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CEO CHARACTERISTICS AND COMPENSATION: A CHANNEL ANALYSIS OF U.S. LISTED FIRMS

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Abstract:

The empirical exploration of executive compensation determinants has been a focal point within scholarly inquiry. In this study, we address this gap by analyzing a dataset comprising 1,659 publicly listed U.S. firms spanning from 2006 to 2015. Our investigation draws upon data sourced from Compustat, Execucomp, and BoardEx, encompassing financial indicators, corporate governance metrics, executive compensation data, and CEO background information. Our findings reveal a positive association between director network size, serving as a proxy for "relationship capital," and executive compensation levels. Moreover, we provide empirical evidence for a negative correlation between gender and executive compensation within our U.S. firm sample. Unexpectedly, we observe that neither experience nor age demonstrates statistically significant impacts on executive compensation. Consistent with established literature, our analysis confirms a positive link between accounting performance metrics and executive compensation. Importantly, our empirical findings withstand rigorous tests across various subsamples, econometric methodologies, and CEO compensation variables, bolstering the robustness and reliability of our results. Furthermore, we analyze the possible transmission channels through which the CEO's background enhances executive compensation. Our paper contributes to the extant literature by highlighting the importance of "relationship capital" for executive compensation and the role of transmission channels.

Key words: *Executive compensation, performance, relationship capital, corporate governance, channel analysis*

1. Introduction

Executive compensation has long been a topic of intense debate and scrutiny, attracting the attention of academics, policymakers, and practitioners alike (Adhikari et al., 2015; Brown et al., 2012; Cherry & Gatchev, 2019; Graham et al., 2012; Page, 2018;

Smirnova & Zavertiaeva, 2017). As firms strive to align executive incentives with shareholder interests, understanding the determinants of executive pay becomes crucial not only for corporate governance but also for broader economic and social outcomes. The compensation packages awarded to CEOs can significantly influence corporate strategy, risk-taking behaviour, and ultimately, firm performance. Consequently, the study of CEO compensation is of paramount importance, offering insights that can inform both practical decisions in boardrooms and the development of regulatory policies aimed at promoting equitable and effective executive pay structures.

Despite the extensive body of literature on executive compensation, certain dimensions of this complex subject remain insufficiently explored. One such dimension is the role of "relationship capital", which refers to the social networks and connections that executives cultivate throughout their careers. These networks can confer significant advantages, such as access to critical information, influence over key stakeholders, and enhanced reputation within the business community. However, the extent to which relationship capital influences executive compensation has not been thoroughly examined in existing research, leaving a gap in our understanding of the factors that drive executive pay.

Our paper seeks to address this gap by investigating the impact of relationship capital on CEO compensation within the context of U.S. publicly listed firms. We employ a comprehensive dataset that includes financial indicators, corporate governance metrics, executive compensation data, and detailed CEO background information, spanning 1,659 firms over ten years from 2006 to 2015. Our study employs director network size as a proxy for relationship capital, allowing us to quantify the influence of an executive's social connections on their compensation.

The findings of our analysis reveal several key insights. First, we found a positive association between director network size and executive compensation, suggesting that relationship capital plays a significant role in determining CEO pay. This highlights the practical importance for firms to consider the broader social and professional networks of their executives when designing compensation packages. Second, we provided empirical evidence for a negative correlation between gender and executive compensation, underscoring the persistent gender pay gap at the highest levels of corporate leadership. Contrary to previous literature (e.g., Adhikari et al., 2015), our results indicate that neither experience nor age has a statistically significant impact on executive compensation, challenging some of the traditional assumptions about what drives CEO pay.

In addition to these primary findings, our study explores the channels through which CEO background characteristics influence compensation outcomes. We find that relationship capital may operate through multiple transmission mechanisms, including board structure and improved profitability. By elucidating these pathways, our research contributes to a more nuanced understanding of how executive compensation is shaped by both individual attributes and broader network effects.

Our paper brings important contributions to the extant literature on executive compensation by highlighting the significance of relationship capital and exploring the transmission channels through which CEO characteristics impact pay. Our findings have meaningful implications for both practitioners and policymakers, suggesting that a more

holistic approach to evaluating executive potential—one that includes an assessment of social networks—may be warranted in the design of compensation structures. Furthermore, our results reinforce the need for continued efforts to address gender disparities in executive pay, an issue that remains a critical challenge for corporate governance and societal equity.

The remainder of this paper is organized as follows. Section 2 provides a brief literature review. Section 3 introduces the hypothesis and describes the data and methodology employed in this paper. Section 4 presents the empirical results, several robustness tests, and channel analysis. Section 5 presents the conclusions and discusses the implications of our findings.

2. Literature review

A considerable amount of research has been devoted to explaining executive compensation outcomes. There are two broadly competing models of executive pay. The first one asserts that executive pay is too high and contracts are poorly designed (Bertrand and Mullainathan, 2001). This is the 'managerial power' view of executive compensation. An alternative approach to CEO pay is the 'optimal contracting' model, which claims that CEO compensation is determined by competitive labour market forces (Core and Guay, 2010).

The evolving literature has been truly interdisciplinary, spanning accounting, economics, finance, industrial relations, law, organisational behaviour, and strategy. Financial economists have studied the association between executive compensation and corporate performance, investment decisions, capital structure, dividend policies, mergers, and diversification.

A plethora of variables influence the level of CEO compensation. As highlighted in the previous literature (Graham et al, 2012; Cherry and Gatchev, 2019), CEO characteristics, corporate governance characteristics, firm characteristics and performance characteristics are the most important categories of variables. Our paper will focus on CEO characteristics, namely time on role (tenure), nationality, gender, and director network size (DNS).

Managerial power theory posits that CEOs with extended tenure possess increased influence over determining their compensation. Several papers (Graham et al, 2012; Smirnova and Zavertiaeva, 2017) documented a positive relationship between tenure and CEO compensation.

The relationship between CEO gender and CEO compensation typically reflects disparities, with studies often showing that female CEOs tend to earn less than their male counterparts (Bertrand and Hallock, 2001; Graham et al, 2012; Kulich et al., 2011). This difference in compensation can be attributed to various factors, including gender biases, differences in negotiation practices, and the underrepresentation of women in top executive roles. Additionally, gender can influence how CEO performance is evaluated and rewarded, potentially leading to variations in compensation packages. Understanding this relationship requires considering both the structural and cultural dynamics within organisations and broader societal norms.

Several authors (Geletkanycz et al., 2001; Schoorman et al., 1981) provide arguments and empirical evidence on the relationship between the CEO network (or social capital) and his/her compensation. Geletkanycz et al. (2001) highlighted that CEO networks offer a range of strategic advantages to firms. Firstly, these networks assist firms in acquiring essential resources and diminishing the uncertainty associated with external resource dependencies. Secondly, external networks allow directors to obtain greater access to strategic information and opportunities. Lastly, external networks enhance a firm's legitimacy and prestige; directors who serve on outside boards signal managerial competence, thereby increasing the firm's appeal to employees, customers, and suppliers. Several papers found a positive relationship between CEO network and CEO compensation using mainly data from a single country: SUA (Hallock, 1997; Brown et al., 2012; Cherry and Gatchev, 2019), Spain (Crespi-Cladera and Pascual-Fuster, 2011), and United Kingdom (Horton et al., 2012; Renneboog and Zhao, 2011). However, to the best of the authors' knowledge, there is no study on the potential transmission channels through which DNS influences CEO compensation.

3. Methodology

Our data sample consists of public US industrial companies after certain criteria have been applied. First, in line with previous literature (Adhikari et al., 2015; Graham et al., 2012; Page, 2018), we collect data on CEO compensation from the ExecuComp Database a financial and executive compensation database maintained by S&P Capital IQ which provides detailed compensation data for top executives at publicly traded U.S. companies. Second, we collect data for other CEO characteristics from the Boardex Database, an Altrata proprietary global leadership database (subscription based) that provides detailed information on executives, board members, and senior managers across public and private companies worldwide (nearly 1.7 million people profiles). Third, we collect data for firm characteristics from the Compustat Database. Fourth, we required non-missing data on CEO compensation and independent variables. Thus, the selection procedure resulted in a final sample of 1,659 unique US firms with 10,667 firm-year observations during 2006 and 2015.

The period from 2006 to 2015 is restricted to the shyncronization of data availability within the aforementioned three databases. Despite the most recent issue, we are aware about the relevance over recency principle, given that academic research values theoretical contribution, methodological rigor, and insight over just being current. In this respect, we consider that our research hypotheses answers a relevant question and can still make a strong contribution, given that the period represents a critical phase in the evolution of CEO compensation practices. This timeframe captures three distinct yet interconnected developments: the lead-up to the 2008 global financial crisis, the immediate post-crisis corporate and regulatory responses, and the early years of economic recovery. During this period, CEO pay underwent significant structural changes, including a shift away from stock options toward restricted and performance-based equity, largely in response to intensified public scrutiny and new governance standards. The enactment of the Dodd-Frank Act in 2010 introduced key regulatory mechanisms—such as say-on-pay votes and expanded disclosure requirements—that continue to shape executive pay

design today. We consider that studying this period offers valuable insights into how firms adjust compensation strategies under systemic stress, regulatory reform, and shifting shareholder expectations. Furthermore, it provides a historical baseline for evaluating the persistence and effectiveness of these reforms in aligning executive incentives with long-term firm performance.

In our empirical model, the dependent variables are both CEO Total Compensation (CEO_TC) and (Graham et al., 2012; Smirnova and Zavertiaeva, 2017) Current Compensation (CEO_CC) for robustness purposes. CEO_TC (thousand dollars) comprised of the following: Salary, Bonus, Other Annual, Total Value of Restricted Stock Granted, Total Value of Stock Options Granted (using Black-Scholes), Long-Term Incentive Payouts, and All Other Total. CEO_CC (thousand dollars) includes only Salary and Bonus. For regression analysis, both variables have been transformed using natural logarithm (1+raw data).

Our main variables of interest are Director Network Size – DNS (for rent extraction theory) and Firm performance (for shareholder value/agency theory). CEO Network size provides the number of overlaps/connections through employment (e.g., having a seat on the same corporate board), other activities (school boards, professional associations or clubs) and education (graduated from the same university). The larger the network, the more influential the individual may be based on how well they are connected. For regression analysis, DNS has been transformed using the natural logarithm (1+raw data). For firm performance proxy, we include return on assets (ROA) as book performance and stock return for 1 year (RET) as market performance in line with extant literature (Adhikari et al., 2015; Smirnova and Zavertiaeva, 2017). Agency theory states that compensation constitutes an incentive that is designed according to the firm's performance level, and therefore, a positive relation is suggested. In order to deal with the outliers issue, both proxies have been winsorized at 1%.

These theoretical predictions design the following hypotheses:

H1: *Better-connected CEOs are more likely to experience higher compensation*.

H2: *CEO compensation is a function of a firm's performance, either book or market*.

To capture better the endogenous process of compensation arrangements, several control variables have been considered. On the one hand, CEO compensation might be affected by firm characteristics. In this respect, it has been considered Market value, Debt Ratio, Cash Conversion Cycle, Goodwill, Payout Ratio, and Research & Development expenditures (R&D).

On the other hand, CEO compensation might be affected by CEO characteristics as well as other corporate governance characteristics. In this respect, it has been included Total Shares Owned, Time on Role, Nationality, Gender, Number of Shareholders Directors on Board, Total Directors on Board, and Duality (both CEO and Chairman). All the variables considered are summarised in Figure 1 below:

Variable	Description	Formula
CEO_TC	Total CEO Compensation (Salary + Bonus + Other Annual + Restriced Stock Grants + LTIP Payouts + All Other + Value of Option Grants)	Ln(1+Total compensation CEO)
CEO_CC	Total CEO Current Compensation (Salary + Bonus)	Ln(1+Current compensation CEO)
ROA	Return on assets	Net income/Total Assets
RET	Annual Return (fiscal)	$(P_t-P_{t-1})/P_{t-1}$
DNS	Network size of selected indivdual (number of overlaps through employment, other activities, and education)	LN(1+Director Network Size)
PBV	price to book value	Annual closing price (fiscal) / Book value per share
DR	Debt ratio	Long term debt / Total Assets
CCC	Working Capital = Inventories period + Receivables period - Payables period	Working Capital / Total Assets
GW	Goodwill	Excess of cost over equity of an acquired company / Total assets
PR	Payout ratio	Dividends / Net income
RD	Research & Development Expenses	RD / Operating Expenses
OWN	Ownership	Percentage of Total Shares Owned - Options Excluded
TENURE	Time in Role (years)	ln(1+Time in Role)
NAT	1 if CEO has American nationality, 0 otherwise	Dummy variable
GENDER	1 if CEO is FEMALE, 0 otherwise	Dummy variable
BOARD SDR	Number of Shareholder Directors on Board	Ratio as Total Directors
BOARDE SIZE	Total Directors on the Board	ln(1+Total Directors on the Board)
DUALITY	Executive Chairman present on Board or Combined role of CEO & Chairman is present (1- Yes, 0 - No)	Dummy variable
SIZE	Firm Size	Ln(Sales)

Figure 1 Variable Description

Given the assumptions and the nature of the data, we employ panel model methods with the following specification:

$$Compensation_{i,j,t} = \alpha_0 + \alpha_1 \times Performance_{i,t} + \alpha_2 \times DNS_{i,t} + \alpha_3 \times F'_{i,t} + \alpha_4 \times CG'_{i,t} + \varepsilon_{it} \quad (1)$$

where Compensation includes CEO_TC or CEO_CC; Performance includes ROA and RET; F_it^' is a vector of firm controls (PBV, DR, CCC, GW, PR, R&D); 〖CG〗_it^' is a vector of corporate governance control (OWN, CEO TENURE, CEO NATIONALITY, CEO GENDER, BOARD SDR, BOARD SIZE, CEO DUALITY); “i” is for company; “j” is for CEO characteristics, “t” is for the year; ε_it is the error term.

Table 1 presents descriptive statistics for our sample. Looking beyond the standardization of the data, one can remark that a CEO, on average, receives approximately 989,000 USD per year, with a maximum CEO pay level exceeding 77 million USD. When we look at total compensation (including other benefits such as options), the values are higher: a CEO receives, on average, 5.1 million USD, while the maximum total compensation is 156 million USD. Regarding the CEO background, we notice that on average, a CEO has 1,051 connections in his/her network. However, there are big differences among managers in our sample. Secondly, a CEO has, on average, 5.5 years of experience in his/her current role. Furthermore, market performance is higher than book performance, which is supported by a PBV higher than one, i.e. the firms generate value.

Table 1 Descriptive statistics

VARIABLE	MEAN	P50	MIN	MAX	SD
Current Comp.	13.50	13.59	0.00	18.17	1.28
Total Comp.	14.95	15.07	0.00	18.87	1.33
ROA	0.04	0.04	-0.44	0.28	0.10
RET	0.13	0.07	-0.79	3.01	0.54
DNS	6.33	6.57	0.00	9.26	1.39
PBV	2.87	2.04	-4.94	20.58	3.22
DR	0.19	0.16	0.00	3.60	0.20
CCC	0.18	0.14	-0.13	0.74	0.20
GW	0.12	0.06	0.00	0.81	0.15
PR	0.25	0.02	-1.88	3.65	0.63
R&D	0.04	0.00	0.00	2.46	0.10
OWN	0.02	0.01	0.00	2.09	0.06
TENURE	1.56	1.57	0.00	4.12	0.79
NATIONALITY	0.57	1.00	0.00	1.00	0.50
GENDER	0.04	0.00	0.00	1.00	0.19
BOARD SDR	0.85	0.88	0.00	1.00	0.08
BOARD SIZE	9.31	9.00	1.00	33.00	2.41
DUALITY	0.58	1.00	0.00	1.00	0.49

Source: Author calculations using Stata 16.

4. Results

Table 2 reports the baseline results, where initially we use a Fixed-Effects Model (Column 1) as a benchmark. Afterwards, we dealt with dynamic and endogeneity issues and used General Methods of Moments in System (GMM-SYS), with a stepwise inclusion of variables of interest.

Table 2 Baseline results

	(1) FE	(2) GMM-SYS	(3) GMM-SYS	(4) GMM-SYS	(5) GMM-SYS
ROA	0.970***	1.157*			1.281**
	(0.111)	(0.620)			(0.565)
RET	0.028*		-0.028		0.030
	(0.015)		(0.133)		(0.113)
DNS	0.038***			0.100***	0.137***
	(0.012)			(0.038)	(0.034)
PBV	0.001	0.009	0.033***	0.022*	0.005
	(0.003)	(0.012)	(0.012)	(0.012)	(0.013)
DR	0.081	0.446***	0.115	0.222	0.476***
	(0.100)	(0.169)	(0.105)	(0.148)	(0.148)
CCC	-0.225*	0.219	0.494	0.492	0.326
	(0.121)	(0.431)	(0.333)	(0.331)	(0.300)
GW	0.302	0.759**	0.552**	0.760**	0.996***

	(0.187)	(0.383)	(0.243)	(0.356)	(0.321)
PR	-0.001	-0.014	-0.024	-0.013	0.024
	(0.014)	(0.112)	(0.116)	(0.119)	(0.109)
R&D	-0.100	-2.246	-3.521	-3.433	-3.604*
	(0.234)	(2.841)	(2.159)	(2.268)	(2.162)
OWN	-1.363***	-1.772	-0.407	-1.370	-1.704
	(0.210)	(1.108)	(1.005)	(1.104)	(1.102)
TENURE	0.033**	0.021	0.009	0.034	0.034
	(0.013)	(0.020)	(0.019)	(0.022)	(0.021)
NATIONALITY	0.011	0.089***	0.076**	0.072**	0.062**
	(0.034)	(0.030)	(0.030)	(0.031)	(0.030)
GENDER	-0.061	-0.097	-0.120**	-0.152**	-0.155**
	(0.076)	(0.063)	(0.052)	(0.067)	(0.067)
BOARD SDR	-0.061	1.010***	0.711**	0.653*	1.042***
	(0.229)	(0.390)	(0.287)	(0.360)	(0.346)
BOARD SIZE	0.070	0.409***	0.225*	0.257*	0.395***
	(0.085)	(0.141)	(0.127)	(0.147)	(0.128)
DUALITY	0.072**	0.136**	0.044	0.112*	0.158***
	(0.031)	(0.056)	(0.047)	(0.063)	(0.056)
CEO(-1)		0.328*	0.581***	0.401*	0.150
		(0.189)	(0.129)	(0.206)	(0.182)
#Observations	10,667	10,046	9,965	10,046	9,965
# Firms	1,659	1,650	1,631	1,650	1,631
# Instruments		62	64	55	71
TIME EFFECT	YES	YES	YES	YES	YES
AR(2) (p-value)		0.731	0.313	0.589	0.696
Sargan (p-value)		0.900	0.340	0.657	0.638
Hansen (p-value		0.555	0.133	0.209	0.126

Notes: Standard errors in parentheses. ***,**,* The rejection of the null hypotheses at the 1%, 5% and 10% levels of significance for statistical tests.
Source: Author calculations using Stata 16.

According to these results, several remarks could be drawn. First and foremost, DNS seems to be positively significant and robust for compensation. The association between director network size and CEO compensation, combined with a relatively low average level of performance, is in line with managerial power theory (Bebchuk et al., 2002), whereas directors of firms will use their power to design their remuneration package, leading to inefficiently high levels of compensation.

Second, book performance (ROA) is positively associated with compensation, in line with prior studies (Ahn 2015; Adhikari et al., 2015). This result is consistent with the incentive-based theories of executive pay, which argue that firms align managerial interests with shareholder value by linking compensation to performance outcomes. Higher ROA signals effective utilisation of assets and operational efficiency, thereby justifying greater rewards for executives. Our findings reinforce the argument that traditional performance measures continue to play a central role in determining CEO pay, particularly

in environments where market-based measures (e.g., stock returns) may be more susceptible to external shocks or short-term fluctuations.

Third, from the control variables, board size, board shareholders' ratio are positively associated with compensation. A larger board may imply more diverse expertise and greater resources, but it can also lead to coordination challenges and diluted monitoring effectiveness. This may give CEOs more leeway in influencing their compensation packages, especially if board members are not sufficiently independent. The positive link between board size and compensation aligns with the managerial power hypothesis, suggesting that larger boards might be less cohesive and more susceptible to CEO influence, allowing for higher pay. The board shareholders' ratio, being positively associated with compensation, may reflect an alignment of interests. Directors who hold equity stakes may be more inclined to support higher CEO pay when firm performance is strong, viewing compensation as a tool to drive long-term value creation.

Fourth, like Smirnova and Zavertiaeva (2017), we find a positive relationship between CEO duality and compensation. These empirical findings highlight concerns related to power concentration. Dual roles may reduce board independence, weakening oversight and allowing CEOs to exert greater influence over pay-setting processes. This finding echoes the governance literature, which warns that duality may reduce accountability and increase the risk of excessive or rent-extracting compensation.

Next, we want to examine if our results are sensitive to sample selection. In this respect, we create sub-samples based on two criteria. First, it was considered firm size, proxied by sales, given that different firm size is related to different lifecycle stages and challenges, including CEO compensation. Second, it was considered CEO tenure, given transitions recorded at such a level, with the median having fallen since 2013. Therefore, based on median values, we create different sub-samples, associated with small companies (below median sales, Column 1), large companies (above median sales, Column 2), young tenure (below median tenure, Column 3) and old tenure (above median tenure, Column 4).

Table 3 Robustness part 1

	(1) SMALL	(2) LARGE	(3) TENURE_Y	(4) TENURE_O
ROA	0.807	2.193***	1.908**	1.205
	(0.570)	(0.763)	(0.773)	(0.746)
RET	-0.012	-0.070	0.166	0.018
	(0.109)	(0.143)	(0.120)	(0.155)
DNS	0.065***	0.110***	0.127***	0.101***
	(0.018)	(0.031)	(0.031)	(0.025)
PBV	0.018	-0.004	0.000	-0.005
	(0.017)	(0.011)	(0.017)	(0.015)
DR	0.418**	0.328***	0.660***	0.558***
	(0.167)	(0.124)	(0.161)	(0.163)
CCC	0.468**	-0.771***	-0.489	0.127
	(0.212)	(0.239)	(0.332)	(0.293)
GW	0.654***	0.551***	0.734***	0.729***
	(0.209)	(0.175)	(0.237)	(0.249)
PR	0.022	-0.086	0.058	-0.185

	(0.112)	(0.128)	(0.103)	(0.144)
R&D	-2.127**	1.389	0.580	-1.680
	(1.069)	(1.510)	(2.221)	(1.629)
OWN	-1.864**	-3.357**	-1.803	-0.930
	(0.796)	(1.427)	(1.485)	(1.020)
TENURE	0.053**	0.045**	-0.000	-0.016
	(0.021)	(0.023)	(0.027)	(0.029)
NATIONALITY	0.046	0.063	0.046	0.090**
	(0.033)	(0.040)	(0.036)	(0.036)
GENDER	-0.223***	0.018	-0.072	-0.211***
	(0.063)	(0.074)	(0.067)	(0.080)
BOARD SDR	0.554*	0.900**	1.398***	0.874**
	(0.282)	(0.356)	(0.299)	(0.349)
BOARD SIZE	-0.094	0.517***	0.602***	0.483***
	(0.098)	(0.186)	(0.167)	(0.156)
DUALITY	0.055	0.236***	0.209***	0.185***
	0.293**	-0.122	0.055	0.225
CEO(-1)	(0.136)	(0.187)	(0.117)	(0.174)
	(0.038)	(0.068)	(0.053)	(0.067)
#Observations	4,851	5,114	4,827	5,138
# Firms	931	895	1,315	1,326
# Instruments	71	71	71	71
TIME EFFECT	YES	YES	YES	YES
AR(2) (p-value)	0.803	0.213	0.266	0.948
Sargan (p-value)	0.736	0.812	0.882	0.216
Hansen (p-value	0.148	0.839	0.430	0.054

Notes: Standard errors in parentheses. ***,**,* The rejection of the null hypotheses at the 1%, 5% and 10% levels of significance for statistical tests.
Source: Author calculations using Stata 16.

Once again, DNS is significant and positively associated with compensation, irrespective of firm size or tenure. Duality is insignificant for small companies, where most likely the organisational chart includes a limited number of positions.

Furthermore, we examine if the results are sensitive to the dependent variable considered and re-run all the models with current compensation.

Table 3 Robustness part 2 – current compensation (dependent variable)

	(1) FULL	(2) SMALL	(3) LARGE	(4) TENURE_Y	(5) TENURE_O
ROA	0.288**	0.283*	0.281*	0.507**	0.264***
	(0.117)	(0.151)	(0.147)	(0.228)	(0.096)
RET	0.018	0.016	0.008	0.024	0.001
	(0.016)	(0.015)	(0.020)	(0.022)	(0.013)
DNS	0.023**	0.002	0.029**	0.016	0.025*
	(0.010)	(0.008)	(0.013)	(0.012)	(0.015)
PBV	0.002	-0.004	0.002	0.004	0.000
	(0.003)	(0.004)	(0.004)	(0.005)	(0.003)
DR	0.120**	0.127*	0.027	0.126*	0.169*
	(0.051)	(0.074)	(0.047)	(0.066)	(0.093)

CCC	-0.164**	-0.115*	-0.240**	-0.214**	-0.178
	(0.065)	(0.063)	(0.094)	(0.091)	(0.129)
GW	0.187***	0.129	0.130*	0.070	0.242***
	(0.069)	(0.078)	(0.079)	(0.075)	(0.090)
PR	-0.001	0.006	-0.002	-0.013	0.010
	(0.012)	(0.014)	(0.015)	(0.016)	(0.012)
R&D	-0.060	0.015	-0.296	0.055	-0.080
	(0.226)	(0.124)	(0.486)	(0.137)	(0.537)
OWN	-0.038	-0.806	-0.002	-0.838	0.124
	(0.515)	(0.608)	(0.776)	(1.003)	(0.600)
TENURE	0.018	0.042**	0.023**	-0.011	0.014
	(0.011)	(0.018)	(0.011)	(0.015)	(0.017)
NATIONALITY	0.042**	0.032	0.019	0.030	0.080*
	(0.018)	(0.032)	(0.018)	(0.023)	(0.041)
GENDER	-0.046	-0.027	0.005	-0.048	-0.081*
	(0.038)	(0.033)	(0.046)	(0.051)	(0.043)
BOARD SDR	0.127	-0.008	0.009	0.046	0.246
	(0.152)	(0.301)	(0.127)	(0.250)	(0.207)
BOARD SIZE	0.307***	0.100	0.123*	0.246***	0.388**
	(0.081)	(0.071)	(0.070)	(0.088)	(0.163)
DUALITY	0.046**	0.037	0.031	0.041*	0.099**
	(0.018)	(0.027)	(0.023)	(0.024)	(0.042)
CEO(-1)	0.431***	0.427***	0.499***	0.471***	0.292
	(0.115)	(0.142)	(0.143)	(0.132)	(0.226)
#Observations	9,965	4,851	5,114	4,827	5,138
# Firms	1,631	931	895	1,315	1,326
# Instruments	81	81	81	81	81
TIME EFFECT	YES	YES	YES	YES	YES
AR(2) (p-value)	0.917	0.503	0.356	0.933	0.230
Sargan (p-value)	0.937	0.945	0.010	0.577	0.166
Hansen (p-value	0.242	0.140	0.184	0.662	0.440

Notes: Standard errors in parentheses. ***,**,* The rejection of the null hypotheses at the 1%, 5% and 10% levels of significance for statistical tests.
Source: Author calculations using Stata 16.

For 3 out of 5 models, DNS is positively associated with compensation, except for small companies and young tenure sub-samples. Book performance is superior to market performance in explaining CEO compensation. The insignificance of market performance suggests that firms tend to reward the CEO with more equity-based compensation if director networks are high, i.e. firm has better access to information and resources.

Next, we investigate two main channels through which DNS is likely to impact CEO compensation. Based on this assumption, to conduct the channel analysis between DNS and CEO compensation, we consider the following channels: the board shareholders ratio channel and the performance channel. Like Bilyay-Erdogan et al. (2023), we use a two-step regression approach. In the first step, we analyse the impact of DNS on BOARD_SDR ROA. In the second step, we employ the predicted values of BOARD_SDR/ROA to estimate CEO compensation.

Table 4 Channel analysis

	(1) BOARD SDR	(2) CEO_TC	(3) ROA	(4) CEO_TC
ROA	-0.001	0.990***		
	(0.005)	(0.111)		
RET	-0.001	0.045***	0.022***	-1.246***
	(0.001)	(0.016)	(0.001)	(0.397)
DNS	0.002***		0.001	
	(0.001)		(0.001)	
$\widehat{BOARD\ SDR}$		19.699***		
		(6.128)		
$\widehat{ROA}$				59.628***
				(18.279)
PBV	-0.000**	0.009**	0.002***	-0.099***
	(0.000)	(0.004)	(0.000)	(0.032)
DR	0.008	-0.068	-0.147***	8.721***
	(0.005)	(0.111)	(0.009)	(2.693)
CCC	-0.002	-0.185	0.184***	-11.009***
	(0.006)	(0.122)	(0.011)	(3.362)
GW	0.012	0.073	0.219***	-12.552***
	(0.009)	(0.199)	(0.018)	(4.008)
PR	0.000	-0.004	0.004***	-0.225***
	(0.001)	(0.014)	(0.001)	(0.071)
R&D	-0.005	0.001	-0.320***	18.692***
	(0.011)	(0.236)	(0.022)	(5.860)
OWN	0.003	-1.422***	-0.001	-1.288***
	(0.010)	(0.211)	(0.020)	(0.213)
TENURE	0.002***	-0.002	0.004***	-0.222***
	(0.001)	(0.016)	(0.001)	(0.079)
NATIONALITY	0.008***	-0.146**	-0.002	0.100**
	(0.002)	(0.061)	(0.003)	(0.043)
GENDER	-0.002	-0.020	-0.002	0.077
	(0.004)	(0.077)	(0.007)	(0.088)
BOARD SDR			-0.004	0.180
			(0.022)	(0.239)
BOARD SIZE	0.073***	-1.380***	-0.011	0.715***
	(0.004)	(0.458)	(0.008)	(0.218)
DUALITY	-0.033***	0.718***	0.014***	-0.768***
	(0.001)	(0.205)	(0.003)	(0.261)
N	10,667	10,667	10,667	10,667
R-Squared	0.22	0.13	0.10	0.11

Notes: Standard errors in parentheses. ***,**,* The rejection of the null hypotheses at the 1%, 5% and 10% levels of significance for statistical tests.
Source: Author calculations using Stata 16.

Column 1 demonstrates that DNS positively and significantly affects BOARD_SDR, implying that a higher network enhances board size. In addition, Columns 2 and 4 show that predicted values of BOARD_SDR/ROA also positively and significantly affect CEO

compensation. These findings provide evidence that BOARD_SDR is one of the channels through which a higher CEO network enhances CEO compensation.

5. Conclusions

The growth in executive pay over the past decades has attracted considerable public attention and generated ongoing debate about the effectiveness of the board of directors and the high compensation that directors receive. Many investors have questioned whether executives are worth their substantial pay packages, and, particularly since the start of the financial crisis, this concern has been widely shared around the world.

In this study, we investigate the impact of relationship capital on CEO compensation within the context of U.S. publicly listed firms. A comprehensive dataset that includes financial indicators, corporate governance metrics, executive compensation data, and detailed CEO background information, spanning 1,659 firms over ten years from 2006 to 2015, has been employed in the paper. Our findings reveal a positive association between director network size, serving as a proxy for "relationship capital", and executive compensation levels. Importantly, our empirical findings withstand rigorous tests across various subsamples, econometric methodologies, and CEO compensation variables, bolstering the robustness and reliability of our results. Second, we provided empirical evidence for a negative correlation between gender and executive compensation, underscoring the persistent gender pay gap at the highest levels of corporate leadership. Furthermore, we found that board structure is one of the channels through which a higher CEO network enhances CEO compensation.

Our empirical findings have several practical and policy implications. Given the positive association between DBS and executive pay, regulators and corporate boards should reevaluate how compensation structures are designed. Policies may be introduced to ensure that compensation is linked more directly to firm performance rather than social capital or network size, preventing executives from benefiting disproportionately based on their networks rather than merit. Second, the empirical evidence highlighting the persistent gender pay gap at the highest corporate levels suggests a need for policy intervention. Companies should adopt transparent pay structures and engage in more rigorous assessments of how gender biases may be impacting executive compensation. Policymakers can enforce stricter reporting requirements on pay equity and mandate that firms disclose gender-based pay differences, fostering accountability. Thirdly, the finding that board structure mediates the relationship between CEO network size and compensation indicates potential governance weaknesses. Strengthening the independence of boards and limiting over-reliance on CEO networks in setting executive pay could improve governance practices. This might include measures such as increasing the proportion of independent directors and reducing interlocking directorships to prevent an over-concentration of power in the CEO's hands.

As with any scientific inquiry, our paper has some limitations. First, our dataset covers only U.S.-listed firms between 2006 and 2015. This limits the generalizability of the findings to other periods or geographical contexts. CEO compensation practices may differ internationally or have evolved since the financial crisis and subsequent regulatory changes. Thus, further research employing an international dataset of firms is needed.

Second, while the study controls for various CEO characteristics, it is difficult to capture intangible qualities such as leadership style or negotiation skills, which may also influence compensation. As a result, the model may omit important variables that could affect the interpretation of the results.

6. References

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