Outside shareholder influence on bank CEO incentive pay

Violeta Díaz
New Mexico State University

Rich Fortin
New Mexico State University

Gerson M. Goldberg
Northeastern University

Greg Roth
New Mexico State University

ABSTRACT

This study estimates a model of CEO incentive pay using a sample of large U.S. bank holding companies covering the years 2005, 2007, and 2009. In the years before the 2008 banking crisis, powerful outside shareholders exhibit a strong preference for high incentive pay levels. However, this shareholder enthusiasm for incentive pay markedly decreased in the aftermath of the banking crisis. The evidence suggests, after the height of the crisis, shareholders focused increasingly on the potential downside of CEO risk-taking incentives. Additional evidence suggests that bank size, growth opportunities, and capital adequacy are all positively related to incentive pay. The "too big to fail" perception has a negative influence on incentive pay, but only after the peak of the banking crisis. The majority of banks in the sample accepted Troubled Asset Relief Program (TARP) funds, but no significant influence of this program on incentive pay is found.

Keywords: banking, corporate governance, CEO compensation, regulation

INTRODUCTION

At least since Jensen and Murphy (1990), finance researchers have been keenly interested in the composition of CEO pay. Much of this research is devoted to the managerial risk-taking incentives that different compensation schemes create and how varying pay schemes relate to firm value. Another strand of the literature analyzes the factors that influence CEO compensation. Compensation design in the banking industry has received special attention because of the critical function that banks perform in the economy and because of the contingent liabilities that banks imposed on taxpayers through government guarantees.

Many researchers who studied compensation in the banking industry have found that a higher level of incentive pay in CEO contracts leads to greater bank risk taking.[1] Some observers have suggested that bank CEO compensation, especially the annual bonus and stock option components, caused CEOs to take excessive risk which exacerbated the 2008 banking crisis.[2] For example, in a Federal Reserve press release dated October 22, 2009, Chairman Ben S. Bernanke said, "Compensation practices at some banking organizations have led to misaligned incentives and excessive risk-taking, contributing to bank losses and financial instability."[3]

Motivated in part by concerns that high CEO incentive pay might lead to excessive risk taking, or that low incentive pay might not sufficiently align bank managers' and shareholders' interests, financial economists have naturally been interested in the factors influencing bank CEO composition.[4] John and Qian (2003) and Becher, Campbell and Frye (2005) find that the proportion of total bank CEO pay that is incentive-based has risen since the mid-1990s. Mishra and Nielsen (2000) and John, Mehran and Qian (2010) find that stronger outsider monitoring of top management leads to greater bank CEO incentive pay. John and Qian (2003) and John, et al. (2010) find that incentive pay decreases as a bank's financial leverage decreases. In contrast, Crawford, Ezell and Miles (1995) and Harjoto and Mullineaux (2003) find that bank leverage has a positive influence on incentive pay. Other researchers (including Collins, Blackwell and Sinkey, 1995, John and Qian, 2003, and Belkhir and Chazi, 2010) find evidence that banks with greater growth opportunities have greater incentive pay. The evidence on bank size is somewhat mixed. For example, Belkhir and Chazi (2010) find a positive relation between size and incentive pay, but John and Qian (2003) find a negative relation. Finally, several researchers have found that bank CEO incentive pay increased as banks were deregulated (in the 1980s and 1990s) or as banks entered the investment banking business.[5]

Although the research highlighted above has substantially advanced the understanding of bank CEO compensation, none of these studies has focused on more recent years and whether the factors influencing incentive pay may have changed around the 2008 banking crisis. Furthermore, these prior studies have mostly neglected the role that outside shareholders play in influencing bank CEO incentive pay. The goal of this study is to fill that gap in the literature. To the authors' knowledge, this is the first study to investigate the influence of powerful outside

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[1] See, for example, Belkhir and Chazi (2010), Mehran and Rosenberg (2007), Chen, Steiner, and Whyte (2006), John, Saunders, and Senbet (2000), and John and John (1993).

[2] Throughout this paper the terms "bank" and "bank holding company" are used interchangeably. Like most studies of CEO compensation in the banking industry, this study samples bank holding companies.

[3] The full press release is available at http://www.federalreserve.gov/newsevents/press/bcreg/20091022a.htm.

[4] As discussed later, several different measures of top manager incentive pay, or pay-for-performance, have been developed in the literature. Throughout this paper these types of measures are referred to very generally as "incentive pay."

[5] See Collins, et al. (1995), Crawford, et al. (1995), Hubbard and Palia (1995) and Harjoto and Mulineaux (2003).

shareholders on bank CEO incentive pay and how that influence may have changed around the time of the recent banking crisis.

This study develops a model of CEO incentive pay determinants and estimates that model using panel data for a sample of large U.S. bank holding companies. The sample period includes the years 2005, 2007, and 2009. The measure of incentive pay is the value of annual option and bonus grants as a percentage of total CEO compensation. Although many different measures of incentive pay have been used in the literature, the authors of the current study focus on options and bonuses because these components likely create the greatest risk-taking incentives (see, e.g., Mehran and Rosenberg, 2007) and because these components have generated great controversy since the banking crisis.

The results indicate that size, growth opportunities, and capital adequacy have a positive influence on bank CEO incentive pay. The perception that a bank is "too big to fail" has a negative influence on incentive pay, but only when year 2009 data are included. This finding suggests that political and regulatory scrutiny of very large banks discouraged the use of incentive pay after the onset of the banking crisis. Most banks in the sample accepted Troubled Asset Relief Program (TARP) funds and this decision has no significant influence on incentive pay.[6]

The most striking findings from this study relate to the influence of powerful outside shareholders. Using two different measures of outside shareholder control, the authors find that incentive pay increases as outsider control increases. However, the positive influence of outsider control decreased significantly after the peak of the banking crisis in 2008. A reasonable interpretation of this change is that after 2008 outside shareholders became less supportive of strong incentive pay as they focused more on the potential downside of CEO risk-taking incentives.

PRIOR LITERATURE

Much of the earlier research on bank executive compensation concerns whether pay schemes are designed to increase bank value and/or promote bank risk taking. Houston and James (1995) and Minnick, Unal and Yang (2011) have found that incentive pay serves to align bank managers' interests with shareholders' interests and that this form of compensation leads to an increase in bank value or bank performance. In particular, Houston and James (1995) conclude that the structure of bank CEO compensation does not encourage risk taking. Many researchers have come to a different conclusion regarding the effects of incentive pay. For example, Mehran and Rosenberg (2007) find higher asset risk among banks that grant more executive stock options. Their evidence suggests that paying bank executives in stock options leads them to select riskier investments.

Other studies emphasize the notion that aligning bank managers' and shareholders' interests through higher incentive pay may lead to greater bank risk shifting onto debtholders and taxpayers, thus increasing financial instability. John et al. (2000) develop a model suggesting that FDIC insurance premiums should be adjusted to reflect these risk shifting incentives created by higher incentive pay. Fahlenbrach and Stulz (2011) find evidence that banks with greater shareholder-management incentive alignment (through stock or options holdings) performed worse during the financial crisis. They conclude, "This evidence suggests that CEOs took

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[6] According to the U.S. Treasury, as of 2010 there were only two instances in which the Special Master for TARP Executive Compensation disallowed CEO cash bonuses for any of the banks sampled in this study.

exposures that they felt were profitable for their shareholders ex ante but that these exposures performed very poorly ex post."[7]

Still other researchers have analyzed influences on bank CEO incentive pay. John and Qian (2003) use a sample of bank holding companies from 1992-2000. Their measure of incentive pay is the dollar change in CEO compensation for each $1000 increase in total shareholder wealth. They find a negative relation between bank size and incentive pay. They also find that CEO incentive pay decreases along with decreases in banks' financial leverage. They interpret this result as consistent with John and John (1993), who argue that managers of highly levered firms will have strong incentives to shift risk from shareholders to debt holders. Responding to the high agency costs of debt, highly levered firms will optimally choose CEO contracts with low incentive pay because this decreases managers' risk-shifting incentives. Harjoto and Mullineaux (2003) also gather bank holding company data from 1992-2000. Using different measures of CEO incentive compensation, they find a positive relation between financial leverage and incentive pay. In addition, they find that larger banks and banks with more growth opportunities have higher CEO incentive pay. This evidence supports earlier research by Crawford, Ezzell, and Miles (1995) and Smith and Watts (1992) suggesting that banks with greater growth opportunities will negotiate CEO contracts with higher incentive pay.

Using more recent data, from 1992-2007, John, et al. (2010) find incentive pay is negatively related to financial leverage and positively related to the intensity of bank risk monitoring by regulators and nondepository (subordinated) debtholders. Belkhir and Chazi (2010) estimate vega, the sensitivity of bank CEO stock options to equity risk, using data from from 1993-2006. They find that larger banks and banks with greater growth opportunities grant CEOs stock options with greater sensitivity to equity risk.

DATA AND METHODOLOGY

This study models bank CEO incentive pay as a function of multiple potential influences. In prior literature, several different measures of incentive pay have been developed.[8] Examples of incentive pay measures used in earlier research include the following: (1) the dollar change in CEO compensation for every $1000 change in shareholder wealth; (2) the sensitivity of CEO stock options to equity risk; (3) the ratio of stock-based compensation to total compensation for the CEO; and (4) the value of the CEO's stock option portfolio. In this study incentive pay is measured as the value of stock option grants and bonuses the CEO received for a particular year divided by the total value of the CEO's compensation for that same year. The focus is on options and bonuses because these forms of pay likely create the greatest incentives for risk taking and because these components of CEO compensation have generated intense controversy ever since the recent banking crisis.

To estimate the value of CEO stock options, the Black-Scholes (1973) formula as modified by Merton (1973) is used. For the riskless rate, the study uses the maturity matching Treasury Constant Maturity Rate. Annualized dividend yields are calculated using Compustat data. The Center for Research in Security Prices (CRSP) data are used to obtain year-end stock prices. Option values are estimated using the relevant year-end data, e.g., year-end stock prices are used. CEO annual bonus data are gathered from proxy statements filed with the Securities and Exchange Commission (SEC).

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[7] See Fahlenbrach and Stulz (2011), page 13.
[8] For a discussion of various incentive pay measures used in the literature, see Belkhir and Chazi (2010).

Two measures of outside shareholder control are used to test whether powerful outside shareholders influence CEO incentive pay. First, the authors use the shareholder rights (or corporate governance) index developed in Gompers, Ishii, and Metrick (2003). This index has been used extensively in the literature and it very simply summarizes information on 24 separate corporate governance provisions.[9] Each provision that increases managers' rights (to the detriment of outside shareholders' rights) increases the index value by one. Thus, the index uses count data such that lower values for the index indicate greater outside shareholder power.

Second, the authors also use the concentration of outside shareholdings to measure outside shareholder power. This measure is calculated as the total percentage of shares held by outside blockholders, where "outside blockholders" are defined as non-employee shareholders who individually own at least five percent of the bank's outstanding shares. Gov is used to represent the shareholder rights index and Block is used to represent ownership by outside blockholders. A major advantage of using both measures of outside shareholder power is that each variable captures a different aspect of shareholder control. The index Gov measures shareholders' rights in such a way that it does not directly rely on ownership structure. Therefore, it is entirely possible that a bank could have strong shareholder rights due to various corporate governance mechanisms, but that same bank might have little or no concentration of shares in the hands of outsiders.[10]

The model also includes several explanatory variables emphasized in the literature as potential influences on bank CEO incentive pay. Size is the natural log of the dollar value of bank assets. Capital is a measure of capital adequacy (or financial leverage), calculated as equity divided by total assets. Growth is the price-to-book ratio, a proxy for the bank's investment opportunities. Return is the bank's unadjusted one year stock return. Own is the percentage of bank shares owned by officers and directors. Other factors not emphasized in prior literature, but included because of their potential influence on incentive pay around the time of the 2008 banking crisis, are TBTF, Year07 and Year09. TBTF is an indicator variable set to one if the bank is perceived as "too big to fail."[11] Year07 and Year09 are indicator variables set to one if the year is 2007 or 2009, respectively.

Following earlier studies of bank CEO compensation, this study gathers data for a sample of bank holding companies. To ensure that all sampled banks have the necessary shareholder rights index information, the initial sample of 97 large banks is drawn from Andrew Metrick's website at Yale University.[12] Professor Metrick has made publicly available the shareholder rights index data for 1,896 large firms in various industries. His most recent shareholder rights index information available is for the year 2005 and these data are used to proxy for shareholder rights over the entire sample period. Using 2005 index values to proxy for shareholder power in 2007 and 2009 is unlikely to bias results of this study, because Gompers, et al. (2003) report that these index values are stable over time.

Ownership structure information (for the variables Block and Own) are collected using shareholder proxy statements filed with the SEC. Bank size, capital adequacy, price-book, and

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[9] For examples of studies using this index, see Gompers, Ishii, and Metrick (2003), Klock, Mansi, and Maxwell (2005), Core, Guay, and Rusticus (2006), Dittmar and Mahrt-Smith (2007) and Hwang and Kim (2009). An in-depth discussion of the index is provided by Gompers, et al. (2003).

[10] The correlation between Gov and Block is -0.084 and is not statistically significant (at p=0.20).

[11] The four sampled banks in this study receiving this designation are: JP Morgan Chase & Co.; Bank of America Corp.; Citigroup Inc.; and Wells Fargo & Company. The assets of these individual banks easily dwarf those assets of the remaining banks in the sample.

[12] To view his data see: http://faculty.som.yale.edu/andrewmetrick/data.html.

one year stock return data are obtained from Compustat. After eliminating all banks for which complete data are not available, the final sample includes 83 banks for the year 2005. The sample size declines to 76 in 2007 and to 71 in 2009 as some banks merged or necessary information otherwise becomes unavailable. The banks in the final sample are very large and represent a large portion of the U.S. banking industry on a value-weighted basis. For example, on December 31, 2009 the 71 bank holding companies appearing in the 2009 sample held approximately 7% of all U.S. commercial banks. However, this minority of commercial banks controlled an estimated 51.6% of the Federal Deposit Insurance Corporation (FDIC) insured deposits and 71.3% of total U.S. commercial bank assets.[13]

Four different models (described in the results section) are used to analyze the influences on bank CEO incentive pay. For Models 1, 2, and 3, Generalized Least Squares (GLS) regression with random effects is used.[14] The Hausman test shows that individual effects appear to be uncorrelated with the regressors. This evidence suggests that the estimates generated by the random effects estimator are consistent. To account for heteroscedasticity in the data, robust standard errors are used. For Models 1, 2, and 3 the number of bank observations ranges from 159 (for regressions using 2005 and 2007 data) to 230 (for regressions using 2005, 2007, and 2009 data). For Model 4, which focuses solely on 2009 data, ordinary least squares regression with robust standard errors is used and the sample size is 71 banks.

RESULTS

Summary statistics for sampled banks are shown in Table 1 (Appendix). Median bank size (book value of total assets) increased over the sample period from $10.16 billion in 2005 to $12.06 billion in 2009. In contrast, shareholder wealth decreased over the sample period. Median share returns were -2.51%, -22.13%, and -14.95% for the years 2005, 2007, and 2009, respectively. Not surprisingly, bank CEO incentive pay also decreased throughout the sample period. Median incentive pay was 60% of total compensation in 2005 and declined to 23% of total compensation by 2009. Relative to the year 2005, median share ownership by officers and directors was higher in 2007 and 2009. This failure to divest shares on the part of top bank managers suggests they did not foresee the banking crisis and consequently suffered substantial wealth losses, a point also highlighted by Fahlenbrach and Stulz (2011).

The two measures of outside shareholder power, Block and Gov, exhibit substantial variation among banks. For example, in 2009, the percentage of shares held by outside blockholders had a median of 12.99%, but ranged from zero to 78%. Values on the governance index had a median of 9, but ranged from 3 (indicating very strong shareholder rights) to 15 (indicating very weak shareholder rights). As noted, the governance index was measured in 2005 and does not vary over the sample period, but again this is unlikely to bias the results given that the index is found in earlier literature (Gompers, et al., 2003) to be stable over time.

Table 1 (Appendix) also shows the summary statistics for the indicator variable TARP. The variable is set equal to one if the bank accepted funds from this program. President George Bush signed the program into law on October 3, 2008 in response to a growing banking crisis

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[13] The sources used for these estimations are Federal Financial Institutions Examination Council (FFIEC) call reports and FDIC Statistics on Depository Institutions.

[14] Random effects were chosen to account for random individual effects. These individual effects may reflect omitted variables which are not fixed. Another advantage of using random effects is that time invariant variables, such as the governance variable, can be included in the model without being absorbed by the intercept.

brought on by the massive failures of subprime mortgages. TARP was designed to give aid to the faltering banking system, by purchasing bank assets or (non-voting) equity. Public outrage in the U.S. related to the program precipitated the creation of a governmental "pay czar." Kenneth Feinberg took on this position and became responsible for monitoring top banks' executive compensation in cases where banks had received TARP funds. For purposes of this study, TARP is only relevant for the year 2009. In Model 4, which focuses solely on the determinants of 2009 incentive pay, the TARP variable is included. As shown in Table 1 (Appendix), 76% of sampled banks had accepted TARP funds by the end of 2009.[15]

Table 2 (Appendix) shows the regression results for Models 1-4. Model 1 estimates incentive pay determinants for the years before the peak of the banking crisis. Using panel data for 2005 and 2007, the evidence suggests that incentive pay increases with the power of outside shareholders. The index variable Gov is negatively related to incentive pay (significant at the p=0.026 level). Because outside shareholder rights increase as the variable Gov decreases, the result suggests powerful outside shareholders use their influence to raise bank CEO incentive pay. Similarly, Block is positively related to incentive pay (significant at the p=0.073 level), which suggests that strong outside blockholders use their control to raise incentive pay.

Size, Capital, Growth, and Return are all positively related to incentive pay at traditional levels of significance. The evidence concerning size is consistent with larger banks having more complex, less transparent operations (such as proprietary derivatives trading or structured investment vehicles) that are difficult for outsiders to monitor. In this situation of increased information asymmetry, bank boards likely find it beneficial to tie CEO wealth more closely to annual performance (through bonuses) and to stock price (through options). The positive coefficient on Capital indicates that banks with greater equity financing have higher CEO incentive pay. This result is consistent with the argument of John and John (1993) that the agency costs of debt in highly levered firms will lead them to choose CEO contracts with low incentive pay. Alternatively, firms with low leverage will design CEO contracts with high incentive pay. The positive relation between Growth and incentive pay supports the findings of many earlier researchers (including Smith and Watts, 1992 and Crawford, Ezzell and Miles, 1995) and the hypothesis that banks with greater growth opportunities will select CEO contracts with high incentive pay because this mechanism provides incentives for CEOs to seek out and exploit new wealth increasing (positive net present value) projects. Return is included in the model to capture the immediate influence that current year share returns have on incentive pay. As expected, there is a positive relation between share performance and incentive pay.

Own is included in the model to capture the possibility of a substitution effect between top management share ownership and incentive pay. When top managers have significant share holdings, their collective wealth is already significantly tied to shareholder wealth. In this scenario, high levels of CEO option and bonus pay may be rendered unnecessary. However, Own has no significant influence in Model 1 or in any other model that is used. TBTF is not significant in this model, but the indicator variable Year07 is negative and significant. The finding regarding Year07 suggests that the banking industry generally was decreasing CEO incentive pay in the year prior to the peak of the banking crisis.

Model 2 shows regression results when the sample period is extended so that 2005, 2007, and 2009 data are included. The specification is the same as that used in Model 1, except that a year 2009 indicator variable is added. The results in Model 2, with the addition of 2009 data, are

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[15] Information regarding which banks received TARP funds was obtained from the Office of the Special Inspector General for the Troubled Asset Relief Program.

dramatically different relative to the results in Model 1. In particular, Gov and Block are no longer significantly related to incentive pay. This evidence supports the idea that powerful outside shareholders no longer used their influence to increase bank CEOs' incentive pay in 2009. Surprisingly, even share performance loses significance in Model 2, indicating that it no longer had an influence on CEO bonus and options pay. Also noteworthy is the finding that Size retains its positive coefficient and significance, whereas TBTF achieves significance in Model 2 and has a negative coefficient. This suggests that larger banks generally continued to offer CEOs higher incentive pay, but the largest banks, those commonly perceived as "too big to fail" lowered their incentive pay. The "too big to fail" banks apparently faced unique and extreme political pressure to curtail incentive pay in the aftermath of the banking crisis.

In Model 3 the authors formally test whether significant changes occurred in the influences of key variables. Results are shown using 2005, 2007, and 2009 data. Included in Model 3 are interaction variables created by multiplying the 2009 indicator variable by Gov, Block, TBTF, and Return. The most striking evidence from Model 3 concerns the changing influences of powerful outside shareholders. Gov*Year09 has a positive coefficient and is significant (at p=0.025). Block*Year09 has a negative coefficient and is significant (at p=0.019). Both findings suggest that powerful outside shareholders lost enthusiasm for CEO incentive pay in 2009. A logical interpretation of this evidence is that powerful outside shareholders became focused on the potentially negative consequences of increasing CEOs' risk-taking incentives. Banks that took higher than normal risk (such as by investing heavily in subprime mortgage products) did not perform well during the banking crisis. Powerful outside shareholders appear to have responded by decreasing pressure for high incentive pay. Although support for a negative change in the influence of TBTF is found (TBTF*Year09 has a negative sign and is significant), the authors do not find support for the hypothesis that the influence of Return changed after the banking crisis peaked.

Model 4 shows the results of the last regression analysis, in which the authors test for the possible influence of TARP. TARP was initiated in 2008, so in this study's sample TARP is only relevant for the year 2009. Accordingly, Model 4 shows regression results using only 2009 data with the addition of the TARP indicator variable. The TARP variable is not statistically significant (p=0.757). Although 76% of sampled banks accepted TARP funds by the end of 2009, this decision appears to have no influence on bank CEO incentive pay. In Model 4 TBTF retains a negative sign and is again statistically significant. The authors conclude that the decision to accept TARP funds did not attract the same political pressure as did the perception a bank was "too big to fail."

SUMMARY AND CONCLUSIONS

This study analyzes influences on CEO incentive pay using a sample of large U.S. bank holding companies. The measure of CEO incentive pay used is the sum of annual options and bonuses divided by total compensation. The sample covers the period surrounding the 2008 banking crisis. The evidence generally suggests that bank size, equity-to-assets, growth opportunities, recent share performance, and the existence of powerful outside shareholders are positively related to incentive pay. However, this study also finds that the positive influence of outside shareholders decreased significantly after the height of the banking crisis. The authors interpret this change as evidence of waning outside shareholder enthusiasm for high levels of CEO incentive pay. Earlier research suggests that shareholders face a tradeoff regarding bank

CEO incentive pay. At very low levels of incentive pay CEOs may have insufficient incentives to take risks that are in shareholders' interests. At very high levels of incentive pay CEOs may have incentives to take risks beyond what shareholders prefer. Shortly after the 2008 banking crisis peaked, it appears that outside shareholders focused more on the negative consequences of bank CEO risk-taking incentives. Additional evidence from this study suggests that top management share ownership does not influence bank CEOs' options and bonus pay. Similarly, the decision by banks to accept Troubled Asset Relief Program (TARP) funds does not influence bank CEO incentive pay. The perception of a bank as "too big to fail" has no influence on incentive pay prior to 2008, but this perception significantly decreases incentive pay following the peak of the banking crisis.

REFERENCES

Becher, D., T. Campbell & Frye, M. (2005). Incentive compensation for bank directors: The impact of deregulation. *The Journal of Business* 78, 1753-1778.

Belkhir, M., & Chazi, A. (2010). Compensation vega, deregulation, and risk-taking: Lessons from the US banking industry. *Journal of Business Finance & Accounting* 37: 1218–1247.

Black, F., & Scholes, M. (1973). The pricing of options and corporate liabilities. *Journal of Political Economy* 81, 637–54.

Board of Governors of the Federal Reserve System. (2009) *Federal Reserve issues proposed guidance on incentive compensation* (Press release). Retrieved from http://www.federalreserve.gov/newsevents/press/bcreg/20091022a.htm

Chen, R., Steiner T., & Whyte, A. (2006). Does stock option-based executive compensation induce risk taking? An analysis of the banking industry. *Journal of Banking and Finance* 30, 915-945.

Collins, M., Blackwell D. & Sinkey, J. (1995). The relationship between corporate compensation policies and investment opportunities: Empirical evidence for large bank holding companies. *Financial Management* 24, 40-53.

Core, J., Guay, W., & Rusticus, T. (2006). Does weak governance cause weak stock returns? An examination of firm operating performance and investors' expectations. *Journal of Finance* 61, 655–87.

Crawford, A., Ezell, J. & Miles, J. (1995). Bank CEO pay-performance relations and the effects of deregulation. *The Journal of Business* 68, 231–256.

Dittmar, A., & Mahrt-Smith, J. (2007). Corporate governance and the value of cash holdings. *Journal of Financial Economics* 83, 599–634.

Fahlenbrach, R., & Stulz, R. (2011). Bank CEO incentives and the credit crisis. *Journal of Financial Economics* 99, 11-26.

Gompers, P., Ishii, J. & Metrick, A. (2003). Corporate governance and equity prices, *Quarterly Journal of Economics* 118, 107–55.

Harjoto, M., & Mullineaux, D. (2003). CEO compensation and the transformation of banking, *Journal of Financial Research* 26, 341-354.

Houston, J., & James, C. (1995). CEO compensation and bank risk, is compensation in banking structured to promote risk taking? *Journal of Monetary Economics* 36, 405–31.

Hubbard, R., & Palia, D. (1995). Executive pay and performance: Evidence from the U.S. banking industry. *Journal of Financial Economics* 39, 105-130.

Hwang, B., & Kim, S. (2009). It pays to have friends. *Journal of Financial Economics* 93, 138-158.

Jensen, M., & Murphy, K. (1990). CEO incentives: It's not how much you pay, but how. *Harvard Business Review* 3, 138-153.

John, T., & John, K. (1993). Top-management compensation and capital structure. *Journal of Finance* 48, 949-974.

John, K., Mehran, H. & Qian, Y. (2010). Outside monitoring and CEO compensation in the banking industry. *Journal of Corporate Finance* 16, 383-399.

John, K., & Qian, Y. (2003). Incentive features in CEO compensation in the banking industry. *Economic Policy Review* 9, 101-121.

John, K., Saunders, A. & Senbet, L. (2000). A theory of bank regulation and management compensation. *Review of Financial Studies* 13, 95-125.

Klock, M., Mansi, S. & Maxwell, W.F. (2005). Does corporate governance matter to bondholders? *Journal of Financial & Quantitative Analysis* 40, 693–719.

Mehran, H. & Rosenberg, J. (2007). The effect of employee stock options on bank investment choice, borrowing, and capital. *FRB of New York Staff Report* No. 305.

Merton, R. (1973). Theory of rational option pricing. *Bell Journal of Economics and Management Science* 4, 141–83.

Minnick, K., Unal, H. & Yang, L. (2011). Pay for performance? CEO compensation and acquirer returns in BHCs. *The Review of Financial Studies* 24, 439-472.

Mishra, C. & Nielsen, J. (2000). Board independence and compensation policies in large bank holding companies. *Financial Management* 29, 51-69.

Smith, C. & Watts, R. (1992). The investment opportunity set and corporate financing, divided, and compensation policies. *Journal of Financial Economics* 32, 263-292.

United States Department of the Treasury. (2010). *Financial Stability Initiatives* (Final report exhibits). Retrieved from http://www.treasury.gov/initiatives/financial-stability/about/Documents/Exhibits.pdf.

White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica* 48, 817–38.
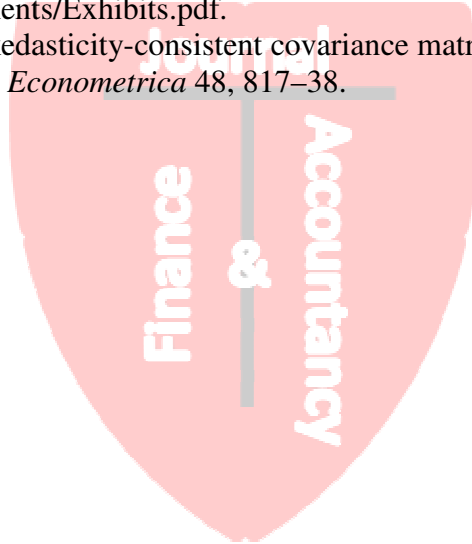
APPENDIX

Table 1
Summary Statistics for Sampled Banks
Shown are descriptive statistics for the sample of bank holding companies. All variables except Gov and TARP vary with year. Gov is the corporate governance index for 2005. TARP is an indicator variable equal to one if the bank received TARP funds during 2009. TBTF equals one if the bank is defined as "too big to fail." IP is incentive pay for bank CEOs, calculated as the value of annual bonuses and stock options divided by total compensation. Capital is equity divided by total assets. Return is the unadjusted one year stock return for the bank. Growth is the price-book ratio. Size is the dollar value of total assets (in billions). Block is the percentage of shares owned by outside shareholders who individually hold at least 5% of the bank's outstanding shares. Own is the percentage of outstanding shares held by officers and directors.

Variable	2005			2007			2009		
	Mean (Median)	SD (N)	Max (Min)	Mean (Median)	SD (N)	Max (Min)	Mean (Median)	SD (N)	Max (Min)
IP	0.57 (0.60)	0.24 (83)	1.00 (0.00)	0.30 (0.24)	0.28 (76)	0.99 (0.00)	0.32 (0.23)	0.33 (71)	1.00 (0.00)
Gov	9.45 (9.00)	2.82 (83)	15.00 (3.00)	9.51 (9.00)	2.85 (79)	15.00 (3.00)	9.54 (9.00)	2.94 (71)	15.00 (3.00)
TBTF	0.05 (0.00)	0.22 (83)	1.00 (0.00)	0.05 (0.00)	0.22 (79)	1.00 (0.00)	0.06 (0.00)	0.23 (71)	1.00 (0.00)
Capital	0.09 (0.09)	0.02 (83)	0.16 (0.03)	0.10 (0.09)	0.02 (79)	0.18 (0.05)	0.09 (0.09)	0.03 (71)	0.16 (0.00)
Return	-3.11 (-2.51)	13.89 (83)	20.31 (-77.59)	-23.55 (-22.13)	18.35 (79)	28.15 (-68.57)	-21.75 (-14.95)	35.35 (71)	52.34 (-94.22)
Growth	2.20 (2.09)	0.59 (83)	3.99 (1.15)	1.53 (1.40)	0.63 (79)	3.74 (0.48)	1.03 (0.94)	0.55 (71)	3.20 (0.19)
Size	79.81 (10.16)	252.26 (83)	1494.04 (1.78)	109.70 (11.80)	355.37 (79)	2187.63 (2.42)	141.00 (12.06)	431.44 (71)	2223.30 (3.23)
Own	6.27 (2.70)	10.31 (83)	66.90 (0.02)	7.83 (4.64)	10.20 (76)	66.60 (0.01)	5.76 (3.12)	9.54 (71)	62.90 (0.00)
Block	12.40 (11.00)	10.50 (83)	53.47 (0.00)	10.85 (9.31)	10.05 (76)	50.38 (0.00)	16.07 (12.99)	13.05 (71)	78.00 (0.00)
TARP							0.76 (1.00)	0.43 (71)	1.00 (0.00)

Table 2
Regression Results for Bank CEO Incentive Pay
Shown are the results of regressing bank CEO incentive pay on several variables. Model 1 includes data from years 2005 and 2007. Models 2 and 3 include data from years 2005, 2007, and 2009. Model 4 includes only 2009 data. The sample size ranges from 71 bank years in Model 4 to 230 bank years in Models 2 and 3. All variables except Gov vary with year. Gov is the corporate governance index calculated in 2005. TBTF equals one if the bank is defined as "too big to fail." Capital is equity divided by total assets. Return is the unadjusted one year stock return for the bank. Growth is the price-book ratio. Size is the dollar value of total assets (in billions). Block is the percentage of shares owned by outside shareholders who individually hold at least 5% of the bank's outstanding shares. Own is the percentage of outstanding shares held by officers and directors. Year07 and Year09 are indicator variables equal to one if the year is 2007 and 2009, respectively. Coefficient estimates are shown on the top row for each variable. P-values are shown in parentheses.

Variable	Model 1	Model 2	Model 3	Model 4
Intercept	-0.7553	-0.9416	-0.8455	-1.8656
	(0.005)	(0.000)	(0.000)	(0.000)
Gov	-0.0184	-0.0100	-0.0183	0.0042
	(0.026)	(0.136)	(0.017)	(0.689)
TBTF	-0.1049	-0.4157	-0.2082	-1.7424
	(0.426)	(0.007)	(0.089)	(0.000)
Capital	3.7061	2.6202	2.6072	1.7424
	(0.001)	(0.003)	(0.002)	(0.203)
Return	0.0030	0.0009	0.0025	0.0002
	(0.024)	(0.289)	(0.034)	(0.823)
Growth	0.1276	0.1378	0.1264	0.1838
	(0.001)	(0.000)	(0.000)	(0.001)
Size	0.0886	0.1113	0.1087	0.1878
	(0.000)	(0.000)	(0.000)	(0.000)
Block	0.0029	0.0007	0.0028	0.0001
	(0.073)	(0.611)	(0.086)	(0.966)
Own	0.0002	-0.0001	0.0004	0.0003
	(0.944)	(0.966)	(0.878)	(0.898)
Year07	-0.1447	-0.1806	-0.1538	
	(0.000)	(0.000)	(0.000)	
Year09		-0.1027	-0.2454	
		(0.027)	(0.067)	
Gov*Year09			0.0255	
			(0.025)	
TBTF*Year09			-0.6090	
			(0.000)	
Return*Year09			-0.0013	
			(0.305)	
Block*Year09			-0.0053	
			(0.019)	
TARP				-0.0213
				(0.757)
(Adj.) R^2	0.521	0.466	0.535	0.533
	159	230	230	71