

The impact of the pandemic on determinants of bank CEO compensation

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ABSTRACT

The recent pandemic provides a unique opportunity to evaluate the stability of the parameters involved in determining executive compensation. That can provide an insight into the drivers of that compensation. An ongoing challenge in executive compensation is to disentangle the drivers of the level and forms of executive compensation. Two theories address alternate explanations for how compensation is determined. The first, optimal contracting, argues that compensation levels and types are designed to provide a wealth-maximizing return to shareholders. That pay reflects the value brought to the firm by the executives and is determined by efficient bargaining between boards of directors and executives. The alternate is managerial power. Managerial power suggests that CEOs can influence their compensation in ways beyond actual performance. They may have influence with the board of directors and use that influence to bias compensation decisions. The paper uses the period during and after the pandemic for a natural experiment. Tests of the level of different forms of compensation are done using governance and financial data. Compensation appears to be related to board of director independence and institutional ownership. The former relation appears significantly stronger during the pandemic period. Tenure, often used as a measure of entrenchment was also a significant determinant of compensation over the full period, but that significance reversed during the pandemic subperiod. Taken together, paper finds evidence that the pandemic period saw a strengthening of the relation between compensation and the factors associated with optimal contracting.

Keywords: Bank, Compensation, Governance, Pandemic, Performance

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INTRODUCTION

During and immediately after the pandemic period there has been a significant degree of stress on financial institutions. That has, in some cases, expressed as the failure of financial institutions. The three sizable banks that failed in early 2023 were among the largest to have ever failed in the US. The loss of First Republic Bank, Silicon Valley Bank, and Signature Bank has reopened the discussion about the compensation of bank executives. On June 22nd, 2023, the U.S. Senate's Banking Committee voted 21-2 to pass S.2190 RECOUP Act of 2023 out of committee and to the full Senate. The "Recovering Executive Compensation from Unaccountable Practices Act" includes, among other provisions, a claw-back for two years of compensation and gains from stock sales.

This pandemic-induced stress, both the event itself and the actions by institutions and governments to manage the effects, provides an unparalleled opportunity to evaluate the stability of executive compensation determinants. When a relation is detected, the question arises about the robustness of the parameter estimate across multiple states of the world. A serious exogenous shock can provide a natural experiment allowing a reevaluation of those estimates. Looking at the prior financial crisis of 2007-2008, various papers found subsequent systematic changes in financial institutions, particularly in relation to compensation (Cerasi, et al., 2020; Tian and Yang, 2014). The pandemic, starting in 2020, is such a shock and may provide an opportunity to consider whether there was an impact on the determinants of the structure of executive compensation in financial institutions.

Those determinants are often used to inform the interpretation of the motivation for the extant compensation structure. Two theories, optimal contracting, and managerial power, are important explanations in the literature (Bebchuk, et al., 2002; Jones, 2016; Murphy, 2002), and many papers have evaluated variables seeking evidence for each (Slomka-Golebiowska and Urbanek, 2016; Song, et al., 2019; Tian and Yang, 2014; Vo and Canil, 2019).

The pandemic provides an opportunity to examine evidence of changes in the determinants of Chief Executive Officer compensation in financial institutions. That, in turn, may impact the degree of evidentiary support for two theories. To exploit this opportunity, the paper examines 259 publicly-traded US-listed financial institutions with compensation and financial data available for multiple years both before and after the pandemic. To provide greater detail, compensation is also broken into its component parts and each component is also analyzed. The results address to what degree the pandemic impacted the determinants of executive compensation.

The remainder of the paper is organized as follows. Section 2 addresses the literature review financial institutions compensation. Section 3 discusses the data used in the analyses. Section 4 provides the empirical methodology for the paper. Section 5 provides the results of the analysis. Finally, Sections 6 covers the conclusions of the paper.

LITERATURE REVIEW

The two major theories addressing the structure of compensation of top executives in the firm include optimal contracting, and managerial power (Bebchuk, et al., 2002; Murphy, 2002; Vo and Canil, 2019). The two theories are not mutually exclusive and there is the potential that elements of both may be observed to differing degrees in an analysis.

The argument of optimal contracting is that compensation is designed to align executive incentives with those of shareholders. It recognizes that many CEOs do not hold a large portion of the equity value of the firm. That can lead to a principal-agency problem between managers and shareholders. The question then arises how to motivate the CEO to act in the best interests of the shareholders. The board of directors negotiate, on behalf of shareholders, to create an optimal contract for a high-quality CEO. That contract should maximize the value the CEO brings to the bank, net of agency costs. Bebchuk, et al., (2002) suggests these agency costs include both contracting costs, and monitoring costs. Compensation, both amounts and types, are a component of that contracting. DeYoung, et al., (2013) shows that managers do act in alignment with incentives.

The managerial power theory agrees with the existence of the agency cost problem. However, this approach suggests that CEO compensation negotiations are not simply arm's length transactions. Rather, the CEO can influence the level and types of compensation. That can arise either due to managerial entrenchment (Morck, et al., 1988), or having influence on who joins the board of directors as in Shivdasani and Yermack (1999). In such a case the contracting, including compensation is not necessarily optimal for shareholders as the manager can extract rents (Bebchuk, et al, 2002). Inefficient pay arrangements may provide an incentive structure that is suboptimal and impairs shareholder value.

There are a variety of factors considered indicators of one or the other of the theories. Board of director independence is used by a range of papers as an important governance variable (Haddad 2023; Tanna, et al., 2011) that can suggest optimal contracting. Board independence is where a majority of directors are not executives of the firm. The literature argues that firms with independent boards of directors are less likely to be captured by managerial power. The directors main form of business is external to the firm so they are less likely to be influenced than directors who report to the CEO. Therefore, a firm with an independent board is more associated with optimal contracting.

Institutional ownership is another variable that may be more tied to optimal contracting (Baghdadi, et al., 2020; Bedford, et al., 2023; Gontarek and Belghitar, 2018). Large institutional owners have the ability, and the incentive, to monitor the management and the board of directors to limit sub-optimal behaviors associated with managerial power.

CEO tenure indicates the amount of time that the CEO has served in that role. It is an indicator of accumulated experience. However, CEOs with longer tenure have also had greater time to pursue entrenchment strategies and impact the selection of directors. Tenure is often associated with managerial power and higher compensation (Al-Shaer, et al., 2022; Fabrizi, 2018; Jimenez-Angueira and Stuart, 2015) though Song and Wan (2019) argue that it might simply reflect accumulated experience.

CEO-Chair duality reflects a situation where the same person is serving in both roles in the company (Ayadi and Boujelbene, 2012). This is often seen as an indicator of managerial power as the Chair leads the board of directors in monitoring the CEO. Someone with both roles has a significant level of impact on the board. That can impact decisions of the bank (Al-Shaer, et al., 2022; Lu and Boateng, 2018), including on pay as indicated by Ding, et al., (2015). Therefore, the existence of CEO-Chair duality may lead to higher CEO pay.

Other studies use CEO ownership (Guo, et al., 2015; Fahlenbrach and Stulz, 2011; Shivdasani and Yermack, 1999). Typically, CEO stock ownership is taken as a measure of CEO power, as in Dunbar, et al., (2020) through entrenchment.

The literature also uses a wide range of financial variables based on the characteristics of financial institutions that may explain performance or risk-taking. The natural log of total assets, as a measure of size, is widely used in governance literature (Bai and Elyasiani, 2013; Boateng, et al., 2021). It is particularly of import for banks given the wide range of asset levels in publicly-traded banks. The loan to asset ratio can account for the potential of different lending strategies with different risk profiles across firms (Gontarek and Belghitar, 2018, Tran, et al., 2022). Banks better able to attract deposits may have improved performance potential moving forward so the literature often includes the ratio of deposits to assets (Abdulla and Ebrahim, 2021). The provision for loan loss ratio is also used as a measure of institutional actions to manage potential risk issues (Abdulla and Ebrahim, 2021; Lu and Boateng, 2018). The bank's Core Tier 1 capital is also included (Fahlenbrach and Stulz, 2011; Laeven and Levine, 2009; Tran et al., 2022). When evaluating firm performance, the literature widely uses ROA and ROE (Cho et al., 2017; Choi, et al., 2020; Giri 2021) for accounting performance. The literature also frequently uses market measures such as Tobin's Q (Bebchuk, et al., 2011; Dunbar, et al., 2020) to evaluate performance.

Another aspect of the literature is examining the components of the total compensation. Various papers examine the differential effects of the forms of compensation, including salaries and equity. White and Hollingsworth (2018) finds lower risk banks' executives respond most to salary incentives while high-risk banks are more tied to equity incentives. Vo and Cavil (2019) argue that options are often used for pay inflation rather than incentives. Fabrizi (2018) argues bank CEOs with high equity incentives tend to engage in greater risk-taking, but Guo, et al., (2015) finds that a greater portion of incentive pay is associated with a lower likelihood of failure. An additional measure may be total cash compensation. Kayani and Gan (2022) find firm performance, Tobin's Q and ROA, are tied to the total of both salaries and bonuses. They argue the evidence support optimal contracting as higher pay led to higher performance. More evidence justifying examining total cash compensation is Bedford, et al., (2023) who finds that CEO pay cuts are, on average, balanced out by greater bonuses. Dunbar, et al., (2020) also uses a cash compensation variable.

However, an important question is whether established relations have changed. Some papers have examined compensation issues around the 2008-2009 financial crisis (Abudy, et al., 2023; White and Hollingsworth, 2018). Tung, (2011) points out the belief that perverse incentives of executives drove that crisis suggesting a compensation issue. Bhagat and Bolton (2014) concur and point out the value in more compensation that is delayed until after retirement. Tian and Yang, (2014) find bank CEOs fared much better than their firms even though the aggregate dollar amount of pay declined. They find evidence that CEO power increases the level of compensation. Fabrizi (2018) examines the connection between equity incentives and the level of securitization associated with the crisis and finds the level of contingent compensation expanded risky behaviors, consistent with pay being driven by managerial power. Cerasi, et al., (2020) points out significant changes in the structure of compensation following that crisis to reduce the correlation between variable compensation and short-term profit, and Handorf (2015) discusses other structural changes. It appears that the 2008-2009 financial crisis did change the structure of bank CEO compensation.

The literature on financial issues around the pandemic is more limited with little on compensation. That is surprising given that Zattoni and Pugliese, (2021) argue that executive compensation is one of the five key areas in corporate governance that are deserving of analysis around the pandemic. Bedford, et al., (2023) discusses CEOs taking pay cuts during COVID-19

under pressure from external parties, particularly if they have higher pay and greater shareholdings. They find that CEOs with greater shareholdings are less likely to accept a pay cut. This might suggest a positive coefficient on the relation between CEO ownership and compensation during the pandemic period. Also considering governance factors, Chen, et al., (2021) examines firms in China and finds that the right types of independent directors can assist in firm recovery, while Haddad (2023) examines financial performance and the board of directors of Islamic banks.

More has been written on firm performance around the pandemic. Abdulla and Ebrahim, (2021) evaluate the performance of Islamic and conventional banks during COVID-19 and find the Islamic banks performed better in the Gulf Cooperation Council countries. They also found evidence for banks with high loan ratios being more affected. Pancheva, (2022) examines Bulgarian banks and finds that the intensity of the impact of the pandemic appeared to have no effect on the changes in lending or in bank efficiency. Giri, (2021) examines the performance of Nepalese banks and does not find significance in the relation between covid cases and stock returns in banking institutions. Rahman, et al., (2021) examines the liquidity levels in Bangladeshi banks and its interaction with government actions. They find variables tied to the level of the pandemic can lower liquidity, as can some government actions.

DATA

The paper assesses the relation between the compensation of bank CEOs and both financial and governance factors using data from 2010–2022. The initial sample consisted of 301 financial institutions stocks traded in the US markets. Forty-two were dropped due to missing financial or compensation data, or an insufficient number of years of that data. That left 259 financial institutions with 3062 observations. Compensation, governance, and financial data was collected from Capital IQ. Data was also gathered from proxy statements found at the SEC (<https://www.sec.gov/edgar/search-and-access>) and call reports available from the Federal Financial Institutions Examination Council (ffiec.gov). Variable definitions are indicated in Table 1 (Appendix).

The compensation data includes yearly information on total compensation and its components. The data also encompasses information on the board of directors, executive shareholdings, and institutional stockholders. Consistent with prior literature (Bedford, et al., 2023; Slomka-Golebiowska and Urbanek, 2016;) the paper expands the analysis beyond total compensation with an analysis of its components. The components considered are salary, total cash compensation, and equity compensation. Total cash compensation includes salary, bonus, pension value changes, and other cash elements, while equity compensation combines the value of stock and option grants. Evaluating the pieces separately can provide deeper understanding of the compensation structure akin to literature where factors like salary and equity compensation can help address the choice between theories (Guo, et al., 2015; Song, et al., 2019).

There are a range of governance control variables including board independence (Haddad 2023; Tanna, et al., 2011; Vo and Canil, 2019), tenure (Fabrizi 2018; Liu and Wu, 2022), CEO-Chair duality (Cheng, et al., 2022; Francis, et al., 2015), the proportion of CEO equity ownership (Guo, et al., 2015), and the proportion of institutional ownership (Bebchuk, et al., 2002; Gontarek and Belghitar, 2018).

The analysis also uses a set of financial control variables that may impact performance or risk-taking. The natural log of total assets measures size. The loan to asset ratio and the

provision for loan loss ratio proxy for the risks of lending including the lending strategy. For overall risk, bank core tier 1 capital ratios are used. The deposit ratio reflects funding costs of the bank. The Federal Funds rate is used as an interest rate control variable, and the control variable for inflation is estimated using the Personal Consumption Expenditure Price Index. Performance is measured using the accounting measures of ROA and ROE, and by the market-based measure Tobin's Q.

Table 2 (Appendix) includes financial descriptive statistics across the sample period. The market value shows a wide range of bank values, from a few million in stock value to those worth hundreds of billions of dollars, with a mean of about six billion dollars in equity value. That also shows up in the range of other values as well. For instance, the maximum provision for loan loss was over 28 billion dollars by Bank of America during 2010, while most of the biggest reductions in the loan loss provision occurred in 2021. The core tier 1 capital ratio across the period is 8.2%, but one bank had a ratio nearly at zero for at least a year. The mean return on assets is almost 1% while the mean return on equity is nearly 9%, exhibiting a gap that is not atypical for banks. The mean Tobin's Q is above 1, with the lowest measure being 0.933 so banks were broadly creating value with their asset base across the period 2010-2022.

The table also includes governance information. It appears that the typical board of directors has a significant portion of external directors with a mean proportion of 0.785. Not all, however, as the minimum is zero. CEO equity holdings tend to be quite low, in percentage terms, with a mean of 1.8% of common stock outstanding. Certainly, many firms are quite large so that may tend to depress that number. However, one firm saw CEO ownership of 38.9% of the bank. Roughly half of the firm-years reported having a dual CEO-Chair so that is not a rare occurrence in the banks. Average tenure was slightly over 10 years with at least one CEO having 44 years of experience. Total compensation averaged about 2.4 million dollars with a rough split between cash compensation and equity compensation. The two do not necessarily add up to total compensation as there are some other compensation pieces that do not fit well in either category (e.g., changes in value of pension plans and compensation for serving as director)

One interesting question is about the total level of compensation. A full analysis lies outside the ambit of the paper, but the increase in mean compensation across 2020-2022 was 18.9%, well above core inflation for that same period and in line with overall financial market changes. Therefore, unlike in prior crises, executive compensation did not decline, on average.

METHODOLOGY

The purpose of the study is to examine the potentially changing determinants of CEO compensation in financial institutions listed in the United States in the pandemic period compared to earlier data. These results will suggest whether the pandemic is associated with an increase or decrease in the factors associated with contracting or managerial power. There are three hypotheses tied to addressing that issue, examining financial, governance, and performance variables.

H1: The financial determinants of compensation for financial institutions CEOs did not change during and after the pandemic compared to the period 2010-2019.

Consistent with the literature, the first hypothesis examines financial variables to estimate the relation between them and the levels of compensation. Cross terms with an indicator variable (P) are also included to determine whether levels of significance for those independent variables change during the period 2020-2022. The literature has provided some evidence of changes to

compensation structure after the prior financial crisis. A positive coefficient on capital would be evidence for optimal contracting, as would a negative relation to the provision for loan loss ratio. Bebchuk, et al, (2002) argue executives will attempt to camouflage their compensation, particularly using contingent pay. Lower tier 1 capital ratios means banks have more leverage, so shareholders may see a higher return for a particular level of bank operations. If that is impounded in the stock price, then less capital will tend to raise the value of contingent compensation. Conyon, et al., (2011) argues that bank CEOs seek higher risk and that should be monitored by the directors. That suggests the positive relation to capital levels is consistent with the optimal contracting theory.

The second hypothesis examines the governance variables often found in the literature. The question is to what degree do governance variables explain compensation levels. Again cross-terms on governance variables allow for innovations in explanatory power for 2020-2022.

H2: The governance determinants of compensation for financial institutions CEOs did not change during and after the pandemic compared to the period 2010-2019.

Board independence and institutional ownership provides two conduits for the attenuation of managerial power. The CEO tenure, CEO-Chair duality, and CEO ownership all are factors associated with greater managerial power if positive and significant

The third hypothesis examines company performance to determine the explanatory power of that performance on the level of compensation for the various forms of compensation. It will use the governance and financial variables as controls.

H3: Bank performance is a significant determinant of the level and types of CEO pay. The existence of a pay-performance relation would typically be associated with optimal contracting as the board would be providing higher rewards for executives creating greater value in the firm.

To estimate these relations, the paper uses a fixed effect panel data model. The model uses regression to examine the relation among the factors, with a combination of natural logs, ratios, and percentages being used to eliminate scaling issues tied to firm size. The model includes clustering standard deviations by firm. Each model uses the equation.

$$C_{i,t} = \beta_0 + \beta_1 * \text{Financial}_{i,t} + \beta_{2,j} * \text{Governance}_{i,t} + \beta_3 * P * \text{Financial}_{i,t} + \beta_{2,j} * P * \text{Governance}_{i,t} + \text{OtherFE} + \varepsilon_{i,t}$$

The equation is used for all the regressions used in the paper. In the equation, $C_{i,t}$ is the chosen compensation variable for financial institution i in period t . There are separate regressions for the total compensation data, the cash compensation, salary, and the equity compensation.

$\text{Financial}_{i,t}$ are the financial variables, including the loan/asset ratio, the deposit/asset ratio, the provision for loan loss ratio, and the natural log of total assets. It also includes the federal funds interest rate and the personal consumption expenditure inflation control variables. Finally, it may include a performance variable including ROA, ROE, and Tobin's Q. The $\text{Governance}_{i,t}$ indicates governance-related variables including CEO-Chair Duality, Board independence, CEO tenure, CEO proportion of common share ownership, and the fraction of institutional ownership of common shares. P is an indicator variable taking the value of 1 during 2020-2022 and 0 otherwise. Finally, the OtherFE include variables for the year and the bank.

RESULTS

Table 3 (Appendix) examines compensation in the context of important financial variables. It includes the five financial variables, two economy-level control variables (interest rate and inflation), and five variables that are cross-products with the pandemic indicator variable to gain a sense of potential change in relations post-2019. Total compensation is significantly, and positively related to Core Tier 1 capital and firm size. The relation to capital suggests that managers are rewarded for having better-capitalized banks. There is also a negative relation to the provision for loan loss ratio, so greater expected losses are associated with lower compensation. These results are consistent with those for total cash compensation as well. Equity compensation add a positive relation to the loan ratio. Salary compensation is only significantly related to size. The results tend to suggest evidence to support optimal contracting.

Considering the pandemic-related variables, there appears to be no pattern of significance. Salary is significantly positively tied to the loan ratio for 2020-2022, suggesting incrementally greater base pay for CEOs whose banks were able to lend more. Equity compensation is negatively related to size. However, that relation is much smaller than the positive relation to size across the full period. That suggests a reduction, rather than a reversal, of the relation. Moreover, neither of these two effects exist for the other compensation measures including total compensation. This suggests that changes to financial variables during the pandemic may not lead to a significant impact on the relation to compensation. Moving forward only the two economic variables, and the five financial variables will be used in the other tables, while the cross-terms will be excluded.

Table 4 (Appendix) attempts to examine governance explanatory variables and compensation. Also included are five pandemic cross-variables. Board of director independence, CEO tenure, and institutional ownership all appear to be significantly related to the level of compensation, including its components. Both an independent board of directors, and external institutional holders, can provide monitoring to balance out managerial power. They are thus associated with optimal contracting, so the evidence tends to support that theory. In contrast, tenure is often associated with managerial power and it too is significant and positive, except for equity compensation. Equity holding also appear to be negatively related to salary. That may be a situation where a CEO with significant equity wealth has greater risk tolerance. When looking at the pandemic-related variables, the relation to board independence shows a significant increase in effect. The significance of tenure appears to reverse with the incremental effects cancelling out part of the relation observed during 2010-2019. The CEO-Chair duality factor is also often seen as one associated with managerial power as the CO also has direct oversight of the board. However, that factor is not significant for any of the compensation forms. This suggest the pandemic period has seen a strengthening of the impact of board independence – associated with optimal contracting - and a reduction in the impact of managerial power via tenure.

Table 5 (Appendix) reports the results of using return on assets as a performance measure. The five financial variables from Table 3 (Appendix) and the two market variables are included, but not reported for space reasons, However, the significant relations already reported for those factors do not change in magnitude or sign. The return on assets is significantly related to equity compensation but is not a significant regressor for total compensation, cash compensation, or salary. The relation to equity compensation provides some evidence for optimal contracting, but overall compensation does not appear to be tied strongly to company

performance. It is notable, however, that institutional ownership appears less significant when performance is considered.

Table 6 (Appendix) reports the results of using return on equity as a performance measure. Again, the financial variables are not reported for space reasons, but the significant relation reported in Table 3 (Appendix) are consistently maintained. Return on equity is only significantly related to equity compensation, but not the other measures. It appears that performance of the firm affects the equity portion of the compensation, but not the cash portion or the overall pay. Institutional ownership has lost its significance except when related to equity compensation. However, that and the connection between tenure and salary, are the only relations estimated in Table 3 (Appendix) that are not stable.

Table 7 (Appendix) reports the results of using Tobin's Q as a performance measure. For the unreported financial variables used in the model, the significant relations reported in Table 3 (Appendix) do not change. Tobin's Q is significantly related to equity compensation, which is unsurprising as both are related to the overall market value of the bank. The other compensation variables are not significantly related to Tobin's Q. It appears that, on average, contracting structure may create a reduction of equity impact on total pay despite the significant amount of stock and options used, and that provides some evidence for optimal contracting. The significance of the other governance relations continue to be stable across multiple specifications.

Table 8 (Appendix) examines the Tobin's Q performance measure further by including a separate measure for the pandemic time period. Consistent with the prior table, performance is not significant for explaining either salary or total cash compensation. However, Tobin's Q over the pandemic subperiod is now a significant explanatory factor for total compensation suggesting, consistent with an optimal contracting view, that executive performance has become more important in determining compensation during the pandemic. The significant relation between Tobin's Q and equity compensation has now shifted so that the relation is only significant during the pandemic. That suggests the pandemic may have led to an increase in the degree of optimal contracting in compensation.

The other performance measures were also analyzed with the addition of a separate measure for the pandemic time period. There was no significance beyond those reported in the prior tables. Other tests were run including using lagged performance measures. Those results did not change the pattern of performance significance.

It appears that the pandemic increased the degree to which compensation is determined as a function of board of director independence and decreased the explanatory power of CEO tenure. There is also some evidence tying compensation to market performance and that result was stronger during the pandemic period. Overall, the evidence is consistent with greater support for the optimal contracting theory during and immediately after the pandemic

CONCLUSION

This study evaluated how the determinants of the compensation of bank CEOs were impacted by the pandemic. Using panel data for banks, the relations were analyzed both for the full sample period and the pandemic subperiod. Consistent with prior literature factors such as board independence, tenure, and institutional ownership are significant explanatory factors for CEO compensation. When looking at the pandemic period, the relation to board independence is stronger than during the full period, suggesting the importance of independent boards during

structural changes. However, it appears that CEO tenure sees much of its explanatory power reduced during the pandemic. That may indicate that there is a systematic change to the way that professional experience is evaluated. Interestingly, when controlling for financial and governance factors, full-period performance measures are significant, but only for the equity portion of the compensation. However, looking at Tobin's Q in the subperiod, it is related to total compensation.

Financial variables such as firm size, capitalization, and the provision for loan loss appear to have significant explanatory power for compensation. However, the incremental impact of the pandemic appears to have relatively few effects on those relations. Broadly speaking, the data suggests that bank CEOs has seen a stronger relation between compensation and board independence while the explanatory power for CEO tenure has decreased. The evidence suggests stronger evidence for optimal contracting during and immediately after the pandemic. This effect may be temporary, reflecting a change in board and investor focus during a high-stress period, or it may reflect a permanent change to the evaluation of executives in such financial institutions.



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APPENDIX

Table 1: Variables

| Variable | Definition |
|-------------------------|---|
| Board Independence | The total number of non-executive directors divided by the total number of directors on the board |
| Cash | The natural log of Cash Compensation |
| Cash Compensation | Compensation including salary, bonus, non-equity incentive plans, director fees, and other cash compensation. |
| CEO Equity Holdings | The proportion of common stock outstanding held by the CEO |
| CEO Tenure | The number of years that the CEO has served in that capacity at the bank. Some served multiple different times so tenure is cumulative across all such periods |
| Deposit/Total Assets | Foreign deposits plus total domestic office deposits divided by total assets |
| Duality | Binary variable with a value of 1 when the CEO simultaneously serves as the Chairman of the bank, and zero otherwise |
| Equity | The natural log of Equity Compensation |
| Equity Compensation | Compensation include awards of both restricted stock and options |
| Inflation | The percent change in the personal consumption expenditures Index, estimated on an annual basis |
| Institutional Ownership | The proportion of common stock outstanding held by external Institutional investors |
| Interest Rate | The year-end federal funds rate |
| Loans/Total Assets | Loans and leases, net of allowance for loan loss, divided by total assets |
| Loan Loss Provision | Provision for loan and lease losses divided by total assets |
| P | Binary variable taking the value 1 during 2020-2022, otherwise 0 |
| ROA | Net income divided by total assets of the bank |
| ROE | Net income divided by total equity of the bank |
| Salary | The natural log of Salary Compensation |
| Salary Compensation | Total salary compensation |
| Size | The natural log of total assets |
| Tier 1 | Core Tier 1 capital divided by total assets in each year |
| Tobin's Q | Calculated by adding the bank's market value of equity to the book value of liabilities and dividing that sum by total assets |
| Total | The natural log of Total Compensation |
| Total Compensation | Compensation including salary, bonus, non-equity incentive plans, director fees, restricted stock awards, options awards, changes in pension value, non-equity incentive plans, and other compensation. |

Table 2: Descriptive Statistics

| Variable | Mean | Std. Dev. | Minimum | Maximum |
|-----------------------------|------------|-------------|-------------|---------------|
| Tier 1 % | 8.190% | 0.061 | 0.120% | 32.200% |
| Market Value (\$ million) | 5,917.611 | 31,122.146 | 3.569 | 440,763.317 |
| Net Income (\$ million) | 479.852 | 2,760.226 | (6,798.000) | 48,334.000 |
| Net Loans (\$ million) | 23,831.388 | 111,311.515 | 68.220 | 1,161,235.000 |
| Total Assets (\$ million) | 53,022.437 | 294,747.584 | 95.866 | 3,743,567.000 |
| Common Equity (\$ million) | 5,034.644 | 26,491.589 | 0.001 | 264,928.000 |
| Total Deposits (\$ million) | 33,879.965 | 175,325.342 | 62.378 | 2,462,303.000 |
| Return on Assets (%) | 0.967% | 0.007 | -6.750% | 4.453% |
| Return on Equity (%) | 8.966% | 0.089 | -211.383% | 116.178% |
| Tobin's Q | 1.032 | 0.049 | 0.933 | 1.415 |
| PLL (\$ million) | 144.30 | 1204.03 | -9,256.000 | 28,435.000 |

| Variable | Mean | Std. Dev. | Minimum | Maximum |
|-----------------------------|---------------|---------------|---------|----------------|
| Board Independence (%) | 78.45% | 0.129 | 0.01% | 100.00% |
| Board Size | 10.319 | 3.475 | 2.000 | 25.000 |
| CEO Equity Holdings (%) | 1.80% | 0.041 | 0.01% | 38.90% |
| Compensation Slice (%) | 37.20% | 0.102 | 0.01% | 85.72% |
| Duality (%) | 0.498 | 0.500 | 0.000 | 1.000 |
| Salary (\$) | 600,959.514 | 353,422.038 | 0.000 | 3,496,615.000 |
| Tenure | 10.416 | 7.879 | 1.000 | 44.000 |
| Cash Compensation (\$) | 1,263,757.353 | 1,214,106.326 | 0.000 | 10,123,293.000 |
| Tot. Compensation (\$) | 2,432,338.920 | 3,865,274.711 | 0.000 | 84,428,145.000 |
| Equity Compensation (\$) | 1,016,943.420 | 2,842,975.272 | 0.000 | 77,620,000.000 |
| Institutional Ownership (%) | 0.509 | 0.269 | 0.000 | 1.000 |
| Board Independence (%) | 78.45% | 0.129 | 0.01% | 100.00% |

Table 3: Panel Data Results Examining Financial Factors Relation to Compensation

| Variable | Total | Cash | Salary | Equity |
|-------------------------|----------------------|----------------------|--------------------|-----------------------|
| Intercept | 5.104 (0.930) | 15.527 (0.747) | -12.458 (0.878) | -781.042* (0.003) |
| Tier 1 | 1.159* (0.023) | 0.952* (0.025) | 0.489 (0.497) | 8.733** (0.000) |
| Loans/Total Assets | 0.580 (0.051) | 0.457 (0.065) | 0.088 (0.833) | 4.541** (0.001) |
| Deposit/Total Assets | 0.220 (0.631) | 0.286 (0.454) | 0.903 (0.162) | 3.335 (0.108) |
| Size | 0.537** (0.000) | 0.381** (0.000) | 0.275** (0.001) | 1.545** (0.000) |
| Interest Rate | -0.023 (0.193) | 0.006 (0.705) | -0.022 (0.378) | 0.006 (0.935) |
| Inflation | 0.868 (0.688) | 2.014 (0.263) | 0.495 (0.871) | -3.772 (0.700) |
| PLL/TA | -16.432** (0.000) | -13.968** (0.000) | -5.970 (0.345) | -132.620** (0.000) |
| P*Tier 1 | 1.008 (0.305) | 0.738 (0.367) | 0.694 (0.616) | 0.973 (0.827) |
| P*Loan/Total Assets | 0.245 (0.405) | 0.261 (0.286) | 0.980* (0.018) | 0.468 (0.725) |
| P*Deposits/Total Assets | -0.317 (0.352) | 0.019 (0.946) | -0.668 (0.164) | 2.682 (0.082) |
| P*Size | 0.010 (0.605) | -0.015 (0.337) | -0.019 (0.461) | -0.228** (0.006) |
| P*PLL/TA | 8.041 (0.573) | 9.337 (0.432) | -5.681 (0.777) | 20.212 (0.754) |
| Other Fixed Effects | | | | |
| R ² | 0.626 | 0.585 | 0.389 | 0.648 |

Note:
A t-

statistic is listed below each estimate. *Denotes significance at the 5% level, **Denotes significance at the 1% level.

Table 4: Panel Data Results Examining Governance Factors Relation to Compensation

| Variable | Total | Cash | Salary | Equity |
|---------------------------|--------------------|--------------------|---------------------|---------------------|
| Intercept | 45.761 (0.447) | 47.629 (0.339) | 36.510 (0.660) | -247.878 (0.362) |
| Board Independence | 0.783** (0.000) | 0.808** (0.000) | 1.264** (0.000) | 4.388** (0.000) |
| P*Board Independence | 0.597** (0.000) | 0.531** (0.000) | 0.332 (0.069) | 2.604** (0.000) |
| CEO Equity Holdings | -0.564 (0.461) | -1.191 (0.060) | -3.096** (0.003) | -1.171 (0.735) |
| P*CEO Equity Holdings | -1.213 (0.278) | 0.645 (0.486) | -1.158 (0.453) | 16.022** (0.002) |
| Duality | -0.024 (0.743) | -0.071 (0.243) | -0.168 (0.099) | 0.201 (0.547) |
| P*Duality | -0.099 (0.190) | -0.091 (0.147) | -0.177 (0.090) | 0.053 (0.876) |
| CEO Tenure | 0.012** (0.002) | 0.012** (0.000) | 0.010* (0.047) | -0.016 (0.344) |
| P*CEO Tenure | -0.010* (0.035) | -0.007 (0.076) | -0.016* (0.023) | -0.064** (0.004) |
| Institutional Ownership | 1.003** (0.000) | 0.706** (0.000) | 0.554* (0.016) | 5.975** (0.000) |
| P*Institutional Ownership | 0.040 (0.788) | -0.034 (0.783) | 0.060 (0.767) | -0.774 (0.244) |
| Other Fixed Effects | | | | |
| R ² | 0.615 | 0.577 | 0.396 | 0.639 |

Note: A t-statistic is listed below each estimate. *Denotes significance at the 5% level.

**Denotes significance at the 1% level.

Table 5: Panel Data Results with ROA Performance Measure

| Variable | Total | Cash | Salary | Equity |
|---------------------------|--------------------|--------------------|---------------------|---------------------|
| Intercept | 38.181 (0.525) | 39.455 (0.430) | 47.288 (0.575) | -380.305 (0.159) |
| Board Independence | 0.527** (0.007) | 0.616** (0.000) | 1.178** (0.000) | 3.055** (0.001) |
| P*Board Independence | 0.406** (0.002) | 0.392** (0.000) | 0.250 (0.181) | 1.729** (0.004) |
| CEO Equity Holdings | -0.047 (0.951) | -0.817 (0.193) | -3.093** (0.004) | 1.802 (0.595) |
| P*CEO Equity Holdings | -1.660 (0.133) | 0.366 (0.691) | -1.078 (0.488) | 14.501** (0.004) |
| Duality | 0.045 (0.536) | -0.022 (0.714) | -0.143 (0.162) | 0.439 (0.180) |
| P*Duality | -0.102 (0.170) | -0.095 (0.129) | -0.194 (0.064) | 0.072 (0.830) |
| CEO Tenure | 0.008* (0.044) | 0.009** (0.004) | 0.009 (0.103) | -0.028 (0.095) |
| P*CEO Tenure | -0.010* (0.039) | -0.007 (0.083) | -0.015* (0.033) | -0.065** (0.003) |
| Institutional Ownership | 0.284 (0.112) | 0.194 (0.192) | 0.380 (0.131) | 2.911** (0.000) |
| P*Institutional Ownership | -0.111 (0.445) | -0.138 (0.256) | -0.015 (0.941) | -1.112 (0.091) |
| Return on Assets | 5.453 (0.112) | 3.295 (0.249) | -8.648 (0.073) | 59.698** (0.000) |
| Other Fixed Effects | | | | |
| R ² | 0.630 | 0.588 | 0.396 | 0.656 |

Note:
A t-

statistic is listed below each estimate. *Denotes significance at the 5% level. **Denotes significance at the 1% level.

Table 6: Panel Data Results with ROE Performance Measure

| Variable | Total | Cash | Salary | Equity |
|---------------------------|--------------------|--------------------|---------------------|---------------------|
| Intercept | 37.106 (0.537) | 38.490 (0.441) | 47.818 (0.571) | -381.778 (0.158) |
| Board Independence | 0.527** (0.007) | 0.615** (0.000) | 1.177** (0.000) | 3.070** (0.001) |
| P*Board Independence | 0.408** (0.002) | 0.394** (0.000) | 0.251 (0.181) | 1.719** (0.004) |
| CEO Equity Holdings | -0.093 (0.901) | -0.847 (0.177) | -3.027** (0.004) | 1.367 (0.687) |
| P*CEO Equity Holdings | -1.609 (0.146) | 0.404 (0.661) | -1.133 (0.466) | 14.830** (0.003) |
| Duality | 0.047 (0.518) | -0.021 (0.733) | -0.145 (0.155) | 0.454 (0.166) |
| P*Duality | -0.106 (0.158) | -0.097 (0.120) | -0.190 (0.070) | 0.046 (0.890) |
| CEO Tenure | 0.008* (0.042) | 0.009** (0.004) | 0.008 (0.107) | -0.028 (0.103) |
| P*CEO Tenure | -0.010* (0.042) | -0.007 (0.086) | -0.015* (0.031) | -0.064** (0.004) |
| Institutional Ownership | 0.295 (0.099) | 0.201 (0.177) | 0.362 (0.150) | 3.033** (0.000) |
| P*Institutional Ownership | -0.118 (0.419) | -0.143 (0.240) | -0.007 (0.971) | -1.162 (0.077) |
| Return on Equity | 0.118 (0.591) | 0.034 (0.851) | -0.324 (0.293) | 2.490* (0.012) |
| Other Fixed Effects | | | | |
| R ² | 0.629 | 0.589 | 0.398 | 0.655 |

Note:
A t-

statistic is listed below each estimate. *Denotes significance at the 5% level. **Denotes significance at the 1% level.

Table 7: Panel Data Results with Tobin's Q Performance Measure

| Variable | Total | Cash | Salary | Equity |
|---------------------------|--------------------|--------------------|---------------------|---------------------|
| Intercept | 39.051 (0.515) | 40.632 (0.416) | 48.851 (0.563) | -386.304 (0.154) |
| Board Independence | 0.551** (0.005) | 0.636** (0.000) | 1.165** (0.000) | 3.186** (0.000) |
| P*Board Independence | 0.408** (0.002) | 0.392** (0.000) | 0.242 (0.195) | 1.777** (0.003) |
| CEO Equity Holdings | -0.066 (0.930) | -0.821 (0.191) | -3.027** (0.004) | 1.406 (0.679) |
| P*CEO Equity Holdings | -1.654 (0.135) | 0.355 (0.700) | -1.155 (0.457) | 14.921** (0.003) |
| Duality | 0.050 (0.490) | -0.018 (0.760) | -0.149 (0.146) | 0.485 (0.140) |
| P*Duality | -0.106 (0.158) | -0.096 (0.122) | -0.188 (0.073) | 0.034 (0.920) |
| CEO Tenure | 0.008* (0.044) | 0.009** (0.004) | 0.008 (0.107) | -0.028 (0.103) |
| P*CEO Tenure | -0.010* (0.040) | -0.007 (0.083) | -0.015* (0.031) | -0.064** (0.004) |
| Institutional Ownership | 0.266 (0.139) | 0.177 (0.237) | 0.379 (0.133) | 2.865** (0.000) |
| P*Institutional Ownership | -0.128 (0.381) | -0.150 (0.218) | 0.003 (0.988) | -1.251 (0.057) |
| Tobin's Q | 0.895 (0.118) | 0.738 (0.122) | -0.527 (0.513) | 5.093* (0.049) |
| Other Fixed Effects | | | | |
| R ² | 0.630 | 0.590 | 0.398 | 0.654 |

Note:
A t-

statistic is listed below each estimate. *Denotes significance at the 5% level. **Denotes significance at the 1% level.

Table 8: Panel Data Results with Performance, and Pandemic Performance Measures

| Variable | Total | Cash | Salary | Equity |
|---------------------------|--------------------|--------------------|---------------------|---------------------|
| Intercept | 35.577 (0.553) | 38.175 (0.445) | 45.606 (0.589) | -403.263 (0.136) |
| Board Independence | 0.610** (0.002) | 0.678** (0.000) | 1.221** (0.000) | 3.476** (0.000) |
| P*Board Independence | -0.291 (0.407) | -0.102 (0.727) | -0.411 (0.406) | -1.636 (0.302) |
| CEO Equity Holdings | -0.016 (0.984) | -0.785 (0.211) | -2.980** (0.005) | 1.653 (0.302) |
| P*CEO Equity Holdings | -2.010 (0.072) | 0.103 (0.911) | -1.487 (0.344) | 13.184** (0.009) |
| Duality | 0.052 (0.478) | -0.018 (0.772) | -0.148 (0.149) | 0.491 (0.134) |
| P*Duality | -0.106 (0.155) | -0.097 (0.120) | -0.189 (0.072) | 0.030 (0.928) |
| CEO Tenure | 0.008* (0.029) | 0.008** (0.003) | 0.009 (0.085) | -0.024 (0.150) |
| P*CEO Tenure | -0.011* (0.027) | -0.008 (0.062) | -0.016* (0.024) | -0.068** (0.002) |
| Institutional Ownership | 0.264 (0.142) | 0.175 (0.241) | 0.377 (0.135) | 2.853** (0.000) |
| P*Institutional Ownership | -0.181 (0.221) | -0.187 (0.128) | -0.047 (0.823) | -1.509* (0.024) |
| Tobin's Q | 0.755 (0.191) | 0.639 (0.183) | -0.659 (0.417) | 4.408 (0.090) |
| P*Tobin's Q | 0.637* (0.032) | 0.450 (0.068) | -0.594 (0.153) | 3.107* (0.020) |
| Other Fixed Effects | | | | |
| R ² | 0.631 | 0.590 | 0.396 | 0.655 |

Note: A t-statistic is listed below each estimate. *Denotes significance at the 5% level.
 **Denotes significance at the 1% level.