

**MASTER
FINANCE**

Banks performance and CEO pay cuts relationship: evidence from the US

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Dissertation

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Bibliographical Note

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The conclusion of this dissertation will mark the accomplishment of the Master in Finance.

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Abstract

The reasons behind large CEO pay cuts have scarcely been studied, particularly applied to the banking sector. Many studies have found a significant relation between firm performance and CEO remuneration, but only a few of them tried to answer the question of whether poor firm performance can be a cause of the observed pay cuts in CEO compensation.

This dissertation focuses on the existence of CEO remuneration cuts in the US banking sector between the years of 1994 and 2020. Using a sample of 321 pay cut situations, the study applies a logit model to test for the influence of firm performance as well as other firm characteristics, in the likelihood of a pay cut in CEO total remuneration.

The results indicate that firm performance influences the likelihood of a pay cut in CEO remuneration, particularly when is measured by abnormal stock returns, as predicted by the literature. When performance is measured by abnormal return on assets, the link is weak or not significant. It is also found that the likelihood of a pay cut is higher when the CEO pay in the year before the pay cut, measured by the abnormal total pay, is higher than predicted to begin with. The analysis also shows evidence that some corporate governance characteristics impact the relation between firm performance and the probability of a pay cut in CEO total compensation.

This study contributes to the literature regarding the relation between company performance and CEO compensation, particularly the few studies about pay cuts in consequence of poor firm performance. In addition, it also presents practical implications, giving new insights to banks' board of directors on how CEO compensation changes in response to poor stock and accounting firm performance in the banking industry.

JEL codes: G21, G35

Keywords: Pay Cut Likelihood; Stock Performance; ROA Performance; Banking Industry; Corporate Governance Characteristics

Resumo

Os motivos por trás dos grandes cortes na remuneração dos CEOs têm sido pouco estudados, particularmente no setor bancário. Diversos estudos encontraram uma relação significativa entre o desempenho da empresa e a remuneração dos CEOs. No entanto, poucos tentam responder à questão de se o fraco desempenho de uma empresa pode ser causa dos cortes observados na remuneração dos CEOs.

Este trabalho foca-se na existência de cortes na remuneração dos CEOs no setor bancário dos Estados Unidos entre 1994 e 2020. Recorrendo a uma amostra de 321 situações de cortes remuneratórios, é aplicado um modelo logit para testar o impacto do desempenho da empresa, bem como outras características da mesma, na probabilidade de um corte na remuneração total do CEO.

Os resultados indicam que o desempenho da empresa influencia a probabilidade de um corte na compensação do CEO, particularmente quando é medido pelos retornos anormais das ações, indo ao encontro do que é previsto pela literatura. Quando o desempenho é medido pelo retorno sobre ativos (ROA), a relação é fraca ou não significativa. Também se constata que a probabilidade de um corte salarial é maior quando a remuneração do CEO no ano anterior ao corte, medida pelo pagamento total anormal, é maior que a prevista. A análise também apresenta evidências de que algumas características de governo da empresa impactam a relação entre o desempenho da empresa e a probabilidade de um corte na remuneração do CEO.

Este estudo contribui para a literatura relativa à relação entre o desempenho da empresa e a remuneração dos CEOs, particularmente para os poucos estudos sobre cortes salariais em consequência do fraco desempenho da empresa. Além disso, apresenta implicações práticas, oferecendo novas informações aos conselhos de administração dos bancos sobre como a remuneração dos CEOs se altera em resposta ao fraco desempenho, quer contabilístico quer das ações da empresa, no setor bancário.

Códigos JEL: G21, G35

Palavras-chave: Probabilidade de Corte Salarial; Performance da Ação; Performance do Retorno sobre Ativos; Setor Bancário; Características de Governo da Empresa

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1. Introduction

According to the agency theory, company performance and executive compensation appear to be correlated (Deysel & Kruger, 2015; Fama, 1980; Jensen, 1976). Despite the attention from the researchers, most of the literature about executive compensation focuses on explaining the overall link to performance, rather than the causes of big pay cuts in CEOs compensation, ignoring the causes of these big remuneration decreases. According to Core et al. (2003), the board of directors may link CEO compensation to firm performance to align the interest of the company and its shareholders and, particularly in banking industry, Barro (1990) concluded that changes in CEO remuneration depend on bank performance.

The few studies about pay cuts related to performance tried to understand if boards dynamically adjust compensation when the firm is facing poor performance. According to Gao et al. (2012), it is common to see a large CEO pay cut in response to poor firm results and the probability of existing a pay cut following poor performance is higher in firms with good corporate governance practices, where the board uses pay cuts as a response towards the CEOs in consequence of bad performance.

The choice for the banking sector as the sample of this analysis comes, first, from the lack of research found regarding the relation between CEO compensation and the performance of banks. Moreover, banks, as financial institutions, play a vital role in the economy as a whole, motivating economic growth and the development across the other sectors (Allen et al., 2014). In addition, literature indicates that corporate governance mechanisms in banks differentiate from non-financial firms (Adams & Mehran, 2003; Adams & Mehran, 2012; Fernandes et al., 2017), so the reaction of the board to poor performance in banks can have particularities comparing to other industries. Finally, the particularities of the CEO pay structure in the banking industry identified by Houston and James (1995) and Ang et al. (2002) may also create new conclusions regarding the link between firm performance and CEO remuneration when looking at the banking sector.

The focus of this work is on understanding if CEO's payment cuts are related to banks performance. It will be tested the hypothesis of whether, in times where the performance decreases, there are payment cuts in CEOs compensation. The different conclusions of the previous literature regarding the link between CEO pay and performance and the lack of research about poor firm performance as an explanation for large pay cuts motivate this

investigation that pretends to contribute to reduce this research gap. As raised by Gao et al. (2012), the relation between pay and performance can be non-linear in the sense that poor firm performance can lead to a big pay cut in CEO remuneration, as a way of incentive to improve performance. In addition, it will be tested whether the presence of certain board characteristics influences the reaction of the board to poor firm performance, being the response of the board, dependent also on the presence of specific corporate governance board characteristics.

This way, if this proposed study, on the one hand, detects a significant relation between declining performance and the likelihood of a pay cut, it can indicate that banks board associate bad results to the manager's actions, using the pay cut as a way of reflecting CEO performance. On the other hand, if the relation is not detected, it indicates that, in the US banking industry, CEO remuneration does not reflect the bad performance of the company. This work is inserted into a field of extreme importance in corporate governance as it is the link between remuneration and performance presented by the agency theory and, at the same time, focus on a little explored area, the relation between firms' performance and large CEO pays cuts, applied to the US banking sector.

The research will apply a logit empirical model to the chosen sample which consists in CEOs from US banks that stayed at the company for at least three years, using data taken from EXECUCOMP and DataStream, for the years 1994 to 2020.

This study is organized as follows. Chapter 2 covers the main literature. Chapter 3 presents the research questions and hypothesis, and chapter 4 describes the data, variables and methodology employed. Chapter 5 has the discussion of the empirical results and findings. Chapter 6 presents some robustness analysis. The conclusions and implications are presented in Chapter 7 and the limitations and ideas for possible future investigation are discussed in Chapter 8.

2. Literature Review

2.1. Banking Sector

Banks and other financial institutions play a vital role in the economy. The banking sector activities have a real impact in improving business development across the different sectors, being one of the most important promoters of economic growth. Banks have the important role of channeling resources and provide liquidity across economies and, at the same time, offering saving and investment products for the main actors of the market, including individuals, companies, institutions, and governments (Allen et al., 2014).

The history of the US banking sector from 1994 to 2020 is characterized by important events and significant changes that modeled the industry to the present. The 1990s decade was marked by the repeal of the Glass-Steagall Act in 1999, permitting commercial banks, investment banks, and insurance companies to take part in each other's activities and offer banking, security, and insurance. This situation increased the range of activities that banks and their holding companies were able to conduct, as they could before the Great Depression. From 1933 until this date, the commercial banking and the securities business had to be separated (Barth et al., 2000). Moreover, the late 1990s and early 2000s started the introduction of internet banking, changing the way banks interacted with the costumers and promoting some deregulation (Beck et al., 2007). After almost 18 years of growth and expansion in the economy, the US entered a recession at the beginning of 2001 that continued until the end of the year, characterized by an increase in unemployment rate (Kliesen, 2003). Later, in 2007, the US banking sector faced the biggest challenge since the Great Depression. The mortgage crisis led to the collapse of several major financial institutions, requiring government intervention to save the financial sector. The financial crisis promoted significant regulatory reforms to assure financial stability, transparency and protect the clients from abusive financial practices (Hoshi, 2011). Also, following the financial crisis, Federal Reserve implemented a new monetary policy characterized by near-zero interest rates and quantitative easing with the goal of stimulating the economic growth and stabilizing the financial system, having a big impact on the banks profitability and lending practices (Thornton, 2012). During these decades, with the appearance of the Millennials and Gen Z consumers, an increase in the presence of technology and digitalization was a constant, requiring the traditional banks to adapt to the new costumers behavior and requirements, being forced to offer continuously more tech-driven services and increasing

competition (Pousttchi & Dehnert, 2018). Later, in 2020, the COVID-19 pandemic also created new challenges to the banking industry, requiring the implementation of many different policy measures that impacted bank lending decisions and the banks themselves. Banks played a vital role in implementing government relieve programs as the Paycheck Protection Program (PPP) that supported businesses and individuals during the pandemic (Berger & Demirgüç-Kunt, 2021). Overall, the period between 1994 and 2020 presented significant challenges for the US banking sector, creating the need for important changes driven by regulatory frameworks, technological advances, shifts in consumer behavior and economic fluctuations.

The importance of understanding corporate governance and compensation mechanisms in the financial industry relates to the fact of it differing from the other sectors in some features. Moreover, failures in bank governance look more critical than failures in firms from other sectors governance, due to its impact on the stability of the financial system and the overall economy (Fernandes et al., 2017). So, it is important to have well-governed banks in order to maintain the stability not only of the entire financial system but also due to the importance of banking sector in the economy as a whole (Fernandes et al., 2017). In fact, the weak corporate governance in the banking industry is often identified as one of the causes of the global financial crisis (Saghi-Zedek & Tarazi, 2015) or even its major cause (Kirkpatrick, 2009), affecting not only the banking industry but also many other industries and the economy as a whole.

Banks, being financial institutions, can create different corporate governance challenges, differing from non-financial firms (Staikouras et al., 2007). For example, the regulation in banks is higher than in manufacturing firms so, understanding the incentive structure that motivates the compensation decisions in the banks can be very important to create effective regulation (John, 2003). Moreover, research suggests that there are some differences in how corporate governance mechanisms act in banks compared with non-financial firms. Some of the empirical findings commonly found in non-financial institutions, like board independence and board size, do not affect in the same way banking firms (Fernandes et al., 2017), so it appears to be differences in governance structures when comparing banks with unregulated non-financial firms (Adams & Mehran, 2003; Adams & Mehran, 2012). In addition, poor governance problems look to be more severe in banks than in non-bank firms

and the costs of failures appear to be higher (Pathan, 2009), playing bank's board a crucial role in achieving effective governance (Fernandes et al., 2017).

Despite the attention given to the topic of corporate governance and CEO compensation in the United States companies, there has been given less focus on the corporate governance of banks and financial institutions (John, 2003). However, mostly since 2007–2008 financial crisis, there has been an increasing attention paid to the quality of corporate governance systems in banks, in particular concerning the quality of the boards of banks and respective characteristics (Fernandes et al., 2017).

2.2. Agency theory in executive compensation: pay by performance relation

According to the agency theory, company performance and executive compensation appear to be correlated (Deysel & Kruger, 2015; Fama, 1980; Jensen, 1976). In fact, some studies have already tried to find a relation between CEO compensation and firm performance, reaching different results. In the field of agency theory, there has been a lot of research on principal-agent conflict in corporate finance (Gao et al., 2012). Since Jensen (1976), many studies have explored the incentive mechanisms, showing different results about the principal-agent relationship regarding performance and compensation. Jensen and Murphy (1990) argue that a compensation policy that connects the remuneration of the CEO to the shareholders wealth gives incentives to the managers to take actions aligned to an increase in shareholders wealth, minimizing conflicts of interest. In addition, Core et al. (2003) state that, in order to make sure that CEO's actions are aligned with the best interests of the company and its shareholders, the board can decide to link executive's compensation to firm performance. This way, it appears to be appropriate to pay top managers based on shareholder wealth.

In the US, according to Bebchuk (2005), between 1993 and 2003, companies market capitalization growth could only explain less than 50% of growth in mean CEO compensation. Firth et al. (1996) also found no significant correlation between firm performance and CEO compensation in their study applied to Norway. However, most of the studies show a positive relationship between these two variables (Deysel & Kruger, 2015). According to Doucouliagos et al. (2007), Crespi-Cladera and Gispert (2003), Herdan and Szczepańska (2011), there is a positive relationship between compensation and performance,

in Australian, Spanish, UK and Polish markets respectively. According to Murphy (1999), an important mechanism of corporate governance is the alignment between the CEO incentives and the interests of the shareholders, including the managerial ownership of equity and options in the firm, performance-related bonuses and performance-contingent promotions and dismissals. However, the majority of incentive plans employ piece-wise linear accounting of earnings with lower and upper bounds. This reduces the sensitivity of cash compensation to earnings during periods of extremely low or high earnings (Murphy, 1999).

Regarding the differences in the impact between facing good or bad performance, one fraction of the studies reaches the conclusion that CEO pay rises when facing good firm performance but don't decrease (or decrease in a non-significant level) when the firm is facing bad performance. An example is Harris and Holmstrom (1982) model, that shows that compensation doesn't decrease for poorly performing executives contrary to better performance executives that will see their salaries going up after a contract renewal, suggesting an almost one-sided relationship. Garvey (2006) and Rajgopal et al. (2006) conclusions present that CEO total pay is less sensitive to negative performance than to positive performance, meaning asymmetry in pay-for-performance relationship. In the other position of the literature, Noe (2009) states that the CEO's capacity to siphon off funds from the company is the root cause of the agency issue. It happens due to the opportunity cost of diverting resources, which is high when performance is high, so it is not necessary to have many incentives. Facing lower performance, the pay-for-performance relation must be steep because the incentive for diversion is high. The board plays the role of setting the minimum level of acceptable performance and has a sharp decline in pay after that point. Also, there is evidence that CEO cash remuneration is twice as sensitive to negative stock returns as it is to favorable stock returns (Leone, 2005).

In the context of pay by performance relationship, the reasoning behind the pay cuts has the following explanation (Lobo, 2018). Assuming that the poor performance of the company is related to factors that the firm can control, the board reflects if this poor performance is associated with low effort from the CEO. If so, the board will probably adjust CEO compensation to promote greater effort, reducing it. The new remuneration will be accepted by the CEO if he considers that the utility of keeping in the company is still higher than the utility of finding a new job. Then, the CEO will increase the effort to perform better and

restore the previous level of pay. It can be seen as a sign of the board that is wheeling to take actions to punish the CEO when the company is facing poor performance.

Barro (1990) studies on bank-management compensation found that changes in CEO remuneration depend on performance, measured by stock returns and changing in earning yields. Moreover, Houston and James (1995) concluded that, usually, banks CEOs receive less cash compensation, hold fewer stock options and receive a smaller percentage of the total compensation as options and stocks, compared with other industries. Ang et al. (2002), by studying the compensation of top-management in the US banks, concluded that compensation structures of CEOs are different from the ones of the other managers, having a larger part of their pay connected to performance measures.

The studies about pay cuts related to performance, like Gao et al. (2012), tried to understand if boards dynamically adjust compensation when the firm is facing poor performance. The authors studied discrete decreases in CEO compensation as a response to poor performance, rather than studying the general pay-for-performance link. They tried to understand if boards dynamically adjust compensation when the firm is facing poor performance. According to the authors, it is common to see a large CEO pay cut in response to poor firm performance and the probability of existing a pay cut following poor performance is higher in firms with good corporate governance practices, where the board uses pay cuts as a response towards the CEOs in consequence of poor firm performance. They also concluded that pay-for-performance sensitivity and the probability of a pay cut increase for companies with particularly poor performance motivating managers to improve performance. Following the pay cut, usually CEO performance increases and, consequently, the remuneration rises. Results show the possibility that a compensation cut creates incentives for CEOs to reduce poor performance and to increase performance after the pay cut (Gao et al., 2012). The main cause of total pay decrease is related to the decrease in the value of equity-based compensation, due to the decrease in the units of stock and options grants. In their pay cut sample, the median CEO experienced a 60% reduction in his equity-based compensation but only a 12% reduction in his salary and bonus (Gao et al., 2012). The results also show an increase in the frequency of pay cuts over time, being most of them in moments when the economy entered a recession, and the stock market experienced a big fall. The authors also found that, when the remuneration is high from the beginning compared with the industry, boards are more likely to do a pay cut.

According to Lobo (2018), the consequences of the pay cuts in improving firm performance are not clear ex ante. Being used as a mechanism of discipline, it may be expected that, on the one hand, the CEO improves his behavior and performance following the pay cut. In this situation, the CEO comprehends that the company associates the poor operating results with poor managerial decisions, being motivated to do better to increase firm performance in the following years and restore his remuneration. On the other hand, an opposite reaction of the CEO after the pay cut, decreasing his performance and leading even to worst results, can be explained by a possible decrease in the managerial incentives and motivation, making the CEO feel insulted, belittled, and wronged by the pay cut. The findings of Lobo (2018) go according to the ones from Gao et al. (2012), reaching the conclusion that the reported earnings of the company, measured as ROA, increase in the year after the CEO pay cut. However, they also found that most of the reported improvement is achieved via accruals and real activities manipulation, being insignificant the improvement in profits in the year following the pay cut if they had not engaged in earnings management activities. These results show that CEOs may involve in real earnings management and accruals management to restore the level of remuneration before the pay cut, as well as to restore his reputation quickly, raising moral problems and unintended consequences that can be associated with CEO pay cuts as response to poor performance.

2.3. Bank performance and CEO compensation: determinants and measurement

The level of remuneration of the CEO and the choice of performance measures are important and often debated components of the governance structure (Core et al., 2003) and many studies had already focused in explaining these concepts (Murphy, 1999). According to Antle and Smith (1986) and Jensen and Murphy (1990), executives compensation can be divided into three categories. The first, current compensation, includes CEO total annual salary, bonus, new equity grants and other compensation. The second includes the changes in the value of the CEO's portfolio of stock and options from the company. The third refers to the possibility that the market's assessment of the CEO's human capital will decrease following termination because of poor performance or a change in control. Mehran (1995) says that firm performance is positively related the percentage of CEOs compensation that is equity based. Agency theory refers that the use of incentives like performance based pay

align the action of the CEOs to the interests of the shareholders (Ang et al., 2002), requiring this way less monitoring from the board of the directors.

When evaluating performance, the choice of adequate indicators plays a vital role. According to Eriksson (2000), indicators can be market-based or based on accounting profits. In some literature, as Deysel and Kruger (2015), in order to measure company's market performance, the authors use "relative performance reviews", comparing the change rate in a specific company market share or profitability with those from the market competitors. In that way, comparing the performance of a company with the performance of its competitors, it is possible to reduce the impact of external factors when determining the performance of the company (Farmer, 2013).

The return-on-assets (ROA) can be used as an indicator of the operational efficiency of the bank, giving information regarding the way profits are made, on average, by each unit of assets and indicating how efficiently the company is being run. This is computed by dividing the net profit after taxes by the assets of the bank (Petersen & Schoeman, 2008). ROA can be used as a measure of bank performance, representing the ability to earn profits (Digdowiseiso, 2021). Nulla (2013) investigated the effect of ROA on CEO compensation, concluding that most of the analyzed companies have no relation between return on assets and CEO compensation, except in the bonus component of compensation.

Stock price refers to the stock market closing price during a certain period. The change in the stock price and, consequently, the stock return, is something very observed by the investors, because it determines the shareholders wealth, meaning that maximizing shareholders wealth implies maximizing company's share price (Brigham & Houston, 2014). The share price is described as a market price, as it represents the price at the end of the exchange day requested by the seller or the buyer, determined by the market (Digdowiseiso, 2021).

Some studies found a positive relationship between ROA and stock returns, once a high ROA increases the attractiveness of the company for investors, increasing stock prices (Ang, 1997; Fitri & Innes, 2016; Riani et al., 2022). The results indicate that the operational performance of the company also impacts its market-based performance.

2.4. Board Characteristics

In this part of the literature review it will be presented the main existing literature regarding the characteristics of a company board, the respective meaning, and the influence they have in the board actions, particularly across the banking sector companies. The board characteristics explored will be the board independence, board size, CEO-chairman duality, CEO equity ownership, CEO connection to the compensation committee and the situation when the CEO is also a member of the board of directors.

According to the literature, the different characteristics of the board can also have impact on director's incentives (Fernandes et al., 2017). Most of the time, the compensation given to a CEO must be approved by the board of directors. The reaction of the board can take more or less time depending on its characteristics (Gao, 2010). However, not a lot is known regarding what makes a board more efficient in deciding the right compensation for each moment of the company. According to Jensen and Murphy (1990), the board of directors has the role of penalizing the incentives for the CEO that fail to maximize shareholder's wealth by linking his remuneration to firm performance.

2.4.1. Board independence

Independent directors can be defined as the ones that don't have any business or social relationship with management (Fernandes, 2012). Having no connection with the management team and no concerns about their reputation, board members should be more effective monitoring and supervising the manager (Hermalin, 2003). If the CEO chooses outside directors to advise and supervise his activities as well as to give experience, valuable insights and opinions and a different perspective to the company activities, the board can also have an important advisory role (Adams & Mehran, 2012; Hermalin, 1988). On the banking sector, where the companies are characterized by particular and relevant advising requirements, the presence of an independent board is particularly important (Coles et al., 2008). However, independent directors, not being directly related to the activities of the bank, may not have the sufficient knowhow and expertise in the complex banking sector, being limited monitoring and controlling the CEO activities (Adams & Mehran, 2012).

With regards to compensation, the managerial power hypothesis states that the influence of managers over the board of directors leads to excessive pay. Moreover, more independent boards is a key factor to improve corporate governance (Bebchuk, 2002). According to

Guthrie et al. (2012), in the presence of independent directors, who are better monitors of CEOs, CEO pay should decline in moments when the performance decrease because the manager should be unable to extract rents in form of a higher pay.

2.4.2. Board size

In most of the times, banks have larger boards than non-financial firms (Adams & Mehran, 2012). According to the literature, board size plays a significant role in board monitoring and affects firm performance. According to the agency theory, studies found a negative correlation between board size and firm performance (Yan et al., 2021). It should happen due to the larger agency costs and difficulties related to coordination and communication (Ahmad et al., 2017). However, according to the resource dependence theory, this relation is positive, once a larger board can contain more non-executive directors and members from different areas and with different experiences, making better decisions and monitoring the manager more effectively (Ahmad et al., 2017).

The study of Gao (2010) examined how board size affects the board decision on determining the right changes in executive compensation relative to firm performance, investigating the relation between board size and CEO's pay-performance sensitivity. The authors argue that an optimal board in size, with low costs of flow and process of the information leads to a better management of the CEO pay when facing poor performance. In the presence of a vigilant board, CEOs who destroy value should be penalized in their remuneration (Gao, 2010). Bedford et al. (2023) concluded that board size increases the likelihood of a pay cut.

2.4.3. CEO duality

According to Jensen (1993), when the chairman and the CEO of the company are the same person, the lack of independence and possible conflicts of interest can compromise the monitoring role of the board, decreasing the ability to guarantee that the management team take part in activities that create value. Moreover, the separation between CEO and chairman decreases the agency costs because the ability to supervise the CEO is higher. Westphal and Zajac (1995) state that, in the presence of CEO duality, the remuneration of CEO will reflect his risk preferences. Risk-averse executives will attribute a higher portion to fixed compensation and a lower portion for performance-based compensation. However, and according to the agency theory, shareholders benefit from the opposite, when CEO pay is highly linked to the company performance (Jensen & Murphy, 1990). Moreover, agency

theory also suggests that CEO duality leads to increased total compensation (Krause et al., 2014).

2.4.4. CEO equity ownership

In many companies, most of the executive's pay is related to the stock returns of the firm, directly through the CEO stock and options ownership (Antle & Smith, 1986). According to Jensen and Murphy (1990), stock ownership is a way of linking executive's wealth to the value of the firm, providing managerial incentives to maximize the firm value and, consequently, shareholders wealth, reducing potential agency problems. According to the theory, an increase in the CEO equity ownership reduces the need for monitoring because it motivates the objectives alignment between the manager and the board of directors (Khan et al., 2005). Moreover, CEO stock ownership will increase the power of the CEO (Hambrick & Finkelstein, 1995) and affect compensation characteristics, enabling CEOs to extract more compensation (Khan et al., 2005). However, CEOs with a higher level of equity ownership will prefer, as a percentage of the total compensation, to maximize the guaranteed compensation that is not directly connected to the firm's performance. They will minimize the incentive compensation that is directly connected to the performance of the company, reducing the pay for performance relationship (Bathala, 1996; Gomez-Mejia, 1997).

2.4.5. CEO and compensation committee

Many studies already analyzed the importance of compensation committees in creating the CEO remuneration packages and respective composition (Vafeas, 2003). According to Newman and Mozes (1999), the composition of the compensation committee, appointed by the board of directors, impacts CEO remuneration practices and the value of the firm. The authors refer that, despite an insider participation (also part of the company's management or a key stakeholder) in the compensation committee not influencing CEO pay on a first stage, the relationship between CEO compensation and performance, the pay-for-performance relation, tends to be more favorable for the CEO in companies in the presence of insiders on the compensation committee, decreasing shareholders value. Other studies reached different conclusions. Daily et al. (1998) concluded that the participation of CEO directors in compensation committees does not benefit the CEO payment decisions and do not lead to excessive remuneration and changes. However, Conyon and Peck (1998) results refer that the percentage of outside directors in the compensation committee is positively

connected to CEO pay and pay-for-performance sensitivity. Anderson and Bizjak (2000), studying the influence of the presence of the CEO in the compensation committee on the pay structure, verified that CEO pay cuts increase when the CEO leaves the compensation committee.

2.4.6. CEO is also a member of the board of directors

According to the agency theory, when the CEO is also a member of the board of directors, the influence he has over the board leads to less managerial changes and more fixed managerial characteristics (Jensen, 1976, 1993). Moreover, Hermalin (2003) indicate that board independence from the CEO is extremely important to ensure its effectiveness and CEO involvement on the board reduce the efficacy of the monitoring of CEO activities. This CEO power on the board is associated to his information advantage of being the manager that participates in the day-to day activities of the company. It may therefore influence the other members of the board that trust the CEO, leading to decisions that benefit the CEO (Li & Roberts, 2018).

3. Research Questions and Hypothesis

In this section, the research questions and hypotheses are presented. Based on the existing literature analyzed in the previous section, research gap and on the purpose and objectives of the study, two main research questions are formulated, being the following:

- Are the CEO's payment cuts related to banks performance?
- Does some specific board characteristics impact the use of CEO pay cuts in response to poor firm performance?

The main hypothesis of this study is that the board of directors uses CEO pay cuts in response to poor firm performance in the US banking industry. It means that the likelihood of a pay cut in a certain year is higher when the firm's performance relative to the other companies in the industry is worse. On the one hand, if it is verified that pay cuts likelihood increase in consequence of poor firm performance, the hypothesis is confirmed. On the other hand, if it is found that pay cuts are not related to poor firm performance, we conclude that there is no evidence of the usage of pay cuts as a consequence of poor performance. As detailed in the literature section of this study, most of the existing studies indicate a positive correlation between firm performance and CEO compensation (Deysel & Kruger, 2015), being an usual decision of the board to link executive's compensation to the performance of the company to align CEO actions to the interests of the company (Core et al., 2003). This relation is also noticed in the banking industry (Barro, 1990). Regarding the particular case of CEO pay cuts in response to poor performance, Gao et al. (2012) found that CEO compensation is adjusted when the firm is facing poor performance. Moreover, Noe (2009) stated that, facing lower performance, there is a steep relation between compensation and performance. Thus, the following hypothesis has been formulated for this study:

Hypothesis 1 (H1): Poor firm performance increases the likelihood of a pay cut.

The study's second hypothesis indicates that corporate governance characteristics influence the relation between firm performance and the likelihood of a pay cut. According to Fernandes et al. (2017), literature suggests that the characteristics of the board of directors can impact CEO incentives and compensation. However, little is known about what makes the board deciding the right compensation for the CEO in each moment of the company (Gao, 2010).

The effect of these governance characteristics varies based on the specific factor examined, either strengthening or weakening the connection between firm performance and the probability of a pay cut. For this reason, hypothesis 2 (H2) has been unfolded in six sub hypotheses (H2.1, H2.2, H2.3, H2.4, H2.5, H2.6) that refer to the expected impact of each of the corporate governance factors presented based on the existing literature.

Hypothesis 2 (H2): The link between firm performance and the likelihood of a pay cut is affected by corporate governance characteristics.

According to Hermalin (2003), the presence of the CEO in the board of directors reduce the effectiveness and efficacy of monitoring of CEO activities. In addition, Li and Roberts (2018) refer that the presence of the CEO in the board of directors can influence the other members of the board, leading to decisions that benefit the CEO. Looking at CEO participation in the compensation committee, literature suggests that it tends to benefit the CEO in terms of the pay-for-performance sensitivity (Newman & Mozes, 1999). In addition, Anderson and Bizjak (2000) found evidence that CEO pay cuts increase when the CEO leaves the compensation committee, being the percentage of outside directors in the compensation committee positively connected pay-for-performance sensitivity. Thus, it is hypothesized:

H2.1: The link between firm performance and the likelihood of a pay cut is weaker in banks where the CEO served as a director during the year.

H2.2: The link between firm performance and the likelihood of a pay cut is weaker in banks where the CEO participates in the compensation decisions.

Regarding board independence, literature suggests that, in the presence of independent directors, CEO will be better monitored and his remuneration should decline in moments of poor firm performance (Guthrie et al., 2012). In respect to board size, Bedford et al. (2023) concluded that more board members increase the likelihood of a pay cut. The following hypotheses are formulated:

H2.3: The link between firm performance and the likelihood of a pay cut is stronger in banks with more independent directors.

H2.4: The link between firm performance and the likelihood of a pay cut is stronger in banks with more board members.

When we look at CEO equity ownership, literature presents different views on the influence of this variable in the relation between firm performance and CEO compensation. On the one hand, stock ownership relates executive remuneration to stock returns (Antle & Smith, 1986), linking executive's compensation to the value of the firm (Jensen & Murphy, 1990). On the other hand, Bathala (1996) and Gomez-Mejia (1997) referred that CEOs with a higher level of equity ownership will prefer to maximize the guaranteed compensation that is not directly connected to the firm's performance, minimizing the compensation that is directly connected to the performance of the company, reducing the pay for performance relationship. Regarding CEO duality, literature refers that the link between firm performance and CEO compensation will depend on the CEO risk preferences, once risk-averse executives will attribute a higher portion to fixed compensation and a lower portion for performance-based compensation (Westphal & Zajac, 1995). Based on the presented literature, the following hypotheses are formulated:

H2.5: The link between firm performance and the likelihood of a pay cut is affected by the level of CEO equity ownership.

H2.6: The link between firm performance and the likelihood of a pay cut is affected if the CEO and the chairman are the same person.

4. Data, Variables and Methodology

The empirical analysis of this study is based on information retrieved from the ExecuComp and DataStream databases, for a sample of US banks CEOs for the years of 1994 to 2020. Variables information starts in 1992, but the sample formation requires information on firm performance and CEO pay for two years before a pay cut. Consequently, the final sample period starts in 1994. ExecuComp is used to retrieve data concerning CEO compensation, while DataStream is used to obtain market related data. The sample consists of 245 US banks and 401 CEOs that stayed in the company for at least 3 years and have sufficient information to calculate the relevant variables used in the study. The sample consists of 2147 observations, being found 321 cases of pay cuts in total compensation for the analyzed period with the corresponding criteria. All the continuous variables were winsorized at the 1st and 99th percentiles (Reifman & Garrett, 2010).

4.1. Base Model

In this section, the models implemented to explore the motives behind a pay cut are presented. Following the discussion in the hypotheses' development section, the prediction is that pay cuts could be explained by abnormally poor performance by firms. Thus, the model shown in equation (1) is used to explore the relation between firm performance and the likelihood of a pay cut:

$$\begin{aligned} p(i, t) = & \alpha_0 + \alpha_1 ABN_SRET_{i,t-1} + \alpha_2 ABN_SRET_{i,t} + \alpha_3 ABN_ROA_{i,t-1} + \alpha_4 ABN_ROA_{i,t} \quad (1) \\ & + \alpha_5 ABN_PAY_{i,t-1} + \alpha_6 ABN_PAY_{i,t} + \alpha_7 SRET_VOL_{i,t} + \alpha_8 LnSALES_{i,t} \\ & + YearFixedEffects + e_{it} \end{aligned}$$

Where $p(i, t)$ represents the probability of the CEO of firm i being subject to a pay cut of at least 25% in his total remuneration (Gao et al., 2012) in the year t . The dependent variable (PAY_CUT) takes the value 1 if the company cuts CEO total compensation by at least 25% in company i in year t , and 0 otherwise.

The independent variables consist of the abnormal stock return in the year of the pay cut (ABN_SRET) and in the year before the pay cut (LAG_ABN_SRET), the abnormal return on assets in the year before the pay cut (LAG_ABN_ROA) and in the year of the pay cut (ABN_ROA). Lagged abnormal stock return (LAG_ABN_SRET) and lagged abnormal ROA (LAG_ABN_ROA) are included in the model to account for the performance of the

company in the year prior to the pay cut. The choice for both these two performance metrics, return on assets (ROA) and stock return (SRET), is related to the differences between them, being the first based on the firm accounting performance and the second being market based (Eriksson, 2000). ROA is used as an indicator of the operational performance of the company, giving information on how efficiently the company is being run by the manager (Petersen & Schoeman, 2008) and on its ability to earn profits (Digdowiseiso, 2021). For this reason, is more directly connected to the manager's efficiency and performance. For instance, stock return refer to the change in stock price during a certain period, determining shareholders wealth (Brigham & Houston, 2014). Being mostly determined by the market (Digdowiseiso, 2021), stock returns are not as directly related to CEO performance as the return on assets, depending also on other factors not controlled by the CEO. Despite the differences between the two performance metrics used, there is evidence that ROA impacts stock prices and, consequently, stock returns, since a high ROA typically increases the attractiveness of the company for investors (Fitri & Innes, 2016). Abnormal performance is used to reduce the impact of external factors when determining the performance of the company (Farmer, 2013), comparing the performance of a company with the performance of its competitors through its relative performance metrics (Deysel & Kruger, 2015). This way, it becomes more likely that changes in the company's performance are primarily due to the CEO's actions, rather than being merely a result of events affecting the entire banking industry.

Additionally, several control variables are introduced. This group of control variables includes the abnormal CEO pay in the year before the pay cut (LAG_ABN_PAY) and in the pay cut year (ABN_PAY), to address if the probability of existence of a pay cut is higher when the CEO compensation is higher to begin with. The stock return volatility (SRET_VOL), representing the stock return volatility of the last 60 months for each company, might affect the company decision-making regarding a pay cut, so it is also included the stock return volatility to capture this effect (Gao et al., 2012). Finally, including a measure of firm size, specifically the logarithm of sales (LnSALES), is important. Larger firms may have more resources to surpass financial difficulties without needing to cut the CEO remuneration. For example, many studies have found that CEO compensation in larger firms is less sensitive to performance compared to smaller companies (Hartzell & Starks, 2003; Jensen & Murphy, 1990; Murphy & Conyon, 2000; Schaefer, 1998). Year Fixed Effects are introduced through a year dummy to capture the effect of each specific year, controlling

for time-specific variation, to account for the time trend and year particularities (Gao et al., 2012). Finally, the model is estimated using clustered standard errors by CEO to allow for correlation at each CEO due to the existence of dependence within each group (McCullagh, 1989).

4.2. Model including corporate governance characteristics

Model (1) is further extended to consider the impact that firms' corporate governance characteristics might have on the pay cut decision. For this purpose, model (2) is estimated:

$$\begin{aligned}
 p(i,t) = & \alpha_0 + \alpha_1 ABN_SRET_{i,t-1} + \alpha_2 ABN_SRET_{i,t} + \alpha_3 ABN_ROA_{i,t-1} + \alpha_4 ABN_ROA_{i,t} \quad (2) \\
 & + \alpha_1 ABN_SRET_{i,t-1} * CG_{i,t} + \alpha_2 ABN_SRET_{i,t} * CG_{i,t} + \alpha_3 ABN_ROA_{i,t-1} \\
 & * CG_{i,t} + \alpha_4 ABN_ROA_{i,t} * CG_{i,t} + CG_{i,t} + \alpha_5 ABN_PAY_{i,t-1} + \alpha_6 ABN_PAY_{i,t} \\
 & + \alpha_7 SRET_VOL_{i,t} + \alpha_8 LnSALES_{i,t} + YearFixedEffects + e_{it}
 \end{aligned}$$

Where $p(i,t)$ represents the probability of the CEO of the firm i being subject to a pay cut in his total remuneration in the year t . The difference between model (1) and model (2) is the inclusion of the interaction between the performance independent variables and the corporate governance characteristics. The variable of corporate governance (CG) assumes the value of each of the corporate governance factors that are pretended to be studied, resulting in a single model that contains the different corporate governance factors and respective moderation effects in the same regression. The inclusion of the corporate governance variables in the same regression allows to control for the effect of the other governance factors when analyzing the moderation effect of each of the corporate governance characteristics.

The inclusion of governance characteristics in the base model intends to study the impact of certain board characteristics in the relation between firm performance and the likelihood of a pay cut. The board characteristics explored are the board size (BS), board independence (BI), CEO-chairman duality (CEO_DUALITY), CEO equity ownership (CEO_OWN), if the executive is also a member of the board of directors (EXECDIR) and if the CEO participates directly or indirectly in the compensation committee decisions (INTERLOCK).

The variables EXECDIR, INTERLOCK, CEO_OWN and CEO_DUALITY are added to the model and applied to the full existent sample. Due to data limitations, the variables BI

and BS are applied separately and to a reduced sample of companies and CEOs, consisting only in the observations with available data for these variables.

4.3. Variables Construction

4.3.1. Remuneration Metrics

4.3.1.1. Pay Cut

Pay cut (PAY_CUT) is model (1) dependent variable, corresponding to a dummy variable that takes the value 1 in situations when the CEO total pay level (TDC1) decreases by at least 25% in a certain year. Total pay (TDC1), or total remuneration, is the total compensation given by the sum of salary, bonus, other annual compensation, total value of restricted stock granted, total value of stock options granted (using Black-Scholes), long-term incentive payouts and all other totals.

4.3.1.2. Abnormal Pay

The variable for abnormal pay (ABN_PAY) is included as one of the independent variables in model (1). It aims to analyze whether the likelihood of a pay cut increases when the CEO's total compensation (TDC1) is higher than the value predicted based on firm performance and executive characteristics. ABN_PAY is calculated as the difference between the actual pay level, represented by the logarithm of total pay (LnPAY) for a specific CEO in a specific year, and the expected pay level, predicted based on the firm and executive characteristics. To determine the abnormal pay, and following previous research (Core et al., 1999; Murphy, 1999), equation (3) is estimated according to Gao et al. (2012):

$$\begin{aligned} LnPAY_{i,t} = & \alpha_0 + \alpha_1 SRET_{it-1,t} + \alpha_1 ROA_{it-1,t} + \alpha_3 LnSALES_{i,t} + \alpha_3 SRET_VOL_{i,t} \\ & + \alpha_3 CEO_TENURE_{i,t} + YearFixedEffects + e_{i,t} \end{aligned} \quad (3)$$

Where *i* represents a firm and *t* a year. The logarithm of total pay (LnPAY) represents the logarithm of the total compensation (TDC1) received by the CEO of the firm *i* in the year *t*. The variables of stock return (SRET) and return on assets (ROA) account for the market and operational performance of the company, respectively. Moreover, because CEO compensation can be affected by firm performance in both the present and previous year, we use the two-year cumulative stock returns and ROAs (Gao et al., 2012). The remaining independent variables are calculated based on the current year information. Logarithm of

sales (LnSALES) is the measure of firm size and volatility (SRET_VOL) represents the stock return volatility of the last 60 months for each company. CEO tenure (CEO_TENURE) is the number of years the CEO belongs to the company as chief executive officer until year t . Year Fixed Effects are included in the model to control for time trends. Abnormal Pay (ABN_PAY) is given by the difference between the actual logarithm of pay (LnPAY) and the predicted logarithm of pay, obtained from equation (3).

Nevertheless, the implementation of equation (3) presents some limitations. The model uses data from all the observations across all years presented in the sample to reach the value of predicted total pay, using future data to predict values for past observations. Despite the use of Year Fixed Effects to account for time trends, some years particularities and possible omitted variables, the model does not account, for example, for the continuous inflation throughout the years, and possible drastic events, such as crises, that could affect some periods observations. For this reason, a degree of caution should be considered when analyzing the effect of this variable included in the base model. The description and respective source of information on remuneration metrics used in this study are presented in Table 1.

4.3.2. Firm Performance

Banks' performance is measured using the abnormal return on assets (ABN_ROA; LAG_ABN_ROA) and the abnormal stock returns (ABN_SRET; LAG_ABN_SRET). Because there are some events that can impact most of the industry constituents, in this case most of the companies in the banking sector, it is important to take into consideration the abnormal stock returns and abnormal ROA to check for abnormal performance in a company comparing with the others firms in the sector and limiting the impact of external factors when determining bank performance (Deysel & Kruger, 2015; Farmer, 2013; Gao et al., 2012). Company stock return (SRET) corresponds to the 1-year total return to shareholders, including the monthly reinvestment of dividends, for the corresponding company. Company return on assets (ROA) is given by the net income before extraordinary items and discontinued operations divided by the total assets of the company. Abnormal stock return represents the difference between the company stock return and the industry (banking sector) median stock return. Abnormal ROA indicates the difference between firm ROA and industry median ROA. This way, it is possible to analyze if the companies that introduced a pay cut following poor performance had a poor performance particularly when

compared to the other firms in the sector and not due to a decrease in the industry performance overall, reducing the impact of external factors when determining the performance of the company (Farmer, 2013). In the first case we would be in the presence of a negative abnormal performance, meaning that the returns were worse than the ones from the overall industry. The look at the abnormal performance in comparison with the other companies of the sector indicates whether a worse performance of the analyzed bank is due to factors that affected all the banking sector or to particular actions of the company, possibly taken by the CEO, permitting a better analysis of CEO performance. The description and respective source of information on firm performance metrics used in this study are presented in Table 1.

4.3.3. Governance Factors

To verify if certain governance and board characteristics might impact the relationship between the independent variables and the dependent variable, some corporate governance metrics are used. These metrics include the CEO equity ownership (CEO_OWN), the situation when the CEO is also a member of the board of directors (EXECDIR) or the chairman of the board (CEO_DUALITY), its participation in the compensation decisions (INTERLOCK), the board size (BS) and board independence (BI). The description and respective source of information on corporate governance metrics is given in Table 1.

Table 1. Variables description and source

Remuneration Metrics	Description	Source
Salary (SALARY)	Dollar value of the base salary earned by the named CEO during the fiscal year. (Thousands)	EXECUCOMP
Bonus (BONUS)	Dollar value of a bonus earned by the named CEO during the fiscal year. (Thousands)	EXECUCOMP
Current Compensation/Pay (CURR_PAY)	Cash pay given by the sum of the Salary and Bonus. (Thousands)	EXECUCOMP
Total Compensation/Pay (TDC1)	Given by the sum of Salary, Bonus, Other Annual, Total Value of Restricted Stock Granted, Total Value of Stock Options Granted (using Black-Scholes), Long-Term Incentive Payouts, and All Other Total. (Thousands)	EXECUCOMP
Equity Compensation/Pay (EQUITY_PAY)	Black-Scholes value of the stock options and value of the restricted stock grants. (Thousands)	EXECUCOMP

Abnormal Pay (ABN_PAY)	Difference between the actual level of pay and the “predicted” level of pay based on the firm and executive characteristics presented by equation (3). (Logarithm)	Equation (3)
Performance Metrics		
Return-on-assets (ROA)	Net Income Before Extraordinary Items and Discontinued Operations divided by Total Assets. (%)	EXECUCOMP
Abnormal ROA (ABN_ROA)	Difference between the company ROA and the industry median ROA for each company in each of the analyzed years. (%)	
Stock Price (SPRICE)	Close price of the company's stock for the fiscal year. (Dollars)	DataStream
Market Value (MKTV)	Close price for the fiscal year multiplied by the company's common shares outstanding. (Millions)	EXECUCOMP
Stock Return (SRET)	1-year total return to shareholders, including the monthly reinvestment of dividends, for each company in each of the analyzed years. (%)	DataStream
Abnormal Stock Return (ABN_SRET)	Difference between the company stock return and the industry median stock return for each company in each of the analyzed years. (%)	
Stock Return Volatility (SRET_VOL)	Standard deviation of the stock returns based on monthly returns over the past 60 months, the one used in Black-Scholes formula.	DataStream
Sales (SALES)	Net Annual Sales as reported by the company for each year. (Millions)	EXECUCOMP
Governance Factors		
CEO Age (CEO_AGE)	Age of the executive as reported in the annual proxy statement.	EXECUCOMP
CEO Tenure (CEO_TENURE)	Number of service years the executive carries the chief executive title. (Years)	EXECUCOMP
CEO Equity Ownership (CEO_OWN)	Percentage of total shares owned, excluding options because of the available data presented in the database; number of shares owned excluding options divided by the number of shares outstanding. (%)	EXECUCOMP
EXECDIR	Indicates if the CEO served as director during the year; it does not mean that the CEO is the Chairman of the Board. (Dummy)	EXECUCOMP
INTERLOCK	Indicates if the CEO participates directly or indirectly in compensation decisions. (Dummy)	EXECUCOMP
CEO Duality (CEO_DUALITY)	Indicates if the CEO, besides running the corporation, also holds the position of the Chairman of the Board in each of the analyzed years. (Dummy)	EXECUCOMP

Board Size (BS)	Total number of board members at the end of the fiscal year.	DataStream
Board Independence (BI)	Percentage of independent board members as reported by the company. (%)	DataStream

4.4. Descriptive Statistics

Table 2 shows the distribution of the pay cuts by year, where the first column represents the current year and the second column, labeled as “No”, has the number of situations in that year where a pay cut is not observed. The third column (“Yes”) has the number of pay cuts in that year and respective percentage relative to the total number of observations for that same year. The fourth column represents the total number of observations in the current year and respective percentage and the fifth column indicates the frequency of pay cuts in each year as a percentage of the total pay cut situations (321).

Table 2. Distribution of CEO Pay Cuts by Year

YEAR	PAYCUT			
	No (%)	Yes (%)	Total Observations (%)	Yes/Total “Yes”
1994	26 (83.87%)	5 (16.13%)	31 (1,44%)	1,56%
1995	40 (81.63%)	9 (18.37%)	49 (2,28%)	2,80%
1996	63 (91.30%)	6 (8.70%)	69 (3,21%)	1,87%
1997	54 (88.52%)	7 (11.48%)	61 (2,84%)	2,18%
1998	48 (87.27%)	7 (12.73%)	55 (2,56%)	2,18%
1999	52 (83.87%)	10 (16.13%)	62 (2,89%)	3,12%
2000	52 (81.25%)	12 (18.75%)	64 (2,98%)	3,74%
2001	45 (77.59%)	13 (22.41%)	58 (2,70%)	4,05%
2002	47 (74.60%)	16 (25.40%)	63 (2,93%)	4,98%
2003	57 (86.36%)	9 (13.64%)	66 (3,07%)	2,80%
2004	59 (90.77%)	6 (9.23%)	65 (3,03%)	1,87%
2005	58 (84.06%)	11 (15.94%)	69 (3,21%)	3,43%
2006	52 (76.47%)	16 (23.53%)	68 (3,17%)	4,98%
2007	41 (66.13%)	21 (33.87%)	62 (2,89%)	6,54%
2008	46 (63.89%)	26 (36.11%)	72 (3,35%)	8,10%
2009	68 (68.69%)	31 (31.31%)	99 (4,61%)	9,66%

2010	92 (90.20%)	10 (9.80%)	102 (4,75%)	3,12%
2011	82 (86.32%)	13 (13.68%)	95 (4,42%)	4,05%
2012	90 (87.38%)	13 (12.62%)	103 (4,80%)	4,05%
2013	93 (86.92%)	14 (13.08%)	107 (4,98%)	4,36%
2014	95 (84.82%)	17 (15.18%)	112 (5,22%)	5,30%
2015	107 (90.68%)	11 (9.32%)	118 (5,50%)	3,43%
2016	112 (98.25%)	2 (1.75%)	114 (5,31%)	0,62%
2017	91 (90.10%)	10 (9.90%)	101 (4,70%)	3,12%
2018	92 (92.00%)	8 (8.00%)	100 (4,66%)	2,49%
2019	86 (91.49%)	8 (8.51%)	94 (4,38%)	2,49%
2020	78 (88.64%)	10 (11.36%)	88 (4,10%)	3,12%
Total	1826 (85.05%)	321 (14.95%)	2147 (100%)	100%

Note: A pay cut situation, labeled as “Yes”, corresponds to a decrease of at least 25% in CEO total remuneration (TDC1).

According to Table 2, the years with the highest number of pay cuts as a percentage of the total observations in that year are 2001 (22,41%), 2002 (25,40%), 2006 (23,5%), 2007 (33,87%), 2008 (36,11%) and 2009 (31,31%). These years are the only ones that present at least 20% of pay cut situations for the analyzed sample. It is interesting to note that the years with a higher percentage of pay cuts correspond to two periods of economic recession and crisis that impacted the banking industry and when the stock market experienced a big fall (Hoshi, 2011; Kliesen, 2003).

Table 3 shows the distribution of CEO pay cuts by size. In the first column, the different intervals for the size of a pay cut are given. The second column provides the frequency of pay cuts of that size during all the analyzed years. The third column gives the frequency in percentage, dividing the number of pay cuts of each size by the total number of pay cuts. The last column represents the cumulative percentage.

Table 3. Distribution of CEO Pay Cuts by Size

Paycut Size	Freq.	Percent.	Cum.
[0.25; 0.35[	86	26.79	26.79
[0.35; 0.45[	78	24.30	51.09
[0.45; 0.55[	53	16.51	67.60
[0.55; 0.65[	42	13.08	80.69

[0.65; 0.75[	28	8.72	89.41
[0.75; 0.85[	15	4.67	94.08
[0.85; 0.95[	7	2.18	96.26
[0.95; 1[	12	3.74	100.00
Total	321	100.00	

Table 3 shows that the majority, around 80% of the sample, reduced CEOs' pay from 25% to 65% of their total pay in the previous year. Pay cuts of over 75% represent only around 10% of the total pay cuts.

Table 4 provides the descriptive statistics of the variables presented in the models (1), (2) and (3) for the analyzed sample.

Table 4. Descriptive Statistics

Variable	Equation	Obs	Mean	Std. Dev.	Min	Max
PAY CUT	(1), (2)	2147	.15	.357	0	1
ABN_SRET	(1), (2)	2147	.018	.229	-.562	.875
LAG_ABN_SRET	(1), (2)	2147	.019	.229	-.562	.854
ABN_ROA	(1), (2)	2147	.055	1.071	-5.064	5.115
LAG_ABN_ROA	(1), (2)	2147	.095	.997	-3.767	5.207
SRET_VOL	(1), (2), (3)	2147	.29	.126	.092	.736
ABN_PAY	(1), (2)	2147	.022	.622	-1.911	1.877
LAG_ABN_PAY	(1), (2)	2147	.001	.61	-1.941	1.817
LnSALES	(1), (2), (3)	2147	7.204	1.619	4.43	11.534
LnPAY	(3)	2147	8.022	1.027	5.972	10.581
SRET	(3)	2147	.128	.31	-.615	1.018
ROA	(3)	2147	1.043	1.123	-4.195	6.238
CEO_TENURE	(3)	2147	11.242	5.026	3	27
EXECDIR	(2)	2147	.944	.231	0	1
INTERLOCK	(2)	2147	.033	.179	0	1
CEO_OWN	(2)	2089	.022	.063	0	.495
CEO_DUALITY	(2)	2147	.664	.472	0	1
BS	(2)	899	12.522	3.163	6	22
BI	(2)	805	.802	.131	.167	.941

Note: Table 2 provides the descriptive statistics for the sample over the period of 1994 to 2020. The dependent variable Pay Cut (PAY CUT) is a dummy variable that takes the value 1 in situations when the CEO total pay level (TDC1) decreases by at least 25% and 0 otherwise. Abnormal stock return (ABN_SRET) is the difference between the company stock return and the industry median stock return for each company in each of the analyzed years. The abnormal return on assets (ABN_ROA) is computed by the difference between the company ROA and the industry median ROA for each company in each of the analyzed years. Volatility (SRET_VOL) is the standard deviation of the stock returns based on monthly returns over the past 60 months, the one used in Black-Scholes formula. Abnormal pay (ABN_PAY) is measured by the difference between the actual level of pay and the “predicted” level of pay based on the firm and executive characteristics presented by equation (3). The variable logarithm of sales (LnSALES) is the logarithm of net annual sales as reported by the company for each year. The logarithm of TDC1 (LnPAY) is the dependent variable of equation (3) and is given by the logarithm of total compensation of the CEO (TDC1) in a certain year. Stock return (SRET) is the 1-year total return to shareholders, including the monthly reinvestment of dividends, for each company in each of the analyzed years. Return on assets variable (ROA) is computed as the net income before extraordinary items and discontinued operations divided by total assets. CEO tenure (CEO_TENURE) is given by the number of service years the executive carries the chief executive title. The variable EXECDIR is a dummy that indicates if the CEO served as director during the year. INTERLOCK is a dummy that indicates if the CEO participates directly or indirectly in compensation decisions. CEO equity ownership (CEO_OWN) is measured by the number of shares owned by the CEO excluding options divided by the number of shares outstanding. CEO duality (CEO_DUALITY) is a dummy variable that indicates if the CEO, besides running the corporation, also holds the position of the Chairman of the Board in each of the analyzed years. Board size (BS) is the total number of board members at the end of the fiscal year. Board independence (BI) indicates the percentage of independent board members as reported by the company. Lagged variables (LAG_ABN_SRET; LAG_ABN_ROA; LAG_ABN_PAY) measure the values of the corresponding variables in the previous year.

For the sample period, the value for bank performance measured by the abnormal stock returns indicates that, on average, companies stock returns are 1.8 percentage points higher than the industry median stock return. When measured by the abnormal return on assets, banks' performance is, on average, 5.5 percentage points higher than the banking sector median. Stock return volatility mean value indicates that the standard deviation of stock returns in the 60 months averages 0.29. The average abnormal CEO pay is 0.022, meaning that, on average, sample CEOs receive a little bit more than the value predicted based on CEO and firm characteristics given by equation (3). The mean value for the sample stock returns indicates that the average 1-year total return to shareholders is around 12.8%. Return on assets mean indicates that the income before extraordinary items and discontinued operations represents, on average, around 104.3% of company total assets.

As a complement to the descriptive statistics representation, Table 5 and Figure 1 show the evolution of CEO pay before and after the pay cut year in terms of total compensation (IDC1), current compensation (CURR_PAY) and equity compensation (EQUITY_PAY), for the CEOs that experience a pay cut situation. Equity compensation (EQUITY_PAY) represents the value of restricted stock granted and the Black-Scholes value of stock options granted. Current compensation (CURR_PAY) is obtained by summing the salary and bonus. The year 0 is the year when the pay cut occurred, and the other years represent the year before (-1) and after (+1) the pay cut. Figure 2 shows the abnormal CEO total pay (difference between the actual CEO pay and the predicted CEO pay given by equation (3)) around the pay cut.

Table 5. Descriptive statistics for CEO Pay around a Pay Cut

Year -1				
	Mean	SD	Min	Max
Total Compensation (K\$)	8701.276	10207.176	527.300	39364.42
Current Compensation (K\$)	2059.846	2574.69	179.167	11198.75
Equity Compensation (K\$)	4662.922	6569.682	0.000	25703.322
Pay cut year (0)				
	Mean	SD	Min	Max
Total Compensation (K\$)	3842.831	5190.063	392.251	39364.42
Current Compensation (K\$)	1440.556	1761.259	179.167	11198.75
Equity Compensation (K\$)	2223.059	4450.803	0.000	25703.322
Year +1				
	Mean	SD	Min	Max
Total Compensation (K\$)	5767.18	7839.561	392.251	39364.42
Current Compensation (K\$)	1641.41	1941.436	179.167	11198.75
Equity Compensation (K\$)	2932.653	5076.747	0.000	25703.322

Figure 1. CEO pay around a Pay Cut

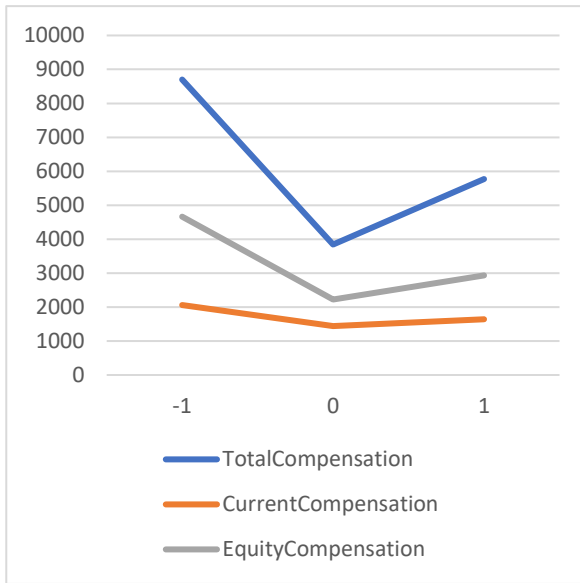
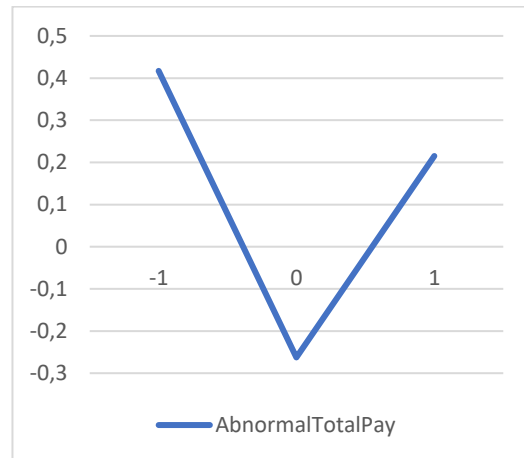


Figure 2. Abnormal CEO pay around a Pay Cut



The information provided by Table 5 and Figure 1 indicate a decrease in the mean value for both total compensation, current compensation, and equity compensation between the year -1 and the year of the pay cut. It is possible to detect a larger decrease in the equity part of the compensation (around 52%) than in the current compensation (around 30%). In the year after the pay cut, the mean levels of compensation increase but still to lower values than the ones in the year before the pay cut, as it is possible to verify looking at the mean values for each of the analyzed years, indicating that there is a recovery in the CEO remuneration after a pay cut, but not reaching the value presented in the year before the pay cut.

In addition, to verify how significant are the differences between CEO compensation in the year before the pay cut and at the pay cut year, a *ttest* is done to compare the means between the two groups. The results indicate that the difference between the means is significant at the 1% level for both total compensation, equity compensation and current compensation, meaning that the difference between the year -1 and year 0 does not happen by chance. The same is done to compare the means for CEO compensation between the pay cut year and the year after the pay cut. The results show that the difference between the means is significant for total compensation at the 1% level and significant at the 10% level for equity compensation, indicating that the difference between the year 0 and the year +1 does not happen by chance for this remuneration parts. For current compensation, the p-value of 17.06% indicates a probability of around 17% that the difference in means happens by

chance for this part of CEO compensation. The results for the test are presented in the Annexes section of this study. Figure 2 indicates a similar behavior for the abnormal total compensation around a pay cut. In year 0, when the pay cut occurs, the value of abnormal pay decreases and reaches negative values, meaning that the CEO remuneration is less than predicted by equation (3), based on CEO and firm characteristics. In the year after the remuneration cut, the abnormal total pay increases to values lower than the ones in the year before the pay cut, also indicating the gradual CEO remuneration recovery after a pay cut.

The same is done for the descriptive statistics on the firm's characteristics around a pay cut.

Table 6. Descriptive statistics for Firm Characteristics around a Pay Cut

Year -1				
	Mean	SD	Min	Max
SRET	.082	.302	-0.615	1.018
ROA	1.034	1.146	-4.195	6.238
ABN_SRET	.003	.223	-0.562	.875
ABN_ROA	.03	1.091	-5.064	5.115
SPRICE (\$)	37.088	26.248	2.840	159.63
SALES (M\$)	8329.37	19293.823	95.501	102102
MKTV (M\$)	13608.239	29550.306	86.145	189800.93
SRET_VOL	.286	.118	0.092	.736
CEO_AGE	58.22	7.055	34.000	84
CEO_TENURE	11.224	4.997	3.000	27
Pay cut year (0)				
	Mean	SD	Min	Max
SRET	.017	.325	-0.615	1.018
ROA	.904	1.304	-4.195	6.238
ABN_SRET	-.047	.245	-0.562	.875
ABN_ROA	-.035	1.259	-5.064	5.115
SPRICE (\$)	34.643	24.743	2.840	159.63
SALES (M\$)	8571.843	20162.637	83.936	102102
MKTV (M\$)	13286.52	30921.23	86.145	189800.93
SRET_VOL	.291	.118	0.092	.736
CEO_AGE	57.949	7.078	34.000	85
CEO_TENURE	11.199	5.053	3.000	27
Year +1				
	Mean	SD	Min	Max
SRET	.124	.347	-0.615	1.018
ROA	.813	1.26	-4.195	6.238
ABN_SRET	.032	.268	-0.562	.875
ABN_ROA	-.115	1.192	-5.064	5.115
SPRICE (\$)	34.962	24.547	2.840	159.63
SALES (M\$)	8165.614	19834.752	83.936	102102
MKTV (M\$)	13829.768	33084.344	86.145	189800.93
SRET_VOL	.298	.125	0.092	.706
CEO_AGE	57.603	6.925	34.000	79
CEO_TENURE	11.356	5.128	3.000	27

The information provided by Table 6 indicates a decrease in the mean value for both stock return and return on assets between the year -1 and the year of the pay cut. Abnormal stock return and ROA become negative on the pay cut year, indicating that, on average, firm performance is lower than industry performance in pay cut years using these metrics. The mean value of sales don't decrease in the pay cut year and the mean value for stock returns volatility is also stable around a pay cut. In the year after the pay cut, the mean levels of stock returns increase while the values for ROA remain close to the ones presented in the pay cut year. The value for abnormal stock return indicates that, on average, companies stock returns in the year after the pay cut are higher than the median of the overall industry. In terms of return on assets, the value for the companies in the year after the pay cut is, on average, still lower than the overall industry. Information indicates a recovery in terms of stock returns' performance but not in terms of return on assets performance. Looking at the results of the *ttest* on firm characteristics, the difference between the means for stock returns and abnormal stock returns between the year -1 and the pay cut year are significant at the 1% level. For return on assets, the p-value of 17.88% indicates a probability of around 18% that the difference in the means happens by chance for this variable. For abnormal return on assets, this probability is around 49% and for stock price is around 23%. The difference between the means for variables sales and market value are also insignificant, as it is in the case of stock return volatility. If we compare the mean values between the pay cut year and the year after the pay cut (+1), only the variables stock returns and abnormal stock returns show significant, at the 1% level, indicating that the difference between the year 0 and the year +1 does not happen by chance for these firm characteristics. The results for the test are presented in the Annexes section of this study.

Table 7 provides the correlation matrix. Multicollinearity seems to be not a major problem since most of the correlation coefficients between explanatory variables belonging to the same model are within a range of absolute values meaning negligible (0 – 0.10) or weak correlation (0.1 – 0.39). It is possible to detect a moderate value for correlation (0.4-0.69) between abnormal ROA variable and the corresponding lagged variable. Moderate correlation is also found between return on assets and lagged abnormal return on assets, however these variables are used in different models. Strong correlation (0.7-0.89) is only detected between stock return and abnormal stock return, which also belong to different models. The same happens for the variables return on assets and abnormal return on assets which present very strong correlation (0.9-1) (Schober et al., 2018).

Table 7. Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) ABN_SRET	1.000																
(2) LAG_ABN_SRET	-0.088	1.000															
(3) ABN_ROA	0.222	0.166	1.000														
(4) LAG_ABN_ROA	0.001	0.214	0.546	1.000													
(5) SRET_VOL	0.163	0.060	-0.019	-0.025	1.000												
(6) ABN_PAY	-0.011	0.029	0.020	0.056	0.069	1.000											
(7) LAG_ABN_PAY	-0.003	0.009	0.056	0.036	0.041	0.589	1.000										
(8) LnSALES	-0.019	-0.002	0.033	0.016	-0.020	0.033	0.046	1.000									
(9) SRET	0.770	-0.083	0.196	0.005	0.117	-0.001	-0.004	0.014	1.000								
(10) ROA	0.204	0.163	0.971	0.531	-0.027	0.033	0.067	0.084	0.222	1.000							
(11) CEO_TENURE	0.034	0.053	0.080	0.068	-0.057	-0.089	-0.080	-0.030	-0.033	0.052	1.000						
(12) EXECDIR	-0.003	0.016	0.006	-0.027	-0.068	-0.069	-0.061	0.002	0.035	0.050	-0.024	1.000					
(13) INTERLOCK	-0.028	-0.034	0.008	-0.002	-0.053	0.000	-0.002	0.118	0.059	0.040	-0.143	0.045	1.000				
(14) CEO_OWN	0.069	0.063	0.084	0.101	0.061	0.056	0.050	-0.095	0.074	0.086	0.074	-0.078	-0.050	1.000			
(15) CEO_DUALITY	0.022	0.016	0.004	-0.009	-0.044	0.091	0.122	0.234	0.035	0.023	0.155	-0.122	0.060	0.134	1.000		
(16) BS	-0.035	-0.073	-0.137	-0.136	-0.195	-0.048	-0.014	0.238	-0.013	-0.124	-0.104	-0.109		-0.244	0.047	1.000	
(17) BI	0.002	0.060	-0.022	-0.048	-0.092	-0.058	-0.051	0.200	-0.005	-0.009	-0.096	-0.015		-0.112	-0.003	-0.143	1.000

In addition, to assess the multicollinearity between independent variables, it is computed the variance inflation factors (VIF). All variables show a VIF under 10, indicating that we are not in the presence of multicollinearity (Hair et al., 1995)

5. Results and Findings

The results presented by the models' estimation and respective analysis are discussed in this section. The first part of this section presents the results for the base model, focusing on the effect of firm performance in the likelihood of a pay cut in CEO remuneration. The second part presents the results of the model including the corporate governance characteristics.

5.1. Base model specification results

Before running the model, the expected variable impact in the dependent variable, based on the previous literature and hypothesis formulated, is given by Table 8.

Table 8. Expected signs of the relation between the independent variables and the likelihood of a Pay Cut

Variable Name	Type of Variable	Expected Impact	Literature Support
Abnormal Stock Return	Independent Variable	-	(Ang et al., 2002; Antle & Smith, 1986; Barro, 1990; Deysel & Kruger, 2015; Fama, 1980; Gao et al., 2012; Jensen, 1976; Jensen & Murphy, 1990; Leone, 2005; Lobo, 2018; Noe, 2009)
Lagged Abnormal Stock Return	Independent Variable	-	
Abnormal ROA	Independent Variable	-	
Lagged Abnormal ROA	Independent Variable	-	
Stock Return Volatility	Control Variable	+	(Gao et al., 2012)
Abnormal CEO Pay	Control Variable	-	
Lagged Abnormal CEO Pay	Control Variable	+	(Gao et al., 2012)
Logarithm of Sales	Control Variable	-	(Hartzell & Starks, 2003; Jensen & Murphy, 1990; Murphy & Conyon, 2000; Schaefer, 1998)

Table 9 shows the results of estimating model (1), which allows for testing the impact of firm performance on the likelihood of a CEO pay cut being observed. The results show that the estimated coefficients for the variables Abnormal Stock Return (ABN_SRET) and Lagged Abnormal Stock Return (LAG_ABN_SRET) are negative and statistically significant at the 1% level, indicating strong evidence that pay cuts are more likely to occur following poor stock performance in both the previous year and in the pay cut year. It supports the findings of Gao et al. (2012), Lobo (2018), Deysel and Kruger (2015) and Core et al. (2003) regarding the relationship between firm performance and CEO compensation, but applied to the banking sector in particular. This is also in accordance with the conclusions of Noe (2009), who found a steep pay-for-performance relationship when facing lower performance. Finally, it also supports Leone (2005) and Barro (1990) regarding the sensitiveness of CEO remuneration to performance, when measured by stock returns.

Table 9. Base model logistic regression

PAYCUT	Coef.	St.Err.	p-value	Sig
ABN_SRET	-5.608	.867	0	***
LAG_ABN_SRET	-2.42	.736	.001	***
ABN_ROA	-.359	.144	.013	**
LAG_ABN_ROA	.332	.22	.131	
SRET_VOL	-.59	1.32	.655	
ABN_PAY	-17.821	2.073	0	***
LAG_ABN_PAY	17.863	2.198	0	***
LnSALES	.133	.106	.207	
Constant	-9.498	1.5	0	***
Mean dependent var	0.150		SD dependent var	0.357
Pseudo r-squared	0.824		Number of obs	2147
Chi-square	210.948		Prob > chi2	0.000
Akaike crit. (AIC)	388.283		Bayesian crit. (BIC)	586.797

*** $p < .01$, ** $p < .05$, * $p < .1$

Abnormal ROA (ABN_ROA) coefficient also shows statistical significance, at the 5% level, suggesting that the probability of a pay cut in CEO remuneration increases in years of poor performance measured by the abnormal return on assets. The strength of this relationship is given by a low coefficient ($\beta = -0.359$), indicating a weak relation. Moreover, Lagged Abnormal ROA (LAG_ABN_ROA) does not present statistical significance. This finding contributes to the conclusion of Nulla (2013), who found little relationship between return on assets and CEO compensation, once we reach similar results when looking at the abnormal ROA.

The weak effect of abnormal ROA during the pay cut year and the insignificant effect of abnormal ROA in the year before the pay cut raises questions about the discrepancy between the two performance metrics used: stock returns and return on assets (ROA). One possible explanation for this difference lies in the composition of CEO remuneration, particularly its equity-based component (Antle & Smith, 1986; Jensen & Murphy, 1990) and its direct link to firm stock performance, as highlighted by Core et al. (2003). In the sample studied, equity-based compensation appears to be a large portion of total CEO compensation. As a result, stock performance can greatly influence CEO remuneration, potentially leading to pay cuts when stock performance declines. Reductions in total pay may be a consequence of decreases in the number of stock and option grants, as well as declines in stock prices. Consequently, the equity component of remuneration accounts for most of the decrease in total compensation (Gao et al., 2012; Lobo, 2018). In turn, the relation between ROA and CEO compensation is less direct and more difficult to observe, in this case within the banking industry sample. This less straightforward connection may explain why changes in ROA have a weaker and less consistent impact on CEO pay compared to stock returns.

The coefficient for Abnormal Pay (ABN_PAY) is negative and significant, meaning that pay cut years are characterized by the CEO receiving less than predicted by firm and executive characteristics in that same year. Finally, the coefficient Lagged Abnormal Pay (LAG_ABN_PAY) is positive and significant at 1% level, indicating that CEOs with abnormally high compensation in the year before the pay cut are more likely to receive a pay cut in the following year, meaning that the probability of a pay cut occurs is higher for the CEOs that are highly paid to begin with. It corresponds to the conclusion of Gao et al. (2012) regarding the impact of this variable on the likelihood of a pay cut in CEO compensation.

Overall, the results indicate some statistical support to the first hypothesis formulated (H1), showing that, when firm performance is measured by abnormal stock returns, poor firm performance increases the likelihood of a pay cut. A poor performance measured by abnormal ROA in a certain year also increases the likelihood of a pay cut in the same year, however, in a much weaker way than the abnormal stock performance.

5.2. Model including corporate governance characteristics specification results

We now turn the attention to exploring the impact of corporate governance mechanisms in moderating the relation between firm performance and the likelihood of a CEO getting a pay cut. For this, model (2) is run, which considers several corporate governance variables, namely: CEO equity ownership (CEO_OWN), the situation when the CEO is also a member of the board of directors (EXECDIR) or the chairman of the board (CEO_DUALITY), if he participates in the compensation decisions (INTERLOCK), the size of the board (BS) and board independence (BI). This analysis allows us to explore if specific board characteristics have an impact on the use of CEO pay cuts as a response to poor firm performance by the board.

Before running the model, the expected variable impact in the relation between performance independent variables and the dependent variable, based on the previous literature and hypothesis formulated, is the following (Table 10):

Table 10. Expected signs on the impact of moderating variables in the relation between performance variables and the likelihood of a Pay Cut

Variable Name	Type of Variable	Expected Impact	Literature Support
EXECDIR	Independent Variable	-	(Hermalin, 2003; Li & Roberts, 2018)
INTERLOCK	Independent Variable	-	(Anderson & Bizjak, 2000; Conyon & Peck, 1998; Newman & Mozes, 1999)
CEO Duality	Independent Variable	+/-	(Westphal & Zajac, 1995)
CEO Equity Ownership	Independent Variable	+/-	(Antle & Smith, 1986; Bathala, 1996; Gomez-Mejia, 1997)
Board Independence	Independent Variable	+	(Guthrie et al., 2012)
Board Size	Independent Variable	+	(Bedford et al., 2023)

The results of running the equation (2) for the full sample are presented in Table 11.

Table 11. Corporate governance logistic regression (full sample)

PAYCUT	Coef.	St.Err.	p-value	Sig
ABN_SRET x EXECDIR	2.574	2.512	.306	
LAG_ABN_SRET x EXECDIR	3.988	2.254	.077	*
ABN_ROA x EXECDIR	.324	.43	.452	
LAG_ABN_ROA x EXECDIR	-.308	.654	.638	
EXECDIR	.252	.721	.727	
ABN_SRET x INTERLOCK	-11.758	4.509	.009	***
LAG_ABN_SRET x INTERLOCK	-17.413	3.874	0	***
ABN_ROA x INTERLOCK	2.611	.789	.001	***
LAG_ABN_ROA x INTERLOCK	-1.096	.796	.169	
INTERLOCK	-2.624	.759	.001	***
ABN_SRET x CEO_DUALITY	.585	1.371	.669	
LAG_ABN_SRET x CEO_DUALITY	1.397	1.401	.319	
ABN_ROA x CEO_DUALITY	.067	.329	.839	
LAG_ABN_ROA x CEO_DUALITY	.198	.322	.538	
CEO_DUALITY	-.401	.329	.222	
ABN_SRET x CEO_OWN	-10.893	14.303	.446	
LAG_ABN_SRET x CEO_OWN	15.04	9.408	.01	*
ABN_ROA x CEO_OWN	-.043	2.35	.985	
LAG_ABN_ROA x CEO_OWN	-6.067	4.966	.222	
CEO_OWN	7.396	2.772	.008	***
ABN_SRET	-9.076	2.747	.001	***
LAG_ABN_SRET	-7.349	2.42	.002	***
ABN_ROA	-.596	.493	.227	
LAG_ABN_ROA	.559	.691	.419	
SRET_VOL	-.311	1.568	.843	
ABN_PAY	-19.355	2.312	0	***
LAG_ABN_PAY	19.422	2.465	0	***
LnSALES	.229	.114	.045	**
Constant	-10.884	2.021	0	***
Mean dependent var	0.147	SD dependent var		0.354
Pseudo r-squared	0.835	Number of obs		2089
Chi-square	311.870	Prob > chi2		0.000
Akaike crit. (AIC)	397.311	Bayesian crit. (BIC)		707.755

*** $p < .01$, ** $p < .05$, * $p < .1$

The results show that some corporate governance characteristics impact the interaction between firm performance and the likelihood of a CEO pay cut.

Looking at Table 11, the interaction between the Lagged Abnormal Stock Return and the variable EXECDIR is positive and significant at the 10% level. It indicates that the banks where the CEO is also a member of the board of directors are less likely to use pay cuts as response to poor performance on the previous year when measured by the abnormal stock returns. This result supports Li and Roberts (2018) and Hermalin (2003) when they account for the importance of the independence between board and CEO in reducing the actions that just benefit the CEO.

When we look at the coefficients of the interaction between the variable INTERLOCK and the performance indicators, the results are mixed and hard to result in an overall conclusion. The interaction terms Abnormal Stock Return x INTERLOCK and Lagged Abnormal Stock Return x INTERLOCK are negative and significant, suggesting that when the CEO has participated in the compensation decisions, the likelihood of a pay cut in response to poor stock performance increases. It opposes to the conclusions in the literature of Newman and Mozes (1999), who referred that pay-for-performance relationship tends to be more favorable for the CEO with his presence on compensation committee and to the findings of Conyon and Peck (1998), who associate the pay-for-performance sensitivity to the percentage of outside directors. Only when we measure the firm performance using Abnormal ROA, the interaction between this variable and the variable INTERLOCK is significant and positive, indicating that when the CEO has participated in the compensation decisions, the likelihood of a pay cut in response to poor ROA performance decreases, offering some support to the conclusions of Newman and Mozes (1999) and Conyon and Peck (1998). However, the limitation of these results comes from the fact that only around 3% of the pay cut sample presents an INTERLOCK situation, so it appears to be too optimistic to draw conclusions from these results.

Finally, the coefficient on the interaction term Lagged Abnormal Stock Return x CEO Equity Ownership is positive and significant at the 10% level, giving some support that CEO ownership decreases the likelihood of a pay cut in consequence of poor stock performance. It supports and can be related to the conclusions of Bathala (1996) and Gomez-Mejia (1997), who stated that

CEOs with a higher level of equity ownership will prefer, as a percentage of the total compensation, to maximize the guaranteed compensation that is not directly connected to the firm's performance and minimize the incentive compensation that is directly connected to the performance of the company, reducing the pay for performance relationship.

The results of running the equation (2) for the restricted sample, due to data availability for the variables of interest, are presented in Table 12.

Table 12. Corporate governance logistic regression (restricted sample)

PAYCUT	Coef.	St.Err.	p-value	Sig
ABN_SRET x BI	5.274	16.052	.742	
LAG_ABN_SRET x BI	2.047	18.174	.91	
ABN_ROA x BI	2.556	1.749	.144	
LAG_ABN_ROA x BI	6.388	2.848	.025	**
BI	1.302	2.78	.64	
ABN_SRET x BS	.751	.467	.098	*
LAG_ABN_SRET x BS	-.389	1.049	.711	
ABN_ROA x BS	-.033	.079	.675	
LAG_ABN_ROA x BS	.079	.081	.33	
BS	-.108	.148	.464	
ABN_SRET	-22.332	11.887	.06	*
LAG_ABN_SRET	-4.479	18.73	.811	
ABN_ROA	-2.553	2.302	.268	
LAG_ABN_ROA	-5.402	1.95	.006	***
SRET_VOL	-7.973	2.95	.007	***
ABN_PAY	-23.186	4.58	0	***
LAG_ABN_PAY	21.878	4.499	0	***
LnSALES	.079	.308	.798	
Constant	-.797	3.016	.792	
Mean dependent var		0.135	SD dependent var	0.342
Pseudo r-squared		0.868	Number of obs	801
Chi-square		228.832	Prob > chi2	0.000
Akaike crit. (AIC)		155.852	Bayesian crit. (BIC)	324.543

*** $p < .01$, ** $p < .05$, * $p < .1$

Looking at Table 12, showing the results for the restricted sample, the coefficient for the interaction between the Lagged Abnormal ROA and Board Independence is positive and significant, indicating that boards with a higher percentage of independent members are less likely to cut CEO remuneration in consequence of poor ROA performance. This result opposes to the conclusion of Guthrie et al. (2012), who stated that CEO pay should decline when the performance of the company decrease. The same happens for the interaction between Abnormal Stock Return and Board Size, which indicates that more board members decrease the likelihood of a pay cut because of poor stock performance, against what is proposed by Bedford et al. (2023).

Overall, the results give some statistical support to the hypothesis 2 (H2), indicating that the link between firm performance and the likelihood of a pay cut is affected by some corporate governance characteristics. Looking at the sub hypothesis, it is offered some statistical support to H2.1, which refer that the link between firm performance and the likelihood of a pay cut is weaker in banks where the CEO served as a director during the year. The same happens for H2.5, once results indicate that the link between firm performance and the likelihood of a pay cut is affected by the level of CEO equity ownership. Regarding H2.2 about the situation when CEO participates in compensation decisions, the contradictory results don't permit to reach an overall conclusion that supports this hypothesis. It is also not possible to reach conclusions regarding H2.6 and the impact of CEO duality in the link between firm performance and the likelihood of a pay cut. The results on the moderation effect of board size and board independence are contrary to the predicted by hypothesis H2.3 and H2.4.

6. Robustness analysis

6.1. Stock and option awards consideration

As observed in the data analysis of CEO compensation around a pay cut (Table 5), most of the decrease in CEO pay on a pay cut year is in the equity part of the compensation, containing stock options and grants. If these stock and options awards, that make up part of the CEO equity remuneration, are not given every year, CEO's pay will vary over time and increase abnormally in the years they are given. For example, if the CEO receives stock and options awards in certain years, there will be "pay cuts" in the following year, which are a reverse of the increase in the previous year. So, to analyze if accounting for this situation creates impact on the results, we undertook a robustness check, by limiting the CEO pay rise in the year before the pay cut to no more than 25% in order to address the situation (Gao et al., 2012). This way, it is ensured that some pay cuts are not reversals of prior spikes in the pay level, reaching a more restricted sample of 146 pay cut situations. The results are presented in the table below (Table 13):

Table 13. Regression with stock and option awards consideration

PAYCUT	Coef.	St.Err.	p-value	Sig
ABN_SRET	-1.386	.435	.001	***
LAG_ABN_SRET	-.61	.47	.195	
ABN_ROA	-.192	.149	.197	
LAG_ABN_ROA	-.041	.149	.785	
SRET_VOL	.484	.877	.581	
ABN_PAY	-3.035	.565	0	***
LAG_ABN_PAY	2.159	.48	0	***
LnSALES	.052	.062	.398	
Constant	-4.733	1.369	.001	***
Mean dependent var		0.074	SD dependent var	0.262
Pseudo r-squared		0.307	Number of obs	1964
Chi-square		132.045	Prob > chi2	0.000
Akaike crit. (AIC)		786.557	Bayesian crit. (BIC)	970.788

*** $p < .01$, ** $p < .05$, * $p < .1$

It is noticed that the performance variable abnormal stock return (ABN_SRET) remains significant and the coefficient signal remains the same. The control variables abnormal pay (ABN_PAY) and lagged abnormal pay (LAG_ABN_PAY) also keep it significance. The independent variables lagged abnormal return (LAG_ABN_SRET) and abnormal ROA

(ABN_ROA) are significant for the base model and with this restricted sample become insignificant. These results indicate that the relationship between firm performance, when measured by abnormal stock returns in the pay cut year, and the likelihood of a pay cut in CEO remuneration maintains when we have into consideration the abnormal increase in the years where stock and option awards are given. However, the impact of abnormal stock return in the year before the pay cut and the abnormal return on assets in the pay cut year are not maintained when we eliminate big remuneration increases.

6.2. Probit Model application

As an additional robustness test, a probit model is run with the same variables and sample used in the base model of the methodology section of this study (equation 1). The probit model also assumes the value of 1 in the case of existence of a pay cut and 0 if not. However, the main difference to the logit model is that the probit model uses an inverse normal link function, while the logit model uses a logit link function (Hahn, 2005). So, the probit model is used to address if the results change with the application of a different probabilistic model.

The results obtained using the probit model are similar to the ones presented in the logit model. In general, coefficients are closer to zero in the probit model. The main difference appears to be in the control variable LnSALES that shows significant in the probit model and insignificant in the logit model. Results are presented in Table 14.

Table 14. Probit regression

PAYCUT	Coef.	St.Err.	p-value	Sig
ABN_SRET	-2.554	.401	0	***
LAG_ABN_SRET	-1.23	.384	.001	***
ABN_ROA	-.183	.081	.024	**
LAG_ABN_ROA	.064	.124	.605	
SRET_VOL	-.322	.736	.662	
ABN_PAY	-8.308	.794	0	***
LAG_ABN_PAY	8.175	.852	0	***
LnSALES	.119	.053	.025	**
Constant	-4.916	.776	0	***
Mean dependent var		0.150	SD dependent var	0.357
Pseudo r-squared		0.809	Number of obs	2147
Chi-square		328.597	Prob > chi2	0.000
Akaike crit. (AIC)		416.517	Bayesian crit. (BIC)	615.031

*** $p < .01$, ** $p < .05$, * $p < .1$

7. Conclusions

The main purpose of this study is to examine the link between firm performance and the likelihood of a CEO total remuneration pay cut, contributing to the literature regarding the pay-by-performance aspect of agency theory. It is used a data sample of US banks between 1994 and 2020, analyzing 321 pay cut situations. To test the formulated hypotheses, it is used a logit model.

The results show that, when abnormal firm performance measured by abnormal stock returns decreases, the likelihood of the CEO seeing his total remuneration suffering a pay cut of at least 25% increases. It happens when the performance is worst in both the pay cut year and in the year before the pay cut. A poor firm performance measured by abnormal ROA in a certain year also increases the probability of a pay cut in the same year but in a much weaker way than abnormal stock performance. The results indicate some statistical support to the first hypothesis formulated. The lack or weak relationship found between the likelihood of a pay cut and the performance of the company when measured by the return on assets raise interesting questions regarding the connection between this performance metric and the likelihood of a pay cut in CEO remuneration when looking at the banking industry, as occurrence of a pay cut appears to be more correlated with the stock performance of the bank than to its accounting performance. A possible motive for these results is presented and can be related to the equity part of CEO compensation which contains most of CEO total compensation and is directly linked to firm stock performance.

In addition, it is tested the impact of some corporate governance characteristics in the relationship between firm performance and the likelihood of the pay cut in CEO remuneration. The results show that banks where the CEO is also a member of the board of directors are less likely to use pay cuts as a response to poor performance when it is measured by the stock returns. The conclusions regarding the participation of the CEO in compensation decisions are limited due to the lack of observations presenting this situation, which indicate that, in banking industry, the CEO usually has no direct or indirect participation in compensation decisions. The results suggest that when the CEO has participated in the compensation decisions, the likelihood of a pay cut in response to poor stock performance increases. However, when firm performance is measured by abnormal ROA, it is shown that when the CEO has participated in the

compensation decisions, the likelihood of a pay cut in response to poor ROA performance decreases. It is also paid attention to the CEO percentage ownership. Results indicate that it decreases the likelihood of a pay cut as a consequence of poor stock performance. The results regarding board independence and board size indicate that boards with a higher percentage of independent members are less likely to cut CEO remuneration in consequence of poor ROA performance. More board members decrease the likelihood of a pay cut because of poor stock performance.

In conclusion, this dissertation raises very interesting findings for the investigation on the field of the agency theory, supporting the relationship between company performance and executive compensation, in particular the relationship between banks stock performance and large pay cuts in CEO remuneration. According to this study, the main conclusion taken is that, in the banking industry, when the stock performance of the company decreases, the likelihood of observing a pay cut in CEO total compensation increases. When the performance is measured by looking at the return on assets the relationship is weak or not significative on this sector. The results on the influence of corporate governance characteristics are mixed and some of them differ from the previous literature when applied to the US banking industry sample.

8. Limitations and Future Research

It is important to note that this study presents some limitations. The unique characteristics of the banking industry and the inclusion of this sector as the sole focus of the sample allow for conclusions specific to this industry. However, these conclusions cannot be generalized to other sectors, as differences between industries may lead to varying results in similar studies. The choice of a specific sector and area restricted the sample to a relatively small number of pay cut situations, which is also important to refer.

Secondly, the lack or weak relationship found between the likelihood of a pay cut and the performance of the company when measured by the return on assets raise the doubt if the pay cut is just a consequence of the reduction in the equity component of the CEO remuneration due to the reduction in stock returns. Despite the statistical significance shown by the abnormal ROA variable and the decrease in current compensation shown in Table 5 and Figure 1, it can be a motive for future tests in future research. In this sense, future studies can test deeper the impact of firm performance in CEO current compensation, given by the salary and bonus, to analyze if the pay cut also happens frequently and on a significant way in this part of the compensation or if it is only verified in the total compensation, the one tested on this study.

Future research on the relationship between firm performance and CEO remuneration can also study the consequences of the pay cut in banks' performance and if it motivates the CEO to generate an increase in firm performance. It is possible that the compensation cut creates incentives for CEOs to reduce poor performance and to increase performance after the pay cut, checking if, following a pay cut, firm performance increases. If it is verified, a pay cut may be used as a mechanism used by the board to motivate the CEO and increase the performance of the bank.

9. Bibliography

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Databases:

Compustat Execucomp. Standard & Poor's Corp.

Datastream International. LSEG Workspace.

10. Annexes

Ttest results

	PreviousYear	PayCutYear	Diff	pvalue
ttest PreviousYearTDC1 == PCYearTDC1, unpaired	8701.28	3842.83	-4858.44	0.0000
ttest PreviousYearEquity == PCYearEquity, unpaired	4662.92	2223.06	-2439.86	0.0000
ttest PreviousYearCurr == PCYearCurr, unpaired	2059.85	1440.56	-619.29	0.0004

	PayCutYear	AfterYear	Diff	pvalue
ttest AfterYearTDC1 == PCYearTDC1, unpaired	3842.83	5767.18	1924.35	0.0003
ttest AfterYearEquity == PCYearEquity, unpaired	2223.06	2932.65	709.59	0.0603
ttest AfterYearCurr == PCYearCurr, unpaired	1440.56	1641.41	200.85	0.1706

	PreviousYear	PayCutYear	Diff	pvalue
ttest PreviousYearSRET==PCYearSRET, unpaired	0.08	0.02	-0.07	0.0082
ttest PreviousYearROA==PCYearROA, unpaired	1.03	0.90	-0.13	0.1788
ttest PreviousYearABNSRET==PCYearABNSRET, unpaired	0.00	-0.05	-0.05	0.0070
ttest PreviousYearABNROA==PCYearABNROA, unpaired	0.03	-0.03	-0.06	0.4859
ttest PreviousYearPRCCF==PCYearPRCCF, unpaired	37.09	34.64	-2.45	0.2250
ttest PreviousYearSALES==PCYearSALES, unpaired	8329.37	8571.84	242.47	0.8763
ttest PreviousYearMKTVAL==PCYearMKTVAL, unpaired	13608.24	13286.52	-321.72	0.8928
ttest PreviousYearVOL==PCYearVOL, unpaired	0.29	0.29	0.00	0.6110

	PayCutYear	AfterYear	Diff	pvalue
ttest AfterYearSRET==PCYearSRET, unpaired	0.02	0.12	0.10	0.0001
ttest AfterYearROA==PCYearROA, unpaired	0.90	0.81	-0.09	0.3692
ttest AfterYearABNSRET==PCYearABNSRET, unpaired	-0.05	0.03	0.08	0.0001
ttest AfterYearABNROA==PCYearABNROA, unpaired	-0.03	-0.11	-0.08	0.4077
ttest AfterYearPRCCF==PCYearPRCCF, unpaired	34.64	34.96	0.32	0.8700
ttest AfterYearSALES==PCYearSALES, unpaired	8571.84	8165.61	-406.23	0.7972
ttest AfterYearMKTVAL==PCYearMKTVAL, unpaired	13286.52	13829.77	543.25	0.8300
ttest AfterYearVOL==PCYearVOL, unpaired	0.29	0.30	0.01	0.4382

List of banks

AHMANSON (H F) & CO	COAST SAVINGS FINANCIAL INC	FIRSTMERIT CORP	MORGAN (J P) & CO	STERLING FINANCIAL CORP/WA
ALEX BROWN INC	COLLECTIVE BANCORP INC	FLEETBOSTON FINANCIAL CORP	MORGAN STANLEY	STIFEL FINANCIAL CORP
ALLEGIANCE BANCSHARES INC	COLONIAL BANGROUP	FRANKLIN FINL NETWORK INC	MUFG AMERICAS HOLDINGS CORP	STONEX GROUP INC
AMEGY BANCORPORATION INC	COLUMBIA BANKING SYSTEM INC	FULTON FINANCIAL CORP	N B T BANCORP INC	SUMMIT BANCORP
AMERICAN EXPRESS CO	COMERICA INC	GLACIER BANCORP INC	NATIONAL BANK HLDGS CORP	SUNTRUST BANKS INC
AMERIS BANCORP	COMMERCE BANCORP INC/NJ	GLOBAL BROKERAGE INC	NATIONAL CITY CORP	SUSQUEHANNA BANCSHARES INC
AMSOUTH BANCORPORATION	COMMERCE BANCSHARES INC	GOLDMAN SACHS GROUP INC	NATIONAL COMMERCE FINANCIAL	SVB FINANCIAL GROUP
ASSOCIATED BANC-CORP	COMMUNITY BANK SYSTEM INC	GREAT WESTERN BANCORP INC	NATIONAL PENN BANCSHARES INC	SWS GROUP INC
B. RILEY FINANCIAL INC	COMMUNITY FIRST BANKSHARES	GREAT WESTERN FINANCIAL	NORTH FORK BANCORPORATION	SYNCHRONY FINANCIAL
BANC OF CALIFORNIA INC	CORESTATES FINANCIAL CORP	GREATER BAY BANCORP	OFG BANCORP	SYNOVUS FINANCIAL CORP
BANCFIRST CORP/OK	CRESTAR FINANCIAL CORP	GREEN DOT CORP	OLD KENT FINANCIAL CORP	TALMER BANCORP INC
BANCORP INC	CULLEN/FROST BANKERS INC	GREENHILL & CO INC	OLD NATIONAL BANCORP	TAYLOR CAPITAL GROUP INC
BANCORPSOUTH BANK	CUSTOMERS BANCORP INC	HANCOCK WHITNEY CORP	ONBANCORP INC	TCF FINANCIAL CORP
BANK OF AMERICA CORP	CVB FINANCIAL CORP	HANMI FINANCIAL CORP	OPTIONSPRESS HOLDINGS INC	TD AMERITRADE HOLDING CORP
BANK OF HAWAII CORP	DAIN RAUSCHER CORP	HERITAGE FINANCIAL CORP	OPUS BANK	TD BANKNORTH INC
BANK ONE CORP	DEPOSIT GUARANTY CORP	HIBERNIA CORP -CL A	PACIFIC PREMIER BANCORP INC	TEXAS CAPITAL BANCSHARES INC
BANK OZK	DIME BANCORP INC	HILLTOP HOLDINGS INC	PACWEST BANCORP	TOMPKINS FINANCIAL CORP
BANKAMERICA CORP-OLD	DIME COMMUNITY BANCSHARES	HOME BANCSHARES INC	PAINE WEBBER GROUP	TRADESTATION GROUP INC
BANKBOSTON CORP	DISCOVER FINANCIAL SVCS	HOPE BANCORP INC	PARK NATIONAL CORP	TRIUMPH BANCORP INC
BANKERS TRUST CORP	E TRADE FINANCIAL CORP	HSBC FINANCE CORP	PEOPLE'S UNITED FINL INC	TRUIST FINANCIAL CORP
BANKUNITED INC	EAGLE BANCORP INC/MD	HSBC USA INC	PINNACLE FINL PARTNERS INC	TRUSTMARK CORP
BANNER CORP	EAST WEST BANCORP INC	HUDSON UNITED BANCORP	PIPER SANDLER COS	U S BANCORP
BARNETT BANKS INC	EDWARDS (A G) INC	HUNTINGTON BANCSHARES	PNC FINANCIAL SVCS GROUP INC	U S BANCORP/DE-OLD
BBVA COMPASS BANCSHARES INC	EVERCORE INC	INDEPENDENT BANK CORP/MA	POPULAR INC	U S BANCORP-OLD
BEAR STEARNS COMPANIES INC	F N B CORP/FL	INDEPENDENT BANK CORP/MI	PREFERRED BANK LOS ANGELES	U S TRUST CORP
BENEFICIAL CORP	FB FINANCIAL CORP	INDEPENDENT BK GRP INC	PRIVATEBANCORP INC	UCBH HOLDINGS INC
BERKSHIRE HILLS BANCORP INC	FIDELITY SOUTHERN CORP	INTERACTIVE BROKERS GROUP	PROSPERITY BANCSHARES INC	UMB FINANCIAL CORP
BOATMENS BANCSHARES INC	FIFTH THIRD BANCORP	INTL BANCSHARES CORP	PROVIDENT BANCSHARES CORP	UMPQUA HOLDINGS CORP
BOSTON PRIVATE FINL HOLDINGS	FIRST BANCORP P R	INVESTMENT TECHNOLOGY GP INC	PROVIDENT FINANCIAL GRP INC	UNION PLANTERS CORP
BROOKLINE BANCORP INC	FIRST BANCORP/NC	INVESTORS BANCORP INC	RAYMOND JAMES FINANCIAL CORP	UNITED BANCSHARES INC/WV
CADENCE BANCORPORATION	FIRST CHICAGO CORP	IRWIN FINANCIAL CORP	RCSB FINANCIAL INC	UNITED COMMUNITY BANKS INC
CAPITAL ONE FINANCIAL CORP	FIRST CHICAGO NBD CORP	JEFFERIES FINANCIAL GRP INC	REGIONS FINANCIAL CORP	VALLEY NATIONAL BANCORP
CARDINAL FINANCIAL CORP	FIRST COMMERCIAL CORP	JEFFERIES GROUP LLC	RENASANT CORP	VERITEX HOLDINGS INC
CASCADE BANCORP	FIRST COMMONWLTH FINL CP/PA	JPMORGAN CHASE & CO	RIGGS NATIONAL CORP	WACHOVIA CORP
CATHAY GENERAL BANCORP	FIRST FIDELITY BANCORP	JSB FINANCIAL INC	ROOSEVELT FINANCIAL GROUP	WACHOVIA CORP-OLD
CCB FINANCIAL CORP	FIRST FINANCIAL CORP/WI	KEYCORP	S & T BANCORP INC	WEBSTER FINANCIAL CORP
CENTRAL PACIFIC FINANCIAL CP	FIRST FINL BANCORP INC/OH	KEYSTONE FINANCIAL INC	SANTANDER HOLDINGS USA INC	WELLS FARGO & CO
CENTURA BANKS INC	FIRST FINL BANCSHARES INC	LABRANCHE & CO INC	SCHWAB (CHARLES) CORP	WELLS FARGO & CO -OLD
CHARTER ONE FINANCIAL INC	FIRST HAWAIIAN INC	LEGACY TEX FINANCIAL GRP INC	SEACOAST BANKING CORP/FL	WESTAMERICA BANCORPORATION
CHASE MANHATTAN CORP -OLD	FIRST HORIZON CORP	LEHMAN BROTHERS HOLDINGS INC	SERVISFIRST BANCSHARES INC	WHITNEY HOLDING CORP
CHEMICAL FINANCIAL CORP	FIRST INTERSTATE BNCP	LIBERTY BANCORP INC/OK	SIGNATURE BANK/NY	WILMINGTON TRUST CORP
CHITTENDEN CORP	FIRST MIDWEST BANCORP INC	M & T BANK CORP	SIMMONS FIRST NATL CP -CL A	WILSHIRE BANCORP INC
CIT GROUP INC	FIRST NBC BANK HOLDING CO	MAGNA GROUP INC	SLM CORP	WINTRUST FINANCIAL CORP
CIT GROUP INC-OLD	FIRST NIAGARA FINANCIAL GRP	MARK TWAIN BANCSHARES	SOUTH FINANCIAL GROUP INC	ZIONS BANCORPORATION NA
CITICORP	FIRST OF AMERICA BANK CORP	MARSHALL & ILSLEY CORP	SOUTHSIDE BANCSHARES INC	
CITIGROUP GLOBAL MKTS HLDGS	FIRST REPUBLIC BANK	MB FINANCIAL INC/MD	SOUTHTRUST CORP	
CITIGROUP INC	FIRST SECURITY CORP/DE	MBNA CORP	ST PAUL BANCORP INC	
CITIZENS FINANCIAL GROUP INC	FIRST USA INC	MERCANTILE BANCORPORATION	STERLING BANCORP	
CITY HOLDING CO	FIRST VIRGINIA BANKS INC	MERCANTILE BANKSHARES CORP	STERLING BANCORP/NY -OLD	
CITY NATIONAL CORP	FIRSTAR CORP-OLD	MERRILL LYNCH & CO INC	STERLING BANCSHARES INC/TX	

List of CEOs

Aaron P. Graft	David E. Zalman	Irene Mitchell Dörner	Larry D. Richman	Richard K. Davis	Wallace D. Malone, Jr.
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Allen L. Davis	David L. Trautman	Jack L. Kopnisky	Leonard W. Quill	Richard P. Chapman, Jr.	William B. Harrison, Jr.
Alvin Bernard Krongard	David R. Brooks	Jae Whan Yoo	Leslie M. Baker, Jr.	Richard Severin Fuld, Jr.	William Bradford Kessel, CPA
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