics upon which the theories hypothesize within a given firm and extensively within a given CEO.

In terms of empirical evidence from Korea, Kang et al. (2018) is the first paper to test whether the bargaining model hypotheses are applicable to the Korean market. However different from this paper, Kang et al. (2018) use the Korean Corporate Governance Index (KCGI) as an indicator of the monitoring intensity of boards rather than the board independence ratio. Regardless, Kang et al. (2018) also consider only the industry and year fixed effects which is insufficient to control for firm-level endogeneity problems. Other papers regarding board independence test relationships such as firm value, chair duality, and cash holdings (Kang et al., 2015). Consequently, this paper contributes to the existing literature by testing the within-firm and within-CEO board dynamics of the Korean market. My hypotheses for the general Korean market are as follows:

H1. In the overall Korean market, CEO tenure and board independence will be negatively correlated.

H2. The impact of firm performance on board independence is significantly negative.

H3. CEO chair duality and CEO pay will increase as CEO tenure increases.

H4. Board independence will rapidly increase at the point of initial turnover and then gradually decrease throughout their tenure.

The four main hypotheses are established upon the bargaining model. H2 posits on Hermalin and Weisbach's (1988) bargaining model which states that as CEOs gain more power, they facilitate their power to enhance their private benefits, and as one of them decrease their pay volatility. Moreover, dynamic agency models indicate that by positioning successful CEOs as chair of the board, in the board's perspective, agency costs of unnecessary monitoring are reduced which is optimal for the board. In terms of CEO pay, bargaining and dynamic models predict CEO

pay is dependent on a history of great firm performance indicated as increasing CEO tenure (DeMarzo and Fishman, 2007). H4 is based on the bargaining model's prediction that since there is high uncertainty about the CEO's ability at the time of turnover, the board's monitoring incentives increase and as time passes gradually decrease throughout the entire CEO's tenure as successful CEOs' ability is acknowledged by the board. On the other hand, CEO's bargaining power for a less independent board increases. Hermalin and Weisbach (1988) state that this reflection of CEO ability will be quickly accounted and adjusted for within the first few years of the CEO's tenure. Next, I establish hypotheses as described below which predict a different response to the bargaining model and dynamic contracting models using the family characteristics of the Korean market with concentrated ownership.

H5. Non-family firms will be consistent with the bargaining model (H1-H4).

H6. Family firms will be inconsistent with the bargaining model (H1-H4).

As Claessens et al. (2000) has shown, in most Asian countries, controlling shareholders in business groups possess substantial control power relative to small cash flow rights by using an indirect pyramid structure of firm ownership. The Korean market's business groups follow suit with the above practices formed of "legally independent, horizontally and vertically distributed firms" described in Joh (2003) and are distinctively called chaebols. These chaebols are typically initial family members of the corporation and thus the firm's biggest shareholders are also family members of the firm. Building on these firm characteristics, I predict that family firms in Korea will allow family members to have great control over board decisions. In general, CEOs of family firms tend to be initial members of the founding family. Even in cases of a hired CEO within a family firm, family members have great controlling power which they may use to place a CEO with close affinities with them and/or indirectly are able to place a CEO who is able to give family members private benefit irrespective of maximizing shareholder value. Thus, I predict that family firms will have an insignificant relationship between firm performance and board, and as the CEO chair duality and CEO pay increase CEO tenure will also increase. Since family firms will use the controlling family's power on board decisions, board independence is thought to have an insignificant impact

on CEO tenure. Furthermore, as mentioned, CEOs would not necessarily have to show good firm performance to renew their contracts but perhaps be capable of doing so simply by engaging in board decisions beneficial to the current family shareholders.

3. Descriptive Analysis

3.1. Data

This paper builds an exhaustive database of Korean board directors, Chief executive officers (CEOs), and others (such as presidents) at public firms listed on KOSPI and KOSDAQ for the sample period of 1998 to 2017. Data describing board and executive characteristics including data such as firm code, year, official title, pay, and others are collected from TS-2000. I construct a firm-CEO identifier, namely “executive id” which makes it possible to track down individual directors’ and CEOs’ employment histories. First, I match all directors and CEOs by their names and birth date. Then, I filter out people with the same given names and/or birth dates by referring to their employment records. I gather all stock price, return, and financial statement data from FnGuide. Furthermore, I hand collect chair duality from DART, referring to board meeting minutes I establish a chair duality dummy variable equal to one if the board chair is CEO of the firm, for each year. In this paper, I present two variables as proxies for family firms. For the “Family Shareholder” dummy variable, I collect data of public firms listed on the KOSPI and KOSDAQ for which over 50% of total firm shares are owned by family members (including relatives) of the largest shareholder of the firm. This data is collected from TS-2000. For the “Large Business Group” dummy variable I gather data from Egroup, a data portal founded by the Fair-Trade Commission, and assign the value of one if the firm is listed on KOSPI and KOSDAQ as well as identified as a large business group. This paper excludes firms in the financial, utility, and transportation industries as they have a different corporate setting compared to other industries.

3.2. Descriptive Statistics

Table 1, Panel A presents summary statistics of firm-year observations of

the full database. The mean value of CEO turnover is 20.3%, and for CEO tenure the mean tenure year is 4.94. For 96.5% of total observations, CEOs are found to be entitled as board chair in Korea. On average there are approximately 7 executives as board members in Korea. Subsample summary statistics are shown in Panel B and Panel C. Panel B shows the descriptive statistics of family firms which are proxied as firms whose biggest individual shareholders are family members of the firm. The two panels are distinctively different. First, the CEO turnover rate is higher in non-family firms 9.3%. This implies that non-family firm CEOs are fired less on average. The average year of CEO tenure on the other hand is higher for family firms by one year. Board size and chair duality are comparable for both subsamples. Yet the average independence ratio is higher for non-family firms.

Table 1. Descriptive statistics from 1998 to 2017

This table presents summary statistics for corporate boards, CEOs, and firms. Panel A shows statistics on the characteristics in the full sample. The sample is from 1998 to 2017 and includes information on all executives and directors of the TS-2000 as Korean companies listed on KOSPI and KOSDAQ. Companies with only one reported director and utility, transport, and financial company are excluded. CEO Turnover takes the value of 1 if the name of the CEO of the firm changes and 0 otherwise. CEO Tenure is the number of years for which the CEO has been chief executive as of year t . CEO duality is a dummy variable with a value of 1 if the CEO also holds the board chair position simultaneously. The size of the board is the number of directors. Independence ratio refers to the number of independent directors scaled by the size of the board. The independent director is those who are neither a current officer nor a former officer. Firm-level control variables include firm age, board size, book assets, Tobin's q , industry-adjusted ROA, asset tangibility, and cash/assets. Total assets is book assets in millions of constant 2010 won; Firm age indicates the number of years since the establishment. ROA represents a return on assets defined as EBIT scaled by lagged assets. Tangibility is PP&E scaled by assets. Industry-adj ROA represents ROA adjusted for the average ROA at the industry and year level. Tobin's q is book assets minus book equity plus market equity scaled by assets; Cash/assets is cash and cash equivalents scaled by total assets.

Panel A. Full sample						
	N (firm-years)	Mean	Median	Std.dev	Min	Max
<i>Board and officer characteristics</i>						
CEO Turnover	23,135	0.230	0.000	0.421	0.000	1.000
CEO Tenure	23,135	4.94	4.00	4.14	1.00	20.00
Chair duality	16,903	0.965	1.000	0.184	0.000	1.000
Board size	23,135	6.732	6.000	3.568	3.000	132.000
Independence ratio	23,135	0.198	0.200	0.164	0.000	0.917
<i>Firm characteristics</i>						
Total assets	23,135	1680.5	143.5	9435.0	0.505	266927.3
Firm age	23,135	29.75	28.00	16.74	1.00	121.00
ROA	23,135	0.038	0.042	0.123	-0.757	0.585
Industry-adjusted ROA	23,135	0.027	0.019	0.143	-0.789	0.678
Asset tangibility	23,135	0.324	0.318	0.183	0.003	0.804
Tobin's Q	23,135	1.195	0.957	0.797	0.317	8.249
Cash/assets	23,135	0.079	0.055	0.078	0.000	0.477

Panel B. Family-firm sample						
	N (firm-years)	Mean	Median	Std.dev	Min	Max
<i>Board and officer characteristics</i>						
CEO Turnover	10,879	0.183	0.000	0.386	0.000	1.000
CEO Tenure	10,879	5.55	4.00	4.34	1.00	20.00
Chair duality	7,824	0.978	1.000	0.148	0.000	1.000
Board size	10,879	6.537	6.000	2.607	3.000	86.000
Independence ratio	10,879	0.172	0.200	0.152	0.000	0.800
<i>Firm characteristics</i>						
Total assets	10,879	1082.8	141.8	7095.8	3.547	161267.6
Firm age	10,879	32.57	31.00	17.09	1.00	121.00
ROA	10,879	0.051	0.046	0.096	-0.385	0.574
Industry-adjusted ROA	10,879	0.039	0.023	0.123	-0.436	0.678
Asset tangibility	10,879	0.348	0.341	0.174	0.003	0.832
Tobin's Q	10,879	1.085	0.892	0.733	0.296	9.699
Cash/assets	10,879	0.069	0.050	0.067	0.000	0.394
Panel C. Non-family-firm sample						
	N (firm-years)	Mean	Median	Std.dev	Min	Max
<i>Board and officer characteristics</i>						
CEO Turnover	12,256	0.276	0.000	0.447	0.000	1.000
CEO Tenure	12,256	4.36	3.00	3.86	1.00	20.00
Chair duality	9,079	0.953	1.000	0.211	0.000	1.000
Board size	12,256	6.917	6.000	4.277	3.000	132.000
Independence ratio	12,256	0.223	0.200	0.172	0.000	0.917
<i>Firm characteristics</i>						
Total assets	12,256	2247.1	145.6	11181.3	0.505	266927.3
Firm age	12,256	27.07	24.00	15.94	1.00	101.00
ROA	12,256	0.026	0.038	0.150	-1.237	1.303
Industry-adjusted ROA	12,256	0.016	0.015	0.165	-1.347	0.991
Asset tangibility	12,256	0.301	0.294	0.189	0.003	0.796
Tobin's Q	12,256	1.301	1.031	0.852	0.375	8.510
Cash/assets	12,256	0.088	0.061	0.086	0.000	0.550

4. Results

4.1. CEO Tenure and Board Independence

The methodology used in this paper is taken from Graham et al. (2020). Table 2 explores the dynamic within-firm relationship of CEO tenure and board independence. The regression used for Table 2 is as follows:

$$Board\ reaction_{it} = \alpha_i + \alpha_t + \beta_1 CEO\ Tenure_{it} + X'_{it}\gamma + \varepsilon_{it} \quad (1)$$

α_i is defined as firm fixed effects, and α_t is defined as year fixed effects. $Board\ reaction_{it}$ is measured as either board independence, CEO-chair duality, or CEO pay. Board independence indicates the number of independent directors divided by the total number of directors for each firm. $CEO\ Tenure_{it}$ is the number of years that the CEO has held the chief executive title in company i as of year t . X_{it} embodies a vector of control variables at the firm level which are firm age, log board size, log assets, Tobin's q , industry adjusted return on assets, and asset tangibility.

ε_{it} defines random errors clustered at the firm level. The negative coefficients on CEO tenure throughout the four regressions in Table 2 show that overall, the Korean CEO board dynamics are coherent with the bargaining model. Existing literature, Boone et al. (2007) also support the negative coefficient of -0.004 (with a t -statistic of -9.27) in column 4. However, the findings in these existing literature are based on repeated cross-sectional analysis and therefore cannot be considered as theoretically aligned with bargaining models and dynamic agency models. Consequently, firm fixed effects must be considered. Column 2 overcomes the limitations of prior research and empirically tests with firm fixed effects. The CEO tenure coefficient of column 2 shows that as CEO tenure increases by one year, board independence decreases by 0.002 percentage points and this impact is statistically significant at 1%. Moreover, when compared with the column 4 CEO tenure coefficient value, it can be seen that without firm fixed effects, the coefficient becomes inflated. This finding is coherent with Graham et al. (2020). In the Korean

market, the coefficient on column 4 for CEO tenure is exactly twice the economic magnitude of the coefficient on column 2, and the t-statistics become smaller in magnitude.

However, one limitation of firm fixed effects is that it fails to capture the relationship between CEO tenure and board independence for a given CEO since there are firms in which multiple CEOs co-exist. Thereby, without consideration for firm-CEO fixed effects, the negative coefficient on the relationship of board independence and CEO tenure could indicate a correlation from across-CEO differences within a given firm.

Yet, when firm-CEO fixed effects are added to regression (1), year fixed effects show perfect collinearity respective to each firm-CEO and becomes omitted. To substitute for firm-CEO fixed effects, I use an instrumental variable for CEO tenure as facilitated in Altonji and Shakotko (1987) and Graham et al. (2020). The instrument variable is as follows:

$$Tenure_{ict} - \overline{Tenure}_{ic} / \max Tenure_{ic}$$

\overline{Tenure}_{ic} indicates the average CEO tenure and $\max Tenure_{ic}$ indicates the ultimate length of CEO tenure for each firm-CEO pair. This instrument variable controls for the across-CEO variation by scaling CEO tenure for each firm-CEO pair with each pair's unique given ultimate tenure. Thus, the Instrument variable can measure the within firm-CEO effects between board independence and CEO tenure. Regression results using the instrument variable are shown in column (3). In the Korean market when the predicted value of the instrument variable tested as a proxy of CEO tenure the economic magnitude of the coefficient becomes approximately the same as the economic magnitude when only year fixed effects are considered. The t-statistic is significant at the 1% level with a value of -8.12 which is relatively moderate compared to column 4's CEO tenure coefficient.

These negative coefficients indicate that the Korean market follows suit with the bargaining model in that as CEO tenure increases, the independence ratio decreases. However, one point to be noted is that the economic magnitude of the relationship between CEO tenure and board independence is comparatively small. Returning to column 3, the CEO tenure coefficient of -0.004 indicates that five years

of tenure as a CEO will result in a 0.02 percentage point reduction in board independence.

Table 2. The Impact of CEO Tenure on Board Independence

This table shows the relationship between a CEO's tenure and board independence. Samples are from 1998 to 2017. Column 3 measures the CEO tenure effect using the instrumental variable approach (Altonji and Shakotko, 1987). This instrumental variable indicates the proportion of the CEO's final tenure at each point in time. All standard errors clustered at the firm levels.

Dependent Variable:	Board Independence			
	(1)	(2)	(3)	(4)
Regression:	OLS	OLS	IV	OLS
CEO tenure	-0.002*** (-7.60)	-0.002*** (-7.72)	-0.004*** (-8.12)	-0.004*** (-9.27)
Firm age	- -	- -	- -	0.000* (-1.70)
Log (board size)	- -	0.040*** (4.43)	0.040*** (4.32)	0.041*** (4.95)
Log (assets)	- -	0.011*** (2.86)	0.011*** (3.06)	0.042*** (19.85)
Tobin's Q	- -	0.002 (0.82)	0.001 (0.69)	0.004 (1.58)
Industry-adjusted ROA	- -	-0.003 (-0.33)	-0.002 (-0.23)	-0.033*** (-2.92)
Asset tangibility	- -	0.008 (0.62)	0.010 (0.77)	-0.012 (-0.92)
Firm Fixed Effects	Y	Y	Y	
Year Fixed Effects	Y	Y	Y	Y
R ²	0.669	0.673	0.672	0.357
N	23,135	23,135	23,135	23,135

4.2. Firm Performance and Board Independence

Table 3 tests how a firm's financial performance is related to its board independence using the following regression:

$$\Delta Board\ Independence_{it} = \alpha_{i \times c} + \alpha_t + \beta_1 Firm\ Performance_{it} + X'_{it}\gamma + \varepsilon_{it} \quad (2)$$

$\Delta Board\ Independence_{it}$ is taken as the first difference of board independence per firm-CEO. $\alpha_{i \times c}$ indicates firm-CEO fixed effects, $Firm\ Performance_{it}$ is the three-year moving average of industry-adjusted return on assets and annual stock returns. ΔX_{it} represents a vector of the firm first differenced controls log on board assets, log on assets, and tangibility of firm i as of year t.

The results from Table 3 indicate that in Korea, firms' financial performance and board independence is negatively correlated. The coefficient of industry adjusted ROA for the recent three years of firm performance in column 3 shows that if ROA increases by one standard deviation (0.113), the board independence decreases by 0.002 percentage points ($=0.113 \times 0.019$). In other words, this indicates that as a CEO shows great recent industry-adjusted financial performance over their tenure, the board's intensity of monitoring declines. Furthermore, the economic magnitude of the industry-adjusted ROA increases by approximately four times when Firm fixed effects and firm-CEO effects are considered (as in column 2 and 3), compared to when only year fixed effects are considered. This is coherent with the bargaining model which states that the board accepts good firm performance as good CEO ability and thereby their uncertainty of the CEO is reduced and the board's incentive to monitor the CEO decreases. For recent three years of industry-adjusted stock returns, such impact is insignificant which is a valid Korean market trait.

Table 3. The Impact of Firm Performance and Board Independence

This table shows the relationship between firm performance and board independence. Samples are from 1998 to 2017. The dependent variable is the first difference in board independence. The independent variable is a moving three-year average of industry-adjusted ROA or annual stock returns. The control variables are the first difference firm-level control variables in Table 2 (excluding Tobin's q and ROA). All standard errors are adjusted for sample clustering at the firm level.

Dependent variable:	Δ Board Independence					
Sample:	No Turnover					
	(1)	(2)	(3)	(4)	(5)	(6)
ROA (recent 3 years, industry-adj.)	-0.004 (-0.76)	-0.016** (-2.18)	-0.019** (-2.06)	- -	- -	- -
Stock return (recent 3 years, industry-adj.)	- -	- -	- -	-0.001 (-0.59)	-0.001 (-0.78)	-0.002 (-1.48)
Δ Log (board size)	0.058*** (9.14)	0.057*** (9.03)	0.059*** (9.20)	0.058*** (9.10)	0.057*** (8.97)	0.059*** (9.15)
Δ Log (assets)	0.000 (-0.05)	0.000 (-0.01)	-0.001 (-0.36)	0.000 (-0.12)	-0.001 (-0.29)	-0.002 (-0.56)
Δ Asset tangibility	0.004 (0.38)	0.004 (0.39)	0.001 (0.12)	0.003 (0.29)	0.003 (0.24)	0.000 (0.01)
Firm Fixed Effects		Y			Y	
Firm-CEO Fixed Effects			Y			Y
Year Fixed Effects	Y	Y	Y	Y	Y	Y
R ²	0.029	0.064	0.152	0.029	0.064	0.152
N	20,811	20,811	20,811	20,811	20,811	20,811

4.3. CEO Tenure, Chair Duality, and CEO Pay

Next, I test for the correlation between CEO tenure and chair duality as well as pay through Table 4. The regression model used is referred to as regression (1). The significantly positive coefficient on CEO tenure in columns 1 and 2 implies that a CEO working an additional year with a CEO position increases the possibility of the CEO taking a dual position as chair by 0.02 percentage points. Bargaining models and dynamic agency models forecast that increase in CEO tenure acts as a proxy for continuously outstanding CEO performance and therefore CEO pay will likely increase. The results from Table 4 confirm their prediction. Both columns 3 and 4 show that CEO tenure is positively correlated with logged pay. In the Korean market, CEOs working an additional year as a CEO is positively associated with an increase in 5.8% to 6% in their pay. That is, CEOs are remunerated with greater pay as they become deeper into their tenure.

Table 4. The Impact of CEO tenure on Chair Duality position and CEO Pay

This table shows the relationship between CEO tenure and the CEO duality or total compensation, including salaries and bonuses. The samples are subsamples, the CEO duality data is from 2003 to 2017, and the CEO compensation data is from 2013 to 2017. CEO duality is a dummy variable with a value of 1 if the CEO has a chair position at the same time. CEO pay is the sum of salary and bonus. As shown in Table 2, Column 2 and Column 4 measure the CEO tenure effect using the instrumental variable approach (Altonji and Shakotko, 1987). This instrumental variable indicates the proportion of the CEO's final tenure at each point in time. All standard errors are adjusted for sample clustering at the firm level.

Dependent Variable:	Chair Duality		Log (CEO pay)	
	(1)	(2)	(3)	(4)
Regression:	OLS	AS-IV	OLS	AS-IV
CEO tenure	0.002*** (5.17)	0.002*** (2.78)	0.058*** (6.73)	0.061*** (4.34)
Log (board size)	-0.013 (-1.40)	-0.013 (-1.41)	-0.187** (-2.35)	-0.188** (-2.30)
Log (assets)	-0.007 (-1.43)	-0.007 (-1.40)	0.186*** (3.01)	0.185*** (3.00)

Tobin's Q	-0.002 (-0.59)	-0.002 (-0.59)	-0.003 (-0.13)	-0.003 (-0.15)
Industry-adjusted ROA	0.030** (2.29)	0.030** (2.29)	0.253 (1.32)	0.259 (1.29)
Industry-adjusted Stock return	- -	- -	0.004 (0.32)	0.004 (0.32)
Asset tangibility	-0.019 (-1.16)	-0.019 (-1.14)	-0.072 (-0.31)	-0.063 (-0.27)
Firm Fixed Effects	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y
R^2	0.538	0.538	0.718	0.674
N	16,916	16,916	1,278	1,278

4.4. Family Dimension of Korean CEO-Board Dynamics

In this section, the paper expands its focus from the general Korean market to the family dimension of the Korean market and tests if family firms and non-family firms differ regarding their CEO-board dynamics. Tables 5 and 6 test the family dimension regarding the previous tests from Tables 2 and 3. As stated in the data section, family firms are proxied by two variables, the Family shareholder dummy and the Large Business Group dummy, and are tested in the regression as interaction terms. The regression used in Table 5 and Table 6 can be shown as regressions (1) and (2).

Table 5 tests the impact of CEO tenure on the board independence, Chair duality and logged pay. The overall effect indicates the pure effects of each respective non-family and family firms. In general, my test results match my hypothesis. To begin, for non-family firms both non-family proxies depict a negative correlation between CEO tenure and board independence. This finding is somewhat coherent with Kang et al. (2018) who find board independence in Korean non-large business groups to be negatively correlated with CEO tenure. However, findings for family firms are different. According to Kang et al. (2018), when considering industry and year fixed effects, board independence and CEO tenure for large

business groups are also negatively correlated. In contrast, in this paper, I find that for family firms (large business group firms), there exists no such correlation as the coefficients are insignificant. The insignificant coefficients on family firms in columns 1 and 2, may result from the family members of family firms having more controlling power over their giving way to the insignificant relationship between CEO tenure and board independence. CEO ability in family firms would thus not be coherent with the increase in bargaining power for CEOs as their tenure increases. With CEO tenure as the independent variable, and chair duality as the dependent variable, the results differed per family shareholder and large business group variables. Only firms for which 50% of shares are owned by the family member of the biggest shareholder hold a significant relationship. Furthermore, compared to the overall Korean market in Table 4, the economic magnitude of CEO tenure and chair duality is precisely two times greater for family firms; for family firms, there is a 0.004 percentage point increase in the possibility of CEOs becoming chair as CEO tenure increase by one year, whereas the overall Korean market shows a corresponding value of 0.002 percentage point increase.

In terms of CEO tenure and CEO pay, the overall effect of non-family and family firms both confirm to be significantly positive. The family firm's economic magnitude on CEO tenure is approximately two times the economic magnitude of non-family firms. From the results of a stronger impact of CEO tenure on chair duality and CEO pay for family firms compared to non-family firms, it can be assumed that CEO's power in family firms is greater than in non-family firms. Although it could be interpreted that family firms' CEOs have stronger bargaining power, this power could be attributed to the CEOs having an intricate connection with family members of the firm. This could in turn act as greater power rather than bargaining power based on good CEO performance.

Table 5. CEO tenure's Impact on Board Independence, Chair Duality, and CEO Pay in family and non-family firms

This table presents the interactive effect of CEO tenure with the family firms on board independence, CEO duality, and total compensation. Board independence data (Column 1 and Column 2) is of the full sample, which is from 1998 to 2017, whereas the CEO duality data is from 2003 to 2017 and the CEO compensation data is from 2013 to 2017. All independent and control variables are the same as Table 2. Family Shareholder is a dummy variable that has a value of 1 when the sum of the shares owned by family members is 50% or more. Large Business Group is a dummy variable that has a value of 1 if the firm belongs to a large business group. All the regressions measure the CEO tenure effect using the instrumental variable approach (Altonji and Shakotko, 1987). This instrumental variable indicates the proportion of the CEO's final tenure at each point in time. All standard errors clustered at the firm levels.

Dependent Variable:	Board Independence		Chair Duality		Log (CEO Pay)	
	(1)	(2)	(3)	(4)	(5)	(6)
Regression:	AS-IV	AS-IV	AS-IV	AS-IV	AS-IV	AS-IV
CEO tenure	-0.004*** (-8.08)	-0.005*** (-8.64)	0.002*** (2.75)	0.002*** (3.04)	0.060*** (4.25)	0.034** (2.41)
CEO tenure × Family Shareholder	-0.002 (-0.41)	- (-)	0.002 (1.47)	- (-)	0.055*** (3.80)	- (-)
Family Shareholder	0.027 (0.88)	- (-)	-0.015** (-2.22)	- (-)	-0.289** (-2.44)	- (-)
CEO tenure × Large Business Group	- (-)	0.008*** (3.61)	- (-)	-0.002 (-0.53)	- (-)	0.056*** (2.93)
Large Business Group	- (-)	0.01 (0.67)	- (-)	0.021 (0.97)	- (-)	-0.225 (-1.49)
Firm-level controls	Y	Y	Y	Y	Y	Y
Firm Fixed Effects	Y	Y	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y	Y	Y
R ²	0.672	0.675	0.538	0.538	0.674	0.674
N	23,135	23,135	16,916	16,916	1,278	1,278
Overall Effects						
CEO Tenure, Non-family Firms	-0.004*** (-8.08)	-0.005*** (-8.64)	0.002*** (2.75)	0.002*** (3.04)	0.060*** (4.25)	0.034** (2.41)
CEO Tenure, Family Firms	-0.007 (1.18)	0.003 (1.52)	0.004*** (3.34)	0.000 (0.04)	0.115*** (7.42)	0.090*** (4.55)

Table 6 measures the correlation between family and non-family firm's financial performance and board independence. Coherent with my hypothesis, non-family firm's coefficient values for an increase in industry-adjusted ROA for the recent three years have no impact on the first differenced board independence. In contrast, non-family firm test outcomes indicate that when CEOs of family firms show good recent firm performance the monitoring intensity decreases.

Table 6. Firm Performance's Impact on Board Independence in Family and Non-family firms

This table presents the interactive effect of firm performance and board independence for family and non-family firms. Samples are from 1998 to 2017. The dependent variable is the first difference in board independence. The independent variable is a moving three-year average of industry-adjusted ROA or annual stock returns. The control variables are the first difference firm-level control variables in Table 2 (excluding Tobin's q and ROA). All standard errors are adjusted for sample clustering at the firm level. All control variables are the same as in Table 3. Family Shareholder is a dummy variable that has a value of 1 when the sum of the shares owned by family members is 50% or more. Large Business Group is a dummy variable that has a value of 1 when it is a company belonging to a large business group. All standard errors clustered at the firm levels.

Dependent Variable: Sample:	Δ Board Independence No Turnover	
	(1)	(2)
ROA (recent 3 years, industry-adj.)	-0.019** (-2.08)	-0.020** (-2.20)
ROA \times Family Shareholder	0.106 -1.04	- -
Family Shareholder	-0.011 (-1.19)	- -
ROA \times Large Business Group	- -	0.051 -1.19
Large Business Group	- -	-0.026*** (-2.95)
Firm level controls	Y	Y
Firm-CEO Fixed Effects	Y	Y
Year Fixed Effects	Y	Y
R ²	0.152	0.153
N	20,811	20,811
Overall Effects		
Industry-adjusted ROA, Non-family Firm	-0.019** (-2.08)	-0.020** (-2.20)
Industry-adjusted ROA, Family Firm	0.087 (0.85)	0.03 (0.72)

4.5. Change in Dynamic Board After CEO Turnover

Lastly, this paper examines the board dynamic changes when an Internal CEO is hired. Regression 3 shows the model used:

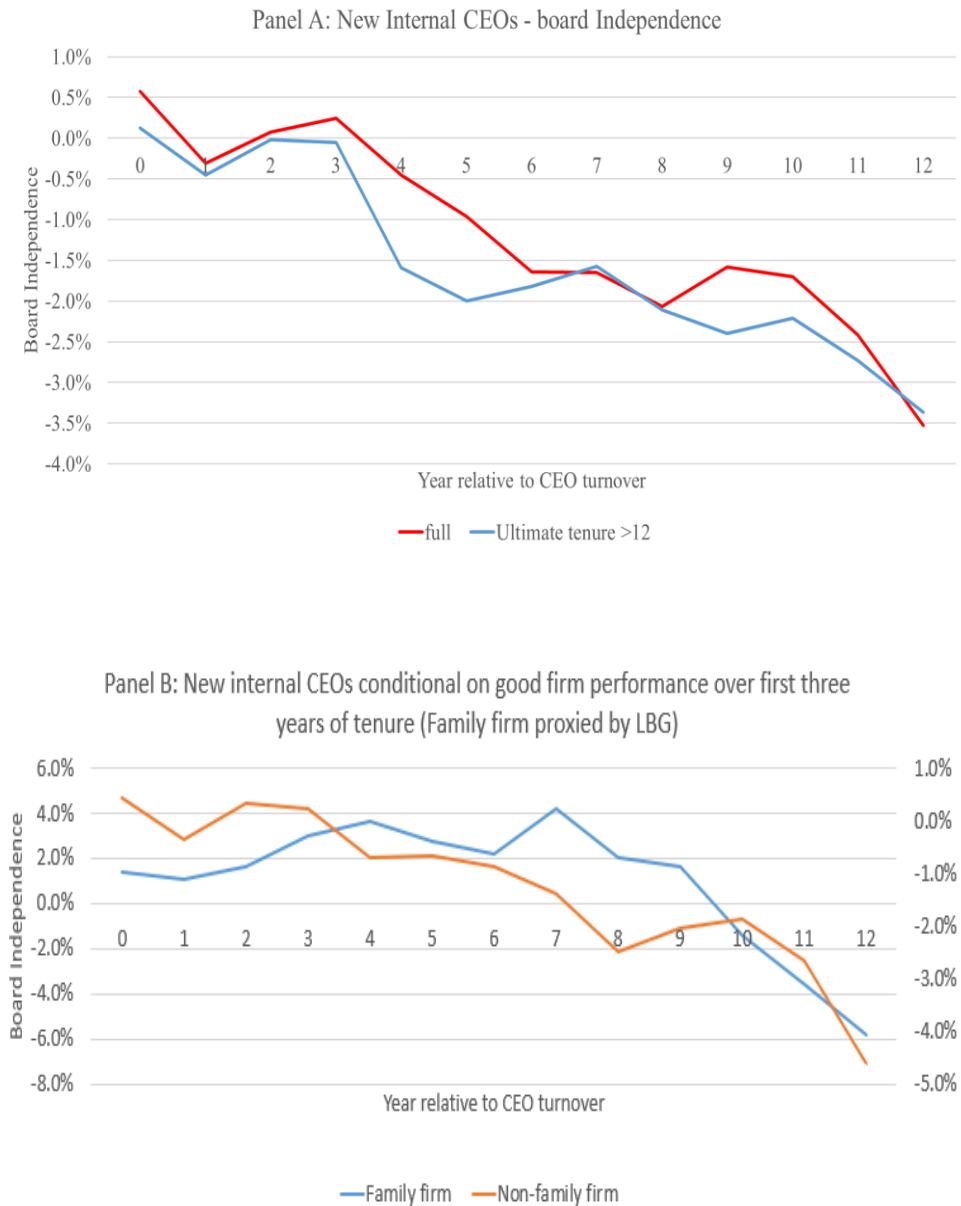
$$\text{Board Independence}_{it} = \alpha_i + \alpha_t + \sum_{k=0}^{12} \gamma_k d_{it}[k] + X'_{it}\delta + \varepsilon_{it} \quad (3)$$

As shown, the independent variable is a categorical variable $d[0], d[1], \dots, d[12]$, which corresponds to firm-year observations from when the CEO initially experiences a turnover, up to 12 years after his turnover. The baseline year is “Year - 1”. The γ_k coefficients from regression 3 are dotted in Figure 1. In accordance with previous results, Figure 1 shows that the within-firm dynamic has a trend of board monitoring intensity increase at the turn of new internal CEO hires but from year 3 and onwards the board independence decreases. This corresponds to my hypothesis H4, as well as the bargaining models and dynamic contracting models. In panel A, compared to the entire sample of new internal CEO hires, the blue line shows a subsample of internal CEOs with over 12 years of CEO tenure proxied as successful CEOs. Reductions in board independence are steeper for successful CEOs indicating that the bargaining model explains successful CEOs much more.

Panel B's two trendlines are conditional on three aspects 1) Newly hired internal CEOs 2) who show ROA values of the initial three years of tenure to be greater than the median and 3) whether the sample consists of family firms or non-family firms. In other words, Panel B shows the family dimension of within-firm dynamics of board independence relative to the year before internal CEO turnover, specifically for CEOs who have shown good firm performance for the first three years of their tenure. The two trendlines in Panel B are distinctly different. The non-family firm subsample shows a decreasing trend in board independence relative to CEO turnover over a CEO's tenure. From this, it can be inferred that non-family firm CEOs good performance leads to an increase in bargaining power over their entire tenure. However, inconsistent with the bargaining model is that the decrease in board independence does not occur until the 8th year of a successful CEO's tenure for non-family firms. In contrast, for family firms, the monitoring intensity relative to the year before turnover continuously increases up to the 9th year of the CEO's tenure. Thus, indicating that bargaining models and dynamic contracting models do not explain the CEO board dynamics of family firms.

Figure 1. Board independence dynamics after CEO turnover

This figure shows how board independence changes following an internal CEO turnover in year t relative to the year before turnover event. Firm years from year -1 to year $+12$ are considered. Observations in which CEO tenure is smaller than two years are excluded. The numbers shown are net of the regression-estimated firm and year fixed effects as firm-level controls the same as in Table 2.



5. Conclusion

In conclusion, as with markets with widely held ownership, this paper finds evidence that the CEO-board dynamics of a market with highly concentrated ownership can indeed be explained by bargaining models and dynamic contracting models. The within-firm and within CEO evidence confirms the following four results of the overall Korean market.

1. *CEO tenure and board independence are negatively correlated.*
2. *Firm performance and board independence are negatively correlated.*
3. *CEO tenure has a positive impact on chair duality and CEO pay, respectively.*
4. *At the initial turnover of an internal CEO, board independence increases, but afterward decreases throughout CEO tenure.*

In terms of examining the family dimension of CEO-board dynamics, family firms' test results do not support the bargaining model. It shows an insignificant relationship between both CEO tenure and firm performance to board independence. In contrast, non-family firms are consistent with the bargaining model. However, the economic magnitude of the tests on points 1 and 2 are relatively small and from the family firm tests, it can be inferred that the insignificant relationship of these family firm tests has caused a reduction in great bargaining model impact in Korea.

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국문 초록

본 연구는 bargaining model과 dynamic agency model 하에 성립되는 CEO와 이사회와의 이론적인 관계를 집중소유지배구조인 한국 시장에서도 실증적으로 존재하는지 연구하였다. 기존 연구들과는 달리 최초로 한국시장에서 CEO-board dynamics 이론을 기업 고정효과와 CEO 고정효과를 고려하여 테스트를 했고, 전문경영인회사와 가족경영회사로 나뉘어 연구를 진행했다는 점에 의의를 둔다. 본 논문의 주요한 발견은 다음과 같다. 첫째, 집중소유지배구조 시장에서도 전반적으로 bargaining model과 dynamic agency model은 성립한다. CEO 임기는 이사회 독립성과 음의 상관관계를 가진다. 기업 성과는 이사 독립성과 음의 상관관계를 가진다. CEO 임기가 1년씩 증가할수록 의장 겸직 여부와 CEO 봉급은 증가한다. 둘째, 이와 같은 결과는 전문경영인회사에서도 일치한다. 셋째, 반면에 가족경영회사에서는 결과값이 bargaining model과 불일치한다. 단, CEO 임기와 의장 겸직 여부의 관계, 그리고 CEO 임기와 CEO 봉급 간의 관계는 예외이다.

주요어 : 기업지배구조, 기업재무, Board Dynamics

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