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CEO PAY SLICE AND CEO GENDER: THEIR COMBINED EFFECT ON FIRM PERFORMANCE

Are there gender differences in the impact of CPS on firm performance in the United States, and can they be attributed to differences in CEO compensation or the level of CEO entrenchment?

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ABSTRACT

In my thesis, I examine whether gender differences affect the impact of CEO pay slice and have an impact on firm performance in the United States. Furthermore, I analyze whether these effects are caused by CEO entrenchment, CEO compensation, or both, and I compare results using Tobin's Q and ROA as firm performance metrics. I use data from S&P 1500 firms from the period of 1993 to 2019. I find evidence that a higher CPS causes lower firm performance, especially among male CEOs. The interaction term between CPS and CEO gender is significant, implying that male CEOs are more negatively affected by high CPS relative to female CEOs. This effect is mainly caused by CEO entrenchment, but also by CEO compensation. However, there are still other factors that contribute to the effect of CPS. To conclude, I believe that my findings suggest that hiring a female CEO instead of a male CEO could potentially benefit firms with respect to CEO compensation and entrenchment.

Keywords: Finance, Gender Diversity, Executive Compensation, Executive Entrenchment, Firm Performance

JEL Classification:

D22 Firm Behavior: Empirical Analysis

J16 Economics of Gender; Non-labor Discrimination

J31 Wage Level and Structure; Wage Differentials

M12 Personnel Management; Executives; Executive Compensation

L25 Firm Performance: Size, Diversification, and Scope

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CHAPTER 1 Introduction

In 2020, Ernst & Young (EY) published a report stating that over 90% of the firms listed on the Nasdaq Stockholm Large Cap list claim in their annual reports or websites that they actively pursue diversity and inclusion. However, only 11% of these firms had female CEOs at the end of 2018. Furthermore, they concluded that when studying Short-Term Incentives, female CEOs earn 62% less than male CEOs. These differences provide a valuable framework to examine the broader consequences of gender differences in executive compensation. It could suggest a gap between executive compensations in reality and aims to promote gender equality in executive positions. This gap leads to questions about the criteria for determining executive compensation and whether these criteria might unintentionally create a bias against female executives, thereby influencing the overall impact of executing compensation strategies in improving firm performance.

Besides an executive pay gap, the literature also suggests that female CEOs are significantly more likely to be fired than their male counterparts (Gupta et al., 2018). This increased vulnerability suggests that female CEOs might be more prone to entrenchment strategies. For example, Indra Nooyi, PepsiCo’s female CEO, said in 2018: "When you become a CEO and you’re a woman, you are looked at differently. … You are held to a different standard. There’s no question about it.” This statement highlights the pressures and challenges that female CEOs encounter, potentially making them more inclined to adopt measures that could secure their position as CEO.

It was Bebchuk et al. (2011) that combined these effects of CEO compensation and entrenchment by studying the effect of CEO pay slice (CPS) on Tobin’s Q from 1993 to 2004 in the United States. However, they did not include the effect of the CEO’s gender. They found that a higher CPS is negatively related to industry-adjusted Tobin’s Q, which measures firm value. This would imply that increasing CEO compensation relative to the other four executives would be seen by the market as value-destroying. Furthermore, Khan and Vieito (2013) studied if firm performance was different if the firm was managed by female CEOs instead of male CEOs, for United States (US) firms from 1992 to 2004. They concluded that the firm risk level is smaller compared to when the CEO is male and stated that the CEO being a female has a positive impact on firm performance. Additionally, Mohan and Ruggiero (2003) found that, on average, male CEOs got paid more after controlling for sales and experience. However, the effect of CPS does not only contain the effect of CEO compensation but also of CEO entrenchment by having a larger influence on the board, as Bebchuk et al. (2011) concluded that the negative correlation of CPS with Tobin’s Q is mainly the case for firms with high entrenchment. Nevertheless, CEO entrenchment has also a negative effect on firm performance (Bebchuk et al., 2009). In contrast to CEO compensation, the CEO being a male seems to have a negative effect on entrenchment (Dah et al., 2020). This would mean that the two factors of CPS, that is CEO compensation and CEO entrenchment, both have a different sign. Therefore, it is interesting to see if the CEO's gender has a bigger effect on CEO compensation or CEO entrenchment.

Although Bebchuk et al. (2011) studied the effect of CPS on Tobin's Q, they did not include the role of the CEO's gender. The literature lacks studies that examine the effect of the interaction between CEO compensation and CEO gender on firm performance. Since the CEO being a male has a positive effect on CEO compensation (Mohan & Ruggiero, 2003), and a negative effect on firm performance (Khan & Vieito, 2013), the effect of CEO compensation on firm performance may be different for male and female CEOs. By including an interaction term between CPS and CEO gender, this thesis will uncover if the effect of CPS on firm performance is different for female and male CEOs.

However, this thesis will not only use Tobin's Q as the dependent variable but also Return on Assets (ROA). To explain, ROA focuses more on operational performance, providing a more useful assessment of management efficiency, and Tobin's Q is sensitive to stock market fluctuations. Nevertheless, it is good to keep in mind that ROA could be influenced by different accounting practices. However, all financial variables are reported under U.S. GAAP standards. It is therefore to be expected that this will not significantly influence the results. Therefore, it is interesting to see if there are gender differences in the impact of CPS on Tobin's Q as well as ROA. The baseline model will have Tobin's Q or ROA as the dependent variable, CPS and CEO male as independent variables, and an interaction term between CPS and CEO male. The executives total compensation will be measured as the total of salary, bonus, other compensation, and employer's contributions to retirement/pension for the period. In concordance with Bebchuk et al. (2011), CPS is measured as the percentage of the total compensation for the firm's top five executives that is received by the CEO. And, following Bebchuk et al. (2011), Tobin's Q will be calculated by adding the market value of equity to the book value of assets subtracted by the sum of book value of common equity and deferred taxes, then dividing this by the book value of asset. Furthermore, I make industry adjustments, by subtracting the Industry Median Tobin's Q. I measure Industry at the four-digit Standard Industrial Classification (SIC) level. ROA will be calculated as the net income divided by the total assets. All variables used to calculate the variables Tobin's Q and ROA are obtained from Compustat. Additionally, CEO male is a binary variable and equals one if the CEO is a male and zero if the CEO is a female. The data for CPS and CEO male is from Execucomp. Since Execucomp data is only available from 1993 and to not include years affected by the COVID-19 pandemic because of the negative effects it had on the economy (Fernandes, 2020), my dataset will cover the period from 1993 to 2019.

However, there are several potential biases that should be kept in mind. Particularly, there could be an issue of reverse causality between firm performance and CPS. That is, firms with a better performance might have more resources to compensate their CEOs, resulting in higher CPS. Consequently, I also add the variables *lagged Industry Median CPS*, *lagged Number of VPs*, and *lagged CEO is Only Director* used by Bebchuk et al. (2011) as instruments, to solve the reverse causality issue, since these instruments do not directly influence firm performance but only through the firm's CPS. Nevertheless, there is still a risk that there is also reverse causality between CEO male and firm performance, since it is possible that firms with a particular firm performance are more likely to hire for example male CEOs than female CEOs. Furthermore, Huang and Kisgen (2013) used a Difference-in-Differences (DiD) estimation to ensure this bias is eliminated by studying the difference of effect between a change of male-to-female CEO or CFO compared to male-to-male CEO or CFO on firm performance, while also interacting this male-to-female CEO or CFO change with CPS. This thesis will copy this DiD framework, including studying the change of CEO and CFO, instead of only CEO, to obtain more CEO and CFO transition observations. This means that if either the CEO or CFO transitions from male-to-female, the variable that displays the post-transition will be equal to one. The CPS would be measured as the total compensation of the CEO and CFO divided by the top five highest-paid executives.

All independent variables will be standardized, and all regressions will contain year-fixed effects. Some regressions include firm-fixed effects and some industry-fixed effects. The industry will be defined at the four-digit SIC code level. The standard errors will be clustered by CEO. Furthermore, to prevent omitted variable bias, control variables will be added to the regressions.

Furthermore, Bebchuk et al. (2009) were the first to use the variable E-Index. Although Bebchuk et al. (2011) did control for the E-Index, though without studying the difference in effect between including E-Index as control and not including it, they did not include any salary or bonus as an additional control. The variable E-Index is short for entrenchment index and is based on the following six takeover defenses: poison pills, classified boards, golden parachutes, restrictions on shareholder-initiated bylaw amendments, supermajority voting requirements for mergers, and supermajority voting requirements for charter amendments. The E-Index variable would range from zero to six, with zero being a firm without having any takeover defenses, meaning the least entrenched, and six being a firm with having all six takeover defenses, meaning the most entrenched. As already mentioned, I analyze whether the effect of CPS on firm performance is mostly caused by CEO compensation or entrenchment. I measure the effect of CEO compensation by the variable Incentive Pay. If CPS is mostly influenced by CEO entrenchment, the coefficient of CPS will become insignificant and the coefficient of E-Index will be significant. If CPS is mostly influenced by CEO compensation, the coefficient of CPS will become insignificant and the coefficient of Incentive Pay will be significant, for the second regression respectively. Furthermore, Johnson et al. (2016) stated that takeover defenses are sticky within-firm. This is good to keep in mind while adding the firm-fixed effects, since these could make the E-Index variable insignificant by lack of variance within firm. Therefore, the research question this thesis aims to answer is: Are there gender differences in the impact of CPS on firm performance in the United States and can they be attributed to differences in CEO compensation or the level of CEO entrenchment?

To conclude, my thesis finds some evidence that there are gender differences in the impact of CEO pay slice on firm performance in the United States, but only when firm performance is measured with Industry-adjusted Tobin’s Q instead of ROA. This effect is mainly caused by CEO entrenchment, but also by CEO compensation. However, there are still other factors that contribute to the effect of CPS.

My thesis is set up the following way, I first discuss the theoretical framework. Afterwards, I explain how I make my dataset. Then, I describe the method of my research. Subsequently, I display and interpret my results. Lastly, I conclude my thesis.

CHAPTER 2 Theoretical Framework

In this chapter, I will outline the theoretical framework necessary to understand the influence of CEO pay slice on firm performance, particularly focusing on the interaction term between CEO pay slice and CEO gender. I will execute this by exploring the concepts, its measurements, review key performance metrics, analyzing existing research on the CEO pay slice-performance relationships. Additionally, I will take into account how CEO gender might moderate this relationship. These elements then leads to the research hypotheses.

2.1 CEO Pay Slice

Finkelstein (1992) was the first to address the challenge of measuring top management power, identifying four different types: structural power, ownership power, expert power, and prestige power. Within his framework of structural power, he introduced a metric similar to CEO Pay Slice, which he referred to simply as Compensation. He measured Compensation as the ratio of an executive's total cash compensation to that of the highest-paid executive within the same firm.

Adding to Finkelstein (1992), Bebchuk et al. (2009) were the first to create and name the variable CEO Pay Slice (CPS) while studying the distribution of top executive pay in publicly listed United States companies from 1993 to 2004. They observed a trend of an increase in the CEO's share of the highest-paid executive's total compensation in the preceding decade. Furthermore, they highlighted several advantages of CPS over other measures of power, as CPS not only reflects an increase in the CEO's slice but also accounts for the total compensation of the highest-paid executives, thereby controlling for the highest-paid executive's average compensation and for firm-specific factors that cause this. They argued that CPS captures multiple managerial characteristics, including less observable traits, and suggested that a higher CPS could indicate a "star CEO" and a "dominant player", while also incentivizing becoming a CEO by creating a larger "prize". However, it is good to be aware of the fact that in the academic literature, CPS is both used to measure CEO power (Chintrakarn et al., 2014; Lee et al., 2014; Sheikh (2019) as CEO compensation.

Furthermore, I adapt the same method of measuring CPS as Bebchuk et al. (2009) and Bebchuk et al. (2011). Specifically, calculating CPS as the ratio of the CEO's total compensation to the top five executive's total compensation summed up, including the CEO, within the firm. This compensation is measured as the total of base salary, bonuses, additional annual compensation, the total value of restricted stock awarded that year, the Black and Scholes value of stock options granted in that year, long-term incentive payouts, and all other forms of total compensation. I follow those two studies and use the same Execucomp database to construct the CPS variable and other executive-related metrics.

2.2 Firm Performance

In their review article on firm performance measurements, Al-Matari et al. (2014) provided a comprehensive summary of the different metrics used in scientific research. They categorized these metrics into accounting-based, focusing on short-term performance, and market-based measurements, focusing on long-term performance. They identified Return on Assets (ROA) and Tobin's Q as the most commonly used by researchers as accounting-based and market-based measurements, respectively.

However, both Tobin's Q and ROA have faced criticism in the academic literature. Luo and Donthu (2006) pointed out that ROA, calculated as net income before extraordinary items divided by assets, is a backward looking performance measurement instead of forward looking. Kapopoulos and Lazaretou (2007) highlighted that Tobin's Q, measured as the firm's market value divided by its intangible capital's replacement costs, does not take into account intangible capital investments. Furthermore, they noted that in the academic literature, researchers often used the book value of assets, instead of intangible capital's replacement costs. For example, Kaplan and Zingales (1997) calculated Tobin's Q by adding the market value of equity to the book value of assets subtracted by the sum of book value of common equity and deferred taxes, and dividing this sum by the book value of asset. Gompers et al. (2003) adopted this method of measuring Tobin's Q, but adjusted Tobin's Q for industry effects, by subtracting the median Tobin's Q of the specific industry. Bebchuk et al. (2011) then refined this approach by making industry-adjustments at the four-digit standard industrial classification (SIC) level. They calculated ROA as the ratio of operation income to book value of assets and applied the same industry-adjustment approach for ROA. Despite criticisms, I use ROA and Tobin's Q following Bebchuk et al. (2011) as ROA and Tobin's Q are widely accepted methods for measuring firm performance.

2.3 The relationship between CEO Pay Slice and Firm Performance

The seminal research article that studied the relationship between CPS and firm performance is the paper by Bebchuk et al. (2011). They were the first to find the negative relationship between CPS and firm performance, as measured by industry-adjusted Tobin's Q and ROA. Consequently, they conclude that their results are consistent with higher CPS being related to agency problems, stating also that the CPS could represent both the CEO's relative importance and the degree to which the CEO is able to maximize economic welfare. These results would imply that increasing the CEO's compensation relative to the other four executives could be perceived by the market as value-destroying, emphasizing the combined impact of CEO compensation and CEO entrenchment, as previously mentioned.

Furthermore, Tarkovska (2017) studied the relationship between CPS and firm performance in the United Kingdom from 1997 to 2010. Similar to Bebchuk et al. (2011), she measures CPS as the ratio of the CEO's compensation to the aggregate compensation of the maximum top five executives, and firm performance as Tobin's Q. She points out that British firms are generally smaller than their American counterparts. However, her results are in line with those of Bebchuk et al. (2011), indicating a negative relationship between CPS and firm performance. Overall, the academic literature on the relationship between CPS and firm performance is relatively limited. However, another academic article that shows the negative relationship between CPS and firm performance is Kong (2017). This adds to the existing body of research, supporting the notion that a higher CEO pay slice adversely affects firm performance.

2.4 Interaction term between CPS and CEO Gender on Firm Performance

The academic literature lacks a study that examines the interaction term between CPS and CEO gender on firm performance. This gap highlights the need for research on whether gender differences affect the impact of CPS. Several studies suggest the importance of this research. For example, Khan and Ruggiero (2013) analyzed US firms from 1992 to 2004 and concluded that firms led by female CEOs had better performance and lower risk levels compared to those firms with male CEOs. Additionally, Flabbi et al. (2016) analyzed the effects of female executives on gender-specific wage distributions and firm performance. They concluded that female leadership has a positive effect on firm performance when the firm consists of more female workers. These two scientific articles suggest that gender may play a significant role in how leadership impacts firm success. Moreover, Bebchuk et al. (2011) showed in their Table 2 the positive and significant effect of Relative Equity Compensation, a form of an incentive compensation variable, but then relative to the top five executives, on CPS, thereby highlighting that CEO compensation is one of the factors that influence CPS. Furthermore, Mohan and Ruggiero (2003) studied US firms in 2000 and discovered that male CEOs generally received higher compensation than female CEOs, even after controlling for factors such as sales and experience. This result points to potential gender differences in executive compensation, which could influence firm dynamics. However, CPS reflects both CEO compensation and entrenchment, as a higher CPS often indicates increased CEO influence over the board. Bebchuk et al. (2011) found that the negative correlation between CPS and Tobin's Q is primarily seen in firms with significant entrenchment. Adding to this, Dah et al. (2020) found that, for US firms, male CEOs tend to be less entrenched, possibly affecting firm performance differently compared to female CEOs.

Based on these academic articles, I aim to study the relationship between CPS and firm performance through the lens of CEO gender. This leads me to my first hypothesis:

Hypothesis 1: There are gender differences in the impact of CEO pay slice on firm performance in the United States.

Furthermore, I study whether this effect is mainly caused by CEO entrenchment. This leads me to my second hypothesis:

Hypothesis 2: Gender differences in the impact of CEO pay slice on firm performance can be attributed to differences in the level of CEO entrenchment.

Furthermore, I study whether this effect is mainly caused by CEO compensation. This leads me to my third hypothesis:

Hypothesis 3: Gender differences in the impact of CEO pay slice on firm performance can be attributed to differences in CEO compensation.

CHAPTER 3 Data

3.1 Sample description

For this thesis, I use data consisting of available data of firms listed from the S&P 1500. I obtain the data for the CEO specific variables, for example *CEO Male* and *CPS*, from Execucomp and I obtain all other variables from Compustat. Since Execucomp data is only available from 1993 and to not include years affected by the COVID-19 pandemic because of the negative effects it had on the economy (Fernandes, 2020), my dataset covers the period from 1993 to 2019. I also require that the CEO was the CEO the year before and that he or she is CEO for the full year. However, for the Difference-in-Differences (DiD) regressions, I do not require that the CEO was the CEO the year before. In the case that my dataset lists multiple CEOs for the same firm and same year, I keep only the CEO that earns the most, measured as the total of salary, bonus, other compensation, and employer's contribution to retirement/pension for the period, as a CEO. I set the variable CEO for the other listed CEOs for that same firm and the same year to zero, meaning not a CEO. Ultimately, there are 129,562 firm-year combinations for 4,063 unique firms.

3.2 Variables

In principle, I measure all variables in the same manner as Bebchuk et al. (2011), except for the variable *CEO Male*, to be able to test whether the results significantly change when adding the interaction term between *CPS* and *CEO Male* to the relationship between CPS and firm performance. The first of two important modifications is the period. While Bebchuk et al. (2011) used data for the period from 1993 to 2004, I extend the data to 1993 to 2019 to obtain more observations. This extension is particularly important for my thesis, as I also include the variable *CEO Male*, where male CEOs represent around 97% of my dataset. By including more years, I increase the statistical variation and robustness. Additionally, I standardize all dependent variables to make the comparisons between the economic significance of the size of the coefficient easier to interpret.

The executives' total compensation is measured as the total of salary, bonus, other compensation, and employer's contribution to retirement/pension for the period. The variable *CPS* is then measured as the percentage of the total compensation for the firm's top five executives that is received by the CEO. I obtain the data for the variables I use to calculate the variable *CPS* from Execucomp. In the database of this thesis, the variable *CPS* has 56,523 observations. To make this variable more intuitive, I transform its range from [0,1] to [0,100], where a value of zero means that the CEO earns nothing compared to the other four top executives and a value of hundreds means that the CEO earns all the money and the other top four executives earn nothing. However, I drop the small number of observations for which the CEO did not receive any compensation at all, which is around 0.06% of the number of observations. Therefore, a CPS of zero should not be possible. In the case of the Difference-in-Differences analysis, I measure the CPS as the total compensation of the CEO and CFO combined and that amount divided by the total compensation for the firm's top five executives.

Furthermore, I calculate the variable *Tobin's Q* by adding the market value of equity to the book value of assets subtracted by the sum of the book value of common equity and deferred taxes, and then dividing this by the book value of assets. Furthermore, I make industry adjustments, by subtracting the Industry Median Tobin's Q. I measure Industry at the four-digit Standard Industrial Classification (SIC) level. This variable is winsorized at the 1% level and measured in percentages. I obtain the data for the variables I use to calculate *Tobin's Q* from Compustat. In the database of this thesis, the variable *Tobin's Q* has 47,749 observations.

However, this thesis not only uses *Tobin's Q* as dependent variable, but also Return on Assets (ROA). To explain, *ROA* focuses more on operational performance, providing a more useful assessment of management efficiency, and *Tobin's Q* is sensitive to stock market fluctuations. Nevertheless, it is good to keep in mind that *ROA* could be influenced by different accounting practices. However, all financial variables are reported under U.S. GAAP standards. Hence, I expect that this will not significantly influence the results. Moreover, I calculate the variable *ROA* as the net income divided by the total assets. This variable is winsorized at the 1% level and measured in percentages. All variables used to calculate the variable *ROA* are obtained from Compustat. In the database of this thesis, the variable *ROA* has 52,187 observations.

Additionally, to obtain the variable that equals one if an executive is a CEO and zero otherwise, I use the variable Annual CEO Flag from Execucomp. If this variable equals one, my CEO variable equals one too. Furthermore, to make it more precise, I also use the variable that displays the annual title and I set my CEO variable equal to one if the variable that shows the annual title contains one of these words "ceo", "chief executive officer", "_ceo", or "_chief executive officer". I convert the annual title to lowercase to standardize the comparisons. I obtain the variable for the annual title from Execucomp. If a CEO is mentioned twice for the same firm and year, I keep only one occurrence. I also require that the CEO was the CEO the year before and that he or she is CEO for the full year. However, for the Difference-in-Differences regressions, I do not require that the CEO was the CEO the year before. In the case of multiple CEOs for the same firm and same year, I change the lowest earner of them to not a CEO. Furthermore, only the five executives with the top five highest ranking total compensation should be kept. Then, I estimate the CPS variable by dividing the CEO's total compensation by the total compensation of the top five highest-paid executives for each firm-year. All observations in which the executive is not the CEO should be dropped so that there is only one observation per firm-year left, else the variable CPS would not actually be the average CPS but only show the total compensation of one top five executive with respect to the top five executive's total compensation. In the database of this thesis, the variable *CEO Male* has 56,719 observations.

For the instrumental variable analysis, I use *lagged Industry Median CPS*, *lagged Number of VPs*, and *lagged CEO is Only Director* as instruments. The *lagged Industry Median CPS* is measured as the *CPS* for each industry, measured with the SIC Code, and for each year, lagged by one year. I obtain the variable *lagged Number of VPs* from the variable that displays the annual title and I set the variable

Number of VPs equal to one if the variable that shows the annual title one of these words “vp”, “v-p”, “vice-president”, or “vice president”, and then I aggregate these for each firm-year combination, lagged by one year. I obtain the variable *lagged CEO is Only Director* from the variable that displays the annual title and I set the variable *CEO is Only Director* equal to one if the variable that shows the annual title contains one of these words “director” or “dir”. I measure this variable as a dummy variable and is equal to one if the CEO is also a director and if the CEO is the only director, lagged by one year. I convert the annual title to lowercase to standardize the comparisons to measure both variables. All variables used to measure the instruments are obtained from Execucomp.

3.3 Control variables

Other variables, besides CPS, Gender Ratio, and their interaction term, are likely to influence ROA or Tobin's Q and may correlate with these variables. Ignoring these relevant factors could introduce omitted variable bias (OVB). Therefore, to address potential endogeneity issues, I include additional variables that are correlated with CPS, Gender Ratio, or their interaction term and impact the dependent variables. I use the same control variables as Bebchuk et al. (2011). These firm control variables are the following:

Log Book Value. I measure this variable as the log of the book value of assets. The book value of assets is the variable *Total Assets* from Compustat and is measured in millions of Dollars.

Insider Ownership. I measure this variable as the shares of the executives divided by the total shares outstanding. The number of shares owned by the executives is measured as the shares the executives own, excluding stock options, measured in thousand units and is obtained from Execucomp. I measure the total shares outstanding as the common shares outstanding in million units and is obtained from Compustat. As I measure the total shares outstanding in million units and the shares owned by the executives are measured in thousand units, and I divide the variable *Insider Ownership* by thousand. Furthermore, as the total shares outstanding is obtained from Compustat and the shared owned by the executives are obtained from Execucomp, it could cause some discrepancies. Therefore, in the case that some firms have more total shares owned by the executives than total shares outstanding, I set even the total shares owned by the executives to the total shares.

Insider $\boldsymbol{Ownership^2}$. I measure this variable as the quadrat of the variable *Insider Ownership.*

ROA. I use this variable only as a control variable in the regressions with Tobin’s Q as dependent variable, as Bebchuk et al. (2011) did as well. I calculate this variable simply as the operating income after depreciation divided by total assets, both obtained from Compustat.

Capex/Assets. I calculate this variable as the capital expenditures divided by the total assets, both obtained from Compustat.

Leverage. I calculate this variable as the total long term debt divided by the total assets, both obtained from Compustat.

R&D. I calculate this variable as the Research and Development expense divided by the gross sales, both obtained from Compustat.

R&D Missing. I measure this as a dummy variable and is equal to one if the observation has a missing value for R&D, and is equal to zero otherwise.

Company Age. I measure this variable as the current fiscal year minus the IPO year. I obtain the IPO year from Compustat. I drop the observation in the case of a negative company age.

E-Index. The variable *E-Index* is short for entrenchment index and is based on the following six takeover defenses: poison pills, classified boards, golden parachutes, restrictions on shareholder-initiated bylaw amendments, supermajority voting requirements for mergers, and supermajority voting requirements for charter amendments. *The E-Index* variable is a categorical variable that ranges from zero to six, with zero being a firm without having any takeover defenses, meaning the least entrenched, and six being a firm with having all six takeover defenses, meaning the most entrenched. Until 2005, I use the database made by Bebchuk, which is based on the database from Investor Responsibility Research Center (IRRC), which already contains the *E-Index* made of these six takeover defenses. From 2006 onwards, I create the *E-Index* with the six takeover defense variables, taken from Institutional Shareholder Services (ISS) from WRDS. Unfortunately, the IRRC database, and therefore also the one made by Bebchuk et al. (2009), is only updated every two years, with an exception for 1996 and 1997 for which both years data for the *E-index* variable seem to be missing. The years missing are therefore 1994, 1996, 1997, 1999, 2001, 2003, and 2005. Therefore, I fill the *E-Index* data for the year before in, e.g. the *E-Index* data used for 1994 are from 1993, and for 1996 and 1997 are from 1995.

Furthermore, the CEO control variables are then the following:

Founder. I measure this variable as a dummy variable and is equal to one if the year the person became a CEO is earlier or the same year as the IPO date, and is equal to zero otherwise. The variable for the year the CEO became a CEO is obtained from Execucomp.

Abnormal Total Compensation. I measure this variable by first taking the logarithm of the total compensation to the top five executives, then regressing this logged value on the log of book value with industry- and year-fixed effects, clustering standard errors by CEO. The residuals from this regression are then saved as the variable Abnormal Total Compensation. Lastly, I calculate the variable for total compensation as the total of salary, bonus, other compensation, and employer's contribution to retirement/pension for the period, aggregated for the top five executives, divided by a thousand, as the total compensation is measured in thousand euros and the book value of assets is measured in million euros. The variable for total compensation is obtained from Compustat and the book value of assets is the variable *Total Assets* from Compustat.

CEO Ownership ≥ 20. I measure this variable as a dummy variable being equal to one if the shares owned by the CEO is larger twenty percent of the total shares outstanding, and is equal to zero otherwise. The number of shares owned by the CEO is measured as the shares the executives own, excluding stock options, measured in thousand units and is obtained from Execucomp. I measure the total shares outstanding as the common shares outstanding in million units and is obtained from Compustat. As I measure the total shares outstanding in million units and the shares owned by the CEO are measured in thousand units, I divide the variable *Insider Ownership* by thousand.

CEO Tenure. I measure ***Tenure*** as a categorical variable, with *Tenure 1*, *Tenure 2, Tenure 3 & 4*, and *Tenure 5 & 6* included in the regressions with a *Tenure* of seven or more years being the hold-out group. I measure Tenure, that shows the CEO tenure, as the fiscal year minus the year the CEO became CEO. I obtain the variable for the year the CEO became CEO from Execucomp.

Diversified. I obtain the data for the variable Diversified from the Compustat Segment. I measure the variable Diversified as a dummy variable that is equal to one if the variable is in more than one segment, and is equal to zero otherwise. This variable often has missing observations, when within the particular firm there are then sometimes non-missing values for the other years. As it is only a control variable that equals one when the firm is active in more than one segment, I think it is reasonable to assume that via carryforward and carrybackward filling, these can be filled in from the data of the other years. If the values are then still missing, I set the value equal to zero, to obtain enough observations.

CEO Outsider. I measure this variable as a dummy variable that is equal to one if the year the CEO became CEO minus the year the CEO joined the firm is smaller than one, and is equal to zero otherwise. Both the year the data for the year the CEO became CEO and the year the CEO joined the firm are obtained from Execucomp.

CEO Is Chair. I measure this variable as a dummy variable that is equal to one if the CEO is chair and is zero otherwise. I obtain this variable from the variable that displays the annual title and I set the variable *CEO Is Chair* equal to one if the variable that shows the annual title contains one of these words "chairman", "chairperson", "chair", or "chmn". I convert the annual title to lowercase to standardize the comparisons. I obtain the variable for annual title from Execucomp.

***Incentive Pay*.** I measure this variable as the total of salary, bonus, other compensation, and employer's contribution to retirement/pension for the period, minus the base salary, and this divided by total compensation. I obtain all of these variables from Execucomp. In the model specification in the Method chapter, I explain that I include tables to separately test the effects of Incentive Pay and E-Index, aiming to determine if the observed gender differences in the impact of CEO pay slice on firm performance can be attributed to differences in CEO compensation and entrenchment levels. Consequently, as I already incorporate the variable Incentive Pay, I exclude the Relative Equity Compensation variable used by Bebchuk et al. (2011), which measures the ratio of the CEO's equity compensation to the average received by the other four top executives. As this measure is relative to the other top executives, I believe that this overlaps too much with the entrenchment or power of the CEO, which is already captured by CPS. For this reason, I study the effect of Incentive Pay, which is not a relative measure to the other top executives, rather than Relative Equity Compensation.

For the Difference-in-Differences analyses, also used these two variables:

Female Transition. I measure this variable as a dummy variable with one being the treatment group, that is if the CEO or CFO transitions from male-to-female, and with zero being the control group, that is if both the CEO and CFO are a male in the year before and this year. I obtain the variables the role and gender of the executives from Execucomp.

Post-transition. I measure this variable as a dummy variable that is equal to one if the CEO or CFO transitioned form male-to-female the year before and zero if both the CEO and CFO are a male in the year before and this year.

With respect to the Difference-in-Differences analysis, it is also good to mention that for the CEO specific control variables as for example *CEO Tenure*, I only measure those variables as for example the tenure for the CEO and not for the CFO.

3.4 Descriptive Statistics

In Table 1, I show the summary statistics of the variables I use to estimate the regressions, before moderating the variables. For example, for both *Industry-adjusted Tobin's Q* and *Industry-adjusted ROA*, I have not winsorized or made it to percentages yet. It is noteworthy to highlight the relatively large negative outliers of *Industry-adjusted Tobin's Q* and *Industry-adjusted ROA*. This is not surprising, as both are measured as *Tobin's Q* and *ROA*, minus their respective median for each SIC Code and fiscal year. Some of these observations are below the median and hence, negative. Furthermore, it is also interesting to see that 96.7% of the CEOs in my dataset are male, as can be observed with the variable *CEO Male*. Additionally, the *CPS* of 40.0% is quite comparable to the *CPS* of 35.7% found by Bebchuk et al. (2011). The difference could be explained by the different periods and that I drop the observations for which the CPS is zero, which Bebchuk et al. (2011) does not do. It is also interesting to observe that of the combination of male-to-male and male-to-female transitions, 12.0% of this consists of the male-to-female transition, which is quite low, but relatively high compared to the fact that 96.7% of the CEOs in my dataset is male. This is caused by the way Female Transition is measured, that is that the variable is equal to one if either the CEO or CFO transitions from male-to-female, or both.

Table 1: Summary statistics

	Obs.	Mean.	Std. Dev.	Median	Min.	Max.
Industry-adjusted Tobin's Q	47749	.26916	1.96972	0	-61.29157	144.6044
Industry-adjusted ROA	52187	-.00747	.25494	0	-31.84838	1.52240
CEO Pay Slice	56523	39.97154	12.40688	39.50074	6.74e-07	100
CEO Male	56719	.96733	.17777	1	0	1
E-Index	29400	2.88905	1.25172	3	0	6
Incentive Pay	56523	72.52202	22.60277	80.03844	0	100
Log Book Value	56685	7.75192	1.83024	7.65736	-6.90776	15.28002

Insider Ownership	51879	.02160	.05978	.00308	-.012302	1
Insider Ownership^2	51879	.00404	.02464	9.46e-06	0	1
ROA	52187	.07381	.26450	.07913	-32	1.27106
Capex/Assets	51387	.04993	.05601	.03448	-.18577	1.20517
Leverage	56513	.21840	.21909	.18498	0	6.90069
R&D	129529	.09960	6.35205	0	-.19845	1239.286
R&D Missing	129529	.77302	.41888	1	0	1
Company Age	26789	13.45616	9.05835	12	0	76
Founder	26166	.08007	.27140	0	0	1
Abnormal Total Compensation	56573	2.21e-11	.59574	0	-5.96548	5.34506
Ownership ≥ 20	50336	.02759	.16381	5	0	1
CEO Tenure	54856	6.90993	7.59169	0	-26	61
Diversified	129529	.40789	.49145	0	0	1
CEO Outsider	19981	.33157	.47079	1	0	1
CEO Is Chair	55524	.53139	.49902	1	0	1
Industry Median CPS	56132	39.46733	2.99877	39.55859	1.16141	63.5555
Number of VPs	56210	2.51868	1.32503	3	0	5
CEO is Only Director	56210	.22165	.41536	0	0	1
Female Transition	117347	.12037	.32539	0	0	1
Post-transition	129530	.03508	.18398	0	0	1

CHAPTER 4 Method

This chapter describes the methodologies I use to examine the impact of the independent variable *CPS* and the interaction between *CPS* and *CEO Male* on the dependent variables *Tobin's Q* and *ROA*. First, I detail the specifications of the model. Following that, I present the core assumptions of the models and relevant statistics for their evaluation.

4.1 Model specification

I estimate for both dependent variables, that is *Tobin's Q* and *ROA*, multiple models using the Ordinary Least Squares (OLS), Instrumental Variable (IV), a Difference-in-differences (DiD) approach for panel data via the statistical software package Stata. I base my main approach on the work of Bebchuk et al. (2011), to study whether there are gender differences in the impact of CPS on firm performance in the United States from 1993 to 2019, by comparing the changes in sign and significance of the coefficients. I estimate all regressions with at least year-fixed effects. The only large methodological difference I make is that I cluster for the CEO instead of clustering for the firm, as the CPS is more a characteristic of the CEO than the firm.

4.1.1 Comparing results with Bebchuk et al. (2011)

I start by estimating and comparing Table 3 and 6, for *Tobin's Q* and *ROA*, respectively, of Bebchuk et al. (2011). For Table 3, their model 1 consists of only *lagged* CPS, firm and CEO control variables, and is estimated with the OLS and IV approach, with some regressions including firm-fixed effects. Furthermore, the instruments that they for the IV analysis for *lagged CPS* are *lagged Industry Median CPS*, *lagged Number of VPs*, and *lagged CEO is Only Director*. Consequently, I estimate most of my tables in a similar way as to their Table 3. Therefore, the formula that belongs to their Table 3's general regression is the following:

$$Y_{i,t} = \beta_0 + \beta_1 CPS_{i,t} + \delta X_{i,t} + \mu_i + \vartheta_t + v_{i,t} \tag{1}$$

Here, $Y_{i,t}$ is the dependent variable *Tobin's Q* for firm i in year t. Furthermore, $CPS_{i,t}$ is the CPS for firm i in year t. Additionally, $CEO\ Male_{i,t}$ is a binary variable, measuring whether a CEO is male or not for firm i in year t. ϑ_t represents year-fixed effects and μ_i represents firm-fixed effects for this formula. v_{it} is the error term for firm i for year t. δ represents the vector for the control variables X.

The only difference between Table 6 of Bebchuk et al. (2011), the table with *ROA* as the dependent variable, and their Table 3, the table with *Tobin's Q* as the dependent variable, is that they left out a model that is similar to model 2 of Table 3, which includes all control variables but without firm-fixed effects.

4.1.2 Interaction term between CPS and CEO Male

For my analysis, I add three separate models that only include *lagged CPS* as the independent variable, that only includes *lagged CPS* and *CEO Male* as independent variables, and that only includes *lagged CPS, CEO Male*, and their interaction term as independent variables to also study what the relationship of those variables look like without adding any control variables and to study what the effect is of adding the firm control variables to the models, for the first three models respectively. Therefore, the main formula of my thesis is the following:

$$Y_{i,t} = \beta_0 + \beta_1 CPS_{i,t} + \beta_2 CEO\ Male_{i,t} + \beta_3 (CEO\ Male \times CPS)_{i,t} + \delta X_{i,t} + \mu_i + \vartheta_t + v_{i,t} \quad (2)$$

Here, $Y_{i,t}$ is the dependent variable, being either *ROA* or *Tobin's Q*, for firm i in year t. Furthermore, $CPS_{i,t}$ is the CPS for firm i in year t. Additionally, $CEO\ Male_{i,t}$ is a binary variable, measuring whether a CEO is male or not for firm i in year t. ϑ_t represents year-fixed effects and μ_i represents firm-fixed effects or industry-fixed effects. That is, all regressions have year-fixed effects, but not all have firm-fixed effects or industry-fixed effects. Some regressions have year-fixed effects combined with firm-fixed effects and some combined with industry-fixed effects. v_{it} is the error term for firm i for year t. δ represents the vector for the control variables X.

4.1.3 Difference-in-Differences analysis

Furthermore, there could be an issue of reverse causality between firm performance and CEO gender, as it is possible that firms with a particular firm performance are more likely to hire for example male CEOs than female CEOs. Huang and Kisgen (2013) used a Difference-in-Differences (DiD) estimation to ensure this bias is eliminated by studying the difference of effect between a change of male-to-female CEO or CFO compared to a change of male-to-male CEO or CFO on the dependent variable, while also interacting this male-to-female CEO or CFO change with the independent variable of interest. This thesis copies this DiD framework, including studying the change of CEO and CFO, instead of only CEO, to obtain more CEO and CFO transition observations. This means that if either the CEO or CFO transitions from male-to-female, the variable that displays the post-transition will be equal to one. Consequently, I calculate the variable *CPS* as the total compensation of the CEO and CFO divided by the top five highest-paid executives. For the DiD framework, the formula is the following:

$$Y_{i,t} = \beta_0 + \beta_1 CPS_{i,t} + \beta_2 Female\ Transition_{i,t} + \beta_3 (Female\ Transition \times CPS)_{i,t} + \beta_4 Post_{i,t} + \beta_5 (Female\ Transition \times CPS \times Post - transition)_{i,t} + \delta X_{i,t} + \mu_i + \vartheta_t + v_{i,t} \quad (3)$$

With $Female\ Transition_{i,t}$ being an indicator variable that displays whether firm i for year t is a firm that used to have a male CEO (CFO) but transitioned to a female CEO (CFO). $Post - transition_{i,t}$ is an indicator variable that shows if year t+1 is after the CEO (CFO) transition.

4.1.4 CEO Compensation vs CEO Entrenchment

In addition, to test whether the effect of *CPS* is mostly driven by CEO entrenchment or CEO compensation, I estimate four regressions. In model 1, I include *lagged CPS*, *CEO Male*, the interaction term between them, and all firm and CEO control variables, except for *E-index*, which I included as a firm control variable in the other regressions as Bebchuk et al. (2011) did as well, and for *Incentive Pay*. In model 2, I add the *E-Index*. In model 3, I do not add *E-Index* but I do add *Incentive Pay*. In model 4, I add *E-Index* as well as *Incentive Pay*. For both the regressions with *Tobin's Q* and *ROA* as dependent variables, I estimate these four regressions twice, meaning that I add industry-fixed effects to the first table and firm-fixed effects to the second table of the two. Furthermore, the table with the year- and firm-fixed effects is copied, but then combining CEO and CFO, in a similar way as for the DiD framework. Therefore, the formula that belongs to this subparagraph is the following:

$$Y_{i,t} = \beta_0 + \beta_1 CPS_{i,t} + \beta_2 CEO\ Male_{i,t} + \beta_3 (CEO\ Male \times CPS)_{i,t} + \beta_4 Incentive\ Pay_{i,t} + \beta_5 E\text{–}Index_{i,t} + \delta X_{i,t} + \mu_i + \vartheta_t + v_{i,t} \tag{4}$$

Here, $Incentive\ Pay_{i,t}$ is the variable *Incentive Pay* for firm i in year t and $E\text{–}Index_{i,t}$ is the variable *E-Index* for firm i in year t. It is good to mention that I also add the variable *E-Index* as one of the firm control variables in the other regressions, as Bebchuk et al. (2011) did as well.

4.1.5 Instrumental Variable analysis

Additionally, there could be an issue of reverse causality between firm performance and CPS. That is, firms with a better firm performance might have more resources to compensate their CEOs, resulting in a higher CPS. Consequently, I add the variables *lagged CPS* with *lagged Industry Median CPS, lagged Number of VPs*, and *lagged CEO is Only Director* as instruments to the regressions to solve the reverse causality issue, as *lagged Industry Median CPS*, *lagged Number of VPs*, and *lagged CEO is Only Director,* likely not directly influence firm performance but only through the firm's *CPS*. Therefore, I expect that the relevance and exclusion restriction holds. The interaction term between Lag CPS and CEO Male is instrumented too, by using as instruments the variable CEO Male multiplied with *lagged Industry Median CPS*, *lagged Number of VPs*, and *lagged CEO is Only Director*. However, I cluster the standard errors by firm instead of by CEO, because of Stata settings. Additionally, I use year- and firm-fixed effects. The formula of the two first stages, for both *Lag CPS* and the interaction term, of the Instrumental Variable analysis looks like this:

$$CPS_{i,t} = \beta_0 + \beta_1 Industry\ Median\ CPS_{i,t} + \delta X_{i,t} + \mu_i + \vartheta_t + v_{i,t} \tag{5}$$

With the instruments being the *lagged Industry Median CPS*, *lagged Number of VPs*, and *lagged CEO is Only Director*. All other variables remain equal. The formula of the second stage looks like this, with all instruments included in the regressions:

$$Y_{i,t} = \beta_0 + \beta_1 CPS'_{i,t} + \beta_2 CEO\ Male_{i,t} + \beta_3 (CEO\ Male \times CPS')_{i,t} + \delta X_{i,t} + \mu_i + \vartheta_t + v_{i,t} \quad (6)$$

$CPS'_{i,t}$ shows the predicted values from the first stage of the Instrumental Variable approaches.

4.2 Assumptions

An important assumption is that the sampling means should follow a Normal distribution, with $u_i \sim N(0, \sigma^2)$. According to the Central Limit Theorem, I assume that the errors are normally distributed given a sufficiently large number of observations.

Another assumption worth considering is homoskedasticity of the errors with $Var(u_i) = \sigma^2 < \infty$. When this assumption is not met, standard errors become larger, invalidating the coefficient distributions and standard errors for hypothesis tests. It is important to note that all regressions already have cluster–robust standard errors. Therefore, this assumption holds.

One of the most important assumptions is the exogeneity assumption, with $Cov(x_{i,} u_i) = 0$. Omitted variable bias (OVB) can violate this if key factors are left out. Therefore, I add control variables and test if the results are also robust with an IV and DiD approach. However, OVB may still be present. Unfortunately, this cannot be directly tested, and if violated, estimates are biased, making conclusions invalid.

Additionally, the relevance condition and exclusion restriction holds for the IV-estimates. The relevance condition can be tested by looking at the results of the first stage's F-test. In the case that the the p-value is lower than 0.05, I assume that the relevance condition holds. However, the exclusion restriction cannot be tested. Nonetheless, as I already mentioned, I expect that the instruments *lagged Number of VPs*, and *lagged CEO is Only Director,* not directly influence firm performance but only through the firm's *CPS*. Hence, I assume that the exclusion restriction holds. However, I report the Hansen J statistic. This tests the null hypothesis that states that the instruments are valid.

CHAPTER 5 Results

In this chapter, I interpret the results of the analyses described in the Method chapter. Before I start interpreting the tables, I want to highlight again that my period is different than that of Bebchuk et al. (2011, as I use the period of 1993 to 2019 and they use the period of 1993 to 2004. Additionally, I standardize all my independent variables, but Bebchuk et al. (2011) did not. Therefore, I can compare signs and significances with their Table 3 and 6, but I cannot compare the economic significance, that is the size of the coefficients, with them. However, it does allow me to compare the size of the coefficients of *Lag CPS*, *Lag CEO Male*, and their interaction term, if the coefficient signs go into the opposite direction.

5.1 Tobin's Q

5.1.1 Comparing results with Bebchuk et al. (2011)

Firstly, I begin by comparing the results of Table 3 of Bebchuk et al. (2011) with my copy of their table, which is Table 1 in the Appendix. For Table 3, their model 1 consists of only *lagged CPS* and firm control variables, and is estimated with the OLS approach. Model 2 includes CEO control variables. Model 3 also includes firm-fixed effects. Model 4 also incorporates instrumental variables for *lagged CPS* with *lagged Industry Median CPS*, *lagged Number of VPs*, and *lagged CEO is Only Director* as instruments. Similar to them, the coefficients for *Lag CPS* in my Table 1 in the Appendix are negative and significant at the 1% or 5% significance level. Furthermore, I do not observe any significant differences between the signs or statistical significances of the coefficients. Moreover, the Hansen J statistic is 0.431 with a p-value of 0.8060. Therefore, the null hypothesis that the instruments are valid is not rejected. Furthermore, the instrument *Lag Industry Median CPS* is significant at the 1% level in the first stage. Still, the instruments *Lag Number of VPs* and *Lag CEO is Only Director* are not statistically significant. In contrast, in the first stage of Bebchuk et al. (2011) for their model 4 IV regression, the instruments *Lag Industry Median CPS* and *Lag Number of VPs* were both significantly related to Lag CPS at the 1% significance level.

5.1.2 Interaction term between CPS and CEO Male

In this subparagraph, I discuss the results of my two main tables, being my Tables 2 and 3. In both Tables 2 and 3, I include the variable *Lag CEO Male* and the interaction term between *Lag CPS* and *Lag CEO Male*. By including those two variables, I can analyze what the effect is of the interaction term and the variable *Lag CEO Male* on *Tobin's Q*, and if including those two variables changes the effect of *Lag CPS* on *Tobin's Q*. For both Tables 2 and 3, I add three separate models that only include *Lag CPS* as the independent variable, that only includes *Lag CPS* and *Lag CEO Male* as independent variables, and that only includes *Lag CPS*, *Lag CEO Male*, and their interaction term as independent variables to also study what the relationship of those variables look like without adding any control variables and to study what the effect is of adding the firm control variables to the models, for the first three models respectively. Furthermore, I add the firm control variables in model 4 and the CEO control variables in model 5. Both Tables 2 and 3 have year-fixed effects. However, Table 2 also includes industry-fixed effects and Table 3 includes firm-fixed effects.

For both Tables 2 and 3, the main independent variables of interest *Lag CPS*, *Lag CEO Male*, and the interaction term between *Lag CPS* and *Lag CEO Male* are either not statistically significant or significant and negative. The negative sign for *Lag CPS* suggests potential agency problems. The negative sign for *Lag CEO Male* implies that firms with male CEOs have lower performance. The negative sign for the interaction term indicates that the effect of a high CPS is larger when the CEO is male, suggesting that male CEOs could be more prone to CEO overcompensation, entrenchment, or both. However, as the *Lag CPS* is still negative, even when controlling for *Lag CEO Male* and the interaction term between Lag CPS and Lag CEO Male, this suggests that a higher CPS also has a negative effect on performance for female CEOs, although it was visible before that the negative effect for the female CEOs is smaller than for the male CEOs.

While comparing the models in Table 2 with each other, there are a few things that immediately catch our attention. That is, the adjusted R-squared for the first three models of Table 2 is extremely low. It is not strange that these are very low for the first three models, since those models do not include as many independent variables as model 4 and model 5. Consequently, this implies that the combination of industry- and year-fixed effects does not explain a lot of the variation in the *Industry-adjusted Tobin's Q*. Now, I focus on models 4 and 5 for Tables 2, as they both have relatively high adjusted R-squared. Still, it is good to mention that the adjusted R-squares are barely different between models 4 and 5, differing only 1%. However, model 5 has a much lower AIC and BIC, and is therefore preferred.

In contrast, in Table 3, the adjusted R-squared for the first three models of Table 3 is not low, as was the case for Table 2. Consequently, this implies that the combination of firm- and year-fixed effects already explains a lot of the variation in the *Industry-adjusted Tobin's Q*. However, models 4 and 5 do have a significantly higher adjusted R-squared compared to the first three models. Similar as to Table 2, the adjusted R-squares are barely different between models 4 and 5, differing only 1%. However, model 5 has a much lower AIC and BIC, and is therefore preferred, as was the case for Table 2.

Furthermore, something important to highlight with respect to model 5, is that the variable *Lag CPS* stays significant and negative at the 1% and 5% significance levels for Tables 2 and 3, respectively. However, the statistical significance levels for the variable *Lag CEO Male* and the interaction term, are not the same for both tables. That is, both are not statistically significant for Table 2 but are both negative and significant at the 5% level for Table 3. Still, I prefer Table 3, since that table includes firm-fixed effects and therefore controls for unobserved characteristics present in a firm, as was visible with the relatively high adjusted R-squared for the first three models where the control variables were not yet added. Consequently, I conclude that this is evidence for hypothesis 1 that stated that there are gender differences in the impact of CEO pay slice on firm performance in the United States.

With respect to the control variables, I observe no strange coefficient signs, compared to Table 3 of Bebchuk et al. (2011) or my copy in Table 1 in the Appendix. Nonetheless, it is good to note that in Table 3, *Company Age* which should have been included in models 4 and 5, as is the case for Table 2, is dropped by Stata because of collinearity with fixed effects.

Table 2. OLS regression results with year- and industry-fixed effects and as the dependent variable Tobin's Q

	Industry-adjusted Tobin's Q									
Variables	Model 1		Model 2		Model 3		Model 4		Model 5	
Lag CPS	-1.593	**	-1.590	**	-1.591	**	-2.618	***	-3.482	***
	(0.642)		(0.642)		(0.644)		(0.747)		(1.260)	
Lag CEO Male			0.192		0.186		0.289		0.904	
			(0.832)		(0.866)		(0.785)		(1.306)	
Interaction between Lag CPS and Lag CEO Male					0.045		-0.755	*	-0.747	
					(0.855)		(0.432)		(0.516)	
Lag Industry-adjusted Tobin's Q							46.615	***	44.776	***
							(3.560)		(7.402)	
E-Index							0.579		3.037	**
							(0.849)		(1.504)	
Log Book Value							-4.604	***	-4.889	*
							(1.433)		(2.773)	
Insider Ownership							-2.165		-4.128	
							(1.489)		(3.158)	
Insider Ownership^2							0.304		-0.299	
							(1.361)		(2.234)	
ROA							27.492	***	23.994	**
							(5.537)		(9.722)	
Capex/Assets							0.732		-1.011	
							(1.369)		(2.176)	
Leverage							-2.220	**	-4.407	*
							(0.971)		(2.426)	
R&D							30.910	***	65.251	*
							(5.437)		(34.287)	
R&D Missing							-1.773	**	-2.394	
							(0.858)		(1.734)	
Company Age							0.252		-8.231	**
							(1.052)		(3.574)	

Founder									0.650	
									(1.261)	
Lag Abnormal Total Compensation									2.805	*
									(1.649)	
CEO Ownership ≥ 20%									1.364	
									(1.834)	
CEO Tenure 1									-0.723	
									(1.940)	
CEO Tenure 2									-0.856	
									(1.150)	
CEO Tenure 3 & 4									-1.625	
									(1.132)	
CEO Tenure 5 & 6									-1.054	
									(1.062)	
Diversified									4.643	
									(2.840)	
CEO Outsider									-3.286	**
									(1.447)	
CEO Is Chair									0.365	
									(1.399)	
Intercept	12.336	***	12.334	***	12.334	***	10.087	***	12.851	***
	(0.699)		(0.700)		(0.701)		(1.210)		(2.302)	
Number of observations	30575		30575		30575		6673		2685	
Adjusted R-squared	0.03		0.03		0.03		0.55		0.56	
AIC	330840.04		330841.72		330843.70		67866.42		27339.43	
BIC	330848.37		330858.37		330868.68		67961.70		27480.92	

Notes: In this table, I display the results of the OLS estimation of the regressions that have the variable Industry-adjusted Tobin's Q as dependent variable. All of these variables have year and industry-fixed effects. Model 1 only includes *lagged CPS* as independent variable. Model 2 only includes *lagged CPS* and *CEO Male* as independent variables. Model 3 only includes *lagged CPS*, *CEO Male*, and their interaction term as independent variables. Model 4 also includes the firm control variables. Lastly, model 5 also includes the CEO control variables. Furthermore, the numbers in brackets are the standard errors. p<.01, ** p<.05, * p<.1

Table 3. OLS regression results with year- and firm-fixed effects and as the dependent variable Tobin's Q

	Industry-adjusted Tobin's Q						
Variables	Model 1	Model 2	Model 3	Model 4		Model 5	
Lag CPS	0.003	0.003	0.001	-2.732	***	-3.741	**
	(0.472)	(0.472)	(0.472)	(0.971)		(1.447)	
Lag CEO Male		0.173	0.120	-0.410		-5.116	**
		(0.641)	(0.637)	(1.025)		(2.293)	
Interaction between Lag CPS and Lag CEO Male			0.413	-0.419		-1.850	**
			(0.550)	(0.832)		(0.839)	
Lag Industry-adjusted Tobin's Q				27.497	***	27.809	***
				(3.087)		(5.200)	
E-Index				0.416		5.089	***
				(1.451)		(1.642)	
Log Book Value				-26.699	***	-29.190	***
				(3.968)		(5.429)	
Insider Ownership				-3.451		-1.968	
				(2.575)		(5.240)	
Insider Ownership^2				2.434		-4.012	
				(2.862)		(4.532)	
ROA				29.728	***	36.366	***
				(4.332)		(6.840)	
Capex/Assets				0.799		1.337	
				(1.601)		(2.235)	
Leverage				-1.351		-1.575	
				(1.550)		(2.902)	
R&D				31.445	***	33.757	
				(4.039)		(27.420)	
R&D Missing				-0.212		-4.742	**
				(1.443)		(2.389)	
Founder						-2.265	
						(2.141)	
Lag Abnormal Total Compensation						1.267	
						(1.644)	
CEO Ownership ≥ 20%						3.312	*
						(1.950)	

CEO Tenure 1									-0.942
									(1.950)
CEO Tenure 2									-0.917
									(1.181)
CEO Tenure 3 & 4									-1.688
									(1.215)
CEO Tenure 5 & 6									-1.153
									(1.025)
Diversified									-9.910
									(10.110)
CEO Outsider									1.940
									(2.303)
CEO Is Chair									-0.472
									(1.780)
Intercept	12.341	***	12.339	***	12.346	***	8.296	***	-0.695
	(0.276)		(0.276)		(0.276)		(1.826)		(4.002)
Number of observations	30296		30296		30296		6531		2636
Adjusted R-squared	0.52		0.52		0.52		0.67		0.66
AIC	303618.46		303620.22		303620.03		63751.93		25943.10
BIC	303626.77		303636.86		303644.99		63840.13		26078.27

Notes: In this table, I display the results of the OLS estimation of the regressions that have the variable Industry-adjusted Tobin's Q as dependent variable. All of these variables have year- and firm-fixed effects. Model 1 only includes *lagged CPS* as independent variable. Model 2 only includes *lagged CPS* and *CEO Male* as independent variables. Model 3 only includes *lagged CPS*, *CEO Male*, and their interaction term as independent variables. Model 4 also includes the firm control variables. Lastly, model 5 also includes the CEO control variables. Furthermore, the numbers in brackets are the standard errors. p<.01, ** p<.05, * p<.1

5.1.3 Difference-in-Differences analysis

Moreover, to test whether there is an issue of reverse causality between firm performance and CEO gender, I estimate regressions with the DiD framework as Huang and Kisgen (2013) did to ensure this bias is eliminated by studying the difference of effect between a change of male-to-female CEO or CFO compared to a change of male-to-male CEO or CFO on the dependent variable, while also interacting this male-to-female CEO or CFO change with the independent variable of interest. I copy this DiD framework, including studying the change of CEO and CFO, instead of only CEO. In model 1, I only include *Lag CPS, Lag Female Transition*, the interaction term between *Lag CPS* and *Lag Female Transition*, *Post-transition*, and the interaction between *Lag CPS, Lag Female Transition*, and *Post-transition*. In model 2, I also include the firm control variables. Lastly, in model 3, I also include the CEO control variables. In both Tables 4 and 5, I estimate the DiD framework. Additionally, I include year- and industry-fixed effects in Table 4 and year- and firm-fixed effects in Table 5.

In Table 5, all the main independent variables *Lag CPS*, *Lag Female Transition*, the interaction term between *Lag CPS* and *Lag Female Transition*, *Post-transition*, and the interaction between *Lag CPS*, *Lag Female Transition*, and *Post-transition* are not significant. This is also almost the case for models 2 and 3 in Table 4. This could be caused by that the effect is negative for male CEOs and positive for female CEOs. However, since *Lag Female Transition*, *Post-transition*, and the interaction between *Lag CPS*, *Lag Female Transition*, and *Post-transition* are not significant, this is not completely sure. Nonetheless, it is not strange that the *Lag Female Transition* is not significant, as there were only 274 male-to-female CEO changes compared to 5,762 male-to-male CEO changes and 306 male-to-female CFO changes compared to 2,182 male-to-male CFO changes, hence, there might not be enough female transitions.

Similar to Tables 2 and 3, the model with the least independent variables included, that is model 1, has the lowest adjusted R-squared. However, the adjusted R-squared is still relatively not that low for model 1, compared to models 2 and 3, in Table 5, suggesting that the combination of year- and firm-fixed effects already explains a lot of the variation in the *Industry-adjusted Tobin's Q*, but the combination of firm- and industry-effects does not, as the adjusted R-squared is extremely low for model 1, compared to models 2 and 3, in Table 4. Moreover, I first focus on models 2 and 3 for Table 4, as they both have relatively high adjusted R-squares, compared to model 1. Additionally, although the adjusted R-squared is again almost the same between models 2 and 3 for Table 4, differing only 1%, the AIC and BIC are significantly lower for model 2 for Table 4, hence I prefer model 2. Now focusing on models 2 and 3 for Table 5, as they both have relatively high adjusted R-squares. Although the adjusted R-squared is again almost the same between models 2 and 3 for Table 5, as is the case for Table 4, differing only 1%, the AIC and BIC are significantly lower for model 2 for Table 5, hence I again prefer model 2.

Additionally, *Lag CPS*, *Lag Female Transition*, the interaction term between *Lag CPS* and *Lag Female Transition*, *Post-transition*, and the interaction between *Lag CPS*, *Lag Female Transition*, and *Post-transition* are not statistically significant at the 10% level for model 2 for both Tables 4 and 5, except for Lag CPS in model 2 in Table 4, which is statistically significant and positive at the 10% level. Before in Tables 2 and 3, the *Lag CPS* generally stayed negative and statistically significant when including *Lag CEO Male* and the interaction term, but here *Lag CPS* is not statistically significant in Table 5 or only significant at the 10% level for Table 4.

With respect to the control variables, I observe no strange coefficient signs, compared to Table 3 of Bebchuk et al. (2011) or my copy in Table 1 in the Appendix. However, it is good to note that in Table 5, *Lag Female Transition* and *Company Age* were dropped by Stata because of collinearity with fixed effects.

Table 4. DiD regression results with year- and industry-fixed effects and as the dependent variable Tobin's Q with CEO and CFO combined

	Industry-adjusted Tobin's Q		
Variables	Model 1	Model 2	Model 3
Lag CPS	0.245	0.595 *	0.458
	(0.261)	(0.327)	(0.511)
Lag Female Transition	1.882 **	-1.160	-2.178
	(0.767)	(0.826)	(1.874)
Interaction between Lag CPS and Lag Female Transition	0.157	-0.900	-0.542
	(0.172)	(1.631)	(2.347)
Post-transition	-1.779 ***	0.413	-1.149
	(0.653)	(1.178)	(2.637)
Interaction between Lag CPS, Lag Female Transition, and Post-transition	-0.155	-5.386	-4.092
	(0.178)	(8.468)	(12.188)
Lag Industry-adjusted Tobin's Q		46.608 ***	44.765 ***
		(3.553)	(7.409)
E-Index		0.546	3.107 **
		(0.829)	(1.484)
Log Book Value		-4.671 ***	-5.883 *
		(1.442)	(3.004)
Insider Ownership		-1.157	-2.459
		(1.528)	(3.276)
Insider Ownership^2		-0.063	-1.267
		(1.440)	(2.483)
ROA		27.831 ***	25.507 **
		(5.460)	(9.935)
Capex/Assets		1.082	0.285
		(1.371)	(2.260)
Leverage		-2.240 **	-2.751
		(1.098)	(3.277)
R&D		31.239 ***	68.223 *
		(5.343)	(36.647)
R&D Missing		-1.736 **	-1.752
		(0.823)	(1.676)
Company Age		0.727	-9.471 **
		(1.064)	(4.145)

Founder					-0.352	
					(1.346)	
Lag Abnormal Total Compensation					1.988	
					(1.470)	
CEO Ownership ≥ 20%					0.653	
					(2.040)	
CEO Tenure 1					-1.442	
					(1.713)	
CEO Tenure 2					0.155	
					(1.249)	
CEO Tenure 3 & 4					-1.554	
					(1.134)	
CEO Tenure 5 & 6					-1.209	
					(1.082)	
Diversified					4.480	
					(2.907)	
CEO Outsider					-4.152	***
					(1.557)	
CEO Is Chair					0.848	
					(1.401)	
Intercept	11.782	***	9.811	***	13.826	***
	(0.695)		(1.190)		(2.238)	
Number of observations	31290		6811		2703	
Adjusted R-squared	0.03		0.55		0.56	
AIC	338195.91		69230.18		27580.36	
BIC	338237.67		69339.40		27733.81	

Notes: In this table, I display the results of the DiD estimation of the regressions that have the variable Industry-adjusted Tobin's Q as dependent variable. All of these variables have year- and industry-fixed effects. Model 1 only includes *Lag CPS, Lag Female Transition, the interaction term between Lag CPS and Lag Female Transition, Post-transition, and the interaction between Lag CPS, Lag Female Transition, and Post-transition.* Model 2 also includes the firm control variables. Lastly, model 3 also includes the CEO control variables. Furthermore, the numbers in brackets are the standard errors. p<.01, ** p<.05, * p<.1

Table 5. DiD regression results with year- and firm-fixed effects and as the dependent variable Tobin's Q with CEO and CFO combined

Variables	Industry-adjusted Tobin's Q				
	Model 1	Model 2		Model 3	
Lag CPS	0.165	0.449		0.658	
	(0.198)	(0.321)		(0.554)	
Interaction between Lag CPS and Lag Female Transition	-0.023	-1.058		0.139	
	(0.169)	(2.656)		(2.559)	
Post-transition	0.066	-0.119		2.279	
	(0.538)	(2.070)		(2.546)	
Interaction between Lag CPS, Lag Female Transition, and Post-transition	-0.067	-5.365		1.362	
	(0.131)	(13.853)		(13.317)	
Lag Industry-adjusted Tobin's Q		27.692	***	27.584	***
		(3.097)		(5.088)	
E-Index		-0.026		4.554	***
		(1.405)		(1.618)	
Log Book Value		-26.527	***	-28.340	***
		(3.823)		(5.480)	
Insider Ownership		-2.471		-0.521	
		(2.530)		(5.271)	
Insider Ownership^2		1.496		-6.879	
		(2.950)		(5.017)	
ROA		29.089	***	35.719	***
		(4.153)		(6.809)	
Capex/Assets		1.326		2.057	
		(1.567)		(2.210)	
Leverage		-0.741		0.065	
		(1.581)		(3.369)	
R&D		30.987	***	29.307	
		(3.874)		(26.585)	
R&D Missing		-0.513		-4.667	**
		(1.403)		(2.304)	
Founder				-0.987	
				(1.883)	
Lag Abnormal Total Compensation				0.272	
				(1.492)	
CEO Ownership ≥ 20%				3.360	*

			(1.936)
CEO Tenure 1			-1.248
			(1.698)
CEO Tenure 2			-0.205
			(1.221)
CEO Tenure 3 & 4			-1.651
			(1.234)
CEO Tenure 5 & 6			-1.323
			(1.027)
Diversified			-11.080
			(9.643)
CEO Outsider			1.094
			(2.251)
CEO Is Chair			-0.366
			(1.697)
Intercept	11.937 ***	8.024 ***	0.366
	(0.276)	(1.809)	(3.769)
Number of observations	31080	6680	2660
Adjusted R-squared	0.52	0.67	0.66
AIC	311513.38	65221.38	26223.96
BIC	311546.76	65316.68	26365.23

Notes: In this table, I display the results of the DiD estimation of the regressions that have the variable *Industry-adjusted Tobin's Q* as dependent variable. All of these variables have year- and firm-fixed effects. Column 1 only includes *Lag CPS, Lag Female Transition*, the interaction term between *Lag CPS* and *Lag Female Transition, Post-transition,* and the interaction between *Lag CPS, Lag Female Transition,* and *Post-transition*. Column 2 also includes the firm control variables. Lastly, column 3 also includes the CEO control variables. Furthermore, the numbers in brackets are the standard errors. p<.01, ** p<.05, * p<.1

5.1.4 CEO Compensation vs CEO Entrenchment

Additionally, to test if the effect of CPS is mostly driven by CEO entrenchment or CEO compensation, I add four regressions, visible in Tables 6, 7, and 8. In model 1, I include *Lag CPS, CEO Male,* the interaction term between them, and all firm and CEO control variables, except for *E-index*, which I included as a firm control variable in the other regressions as Bebchuk et al. (2011) did as well, and except for Incentive Pay. In model 2, I add the *E-Index*. In model 3, I do not add E-Index but I do add Incentive Pay. In model 4, I add E-Index as well as Incentive Pay. In both Tables 6 and 7, I test for including *Incentive Pay*, to compare the effect of CEO compensation, as measured with *Incentive Pay*, and CEO entrenchment, as measured with the *E-Index*. I include year- and industry-fixed effects in Table 6 and year- and firm-fixed effects in Table 7.

For both Tables 6 and 7, it is the case that when I add only *E-Index, E-Index* is positive and significant, when I add only *Incentive Pay*, *Incentive Pay* is positive and significant, and when I add both, only *E-Index* is significant. The fact that both are significant separately and when I include both that only E-Index is significant, implies that the gender differences in the impact of CEO pay slice on firm performance can be attributed to differences in the level of CEO entrenchment and compensation, but mainly to CEO entrenchment. However, as *E-Index* is positive this would suggest that when a CEO is more entrenched, the firm performance increases, ceteris paribus. This goes against the theories in the theoretical framework, as it was expected that CEOs who are more entrenched cause a lower firm performance. Furthermore, the positive coefficient for *Incentive Pay* would imply that a higher CEO compensation would increase firm performance. This also goes against the theories in the theoretical framework. However, as I measure *Incentive Pay* as a bit of a performance-based metric, measured as compensation minus base salary and divided by total compensation, it could be the case that this causes a better alignment with the interests of the other shareholders, causing a better firm performance. Moreover, *E-Index* could also capture a mechanism that stabilizes the firm for the investors. This would explain a positive sign for both. However, it is strange that *Lag CPS* stays negative for models 2, 3, and 4 in Table 6, implying that there are more important factors in CPS than CEO entrenchment and compensation. However, in Table 7, the coefficient of *Lag CPS* is already not significant, as is visible in model 1, before including *Incentive Pay* and *E-Index*, and stays not significant when I add Incentive Pay in model 3. However, in model 2 and 4 where I add *E-Index*, it becomes negative. Again, this implies that there are more important factors in CPS than at least CEO entrenchment. This could be an indicator of poor governance or overcompensation for investors, highlighted by the relative high pay, overshadowing possible positive impacts.

Furthermore, for Table 6, models 1 and 3 have both a lower adjusted R-squared and higher AICs and BICs, suggesting that models 2 and 4 are better. This implies that at least *E-Index* or both *E-Index* and *Incentive Pay* should be included. Furthermore, for Table 6, model 4 has the highest adjusted R-squared and lowest AIC and BIC, implying that it is best to include both *E-Index* and *Incentive Pay*. However, *E-Index* is positive and significant at the 1% level in model 4 for Table 6, suggesting that when a CEO is more entrenched, the firm performance increases. However, the coefficient for *Incentive Pay* is statistically not significant at the 10% level. For Table 7, the adjusted R-squared for models 1 and 3 are significantly higher than for Table 6, but still lower than for models 2 and 4. For Table 7, the adjusted R-squared is equally high for models 2 and 4, and the AIC and BIC for model 4 are only slightly lower than for model 2. Here *E-Index* is again positive and statistically significant at the 1% level, and in model 4, *Incentive Pay* is again not statistically significant at the 10% level.

Furthermore, it is good to note that *Lag CPS* is negative and significant at the 1% or 5% significance level for both model 4 in Table 6 and models 2 and 4 in Table 7, implying similar results as was visible in Table 3. Additionally, *Lag CEO Male* is negative and significant at the 5% level for both model

4 in Table 6 and models 2 and 4 in Table 7. This implies that firms with male CEOs have lower performance. Furthermore, the interaction term is negative and significant at the 5% level for both model 4 in Table 6 and models 2 and 4 in Table 7. This indicates that the effect of a high CPS is larger when the CEO is male, suggesting that male CEOs could be more prone to CEO overcompensation, entrenchment, or both. However, as the *Lag CPS* is still negative, even when controlling for *Lag CEO Male* and the interaction term between *Lag CPS* and *Lag CEO Male*, this suggests that a higher CPS has also a negative effect on performance for female CEOs, although before it was visible that the negative effect for the female CEOs is smaller than for the male CEOs. With respect to the control variables, I observe no strange coefficient signs, compared to Table 3 of Bebchuk et al. (2011) or my copy of it in Table 1 in the Appendix. Nonetheless, it is good to note that in Table 7, *Company Age* which should have been included, as is the case for Table 4, is dropped by Stata because of collinearity with fixed effects.

Furthermore, Table 8 is a copy of Table 7, which also includes year- and firm-fixed effects, but now the CPS consists of both the compensation of the CEO and of the CFO and then I divide this by the total compensation of the top five executives. The Adjusted R-squared, BICs, AICs, hence preferred models 2 and 4, and E-Index and their Incentive Pay coefficients signs and significances for Table 8 are quite comparable to those of Table 7. However, for models 2 and 4, Lag CPS is not significant anymore and the interaction term is positive and significant at the 10% level. Nonetheless, the coefficient for Lag CEO Male is still negative and significant, and in size much larger than that of the interaction term. As the independent variables are standardized, a comparison between the sizes is possible. This suggests that firms with male CEOs or CFOs have lower performance and that in this case, the effect of CPS, measured by Lag CPS and the interaction term is either not significant or almost not significant, even when including E-Index or Incentive Pay, or both.

Table 6. OLS regression results with year- and industry-fixed effects and as the dependent variable Tobin's Q including tests for Incentive Pay

	Industry-adjusted Tobin's Q							
Variables	Model 1		Model 2		Model 3		Model 4	
Lag CPS	-3.452	***	-3.482	***	-3.953	***	-3.908	***
	(1.287)		(1.260)		(1.292)		(1.458)	
E-Index			3.037	**			5.017	***
			(1.504)				(1.631)	
Incentive Pay					8.090	***	1.620	
					(1.197)		(1.273)	
Lag CEO Male	2.899	**	0.904		2.828	*	-5.067	**
	(1.459)		(1.306)		(1.448)		(2.264)	

Interaction between Lag CPS and Lag CEO Male	2.190		-0.747		2.241		-1.858	**
	(1.728)		(0.516)		(1.711)		(0.825)	
Lag Industry-adjusted Tobin's Q	14.595	***	44.776	***	14.736	***	27.768	***
	(4.968)		(7.402)		(4.902)		(5.215)	
Log Book Value	-6.890	**	-4.889	*	-10.526	***	-29.301	***
	(2.959)		(2.773)		(3.072)		(5.505)	
Insider Ownership	-0.716		-4.128		2.119		-1.333	
	(3.124)		(3.158)		(3.153)		(5.333)	
Insider Ownership^2	-1.327		-0.299		-3.343		-4.592	
	(2.381)		(2.234)		(2.369)		(4.617)	
ROA	15.686	**	23.994	**	14.322	**	35.776	***
	(6.839)		(9.722)		(6.710)		(6.974)	
Capex/Assets	3.733	*	-1.011		3.782	*	1.269	
	(2.103)		(2.176)		(2.082)		(2.254)	
Leverage	-3.964	*	-4.407	*	-3.673		-1.421	
	(2.259)		(2.426)		(2.232)		(2.912)	
R&D	-0.097		65.251	*	-0.145		32.512	
	(0.653)		(34.287)		(0.621)		(27.649)	
R&D Missing	-1.852		-2.394		-1.698		-4.630	*
	(2.179)		(1.734)		(2.146)		(2.444)	
Company Age	-11.079	***	-8.231	**	-11.241	***		
	(3.614)		(3.574)		(3.651)			
Founder	-0.810		0.650		-0.717		-2.370	
	(1.510)		(1.261)		(1.503)		(2.127)	
Lag Abnormal Total Compensation	11.712	***	2.805	*	9.901	***	1.254	
	(2.030)		(1.649)		(1.924)		(1.641)	
CEO Ownership ≥ 20%	1.566		1.364		1.629		3.337	*
	(1.806)		(1.834)		(1.866)		(1.916)	
CEO Tenure 1	-5.060	***	-0.723		-4.609	***	-0.872	
	(1.780)		(1.940)		(1.754)		(1.977)	
CEO Tenure 2	-1.464		-0.856		-1.419		-0.934	
	(1.004)		(1.150)		(0.989)		(1.186)	
CEO Tenure 3 & 4	-0.384		-1.625		-0.562		-1.779	
	(1.110)		(1.132)		(1.104)		(1.220)	
CEO Tenure 5 & 6	-0.106		-1.054		-0.268		-1.166	
	(0.929)		(1.062)		(0.923)		(1.030)	

Diversified	5.098	**	4.643		5.722	**	-9.858	
	(2.337)		(2.840)		(2.337)		(10.136)	
CEO Outsider	-2.913	*	-3.286	**	-2.697	*	1.899	
	(1.651)		(1.447)		(1.631)		(2.304)	
CEO Is Chair	1.449		0.365		1.228		-0.508	
	(1.572)		(1.399)		(1.571)		(1.788)	
Intercept	9.527	***	12.851	***	8.998	***	-0.626	
	(2.755)		(2.302)		(2.714)		(4.044)	
Number of observations	5130		2685		5115		2625	
Adjusted R-squared	0.35		0.56		0.36		0.66	
AIC	54834.28		27339.43		54602.32		25840.78	
BIC	54984.77		27480.92		54759.27		25981.73	

Notes: In this table, I display the results of the OLS estimation of the regressions that have the variable *Industry-adjusted Tobin's Q* as dependent variable. All of these variables have year and industry-fixed effects. In all models, I include all independent variables. In model 1, I include *lagged CPS*, *CEO Male*, the interaction term between them, and all firm and CEO control variables, except for *E-index*, which I included as a firm control variable in the other regressions as Bebchuk et al. (2011) did as well, and for *Incentive Pay*. In model 2, I add the *E-Index*. In model 3, I do not add *E-Index* but I do add *Incentive Pay*. In model 4, I add *E-Index* as well as *Incentive Pay*. Furthermore, the numbers in brackets are the standard errors. p<.01, ** p<.05, * p<.1

Table 7. OLS regression results with year- and firm-fixed effects and as the dependent variable Tobin's Q including tests for Incentive Pay

	Industry-adjusted Tobin's Q							
Variables	Model 1		Model 2		Model 3		Model 4	
Lag CPS	-1.576		-3.741	**	-1.600		-3.908	***
	(1.170)		(1.447)		(1.167)		(1.458)	
E-Index			5.089	***			5.017	***
			(1.642)				(1.631)	
Incentive Pay					7.012	***	1.620	
					(1.082)		(1.273)	
Lag CEO Male	0.777		-5.116	**	0.770		-5.067	**
	(1.583)		(2.293)		(1.596)		(2.264)	
Interaction between Lag CPS and Lag CEO Male	1.667		-1.850	**	1.774		-1.858	**
	(1.213)		(0.839)		(1.214)		(0.825)	
Lag Industry-adjusted Tobin's Q	7.634	**	27.809	***	7.833	**	27.768	***
	(3.650)		(5.200)		(3.575)		(5.215)	
Log Book Value	-29.640	***	-29.190	***	-32.343	***	-29.301	***
	(5.336)		(5.429)		(5.393)		(5.505)	
Insider Ownership	4.069		-1.968		6.548		-1.333	
	(4.466)		(5.240)		(4.503)		(5.333)	
Insider Ownership^2	-5.852		-4.012		-7.945	*	-4.592	
	(4.482)		(4.532)		(4.324)		(4.617)	
ROA	8.007		36.366	***	6.581		35.776	***
	(6.383)		(6.840)		(6.273)		(6.974)	
Capex/Assets	6.743	***	1.337		6.335	***	1.269	
	(1.796)		(2.235)		(1.779)		(2.254)	
Leverage	-2.835		-1.575		-2.282		-1.421	
	(2.216)		(2.902)		(2.174)		(2.912)	
R&D	-0.883	***	33.757		-0.896	***	32.512	
	(0.242)		(27.420)		(0.239)		(27.649)	
R&D Missing	-2.563		-4.742	**	-2.170		-4.630	*
	(2.352)		(2.389)		(2.325)		(2.444)	
Founder	-3.253	*	-2.265		-3.111	*	-2.370	
	(1.805)		(2.141)		(1.712)		(2.127)	
Lag Abnormal Total Compensation	6.702	***	1.267		6.183	***	1.254	
	(1.439)		(1.644)		(1.394)		(1.641)	

CEO Ownership ≥ 20%	0.345		3.312	*	0.498		3.337	*
	(1.781)		(1.950)		(1.713)		(1.916)	
CEO Tenure 1	-2.820	*	-0.942		-2.927	*	-0.872	
	(1.688)		(1.950)		(1.681)		(1.977)	
CEO Tenure 2	-0.765		-0.917		-0.803		-0.934	
	(1.175)		(1.181)		(1.163)		(1.186)	
CEO Tenure 3 & 4	0.158		-1.688		-0.046		-1.779	
	(1.292)		(1.215)		(1.281)		(1.220)	
CEO Tenure 5 & 6	-0.141		-1.153		-0.283		-1.166	
	(0.934)		(1.025)		(0.925)		(1.030)	
Diversified	1.267		-9.910		1.539		-9.858	
	(5.070)		(10.110)		(5.084)		(10.136)	
CEO Outsider	4.252	*	1.940		4.362	**	1.899	
	(2.178)		(2.303)		(2.141)		(2.304)	
CEO Is Chair	1.345		-0.472		1.373		-0.508	
	(1.726)		(1.780)		(1.735)		(1.788)	
Intercept	-2.108		-0.695		-2.318		-0.626	
	(3.465)		(4.002)		(3.424)		(4.044)	
Number of observations	5038		2636		5023		2625	
Adjusted R-squared	0.57		0.66		0.57		0.66	
AIC	51258.76		25943.10		51046.35		25840.78	
BIC	51402.30		26078.27		51196.36		25981.73	

Notes: In this table, I display the results of the OLS estimation of the regressions that have the variable Industry-adjusted Tobin's Q as dependent variable. All of these variables have year- and firm-fixed effects. In all models, I include all independent variables. In model 1, I include *lagged CPS*, *CEO Male*, the interaction term between them, and all firm and CEO control variables, except for *E-index*, which I included as a firm control variable in the other regressions as Bebchuk et al. (2011) did as well, and for *Incentive Pay*. In model 2, I add the *E-Index*. In model 3, I do not add *E-Index* but I do add *Incentive Pay*. In model 4, I add *E-Index* as well as *Incentive Pay*. Furthermore, the numbers in brackets are the standard errors. p<.01, ** p<.05, * p<.1

Table 8. OLS regression results with year- and firm-fixed effects and as the dependent variable Tobin's Q including tests for Incentive Pay with CEO and CFO combined

	Industry-adjusted Tobin's Q							
Variables	Model 1		Model 2		Model 3		Model 4	
Lag CPS	0.309		0.272		0.373		0.284	
	(0.399)		(0.511)		(0.396)		(0.512)	
E-Index			4.864	***			4.777	***
			(1.627)				(1.619)	

Incentive Pay					7.131	***	1.288	
					(1.098)		(1.299)	
Lag CEO Male	1.061		-5.843	***	1.065		-5.777	***
	(1.634)		(1.607)		(1.664)		(1.594)	
Interaction between Lag CPS and Lag CEO Male	-0.125		0.255	*	-0.122		0.263	*
	(0.110)		(0.148)		(0.130)		(0.149)	
Lag Industry-adjusted Tobin's Q	7.483	**	27.843	***	7.682	**	27.824	***
	(3.692)		(5.141)		(3.620)		(5.158)	
Log Book Value	-30.016	***	-29.590	***	-32.784	***	-29.622	***
	(5.317)		(5.510)		(5.371)		(5.610)	
Insider Ownership	3.958		-1.157		6.442		-0.608	
	(4.456)		(5.314)		(4.491)		(5.424)	
Insider Ownership^2	-5.821		-4.228		-7.927	*	-4.695	
	(4.445)		(4.430)		(4.277)		(4.515)	
ROA	8.084		35.930	***	6.643		35.491	***
	(6.363)		(6.818)		(6.251)		(6.967)	
Capex/Assets	6.951	***	1.783		6.516	***	1.737	
	(1.784)		(2.229)		(1.765)		(2.246)	
Leverage	-2.759		-1.081		-2.185		-0.957	
	(2.217)		(2.912)		(2.176)		(2.927)	
R&D	-0.866	***	31.526		-0.881	***	30.583	
	(0.243)		(27.009)		(0.240)		(27.230)	
R&D Missing	-2.706		-4.891	**	-2.275		-4.759	*
	(2.320)		(2.373)		(2.295)		(2.428)	
Founder	-3.341	*	-1.625		-3.211	*	-1.687	
	(1.761)		(2.078)		(1.660)		(2.069)	
Lag Abnormal Total Compensation	6.028	***	-0.019		5.522	***	-0.081	
	(1.364)		(1.521)		(1.315)		(1.522)	
CEO Ownership ≥ 20%	0.279		3.155	*	0.438		3.164	*
	(1.761)		(1.791)		(1.692)		(1.763)	
CEO Tenure 1	-2.952	*	-1.305		-3.081	*	-1.221	
	(1.673)		(1.974)		(1.665)		(2.000)	
CEO Tenure 2	-0.647		-0.559		-0.697		-0.574	
	(1.184)		(1.213)		(1.173)		(1.217)	
CEO Tenure 3 & 4	0.206		-1.649		-0.007		-1.731	
	(1.299)		(1.238)		(1.288)		(1.243)	

CEO Tenure 5 & 6	-0.180		-1.303	-0.335		-1.317
	(0.932)		(1.020)	(0.923)		(1.025)
Diversified	1.040		-11.904	1.338		-11.801
	(4.976)		(9.411)	(4.990)		(9.457)
CEO Outsider	4.307	**	1.445	4.429	**	1.411
	(2.186)		(2.324)	(2.150)		(2.328)
CEO Is Chair	1.316		-0.496	1.334		-0.539
	(1.720)		(1.766)	(1.726)		(1.774)
Intercept	-2.343		-1.101	-2.552		-0.945
	(3.436)		(3.819)	(3.397)		(3.860)
Number of observations	5051		2643	5037		2632
Adjusted R-squared	0.56		0.66	0.57		0.66
AIC	51486.40		26040.47	51281.67		25938.73
BIC	51630.00		26175.70	51431.73		26079.74

Notes: In this table, I display the results of the OLS estimation of the regressions that have the variable *Industry-adjusted Tobin's Q* as dependent variable. All of these variables have year- and firm-fixed effects. In all models, I include all independent variables. Furthermore, Table 8 is a copy of Table 7, with also including year and firm-fixed effects, but now the CPS constists of both the compensation of the CEO and of the CFO and then this divided by the total compensation of the top five executives. In model 1, I include *lagged CPS*, *CEO Male*, the interaction term between them, and all firm and CEO control variables, except for *E-index*, which I included as a firm control variable in the other regressions as Bebchuk et al. (2011) did as well, and for *Incentive Pay*. In model 2, I add the *E-Index*. In model 3, I do not add *E-Index* but I do add *Incentive Pay*. In model 4, I add *E-Index* as well as *Incentive Pay*. Furthermore, the numbers in brackets are the standard errors. p<.01, ** p<.05, * p<.1

5.1.5 Instrumental Variable analysis

Additionally, there could be an issue of reverse causality between firm performance and CPS. That is, firms with a better firm performance might have more resources to compensate their CEOs, resulting in a higher CPS. Consequently, I add the variables *Lag CPS* with *lagged Industry Median CPS, lagged Number of VPs*, and *lagged CEO is Only Director* as instruments to the regressions to solve the reverse causality issue. The interaction term between Lag CPS and CEO Male is instrumented too, by using as instruments the variable CEO Male multiplied with *lagged Industry Median CPS, lagged Number of VPs*, and *lagged CEO is Only Director*. However, I cluster the standard errors by firm instead of by CEO, because of Stata settings. Furthermore, Table 9 has year- and firm-fixed effects. Unfortunately, with the command xtivreg I use, as opposed to ivreghdfe I use as the command in the other regressions, Stata does not always show the Hansen J statistic, the adjusted R-squared, and the BICs and AICs.

These results are displayed in Table 9. Here, *Lag CPS, Lag CEO Male,* and their interaction term are not significant. Furthermore, the instrument *lagged Industry Median CPS* is significant at the 1% level in the two first stages for both endogenous variables. Still, the instruments *lagged Number of VPs* and *lagged CEO is Only Director* are not statistically significant. However, this is also the case for model 4 in Table 1 in the Appendix, where I copy Table 3 of Bebchuk et al. (2011). Additionally, the F-statistic is 0.0000 for the first stage. As at least one of the instruments is significant at the 1% level and the F-test of all independent variables having a coefficient of zero is rejected, all for the two first stages, I believe that this suggests that the condition of the relevance of the instruments holds. However, as *Lag CPS, Lag CEO Male*, and their interaction term are not significant, it is hard to conclude anything about the regression, as it seems that they are not significant because of relatively large standard errors, as opposed to those in the tables before. The difference could potentially be caused by clustering by firm instead of CEO.

Table 9. IV regression results with year- and firm-fixed effects and as the dependent variable Tobin's Q

Variables	Industry-adjusted Tobin's Q	
Lag CPS	3.542	
	(3.164)	
Interaction be-tween Lag CPS and Lag CEO Male	0.317	
	(0.355)	
Lag CEO Male	-12.710	
	(16.468)	
Lag Industry-adjusted Tobin's Q	31.311	***
	(5.839)	
E-Index	2.101	
	(3.332)	
Log Book Value	-38.816	***
	(12.230)	
Insider Ownership	6.984	
	(11.517)	
Insider Ownership^2	-5.520	
	(5.608)	
ROA	34.222	***
	(8.080)	
Capex/Assets	3.899	
	(3.801)	
Leverage	2.847	
	(5.135)	
R&D	16.758	
	(35.734)	
R&D Missing	-5.296	
	(4.386)	

Company Age	-2.442
	(12.444)
Founder	3.972
	(6.018)
Lag Abnormal Total Compensation	-13.985
	(13.019)
CEO Ownership ≥ 20%	1.207
	(2.337)
CEO Tenure 1	-6.104
	(5.131)
CEO Tenure 2	0.134
	(1.964)
CEO Tenure 3 & 4	-1.326
	(1.782)
CEO Tenure 5 & 6	-1.666
	(1.277)
Diversified	-11.075
	(10.065)
CEO Outsider	2.132
	(4.772)
CEO Is Chair	-2.451
	(3.307)
Intercept	-136.686
	(121.981)
Number of observations	2686

Notes: In Table 9, I estimate a regression with *Industry-adjusted Tobin's Q* as dependent variable and with *Lag CPS* instrumented with *lagged Industry Median CPS*, *lagged Number of VPs*, and *lagged CEO is Only Director* as instruments and *Lag CEO Male* as additional variable, with both year- and firm-fixed effects. The interaction term between Lag CPS and CEO Male is instrumented too, by using as instruments the variable CEO Male multiplied with *lagged Industry Median CPS*, *lagged Number of VPs*, and *lagged CEO is Only Director*. However, I cluster the standard errors by firm instead of by CEO, because of Stata settings. Furthermore, I include all firm and CEO control variables. Furthermore, the numbers in brackets are the standard errors. *** p<.01, ** p<.05, * p<.1

5.2 ROA

Moreover, I estimate all regressions as mentioned above again, but then with Industry-adjusted ROA as the dependent variable. However, when copying Table 6 from Bebchuk et al. (2011), that is without the Lag CEO Male and the interaction term between Lag CPS and Lag CEO Male, and the other regressions as estimated above, in almost all regressions, the coefficient of the main three variables of interest Lag CPS, Lag CEO Male, and the interaction term, are not significant. As Lag CPS is not even significant for the copy of Table 6 from Bebchuk et al. (2011), that is not including Lag CEO Male and the interaction term, I do not think I can say anything meaningful about whether there are gender differences in the impact of CEO Pay Slice (CPS) on firm performance when firm performance is measured by ROA. Therefore, I do not include the tables of these results here.

CHAPTER 6 Conclusion

In my thesis, I studied if there are gender differences in the impact of CEO pay slice on firm performance in the United States, by examining the relationship between CPS and firm performance, particularly focusing on how CEO gender moderates this relationship. Furthermore, I studied if this effect is mainly caused by CEO entrenchment, CEO compensation, or a combination of both. Lastly, I compared regressions using Tobin’s Q and ROA as dependent variables to determine if the results were consistent across both metrics. I used a comprehensive dataset of firms listed on the S&P 1500 from 1993 to 2019, I employed various econometric techniques, including Ordinary Least Squares, Instrumental Variables, and Difference-in-Differences regressions, to test my hypotheses. The results provide insights into the dynamics of executive compensation and entrenchment and its implications for firm performance.

At first, I replicated the results of Bebchuk et al. (2011) to test the robustness of the negative correlation between CPS and firm performance, measured by *Industry-adjusted Tobin’s Q* and *Industry-adjusted ROA*. For those regressions with *Industry-adjusted Tobin’s Q* as dependent variables, a higher CPS is indeed generally found to be related with lower firm performance, implying that a higher CPS could reflect CEO entrenchment and agency problems. However, for those regressions with *Industry-adjusted ROA* as the dependent variable, the CPS is found to be not significant. Furthermore, it is also not found for the other regressions that did include CPS and the interaction term, the coefficient of the main three variables of interest *Lag CPS*, *Lag CEO Male*, and the interaction term, are not significant, and thus further disregarded. Therefore, I conclude that I cannot say whether my third hypothesis which stated that the gender differences in the impact of CPS on firm performance are present when firm performance is measured by both Tobin's Q and ROA, holds or not, as *Lag CPS* was not even significant at the 10% level when *Lag CEO Male* and the interaction term were excluded for the regressions with ROA as dependent variable.

The central focus was the interaction term between CPS and CEO gender. The analysis revealed some significant gender differences in how CPS affects firm performance. That is, the interaction term between CPS and CEO gender was both negative and significant for the standard OLS regressions with control variables, year-, and firm-fixed effects, indicating that the negative effects of a high CPS may be more pronounced for male CEOs compared to female CEOs. This finding is in line with existing academic literature, which suggests that male CEOs might be more prone to overcompensation and entrenchment. Furthermore, the coefficient of the variable *Lag CEO Male* is also negative and statistically significant, indicating that firms with male CEOs have a lower firm performance than firms with female CEOs.

However, the Difference-in-Differences analyses shows no significant effects. The CPS was not significant when including *Lag Female Transition*, the interaction term between *Lag CPS* and *Lag Female Transition*, *Post-transition*, and the interaction between *Lag CPS, Lag Female Transition*, and *Post-transition*. Nonetheless, it is not strange that the *Lag Female Transition* is not significant, as there were only 274 male-to-female CEO changes compared to 5,762 male-to-male CEO changes and 306 male-to-female CFO changes compared to 2,182 male-to-male CFO changes, hence, there might not be enough female transitions.

Moreover, I studied if this effect is mainly caused by CEO entrenchment, CEO compensation, or a combination of both. The fact that both are significant separately and when I include both that only E-Index is significant, implies that the gender differences in the impact of CEO pay slice on firm performance can be attributed to differences in the level of CEO entrenchment and compensation, but mainly to CEO entrenchment. However, as *E-Index* is positive this would suggest that when a CEO is more entrenched, the firm performance increases, ceteris paribus. This goes against the theories in the theoretical framework, as it was expected that CEOs who are more entrenched cause a lower firm performance. Furthermore, the positive coefficient for *Incentive Pay* would imply that a higher CEO compensation would increase firm performance. This also goes against the theories in the theoretical framework. However, as I measure *Incentive Pay* as a bit of a performance-based metric, measured as compensation minus base salary and divided by total compensation, it could be the case that this causes a better alignment with the interests of the other shareholders, causing a better firm performance. Moreover, *E-Index* could also capture a mechanism that stabilizes the firm for the investors. Consequently, I advise further research to study which other factors besides CEO entrenchment and CEO compensation are captured by the effect of CPS on firm performance. As both CEO entrenchment and compensation seem to have a significant effect, I cannot reject my second and third hypothesis stating that the observed gender differences in the impact of CEO pay slice on firm performance can be attributed to differences in CEO compensation and the level of CEO entrenchment. Additionally, I also do not reject my first hypothesis stating that there are gender differences in the impact of CEO pay slice on firm performance in the United States.

Additionally, these analyses show that the relationship between CPS and firm performance is more complex than previously thought. While a high CPS could indicate potential agency problems and thus a lower firm performance, the gender of the CEO adds another layer of complexity. For male CEOs, my analyses show that high CPS is related to more significant negative impacts on firm performance, which could be caused by increased entrenchment or overcompensation.

The findings of my thesis have both theoretical and practical implications. With respect to theoretical implications, my thesis contributes to the existing academic literature on executive compensation and corporate governance by highlighting the moderating role of CEO gender in the relationship between CPS and firm performance. The results provide empirical evidence for agency theory's prediction that higher CEO compensation can lead to agency problems and entrenchment, particularly among male CEOs. With respect to practical implications, my results suggest that firm could possibly benefit from considering hiring a female CEO instead of a male CEO in their executive compensation strategies, as male CEOs seem to be more prone to the negative effects of high CPS.

While my thesis provides robust evidence on the relationship between CPS, CEO gender, and firm performance, it has some limitations. One limitation is that it is possible that there is still omitted variable bias, even after including multiple control variables and advanced econometric techniques.

Future research could address this by studying the effects of adding other factors that could potentially influence the relationship between CPS and firm performance. However, I want to note that by adding year- and firm- or industry-fixed effects, I already controlled for a lot of possible omitted control variables.

Additionally, I did not include a regression with year- and firm-fixed effects with the interaction term between CPS and CEO gender with CPS instrumented while clustering for CEO, as Stata did not allow me to do so. Future research could try whether this is possible with other statistical software programs.

Another important limitation is the relatively small number of female CEOs in the dataset, potentially affecting the generalizability of the results. As there is now a trend of improved gender diversity in executive positions, future research could re-examine these relationships with larger samples of female CEOs to validate and potentially extend the findings of my thesis.

Furthermore, I focused on firms listed on the S&P 1500, thereby limiting the applicability of the results to smaller firms or firms in other geographical places. Future research could include a more diverse set of firms.

REFERENCES

Al-Matari, E. M., Al-Swidi, A. K., & Fadzil, F. H. B. (2014). The measurements of firm performance's dimensions. *Asian Journal of Finance & Accounting*, *6*(1), 24. https://doi.org/10.5296/ajfa.v6i1.4761

Bebchuk, L. A., Cohen, A., & Ferrell, A. (2009). What matters in corporate governance? The Review of Financial Studies, 22(2), 783–827. https://doi.org/10.1093/rfs/hhn099

Bebchuk, L. A., Cremers, K. J. M., & Peyer, U. (2011). The CEO pay slice. Journal Of Financial Economics, 102(1), 199–221. https://doi.org/10.1016/j.jfineco.2011.05.006

Chintrakarn, P., Jiraporn, P., & Singh, M. (2014). Powerful CEOs and capital structure decisions: evidence from the CEO pay slice (CPS). *Applied Economics Letters*, *21*(8), 564–568. https://doi.org/10.1080/13504851.2013.875102

Compustat Execucomp. (n.d.). [Dataset]. Wharton Research Data Services. https://wrds-www.wharton.upenn.edu/pages/get-data/compustat-capital-iq-standard-poors/compustat/execucomp/

Compustat Global - Fundamentals Annual. (n.d.). [Dataset]. Wharton Research Data Services. https://wrds-www.wharton.upenn.edu/pages/get-data/compustat-capital-iqstandard-poors/compustat/global-daily/fundamentals-annual/

Compustat Historical Segments. (n.d.). [Dataset]. Wharton Research Data Services. https://wrds-www.wharton.upenn.edu/pages/get-data/compustat-capital-iq-standard-poors/compustat/historical-segments-daily/historical-segments/

Dah, M. A., Jizi, M., & Kebbe, R. W. (2020). CEO gender and managerial entrenchment. *Research in International Business and Finance*, *54*, 101237. https://doi.org/10.1016/j.ribaf.2020.101237

Data on the Entrenchment Index 1990-2006. (2009). http://www.law.harvard.edu/faculty/bebchuk/data.shtml

Fernandes, N. O. (2020). Economic Effects of Coronavirus Outbreak (COVID-19) on the World Economy. *Social Science Research Network*. https://doi.org/10.2139/ssrn.3557504

Finkelstein, S. (1992). POWER IN TOP MANAGEMENT TEAMS: DIMENSIONS, MEASUREMENT, AND VALIDATION. *Academy of Management Journal/The Academy of Management Journal*, *35*(3), 505–538. https://doi.org/10.2307/256485

Gompers, P. A., Ishii, J. L., & Metrick, A. (2001). Corporate governance and equity prices. *Social Science Research Network*. https://doi.org/10.2139/ssrn.278920

Gupta, V. K., Mortal, S., Silveri, S., Sun, M., & Turban, D. B. (2018). You're fired! Gender disparities in CEO dismissal. *Journal of Management*, *46*(4), 560–582. https://doi.org/10.1177/0149206318810415

Huang, J., & Kisgen, D. J. (2013). Gender and corporate finance: Are male executives overconfident relative to female executives? Journal of Financial Economics, 108(3), 822–839. https://doi.org/10.1016/j.jfineco.2012.12.005

Institutional Shareholder Services (ISS) (n.d.). [Dataset]. Wharton Research Data Services. https://wrds-www.wharton.upenn.edu/pages/get-data/institutional-shareholder-services-iss-trial/

Is gender a factor for remuneration at CEO level? An EY analysis of the gender pay gap among CEOs of large-caps listed in Sweden. (2020). EY. Retrieved March 9, 2024, from https://assets.ey.com/content/dam/ey-sites/ey-com/sv_se/news/2020/03/ey-gender-pay-gap-analysis.pdf

Johnson, W. C., Karpoff, J. M., & Yi, S. (2016). The Lifecycle Effects of Firm Takeover Defenses. *Social Science Research Network*. https://doi.org/10.2139/ssrn.2813265

Kaplan, S. N., & Zingales, L. (1997). Do Investment-Cash Flow Sensitivities Provide Useful Measures of Financing Constraints? *The Quarterly Journal of Economics*, *112*(1), 169–215. http://www.jstor.org/stable/2951280

Kapopoulos, P., & Lazaretou, S. (2007). Corporate Ownership Structure and Firm Performance: evidence from Greek firms. Corporate Governance, 15(2), 144–158. https://doi.org/10.1111/j.1467-8683.2007.00551.x

Khan, W. A., & Vieito, J. P. (2013). Ceo gender and firm performance. Journal Of Economics And Business, 67, 55–66. https://doi.org/10.1016/j.jeconbus.2013.01.003

Kolhatkar, S. (2018). Indra Nooyi and the Vanishing Female C.E.O. *The New Yorker*. https://www.newyorker.com/business/currency/indra-nooyi-and-the-vanishing-female-ceo

Kong, X. (2017). Relationship between CEO Pay Slice and Firm Performance. *Social Science Research Network*. https://doi.org/10.2139/ssrn.2957769

Lee, J., Park, J., & Park, S. (2014). Revisiting CEO power and firm value. *Applied Economics Letters*, *22*(8), 597–602. https://doi.org/10.1080/13504851.2014.962216

Luo, X., & Donthu, N. (2006). Marketing's Credibility: A longitudinal investigation of marketing communication productivity and shareholder value. *Journal of Marketing*, *70*(4), 70–91. https://doi.org/10.1509/jmkg.70.4.070

Mohan, N., & Ruggiero, J. (2003). Compensation differences between male and female CEOs for publicly traded firms: a nonparametric analysis. Journal Of The Operational Research Society, 54(12), 1242–1248. https://doi.org/10.1057/palgrave.jors.2601639

Sheikh, S. (2019). An examination of the dimensions of CEO power and corporate social responsibility. Review of Accounting and Finance/Review of Accounting & Finance, 18(2), 221–244. https://doi.org/10.1108/raf-01-2018-0034

Tarkovska, V. V. (2017). CEO pay slice and firm value: evidence from UK panel data. *Review of Behavioral Finance./Review of Behavioral Finance*, *9*(1), 43–62. https://doi.org/10.1108/rbf-12-2014-0053

APPENDIX

Table 1. My copy of Table 3 of Bebchuk et al. (2011)

	Industry-adjusted Tobin's Q							
Variables	Model 1		Model 2		Model 3		Model 4	
Lag CPS	-2.862	***	-3.796	***	-3.485	**	-12.527	**
	(1.082)		(1.048)		(1.458)		(5.396)	
E-Index	-1.688		2.430	*	4.859	***	2.313	
	(1.513)		(1.366)		(1.638)		(1.434)	
Log Book Value	-4.007	**	-2.462		-28.308	***	-1.966	
	(1.957)		(2.145)		(5.526)		(2.173)	
Insider Ownership	-2.856		-3.236		-0.949		-5.035	*
	(2.312)		(2.279)		(5.280)		(2.900)	
Insider Ownership^2	0.928		1.067		-4.748		0.425	
	(1.742)		(1.276)		(4.563)		(1.271)	
ROA	61.610	***	21.054	**	35.975	***	20.879	**
	(6.893)		(8.385)		(6.824)		(8.340)	
Capex/Assets	4.603	***	1.863		1.282		1.328	
	(1.395)		(1.650)		(2.238)		(1.761)	
Leverage	-1.850		-3.063		-1.488		-2.991	
	(1.875)		(2.188)		(2.913)		(2.246)	
R&D	63.816	***	65.164	**	32.668		56.538	*
	(6.905)		(31.492)		(27.005)		(29.500)	
R&D Missing	-3.395	***	0.577		-4.754	**	0.639	
	(1.147)		(1.280)		(2.415)		(1.308)	
Company Age	-1.170		1.843				2.509	
	(1.277)		(1.875)				(1.961)	
Lag Industry-adjusted Tobin's Q			50.307	***	27.737	***	49.142	***
			(7.653)		(5.191)		(7.585)	
Founder			-0.786		-2.301		-0.606	
			(0.794)		(2.126)		(0.913)	
Lag Abnormal Total Compensation			2.488	*	1.306		5.116	**
			(1.477)		(1.654)		(2.175)	
CEO Ownership ≥ 20%			0.300		3.137		0.843	
			(1.602)		(1.912)		(1.627)	
CEO Tenure 1			0.201		-0.944		1.043	
			(1.794)		(1.963)		(1.894)	

	(1)		(2)		(3)		(4)	
CEO Tenure 2			-0.627		-0.891		-0.957	
			(1.103)		(1.194)		(1.149)	
CEO Tenure 3 & 4			-1.678		-1.611		-1.679	
			(1.041)		(1.227)		(1.060)	
CEO Tenure 5 & 6			-1.249		-1.134		-1.303	
			(1.090)		(1.024)		(1.097)	
Diversified			0.563		-10.539		0.624	
			(1.642)		(10.142)		(1.749)	
CEO Outsider			-2.682	**	1.341		-2.101	*
			(1.107)		(2.302)		(1.118)	
CEO Is Chair			-0.321		-0.224		0.573	
			(1.326)		(1.785)		(1.526)	
Intercept	10.286	***	14.228	***	-0.883			
	(1.524)		(2.193)		(3.952)			
Number of observations	6942		2690		2631		2686	
Adjusted R-squared	0.19		0.52		0.66		0.50	
AIC	74830.64		27791.24		25905.77		27827.85	
BIC	74905.93		27920.98		26029.15		27957.55	
Hansen J Statistic							0.431	

Notes: In this table, I display the results of my copy of Table 3 of Bebchuk et al. (2011). All models have year-fixed effects. Their model 1 consists of only lagged CPS and firm control variables, and is estimated with the OLS approach. Model 2 includes CEO control variables. Model 3 also includes firm-fixed effects. Model 4 also incorporates instrumental variables for lagged CPS with lagged Industry Median CPS, lagged Number of VPs, and lagged CEO is Only Director as instruments. Additionally, it is good to note that Bebchuk et al. (2011) clustered by firm instead of by CEO. Furthermore, the numbers in brackets are the standard errors. p<.01, ** p<.05, * p<.1