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# CEO compensation in the U.S. financial services industry

**Abstract**

This study examines CEO compensation in U.S. financial services industry, utilizing a sample of 277 financial institutions both before and during the recent crisis. We find that, contrary to the popular portrait that bank CEOs have significantly reduced their compensation during the crisis period, some of these reductions are only window dressing. On average, both the ratio of total CEO compensation and the ratio of fixed compensation over firm value have in fact increased in 2008. Further, we document evidence consistent with the notion that CEOs switch from bonuses to other forms of pay. There is also some indication that more powerful CEOs are able to switch more than otherwise.

*Keywords:* Executive Compensation, financial firms, CEO power, financial crisis

*JEL classification:* G30

## I. INTRODUCTION

Executive compensation has long been examined in the field of economics, accounting, finance and management. In standard agency theory, incentive components of executive compensation, in particular equity-based pay, are generally thought to be a useful tool in aligning executives' interests with those of the shareholders (e.g. Holmstrom, 1979; Murphy, 1999). However, an opposing view, managerial power theory, argues that CEOs are paid overly generously and incentive compensation (including incentive pay) are often abused by entrenched, power executives at the expense of their shareholders.

Until recently, most of empirical studies concerning executive compensation have focused on companies in non-financial industries. In the aftermath of recent financial crisis of 2007-2008, executive compensation (more specifically, CEO compensation in financial services industry) has been the subject of intense debate among regulators, the media, and the academic community. Among mostly discussed topics are whether bank CEOs are paid too much above and beyond reasonable market rates, whether their incentive contracts encouraged excessive risk-taking that almost brought down the entire U.S. financial system, and, from the public policy's point of view, whether the U.S. legislation and government should regulate executive compensation of financial firms.

On one hand, Fahlenbrach and Stulz (2010) present some evidence that bank CEOs invest substantially in their banks, that these CEOs lost large amount of wealth on their holdings of shares and options during the crisis, and that these CEOs did not reduce their equity holdings in anticipation of the crisis. The authors argue that compensation excesses are not likely the cause of excessive risk-taking at financial firms or, in turn, the subsequent problems. Core and Guay (2010) echoed this viewpoint by presenting that, on risk-adjusted basis, U.S. bank CEOs are not paid too high or received too little incentive compensation. Further, these authors argued against the 2009 executive compensation reform proposed by Treasury Secretary Geithner and implemented by Special Master Feinberg.

On the other hand, some scholars see excessive executive compensation as a contributing factor to the financial crisis (e.g. Rajan, 2009). Bebchuk, Cohen and Spamann (2010) took a

detailed account of executive compensation practice in Bear Stearns and Lehman Brothers over 2000-2008. They argue that top executives at both firms pocketed large amounts of performance-based compensation prior to the crisis and that total cash payoffs these executives took away were bigger than the losses suffered by their firms during the crisis.

Some of these recent studies examined bank CEO compensation data only up to 2006, the year before the financial crisis began. We argue that, in order to assess whether there is a case for regulating pay practices in the financial services industry, we need to both investigate CEOs compensation before and during the recent crisis and take into account the differences across various types of financial firms.

Compensation to CEOs of financial firms, in particular of the biggest banks, has been increasing in line with that of non-financial CEOs over the past two decades or so (Core and Guay, 2010). Although some high pay figures of large banks stirred up media attention, these figures may indeed reflect CEOs' talent, complexity of their tasks, overall superior firm performances, and labor market demands (e.g. Core, Guay and Thomas, 2005; Kaplan, 2008). The issue here is to determine whether, above and beyond these forces that determine reasonable market rates, CEO compensation can be explained by proxies of CEO managerial power. Further, in the wake of the recent financial crisis, what has happened to the CEOs' pay when their firm performed poorly or even stood on the edge of collapsing; did the CEOs receive less total pay accordingly, or did they replace certain compensation that are more prone to public anger (such as cash bonuses) with something less obvious and intimidating?

With empirical analysis based on large pool of financial institutions – 277 unique firms over the period of 2003-2008, we intend to address the following questions:

(1) What are the characteristic of CEO compensation in the U.S. financial services industry, both at levels and in terms of compensation structure? What factors are important to CEO compensation? Do these factors matter to the same extent before and during the crisis?

(2) There is reportedly a significant reduction in total compensation (in particular cash bonuses in 2007 and 2008), are these reductions for real? Or, are they simply a window dressing to make compensation look humble and modest? More specifically, when a CEO receives less bonus pay, how do other forms of his compensation change?

(3) If such switches from bonuses to other forms of compensation do exist, what justifies them – firm's growth, CEO risk aversion, or, do they signal issues in our corporate governance practice?

In the wake of the recent financial crisis, executive compensation in the financial services industry has attracted renewed attention from academics, policy makers, capital providers and the general public. We contribute to this relatively under-explored but growing literature by providing new evidence concerning CEO pay practice at financial firms both prior to and during the crisis period. In addition, to our knowledge, apart from handful of papers in accounting literature (Lambert et al., 1991; Anderson et al., 1999), ours is the first empirical study that explicitly examines the possibility that, in financial services industry, executives switch among different forms of compensation. Our findings suggest that CEO compensation, relative to performance of the financial institutions they manage, indeed jumped up in 2008. Further, some CEOs do switch from cash bonuses to other forms of pay (such as fixed pay or stock options) during the crisis period.

The rest of the paper proceeds as follows. Section II summarizes related literature concerning executive compensation and its association with different factors, with a particular focus on the financial services industry. Section III discusses our data, key variables and the empirical strategy we have adopted. Section IV reports our empirical findings, and we conclude with Section V.

## II. RELATED LITERATURE AND HYPOTHESES DEVELOPMENT

Our paper broadly relates to the vast literature on executive compensation and corporate governance, and more specifically to executive compensation of the financial services industry. The issue of CEO compensation has been examined in academia over the past several decades. There are two broad theoretical views concerning the role of executive compensation, in particular the incentive components. In the standard setting of agency theory, incentive compensation is typically viewed as a useful mechanism through which the board mitigates principal-agent problems. Because the executive's effort is not observable,

shareholders have to rely on incentive compensation to encourage the executive to act in the best interests of his shareholders (e.g. Holmstrom, 1979; Grossman and Hart, 1983; Murphy, 1999). Based on this view, market forces should be the dominant factor in determining the optimal level and structure of CEO compensation; CEO incentive pay should be tied to proper performance metrics, leaving little space for powerful CEOs to misappropriate firm resources.

The opposing view, the rent extraction theory, argues that instead of being the solution to agency problem, executive compensation can be abused by a powerful CEO as a way to extract private benefits at the expenses of his shareholders. And this problem becomes increasingly worse as the CEO's power over the board increases (Adams et al., 2005; Bebchuck and Fried, 2004; Morse et al., 2009).

Prior to the crisis of 2007-2008, executive compensation of financial services firms has largely been overlooked. In fact, "very little attention has been paid to the corporate governance of banks (Macey and O'Hara (2003, p.91))," because most of empirical studies in this area typically excluded financial companies from their sample. There are, however, some previous studies looking CEO compensation in the banking industry. Compensation of banking industry executives before early 1990s was found to be not structured to encourage risk-taking, and bonus compensation for bank CEOs was found to be much less than that of non-bank CEOs (Smith and Watts, 1992; Houston and James, 1995).

The U.S. financial sector experienced two major deregulations in the 1990s (the *Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994*, and the *Gramm-Leach-Bailey Financial Modernization Act of 1999*). Banks were allowed to not only conduct business across state lines but also to expand into other non-traditional banking businesses including investment banking, brokerage and insurance.

Underlying both the agency theory and rent-extraction theory, board of directors are assumed to be the gate keeper of good corporate governance. Largely due to heavy regulation, firm-level governance (including the board) has been found to have little impact on compensation or firm performance in banks. Adams and Mehran (2003) argue that boards of financial firms may face large pressure to satisfy stakeholders and regulators. Utilizing a sample of 35 bank holding companies ending in 1999, they find that these banks

have larger boards, more independent directors and lower performance-based pay for CEOs than nonfinancial firms.

The recent financial crisis has sparked renewed interests in CEO compensation in financial institutions, in particular with regard to whether bank CEOs are paid overly generously, and whether pay excesses are related to excessive risk-taking behavior. DeYoung et al. (2010) document some evidence that, after 1999, CEO incentive compensation of banks has a positive impact on firm risk taking. Fahlenbrach and Stulz (2010) find little evidence that banks with higher risk-inducing compensation performed worse during the financial crisis. Core and Guay (2010) and Canyon, Core and Guay (2010) argue that, on risk-adjusted basis, U.S. bank CEOs are not paid too high or received too little incentive compensation. However, Bebchuk, Cohen and Spamann (2010) contended their view by documenting that, at least for the two failed giants – Bear Sterns and Lehman Brothers, top executives were able to extract large amounts of compensation even when their firms went belly up.

## III. DATA, KEY VARIABLES AND ESTIMATION STRATEGY

Our primary data source of CEO compensation is Standard & Poor's Execucomp database. We extract all financial firms with SIC codes between 6000 and 6300 over the period of 2003-2008.[1] After filtering, we have 1172 observations for 277 unique financial institutions, which we then divide into five groups. We have a total of 159 commercial banking companies (SIC 6020) any time during our sample period. Group 1 includes those commercial banks chartered federally under the *National Bank Act*[2] and Group 2 includes

[1] CEOs are identified based on the "Annual CEO" flag provided in the ExecuComp database. The choice of the sample period allows us to examine CEO compensation before and during the financial crisis.

[2] The Office of the Comptroller of the Currency (OCC) regulates and supervises all national banks, and the FDIC insures the deposits in all national banks. All banks incorporated under a national charter must be members of the Federal Reserve System. Banks incorporated under a state charter may also apply for Federal Reserve membership, or else be overseen by FDIC. The Federal Reserve Board of Governors is responsible for regulating and supervising all bank holding companies (BHCs), even if the bank owned by the holding company is under the primary supervision of OCC or FDIC.

state commercial banks and savings institutions.[3] Credit institutions and mortgage banks are put together into Group 3, as their primary businesses involve extending credits to customers. Federal credit agencies, such as Fannie Mae, are also classified into this group.[4] Investment banks form Group 4, while others not belonging to any one of these categories are bundled into Group 5. Our sample is bigger than and includes that of Fahlenbrach and Stulz (2010). For comparison purpose, we also coded the 98 commercial and investment banks they used.

### 3.1 CEO compensation

ExecuComp database decomposes CEO compensation into salary, bonus, equity-based compensation such as restricted stocks and options, and other compensation. There are two complexities caused by the data format discrepancy due to the SEC reporting rule change in December 2006. The new rules require more detailed disclosure of executive compensation, and the reported decomposition of incentive pay has somewhat changed as well. Execucomp changes its data format accordingly. For instance, data item BONUS in the pre-2006 format includes both discretionary and performance-based bonuses, while in the post-2006 format, it only reports discretionary bonuses. Performance-based bonuses, together with long-term incentive pays, are now part of non-equity incentive pay.[5] To maintain data consistency and accuracy of our key measures, we have composed the following five CEO compensation variables based on Execucomp data items:

- Fixed compensation (FIXED) includes SALARY and all other compensation;[6]

[3] To a large extent, the charter a bank chooses depends on its size and nature of operations. Banks operating in multiple states typically prefer a federal charter as the uniform OCC regulation lowers their operating costs and relaxes the administrative burden of complying with multiple state regulations. On the other hand, smaller banks on average are more likely to hold state charters.

[4] Fannie Mae, Freddie Mac and federal mortgage banks are regulated by the Federal Housing Finance Agency (FHFA). Sallie Mae, one of the largest U.S. government sponsored enterprises, was fully privatized in late 2008.

[5] Another example of such discrepancy is related to FAS 123R and subsequent SEC reporting rules, which required firms to report stock options awarded to employees using grant-date fair value method, instead of Black-Scholes model used previously. Compustat also changes the data item OPTIONS format accordingly.

[6] Compensation items such as pension benefits are grouped into FIXED. As pointed out by Bebchuk and Jackson (200?), such benefits are not performance-sensitive.

- Non-equity incentive compensation (BLTIPNE) includes BONUS, LTIP, and NEIP;
- Equity incentive compensation (EQUITY) is the market value of stock awards;
- Options (OPTION) is the market/fair value of options granted;
- Total compensation (TOTAL, or TDC3) is the sum of the above four items.

In order to make assessment concerning the structure of CEO compensation, we also construct ratio variables by dividing each of the above compensation components by TOTAL. These ratios reflect CEO compensation structure, and changes in these ratios over time indicate structural changes in pay. In order to measure the relative compensation (rather than the compensation in dollar value), we also introduce another set of ratio variables by dividing each of the above dollar value compensations by the total market capitalization of the firm. All compensation figures are measured in thousands and are adjusted to 2008 constant dollars using GDP deflator.

Figure 1 shows CEO compensation of financial firms over the period of 2003-2008. Panel A reports only the 98 banks of Fahlenbrach and Stulz (2010), while Panel B includes all our 277 sample firms, separately for each individual group. As correctly pointed out by Fahlenbrach and Stulz (2010), Panel A indicates that, on average, CEOs of large U.S. commercial and investment banks have suffered some wealth losses, in particular in terms of incentive compensation. When we take a closer look at CEO compensation across various types of financial institutions in Panel B, however, some interesting patterns emerge:

- Market capitalization in all groups decreased sharply since 2006 and, for most financial firms, dollar amount of CEO compensation also declined during the crisis;
- There are significant differences among groups in terms of both the extent to which U.S. financial institutions suffered and how their CEOs are compensated before and during the crisis; more specifically,
- In group 1, federally chartered commercial banks, while annual bonuses dropped dramatically on average, stock options as a proportion of compensation has increased since 2006 ( especially in year 2008);
- In group 2, smaller state banks, while both bonuses and options experienced relatively steady decline, fixed compensation have been slowly increasing;

- In group 3, credit institutions, both bonuses and fixed pay have been decreasing over time while equity-based compensation peaked in 2007;
- In group 4, investment banks, bonuses dominated the other forms of compensation prior to the crisis, and the compensation structure has changed afterward;
- In group 5, other types of financial institutions, the relative importance of shares has been increasing over time. Further, absolute level of total CEO compensation increased in 2008, at odds with the other groups.

< Figure 1 goes about here >

### 3.2 Key variables

The amount and structure of CEO compensation can depend on or are associated with many factors, including CEO characteristics such as his risk aversion, equity ownership in the firm and bargaining power over the board, firm-level determinants such as past firm performance and operational complexity, macro economic conditions and regulatory limits on CEO compensation or components of CEO pay.

Because shareholders cannot observe CEO effort, they (through the board) often utilize incentive compensation components such as bonuses and stock options. Compensation structure thus shapes the incentives of the CEO. At the same time, however, compensation structure is also (at least partly) influenced by the CEO. Weak corporate board and the lack of external discipline, such as takeover threat, are both related to more entrenched CEOs.

We employ two measures for CEO's power over the board.[7] First, it is widely recognized that CEO's power increases when he also serves as the chairman of the board (e.g. Yermack, 1996). We thus define variable DUAL as an indicator that equals one when CEO duality exists, and zero otherwise.[8] Our second measure of CEO power is the managerial entrenchment index (EINDEX), which we obtained from Prof. Bebchuk's website. This index

[7] There are certainly more CEO power / governance variables that one could consider (e.g. Grove et al., 2009), which we intend to include in the next draft of this paper.

[8] For instance, Wachovia had combined CEO and board chairman prior to its going bankrupt and being taken over by Wells Fargo.

summarizes 6 anti-takeover provisions and is widely used as a composite indicator of CEO entrenchment (e.g. Bebchuk et al., 2009; Bates et al., 2008).

In terms of control variables, previous research documents that the level of compensation increases with firm size (e.g. Barro and Barro, 1990), the use of stock-based compensation increases in growth opportunities in the firm's investment set (e.g. Smith and Watts, 1992), and the risk associated with incentive compensation increases with stock return volatility (e.g. Banker and Datar, 1989). We thus include as independent variables the logarithm of total market capitalization (SIZE) as a proxy for firm size, logarithm of total assets (LASSET) as an alternative proxy for firm size, market-to-book ratio (MTOB) as a proxy for growth potential, and weekly stock return volatility over the past year (RISK) as a proxy for firm risk. Firm size and risk may both reflect the degree of complexity of the CEO's tasks. We include CEO age (AGE) and equity ownership at the beginning of the year (OWNERSHIP) in the firm as proxies for his risk aversion. Arguably, older CEOs are more risk averse and would prefer less stock-based compensation. Because different forms of incentive compensation may respond differently to alternative performance measures, we also control for firm performance that takes either one of the two measures, accounting-based return on asset (ROA) or annualized stock return (ANRET), depending on the exact compensation variable we examine.[9] We conjecture that CEOs whose firms are larger, with more growth opportunities, facing larger market risk and have performed well in the past year are more likely to receive high compensation than otherwise. We also conjecture that older CEOs and CEOs with greater existing equity ownership prefer less incentive compensation that is equity-based.

Table 1 summarizes our key variables. Panel A reports CEO compensation variables; Panel B reports firm-level controls, CEO characteristics and the power measures we used; Panel C reports simple Pearson correlation matrix, all in aggregation across all groups.

<< Table 1 goes about here >>

[9] In subsequent regression analyses, we only report results based on annualized stock return. We have repeated these analyses, in particular those involving bonuses, using return on assets. However, this accounting based performance measure is insignificant in most of model specifications.

3.3 Empirical Strategy

The purpose of this study is three-fold; (a) to examine the characteristics and determinants of CEO compensation at U.S. financial institutions; (b) to detect any changes in CEO compensation structure over time, in particular whether there is a "switch" from bonuses to other forms of compensation prior to or during the financial crisis; and (c) to examine whether such switches, if exist, are associated with CEO power.

Given that the SEC reporting rule changes occurred in December 2006 and that the financial crisis started in the 2nd half of 2007, we divide our sample period into two sub-sample windows with one including observations in years 2003 to 2006 and the other including observations in years 2006 to 2008.

To investigate what factors determine the level and structure of CEO compensation, we adopt a multiple regression framework to examine the cross sectional difference in the different components of CEO compensation. In particular;

$$PAY = \alpha + \beta_1 * Performance + \beta_2 * risk + \beta_3 * growth + \beta_4 * size + \beta_5 * age + \beta_6 * CEO\ share\ ownership + \gamma_1 * Eindex + \gamma_2 * Duality + \varepsilon \quad (1)$$

, where the dependent variable, *PAY*, measures either the level of CEO compensation or the relative importance of a particular form of compensation and the independent variables are as specified in Section 3.2.

When total compensation is made up of incentive components that have different risk profiles and are linked different performance metrics, one needs to take into account the interplay between these components in analyzing compensation-performance relationship (Anderson et al., 1999). To investigate potential substitution across different forms of compensation (i.e. the "switch"), we adopt a multivariate logistic regression as follows;

$$\ln\left[\frac{prob(switch_t)}{1-prob(switch_t)}\right] = \alpha + \beta_1 * d\_Performance + \beta_2 * d\_risk + \beta_3 * d\_growth + \beta_4 * d\_size + \beta_5 * age + \beta_6 * d\_CEOownership + \gamma_1 * Eindex + \gamma_2 * Duality + \varepsilon \quad (2)$$

, where

$$switch_t = \begin{cases} 1, & if\ there\ is\ a\ switch\ from\ bonus\ to\ other\ forms\ of\ compensation \\ 0, & otherwise \end{cases}$$

A significant coefficient, either β or γ, points to the characteristics of the firms that switch. For example, a positively significant $\gamma_2$ would indicate that a bank with a powerful CEO who also serves as the chairman of the board has a higher probability to replace annual bonus with other forms of compensation than a less powerful CEO.

In all models, we control for year fixed effects.[10] Since our regressions are conducted within each group (i.e. subsets of the financial services industry), we do not need to worry about using industry-adjusted performance measures to rid of the luck factor as in some other studies (Morse et al., 2009).

## IV. MAIN FINDINGS

During the financial crisis some CEOs, in particular those from large investment banks and commercial banking firms, received little bonus rewards either voluntarily or because of the enormous public pressure,[11] as confirmed in Figure 1. The question, however, is whether CEO compensation has really gone down, in particular relative to the value of the firms that they manage? Figure 2 displays the amount of CEO compensation (TOTAL, in thousands of 2008 constant dollars) and a relative measure of total compensation over each $1000 firm market capitalization. In most groups, the level of CEO compensation did go down in 2007 and 2008. However, such decrease was not as dramatic as the erosion in firm value. In fact, on average, the relative measure increased during the crisis for all groups of U.S. financial institutions.[12]

< Figure 2 goes about here >

[10] In results not tabulated for brevity, we also control for firm fixed effects in the pre-crisis sample period of 2003-2006. Firm fixed effects cannot be included for 2007-2008 because of insufficient time series variation. The main results, for the pre-crisis sub-sample, are qualitatively the same as those reported in the paper.

[11] << Reference cases to be added in the text for as footnote >>.

[12] One example is Merrill Lynch. In 2006, Merrill's CEO Mr. O'Neal received annual total compensation of $46 million, including $18 million bonuses. In 2007, his annual compensation dropped to just above $1 million, with zero cash bonuses. This modest-looking compensation seems to be very consistent with poor firm performance of Merrill in 2007. However, when Mr. O'Neal resigned from Merrill in October 2007, he reportedly walked away with a package totaling more than $160 million, largely in the forms of equity-based compensation, retirement benefits and some deferred compensation.

4.1 What matters to CEO compensation in financial firms?

Table 2 summarizes regression results of Equation (1) by linking both the level and structure of CEO compensation to firm features, CEO characteristics and CEO's bargaining power over the board. We have 10 panels, reflecting total compensation and the four components we described in Section 3.1 and the two sub-sample windows.

With respect to CEO total compensation (Panel 2.A-1 and Panel 2.A-2), firm size is a significant determinant both prior to and during the financial crisis. Firm risk seems to matter but only consistently for group 2, smaller commercial banks. Growth prospect had a positive association with total compensation before the crisis, however becomes insignificant during the market meltdown. Past firm performance and CEO age both have an insignificant coefficient throughout, while CEO existing equity ownership only affected commercial banks (groups 1 and 2) before the crisis. For these commercial banks, CEO's bargaining power over the board also had more significant impact on CEO compensation before the meltdown than during the crisis. The two power measures do not seem to have consistent explanatory power concerning other types of financial institutions.

In regards to CEO bonuses and other non-equity incentive payouts (Panel 2.B-1 and Panel 2.B-2), contrary to our expectation, past firm performance has little impact on bonus rewards. Future growth potential, on the other hand, has a significantly positive impact for commercial banks before the crisis and for all types of financial firms during the meltdown. One potential explanation is that, when the U.S. economy was in chaos in 2007-2008, stability and growth prospects became especially important for financial institutions. In terms of CEO power measures in the two commercial bank groups, again, the statistical significance disappeared during the crisis years.

We next report results on CEO options (Panel 2.C). In general, future growth opportunities have a significantly positive association with options compensation the CEO receives, both before and during the crisis. Older CEO receive somewhat less options compensation, however the effect is only significant for some types of financial institutions and only during the crisis. One interesting finding is that the amount of options a CEO is granted increases

when the CEO also holds the board chairmanship. On one hand, more options could lead to better alignment between the interest of the CEO and that of his shareholders. On the other hand, more options could promote excessive risk-taking behavior. In results not tabulated for brevity, we do not find any significant association between duality and the amount of restricted shares the CEO receives.

In results concerning fixed compensation (not tabulated for brevity), firm size, stock volatility and CEO age all have significantly positive regression coefficients for commercial banking firms, supporting the argument that a CEO's salary largely reflects the complexity of his job and his risk aversion. These variables, however, are not significant for other types of financial firms. Neither measure of CEO power, duality or E-index, is significant.

< Table 2 goes about here >

4.2 Have CEOs switched annual bonuses to other forms of compensation?

Despite Citigroup CEO, Mr. Pandit's reportedly $1 salary and zero cash bonuses for 2008, Citigroup was reported in June 2009 to hike salaries by as much as 50% to offset the bonus-cut after it had accepted $45 billion bailout funds from the U.S. federal government. [13] Citigroup, however, was not the only bank switching from bonus to salary. Morgan Stanley, UBS AG, Deutsche Bank, and Bank of American all jointed this trend either in 2008 or 2009. In fact, according to a survey conducted by consultancy Mercer that "some 65 percent" of the surveyed 61 banks and other financial services firms said that they had increased basic salary, while "88 percent" decreased bonus.[14]

With these in mind, we next address the possibility of some CEOs switching from annual bonuses to other forms of compensation, in particular given the public outcry against overly generous bonuses in the wake of Lehman Brothers, AIG and the likes.[15] Figure 3 displays a

[13] Elizabeth Hester, Bloomberg, Feb. 11, 2009.

[14] Reporting by Cecilia Valente, Editing by Dan Lalor, Reuters London Jan 11, 2010.

[15] For instance, AIG recorded a $99.2 billion total loss in 2008, and its market value plummeted to $2.7 billion at the end of March 2009. The US government had to create an $85 billion credit facility in late 2008 to bail out the insurance giant in order to avoid further impact rippling through the entire financial system. In March

set of pie charts regarding different forms of compensation an average CEO received before and during the financial crisis, separately for each group. In terms of proportional bonus pay, we see significant reduction in groups 1 through 3, some reduction in group 4, and little change in group 5.

< Figure 3 goes about here >

We proceed with Table 3, a set of T-tests which keeps track of CEO compensation structure over time. There are two panels in Table 3. In Panel A, the base year is 2007 and we compare each form of compensation as a percentage of either CEO total pay (in thousands of 2008 dollars) or of the firm's market capitalization (in millions). The reported t-stats indicate whether the CEO compensation structure in a particular year is statistically different from that of 2007. Panel B is constructed in a similar fashion, however using 2008 as the base year. These T-tests include firms across all groups.

In general, CEO compensation structure has changed dramatically due to the financial crisis. Compared to the pre-crisis era, annual bonuses as a percentage of total compensation (BLTIPNE _PCT) has reduced dramatically, while the proportion of fixed pay has increased significantly (FIXED_PCT) in 2007-2008. When we examine various components of CEO pay in comparison to firm's valuation, however, we find something quite different. In 2008, total CEO compensation as a percentage of each $1000 firm market capitalization has jumped up significantly for all types of financial institutions in our sample. Further, this jump is contributed by not only restricted shares (as proposed by the legislators and government), but also stock options and fixed compensation.

< Table 3 goes about here >

Table 4 reports the frequencies of "switch" from bonuses to other forms of compensation. A switch from bonus to fixed compensation happens if a firm reduces its CEO bonus (dollar amount) while increases his fixed compensation at the same time. Switching to other forms of compensation is defined in similar fashion. Such switches are interesting if they are used tosooth down the public furry while keeping the CEOs happy. Our results indicate that, in

2009, AIG rewarded its key employees with retention bonuses worth $165 million, out of the bailout money. This ignited angry backlash from the Senate, media and general public.

2007, 43% of financial institutions in our sample involved in at least one instance of switch from bonuses to other forms of compensation. In 2008, this figure increased to 53%.

Table 5 summarizes the results of Logistic regressions, Equation (2), as to what factors may be related to such switches from bonuses to other forms of compensation. In 2008, duality (measuring CEO power) seems to matter. For instance, for an average firm whose CEO is not chairman of the board, the odds of switching from bonus to equity is 0.48. All else equal, if the CEO is also a chairman of the board, the odds will change to 1.3, indicating a much higher probability of switching.

< Table 5 goes about here >

4.3 Robustness Checks

Our definition of CEO is based on "annual CEO" flag provided by ExecuComp database. We sometimes observe changing CEOs in the middle of a year, which might affect our compensation measure. We double checked our data by removing such cases (fairly small number of cases, in fact), and our main findings still hold. Thus, "changing CEO" effect is unlikely to affect our results.

## V. Summary, Discussion and Conclusion

During the financial crisis of 2007-2008, U.S. financial institutions suffered huge losses. Over the same period, there were on average some declines in executive compensation in these firms, in particular in the form of cash bonuses. Some argue that, if these executives were not paid excessively to begin with and if they also suffered together with their firms, there is no legitimate case for the legislators and/or government to regulate the bankers pay.

In this paper, we contribute to the debate by providing new evidence regarding CEO compensation at U.S. financial institutions, both before and during the recent crisis. First, we show that though the aggregate dollar amount of CEO pay dropped during the difficult times, CEOs of financial firms fared much better in comparison to their firms. In fact, the ratio of CEO compensation over firm market capitalization almost doubled in 2008

compared to pre-crisis years of 2003-2006. Second, our findings indicate some structural changes in CEO compensation. In particular, there is a trend to switch from cash bonuses to other forms of compensation. Contrary to what has been promoted by the government (greater use of restricted shares and limited amount of cash salary), some CEOs replace bonuses with fixed compensation or stock options. Last but not least, there is some indication that CEO power matter in this switching game.

**REFERENCE**


Adams, Ferreira, 2007. A theory of friendly boards. Journal of Finance, 62(1), 217-250.

Baber, Janakiraman, Kang, 1996. Investment opportunities and the structure of executive compensation. *Journal of Accounting & Economics* 21, 297-318.

Barro, Barro, 1990. Pay, performance and the turnover of bank CEOs. Journal of Labor Economics 8, 448-481.

Bates, Becher, Lemmon. 2008. Board classification and managerial entrenchment: Evidence from the market for corporate control. *Journal of Financial Economics* 87, 656-677.

Bebchuk, Cohen, Farrell. 2009. What matters in corporate governance? *Review of Financial Studies* 22, 783-827.

Bebchuk, Spamann, 2010. Regulating bankers' pay. *Georgetown Law Journal* 98(2), 247-287.

Bebchuk, Cohen, Spamann, 2010. The Wages of Failure: Executive Compensation at Bear Stearns and Lehman 2000-2008. *Yale Journal on Regulation*, Forthcoming

Chen, Steiner, Whyte, 2006. Does stock option-based executive compensation induce risk-taking? An analysis of the banking industry. *Journal of Banking and Finance* 30(3), 915-945.

Coles, Daniel, Naveen, 2006. Managerial incentives and risk-taking. *Journal of Financial Economics* 79(2), 431-468.

Core, Guay, 2010. Is there a case for regulating executive pay in the financial services industry? Wharton working paper.

DeYoung, Peng, Yan, 2010. Executive compensation and business policy choices at U.S. commercial banks. Federal Reserve Bank of Kansas City working paper RWP10-02.

Fahlenbrach, Stulz, 2009. Bank CEO incentives and the credit crisis. *Journal of Financial Economics*, forthcoming.

Grove, Patelli, Victoravich, Xu, 2009. Corporate governance and performance: Evidence from U.S. commercial banks. University of Denver working paper.

Houston, James, 1995. CEO compensation and bank risk: Is compensation in banking structured to promote risk taking? *Journal of Monetary Economics* 36(2), 405-431.

Hubbard, Palia, 1995. Executive pay and performance: evidence from the U.S. banking industry. *Journal of Financial Economics* 39, 105-130.

Khoroshilov, Narayanan, 2008. The role of profit-based and stock-based components in incentive compensation. *Journal of Financial Intermediation* 17, 357-378.

Lambert, Larcker, Verreccchia, 1991. Portfolio considerations in valuating executive compensation. *Journal of Accounting Research* 29, 129-149.

Macey, O'Hara, 2003. The corporate governance of banks. *Federal Reserve Bank of New York Economic Policy Review* 9, 91-107.

Morse, Nanda, and Seru, 2009. Are incentive contracts rigged by powerful CEOs? *Journal of Finance*, forthcoming.

Murphy, 1999. Executive compensation. In: Ashenfelter, O., Card, D. (Eds.), *Handbook of Labor Economics* Vol. 3, North-Holland, Amsterdam, 2485-2563.

Rajan, 2008. Bankers' Pay Is Deeply Flawed. *Financial Times*, January 2008.

Smith, Watts, 1992. The investment opportunity set and corporate financing, dividend and compensation policies. *Journal of Financial Economics* 24, 263-292.

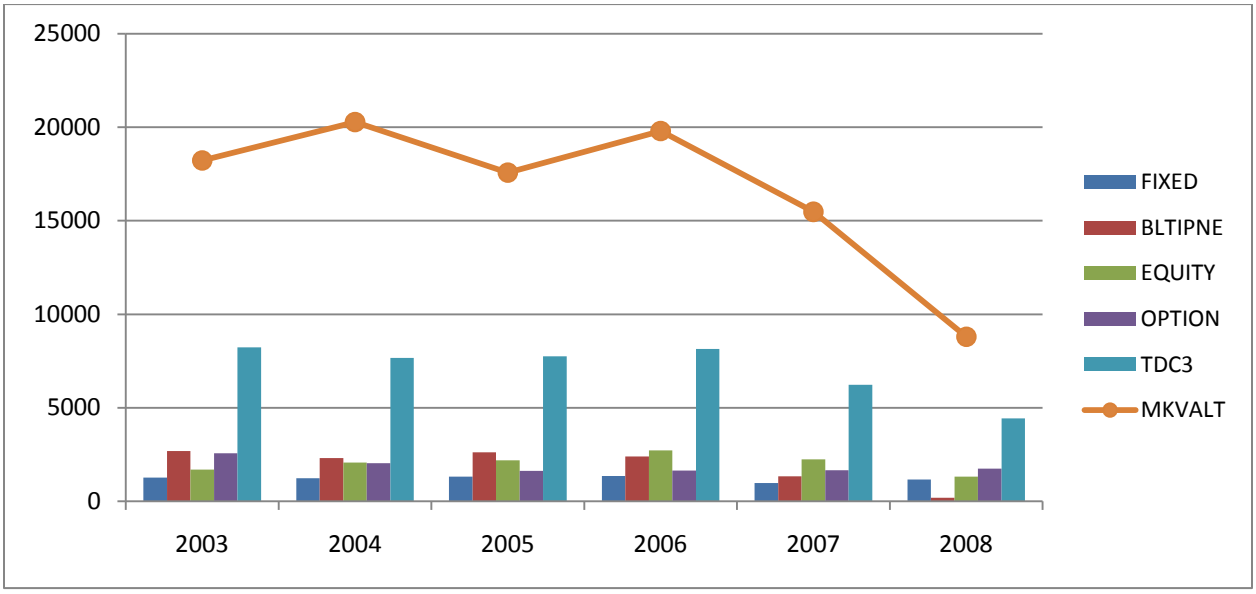
Woodbury, 1983. Substitution between wage and nonwage benefits. *The American Economic Review* 73, 166-182.

Yermack, 1996. Higher market valuation of companies with a small board of directors. *Journal of Financial Economics* 40(2), 185-211.

**Figure 1: CEO compensation and firm market capitalization**

Figure 1 shows CEO compensation of financial firms over the period of 2003-2008. In Panel A, we create the figures for the 98 banks used in Fahlenbrach and Stulz (2010). In Panel B, we report the CEO compensation and firm market size of our 277 financial firms, and separately for each group. Compensation is in thousands of dollars, and firm market capitalization in millions. All figures are adjusted using GDP deflator to 2008 constant dollars.

Panel A: CEO compensation and firm market capitalization, F&S (2010) sample




Panel B: CEO compensation and firm market capitalization, financial firms by group

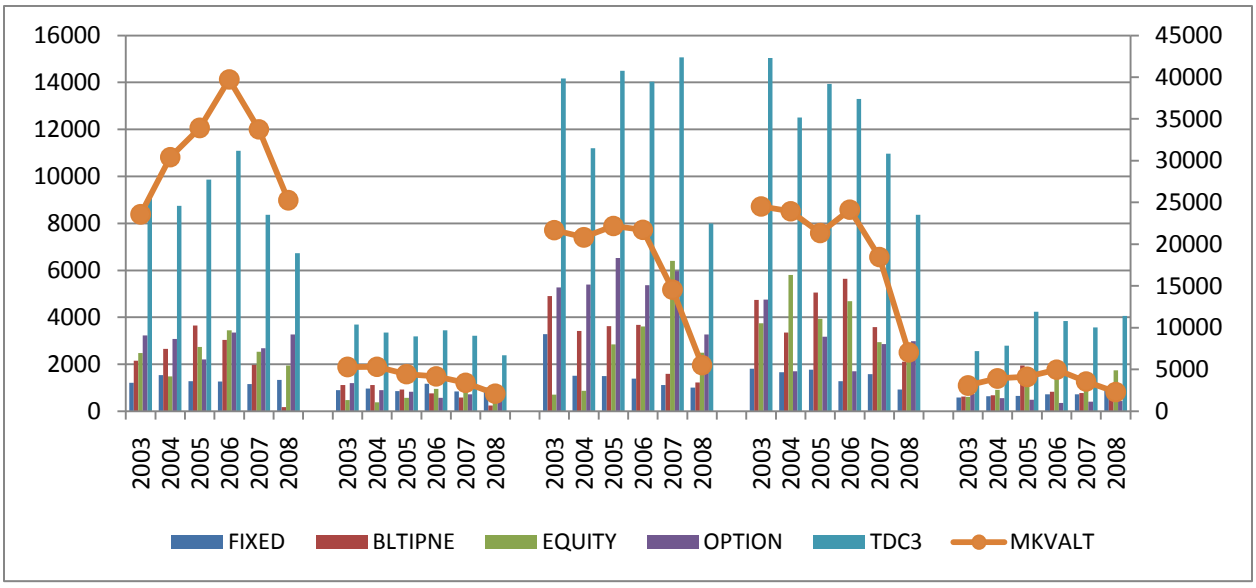


**Figure 2: CEO compensation as a percentage of firm market capitalization**

Figure 2 displays the total CEO compensation and compensation as a ratio of firm market capitalization, separately for each group. Compensation is in thousands of dollars, and firm market capitalization in millions. All figures are adjusted using GDP deflator to 2008 constant dollars.

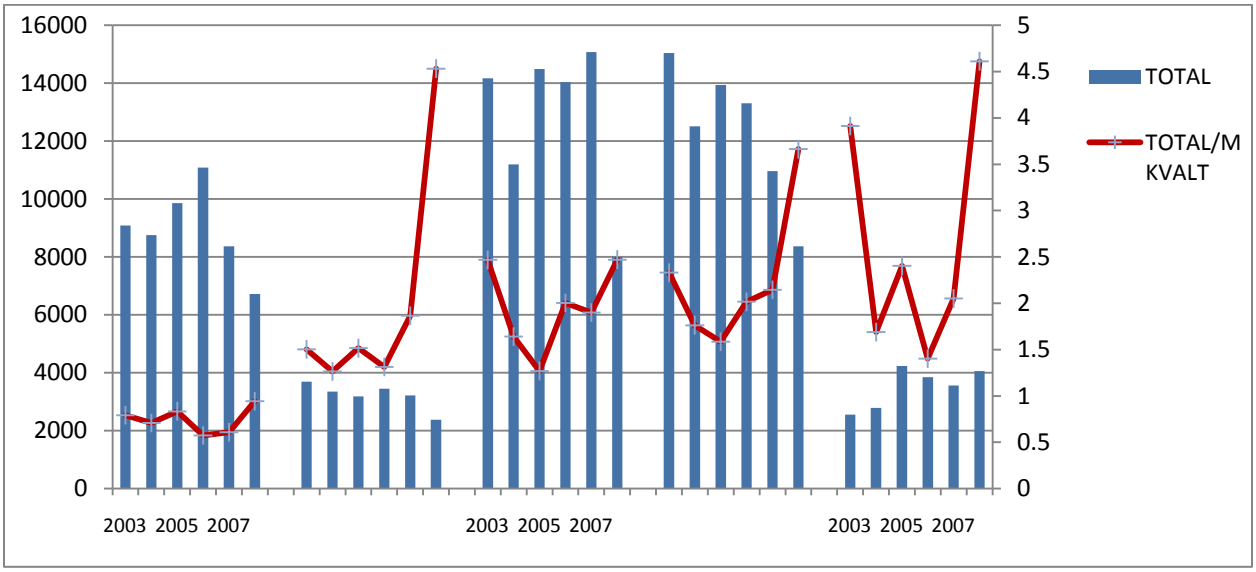
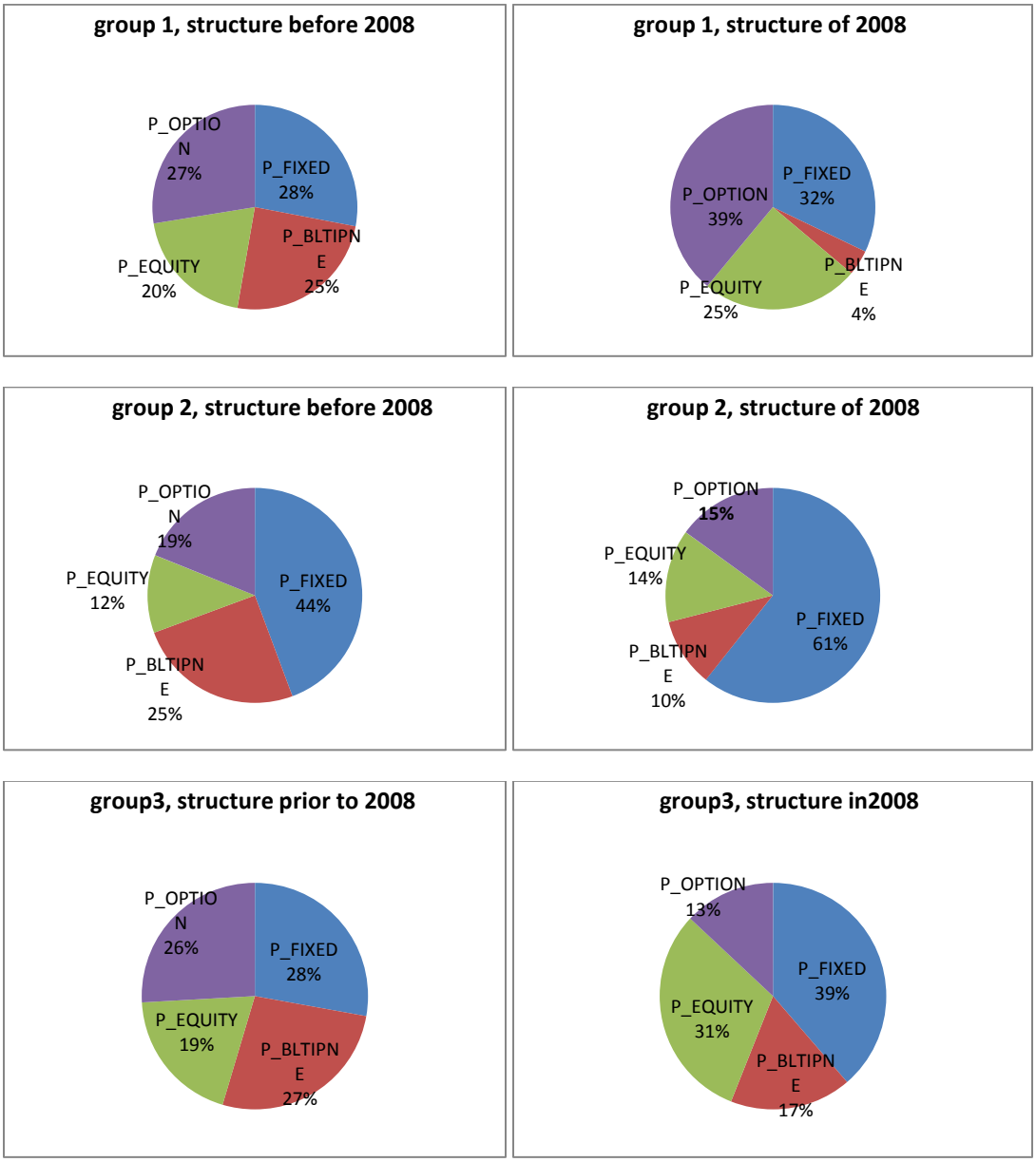
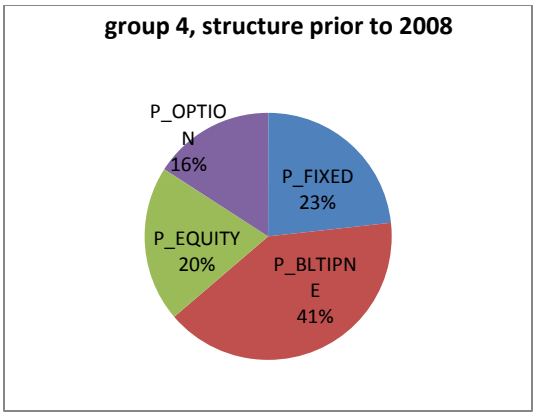
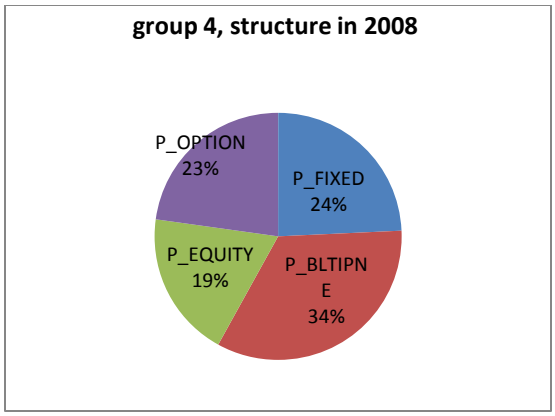


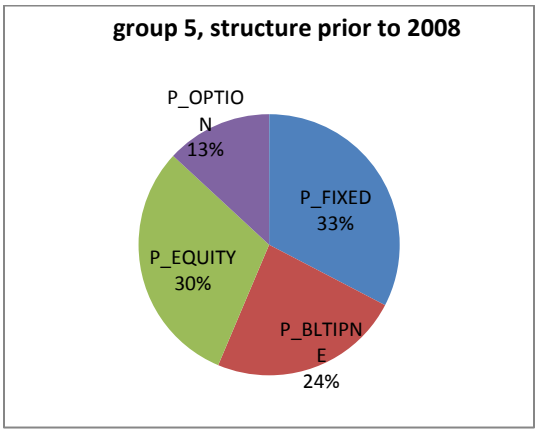
**Figure 3: Structure of CEO compensation before and during the crisis**

Figure 3 displays the CEO compensation structure both before and during the financial crisis, separately for each group. Compensation is in thousands of dollars, and these figures are adjusted using GDP deflator to 2008 constant dollars.




group 4, structure prior to 2008
P_OPTIO
N
16%
P_FIXED
23%
P_EQUITY
20%
P_BLTIPN
E
41%


group 4, structure in 2008
P_OPTION
23%
P_FIXED
24%
P_EQUITY
19%
P_BLTIPN
E
34%


group 5, structure prior to 2008
P_OPTIO
N
13%
P_FIXED
33%
P_EQUITY
30%
P_BLTIPN
E
24%

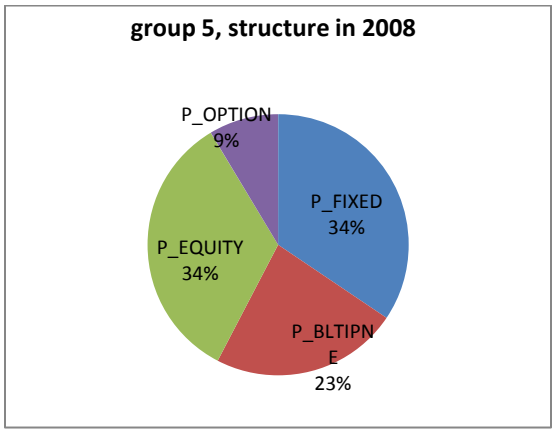

group 5, structure in 2008
P_OPTION
9%
P_FIXED
34%
P_EQUITY
34%
P_BLTIPN
E
23%

**Table 1: Summary statistics of key variables**

Table 1 summarizes the key variables used in this study. Panel A reports level and structure CEO compensation, and compensation relative to firm market capitalization. Panel B reports independent variables used in regression analyses, including firm-level controls of size, growth opportunities, risk and past performance, CEO characteristics of age and existing equity ownership, and CEO power measures of duality and E-index. All compensation figures are in thousands of 2008 constant dollars.

Panel A: Descriptive statistics of CEO compensation of financial firms

| Variable | Mean | Median | Std Dev | Minimum | Maximum | OBS |
|---|---|---|---|---|---|---|
| FIXED | 1063 | 831 | 1513 | 0 | 24361 | 1172 |
| BLTIPNE | 1675 | 600 | 3418 | 0 | 43209 | 1172 |
| EQUITY | 1729 | 150 | 4151 | 0 | 38039 | 1172 |
| OPTION | 1556 | 197 | 3990 | 0 | 42502 | 1172 |
| TOTAL | 6022 | 2812 | 8771 | 28 | 66998 | 1172 |
| FIXED_PCT | 0.36 | 0.29 | 0.27 | 0.00 | 1.00 | 1172 |
| BLITIPNE_PCT | 0.26 | 0.23 | 0.21 | 0.00 | 0.97 | 1172 |
| EQUITY_PCT | 0.20 | 0.08 | 0.25 | 0.00 | 1.00 | 1172 |
| OPTION_PCT | 0.18 | 0.10 | 0.22 | 0.00 | 1.00 | 1172 |
| FIXED_MKT* | 0.78 | 0.33 | 3.29 | 0.00 | 89.44 | 1172 |
| BLTIPNE_MKT* | 0.43 | 0.21 | 1.20 | 0.00 | 25.26 | 1172 |
| EQUITY_MKT* | 0.51 | 0.05 | 2.05 | 0.00 | 54.31 | 1172 |
| OPTION_MKT* | 0.31 | 0.06 | 0.82 | 0.00 | 11.86 | 1172 |
| TOTAL_MKT* | 2.03 | 1.07 | 4.63 | 0.01 | 89.44 | 1172 |

*$1 compensation per $1000 market capitalization

Panel B: Descriptive statistics of CEO power and control variables

| Variable | Mean | Median | Std Dev | Minimum | Maximum | OBS |
|---|---|---|---|---|---|---|
| SIZE | 7.99 | 7.76 | 1.53 | 2.08 | 12.57 | 1172 |
| LASSET | 9.22 | 9.03 | 1.87 | 2.62 | 14.62 | 1172 |
| AGE | 56 | 56 | 8 | 34 | 85 | 1165 |
| MTOB | 1.34 | 1.11 | 0.85 | 0.51 | 10.57 | 1172 |
| ANRET | 0.07 | 0.08 | 0.39 | -0.97 | 3.44 | 1137 |
| ROA | 0.02 | 0.01 | 0.06 | -0.86 | 0.31 | 1172 |
| RISK | 0.04 | 0.03 | 0.03 | 0.01 | 0.34 | 1136 |
| DUAL | 0.53 | 1.00 | 0.50 | 0.00 | 1.00 | 1172 |
| EINDEX | 2.99 | 3.00 | 1.37 | 0.00 | 6.00 | 1139 |
| OWNERSHIP* | 1.12 | 0.17 | 5.57 | 0.00 | 131.55 | 1007 |

* $1 equity ownership per $1000 firm market capitalization

**Table 2: What matters to CEO compensation?**

There are five panels in Table 2, Panels A to D. Panel A reports the regression of logarithm of TDC3 on the independent variables described in Section 3.2. The dependent variables of Panels B to D are logarithm of BONUS, FIXED, EUQITY, and OPTION, respectively.

| | 2003-2006 | | | | | 2007-2008 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Bank group** | **1** | **2** | **3** | **4** | **5** | **1** | **2** | **3** | **4** | **5** |
| **Intercept** | 0.57 | 1.79 | 3.75 | 6.37 | 3.59 | 6.16 | 1.00 | -0.07 | 4.69 | 4.82 |
| | 0.46 | 1.70* | 2.65** | 6.42*** | 3.36*** | 1.88* | 1.50 | -0.01 | 3.87*** | 4.58*** |
| **SIZE** | 1.04 | 0.62 | -1.08 | -0.31 | -0.16 | -0.20 | -0.10 | 0.57 | -0.03 | 0.12 |
| | 0.94 | 0.87 | -2.24** | -4.68*** | -1.01 | -0.07 | -0.73 | 0.19 | -0.37 | 0.55 |
| **MTOB** | 0.57 | 0.58 | 0.49 | 0.41 | 0.42 | 0.50 | 0.64 | 0.54 | 0.32 | 0.37 |
| | 10.53*** | 14.44*** | 5.26*** | 5.84*** | 4.63*** | 6.51*** | 11.62*** | 1.16 | 3.12*** | 3.94*** |
| **ANRET** | -0.12 | -0.25 | 0.38 | 0.19 | 0.48 | 0.09 | -0.08 | -3.08 | 0.53 | -0.13 |
| | -0.22 | -0.98 | 1.11 | 0.66 | 1.45 | 0.12 | -0.30 | -1.14 | 1.24 | -0.18 |
| **RISK** | 14.94 | 23.98 | -8.13 | -18.28 | 16.81 | -11.04 | 10.05 | -9.01 | 18.61 | 0.65 |
| | 1.36 | 4.62*** | -1.77* | -2.49** | 2.17** | -1.79* | 3.94*** | -0.60 | 2.73*** | 0.17 |
| **AGE** | 0.01 | -0.01 | 0.04 | 0.00 | 0.00 | -0.01 | 0.01 | 0.05 | 0.01 | 0.00 |
| | 0.63 | -1.15 | 1.88* | 0.39 | 0.34 | -0.58 | 1.21 | 0.59 | 0.67 | -0.30 |
| **OWNERSHIP** | 0.03 | 0.10 | 0.21 | 0.03 | 0.05 | -0.02 | 0.12 | -0.16 | -0.21 | -0.01 |
| | 0.54 | 2.89*** | 2.04* | 0.47 | 0.62 | -0.20 | 2.30** | -0.35 | -1.99* | -0.12 |
| **EINDEX** | 0.30 | 0.15 | -0.04 | -0.06 | -0.04 | -0.08 | 0.09 | 0.65 | -0.02 | 0.05 |
| | 2.65*** | 2.88*** | -1.15 | -1.77* | -1.43 | -0.28 | 3.30*** | 0.25 | -0.47 | 1.27 |
| **DUAL** | 0.74 | 0.31 | -0.24 | 0.17 | 0.27 | -0.12 | -0.06 | -0.29 | 0.00 | 0.56 |
| | 4.68*** | 3.50*** | -0.76 | 0.86 | 1.40 | -0.62 | -0.43 | -0.25 | 0.01 | 2.73*** |
| **R-Squared** | 0.69 | 0.55 | 0.75 | 0.70 | 0.28 | 0.79 | 0.58 | 0.49 | 0.31 | 0.22 |
| **F-Statistics** | 18.61*** | 24.29*** | 8.01*** | 16.38*** | 4.19*** | 11.59*** | 18.90*** | 0.85 | 2.35** | 3.29*** |
| **OBS** | 103 | 228 | 42 | 88 | 132 | 37 | 134 | 18 | 57 | 115 |

*** indicates p<0.01; ** p<0.05; *p<0.1.

Table 2.B dependent variable is BLTIPNE.

| | 2003-2006 | | | | | 2007-2008 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Bank group** | **1** | **2** | **3** | **4** | **5** | **1** | **2** | **3** | **4** | **5** |
| **Intercept** | -8.59 | -5.66 | 0.63 | 4.09 | -1.91 | -0.76 | -0.92 | -2.41 | 2.89 | 4.76 |
| | -1.94* | -1.45 | 0.11 | 1.18 | -0.60 | -0.23 | -1.02 | -1.21 | 2.46** | 3.31*** |
| **SIZE** | 4.20 | 5.11 | -0.01 | 0.07 | -0.31 | 1.44 | -0.41 | 0.01 | -0.15 | -0.37 |
| | 1.06 | 1.94* | -0.01 | 0.31 | -0.66 | 0.76 | -2.16** | 0.02 | -2.06** | -1.28 |
| **MTOB** | 1.02 | 0.68 | 0.45 | 0.14 | 0.31 | 0.53 | 0.75 | 0.69 | 0.40 | 0.33 |
| | 5.21*** | 4.52*** | 1.16 | 0.56 | 1.14 | 5.41*** | 10.07*** | 5.70*** | 4.58*** | 2.66*** |
| **ANRET** | 1.26 | 1.37 | 2.46 | 2.56 | 0.66 | 3.51 | 0.62 | 0.25 | 0.55 | 1.23 |
| | 0.62 | 1.47 | 1.71* | 2.60** | 0.67 | 3.71*** | 1.57 | 0.41 | 1.37 | 1.22 |
| **RISK** | -27.89 | 8.48 | -11.70 | -9.21 | 26.89 | 22.97 | 17.46 | 11.64 | 6.88 | 13.19 |
| | -0.71 | 0.44 | -0.61 | -0.36 | 1.17 | 1.38 | 4.01*** | 1.17 | 0.95 | 1.65 |
| **AGE** | -0.03 | -0.02 | 0.09 | 0.04 | 0.08 | -0.01 | 0.00 | 0.04 | 0.03 | -0.02 |
| | -0.50 | -0.69 | 1.09 | 0.94 | 2.41** | -0.38 | -0.23 | 1.80 | 1.78* | -1.06 |
| **OWNERSHIP** | 0.31 | 0.05 | -1.23 | -0.19 | 0.07 | 0.01 | 0.08 | 0.41 | -0.07 | -0.09 |
| | 1.55 | 0.40 | -2.84*** | -0.81 | 0.33 | 0.06 | 1.18 | 2.61** | -0.83 | -0.94 |
| **EINDEX** | 0.55 | 0.43 | -0.19 | -0.19 | -0.20 | 0.47 | 0.19 | 0.76 | -0.10 | 0.03 |
| | 1.34 | 2.21** | -1.16 | -1.72* | -2.21** | 1.05 | 4.22*** | 1.14 | -2.36** | 0.47 |
| **DUAL** | 2.11 | 1.00 | -0.74 | 0.67 | -0.56 | 0.35 | 0.15 | 0.21 | 0.34 | 0.01 |
| | 3.71*** | 2.99*** | -0.56 | 0.98 | -1.00 | 0.96 | 0.93 | 0.97 | 1.27 | 0.02 |
| **R-Squared** | 0.37 | 0.20 | 0.40 | 0.28 | 0.13 | 0.84 | 0.53 | 0.95 | 0.54 | 0.12 |
| **F-Statistics** | 4.91*** | 4.76*** | 1.84* | 2.7*** | 1.64* | 13.37*** | 13.81*** | 14.31*** | 6.74*** | 1.65 |
| **OBS** | 103 | 228 | 42 | 88 | 132 | 37 | 135 | 18 | 69 | 128 |

*** indicates p<0.01; ** p<0.05; *p<0.1.

Table 2.C dependent variable is FIXED.

| | 2003-2006 | | | | | 2007-2008 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Group** | **1** | **2** | **3** | **4** | **5** | **1** | **2** | **3** | **4** | **5** |
| **Intercept** | 2.95 | 4.85 | 9.46 | 5.91 | 3.70 | 3.49 | 3.10 | 4.79 | 4.87 | 5.02 |
| | 4.90*** | 4.48*** | 6.63*** | 6.21*** | 2.41** | 1.49 | 7.59*** | 0.97 | 5.60*** | 3.74*** |
| **SIZE** | 1.12 | -1.41 | -1.40 | -0.19 | -0.10 | 2.76 | -0.01 | 0.64 | 0.09 | 0.02 |
| | 2.08** | -1.92* | -2.86*** | -2.97*** | -0.43 | 1.40 | -0.10 | 0.27 | 1.39 | 0.09 |
| **MTOB** | 0.14 | 0.30 | -0.09 | 0.05 | 0.19 | 0.13 | 0.25 | 0.03 | 0.09 | 0.18 |
| | 5.25*** | 7.13*** | -0.93 | 0.78 | 1.46 | 2.31** | 7.40*** | 0.08 | 1.27 | 1.47 |
| **ANRET** | -0.26 | -0.23 | -0.01 | -0.15 | 0.12 | -0.04 | 0.12 | -2.08 | -0.67 | -0.80 |
| | -0.94 | -0.90 | -0.04 | -0.56 | 0.25 | -0.08 | 0.78 | -1.00 | -2.19** | -0.90 |
| **RISK** | 5.71 | 13.45 | -1.55 | -14.61 | 1.76 | 3.84 | 6.66 | -4.90 | 7.06 | -0.81 |
| | 1.07 | 2.51** | -0.33 | -2.08** | 0.16 | 0.87 | 4.25*** | -0.42 | 1.44 | -0.17 |
| **AGE** | 0.02 | 0.01 | 0.02 | 0.03 | 0.02 | -0.01 | 0.01 | 0.03 | 0.01 | 0.00 |
| | 3.46*** | 1.49 | 0.79 | 2.60** | 1.38 | -1.08 | 2.81*** | 0.38 | 0.76 | 0.26 |
| **OWNERSHIP** | -0.03 | 0.06 | -0.46 | -0.01 | -0.05 | 0.04 | 0.11 | -0.29 | -0.11 | -0.10 |
| | -1.21 | 1.59 | -4.38*** | -0.17 | -0.48 | 0.75 | 3.73*** | -0.82 | -1.45 | -0.94 |
| **EINDEX** | 0.13 | -0.07 | -0.01 | -0.02 | 0.01 | 0.00 | 0.01 | -0.06 | -0.01 | 0.02 |
| | 2.29** | -1.30 | -0.32 | -0.82 | 0.16 | 0.00 | 0.86 | -0.03 | -0.33 | 0.45 |
| **DUAL** | 0.22 | 0.08 | 0.57 | -0.41 | -0.06 | 0.03 | 0.02 | -0.22 | -0.10 | -0.10 |
| | 2.82*** | 0.88 | 1.76* | -2.20** | -0.23 | 0.22 | 0.19 | -0.24 | -0.45 | -0.38 |
| **R-Squared** | 0.54 | 0.27 | 0.51 | 0.30 | 0.05 | 0.31 | 0.46 | 0.24 | 0.28 | 0.03 |
| **F-Statistics** | 9.70*** | 7.21*** | 2.86** | 3.01*** | 0.54 | 1.35 | 11.61*** | 0.28 | 1.99* | 0.38 |
| **OBS** | 103 | 228 | 42 | 88 | 132 | 37 | 134 | 18 | 57 | 115 |

*** indicates p<0.01; ** p<0.05; *p<0.1.

Table 2.D dependent variable is EQUITY.

| | 2003-2006 | | | | | 2007-2008 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Group** | **1** | **2** | **3** | **4** | **5** | **1** | **2** | **3** | **4** | **5** |
| **Intercept** | -5.27 | 3.18 | 4.28 | 16.15 | 3.77 | 36.14 | -9.87 | -18.00 | 5.65 | 10.28 |
| | -0.68 | 0.57 | 0.61 | 3.58*** | 1.08 | 1.60 | -3.12*** | -1.02 | 1.17 | 2.56** |
| **SIZE** | 4.68 | -4.56 | -3.52 | -1.11 | -0.19 | -26.98 | 0.39 | -1.63 | -0.27 | 0.63 |
| | 0.67 | -1.21 | -1.47 | -3.68*** | -0.37 | -1.42 | 0.59 | -0.20 | -0.76 | 0.78 |
| **MTOB** | 0.70 | 0.87 | 0.75 | 0.42 | 0.74 | 0.07 | 1.52 | 0.81 | -0.27 | -0.34 |
| | 2.02** | 4.08*** | 1.63 | 1.32 | 2.51** | 0.14 | 5.80*** | 0.63 | -0.66 | -0.95 |
| **ANRET** | 3.05 | 1.06 | 1.91 | -0.29 | 0.71 | 1.45 | -2.17 | -1.08 | 1.59 | 0.71 |
| | 0.85 | 0.79 | 1.12 | -0.23 | 0.66 | 0.29 | -1.82* | -0.15 | 0.93 | 0.27 |
| **RISK** | 31.77 | 35.85 | -8.09 | -108.05 | -30.87 | -15.68 | 21.12 | 8.01 | 42.43 | -1.12 |
| | 0.46 | 1.30 | -0.36 | -3.24*** | -1.22 | -0.37 | 1.74* | 0.19 | 1.56 | -0.08 |
| **AGE** | -0.06 | -0.07 | 0.03 | -0.18 | -0.11 | 0.02 | -0.03 | 0.36 | 0.04 | -0.06 |
| | -0.70 | -1.79* | 0.37 | -3.08*** | -3.00*** | 0.18 | -0.73 | 1.51 | 0.61 | -1.46 |
| **OWNERSHIP** | 0.17 | 0.21 | -1.39 | 0.20 | 0.74 | -0.64 | 0.26 | -0.96 | -1.08 | -0.04 |
| | 0.49 | 1.11 | -2.70** | 0.69 | 3.08*** | -1.12 | 1.08 | -0.77 | -2.53** | -0.13 |
| **EINDEX** | 0.68 | 0.38 | -0.17 | -0.09 | 0.03 | -5.76 | 0.00 | -0.44 | -0.23 | -0.07 |
| | 0.95 | 1.36 | -0.89 | -0.66 | 0.28 | -2.76** | 0.04 | -0.06 | -1.21 | -0.49 |
| **DUAL** | 1.05 | 0.14 | -2.47 | 1.65 | 0.63 | -1.06 | -0.86 | -1.66 | -1.73 | 1.33 |
| | 1.05 | 0.29 | -1.57 | 1.87* | 1.01 | -0.76 | -1.40 | -0.51 | -1.45 | 1.69* |
| **R-Squared** | 0.12 | 0.11 | 0.42 | 0.45 | 0.29 | 0.46 | 0.27 | 0.46 | 0.26 | 0.04 |
| **F-Statistics** | 1.15 | 2.45*** | 2.01* | 5.62*** | 4.35*** | 2.53** | 5.22*** | 0.74 | 1.85* | 0.50 |
| **OBS** | 103 | 228 | 42 | 88 | 132 | 37 | 134 | 18 | 57 | 115 |

*** indicates p<0.01; ** p<0.05; *p<0.1.

Table 2.E dependent variable is OPTION

| | 2003-2006 | | | | | 2007-2008 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Group** | **1** | **2** | **3** | **4** | **5** | **1** | **2** | **3** | **4** | **5** |
| **Intercept** | 2.16 | -5.93 | -31.17 | -4.15 | -5.09 | -12.88 | -3.82 | -16.18 | 0.06 | -5.25 |
| | 0.39 | -1.14 | -6.07*** | -0.78 | -1.49 | -0.67 | -1.22 | -1.30 | 0.01 | -1.48 |
| **SIZE** | -7.23 | 0.96 | 3.74 | -0.44 | -0.15 | 5.56 | -0.13 | 4.28 | 0.22 | 0.98 |
| | -1.46 | 0.27 | 2.13** | -1.24 | -0.30 | 0.35 | -0.19 | 0.73 | 0.58 | 1.38 |
| **MTOB** | 0.96 | 0.86 | 1.34 | 0.39 | 0.78 | 1.35 | 1.39 | 1.19 | 0.75 | 0.82 |
| | 3.91*** | 4.32*** | 4.00*** | 1.04 | 2.69*** | 3.03*** | 5.37*** | 1.31 | 1.72* | 2.60** |
| **ANRET** | -2.26 | -1.95 | -1.73 | -0.94 | -0.60 | -6.34 | -1.42 | -8.30 | 0.30 | -2.03 |
| | -0.89 | -1.57 | -1.38 | -0.62 | -0.57 | -1.50 | -1.21 | -1.59 | 0.16 | -0.86 |
| **RISK** | 12.07 | 27.50 | 8.63 | 11.87 | 77.64 | -60.10 | 11.17 | -32.29 | 32.63 | -0.80 |
| | 0.25 | 1.07 | 0.52 | 0.30 | 3.13*** | -1.67 | 0.93 | -1.11 | 1.13 | -0.06 |
| **AGE** | 0.00 | -0.01 | 0.28 | 0.09 | 0.02 | 0.10 | -0.08 | -0.06 | -0.15 | -0.02 |
| | -0.01 | -0.15 | 4.03*** | 1.35 | 0.43 | 0.98 | -2.06** | -0.34 | -2.01* | -0.53 |
| **OWNERSHIP** | 0.51 | 0.31 | 1.05 | 0.37 | -0.66 | 0.03 | 0.14 | 1.61 | 0.85 | 0.13 |
| | 2.06** | 1.72* | 2.78*** | 1.05 | -2.76*** | 0.05 | 0.60 | 1.82 | 1.87* | 0.46 |
| **EINDEX** | 0.69 | -0.34 | -0.13 | -0.05 | -0.16 | 1.99 | 0.31 | -0.82 | -0.11 | -0.02 |
| | 1.35 | -1.32 | -0.91 | -0.29 | -1.70* | 1.13 | 2.53** | -0.16 | -0.56 | -0.18 |
| **DUAL** | 1.56 | 0.57 | 2.09 | -1.47 | 1.04 | -0.47 | -0.38 | 2.50 | 2.00 | 1.34 |
| | 2.19** | 1.29 | 1.81* | -1.41 | 1.71* | -0.40 | -0.62 | 1.10 | 1.58 | 1.92* |
| **R-Squared** | 0.23 | 0.20 | 0.74 | 0.12 | 0.31 | 0.39 | 0.23 | 0.74 | 0.19 | 0.13 |
| **F-Statistics** | 2.47*** | 4.97*** | 7.87*** | 0.92 | 5.00*** | 1.89* | 4.20*** | 2.55 | 1.22 | 1.79* |
| **OBS** | 103 | 228 | 42 | 88 | 132 | 37 | 134 | 18 | 57 | 115 |

*** indicates p<0.01; ** p<0.05; *p<0.1.

**Table 3: T-tests on the CEO compensation structure, before and during the crisis**

There are two panels in Table 3. In Panel A, the base year is 2007 and we examine each form of compensation as a percentage of either CEO total pay or of the firm's market capitalization. The reported t-stats indicate whether the CEO compensation structure in a particular year is statistically different from that of 2007. Panel B is constructed in a similar fashion, however using 2008 as the base year. These T-tests include firms across all groups.

Panel A: Component compensation as a percentage of total CEO pay (in thousands) or of firm's market capitalization (in millions), with 2007 as the base year.

| | weight as of | Weights in other years relative to that of 2007 | | | |
|---|---|---|---|---|---|
| | 2007 | 2003 | 2004 | 2005 | 2006 |
| | 23% | 4% | 6% | 6% | 6% |
| BLTIPNE_PCT | | 1.93* | 2.99*** | 3.17*** | 2.94*** |
| | 38% | -4% | -4% | -6% | -2% |
| FIXED_PCT | | -1.43 | -1.63 | -2.40** | -0.97 |
| | 23% | -8% | -6% | -2% | 0% |
| EQUITY_PCT | | -3.34*** | -2.31** | -0.98 | 0.12 |
| | 16% | 8% | 4% | 2% | -4% |
| OPTION_PCT | | 3.65*** | 1.73* | 0.98 | -1.73* |
| | 37% | 1% | -1% | 13% | -2% |
| BLTIPNE_MKT* | | 0.13 | -0.07 | 1.54 | -0.23 |
| | 68% | 30% | -24% | -17% | -23% |
| FIXED_MKT* | | 0.98 | -0.77 | -0.57 | -0.8 |
| | 52% | -25% | -27% | -21% | -9% |
| EQUITY_MKT* | | -2.69*** | -2.88*** | -2.25** | -1.01 |
| | 26% | 15% | 4% | 4% | -10% |
| OPTION_MKT* | | 2.29** | 0.65 | 0.66 | -1.67* |
| | 184% | 21% | -47% | -20% | -44% |
| TOTAL_MKT* | | 0.6 | -1.35 | -0.6 | -1.35 |

Panel B: Component compensation as a percentage of total CEO pay (in thousands) or of firm's market capitalization (in millions), with 2008 as the base year.

| | weight as of | Weights in other years relative to that of 2008 | | | | |
|---|---|---|---|---|---|---|
| | 2008 | 2003 | 2004 | 2005 | 2006 | 2007 |
| | 18% | 9% | 11% | 11% | 10% | 5% |
| **BLTIPNE_PCT** | | 4.01*** | 5.03*** | 5.24*** | 5.09*** | 2.28** |
| | 43% | -8% | -9% | -11% | -7% | -4% |
| **FIXED_PCT** | | -2.95*** | -3.13*** | -3.89*** | -2.58*** | -1.67* |
| | 23% | -9% | -6% | -3% | 0% | 0% |
| **EQUITY_PCT** | | -3.33*** | -2.34** | -1.07 | -0.02 | -0.14 |
| | 16% | 8% | 4% | 2% | -4% | 0% |
| **OPTION_PCT** | | 3.51*** | 1.67* | 0.95 | -1.64 | 0.02 |
| | 61% | -22% | -24% | -10% | -26% | -24% |
| **BLTIPNE_MKT*** | | -1.79* | -1.93* | -0.82 | -2.15** | -1.98** |
| | 166% | -67% | -122% | -115% | -121% | -98% |
| **FIXED_MKT*** | | -1.98** | -3.55*** | -3.43*** | -3.73*** | -3.02*** |
| | 123% | -96% | -98% | -92% | -80% | -71% |
| **EQUITY_MKT*** | | -4.54*** | -4.61*** | -4.40*** | -3.96*** | -3.52*** |
| | 47% | -6% | -17% | -17% | -31% | -21% |
| **OPTION_MKT*** | | -0.75 | -1.99** | -2.02** | -3.88*** | -2.62*** |
| | 398% | -193% | -261% | -234% | -258% | -214% |
| **TOTAL_MKT*** | | -4.05*** | -5.47*** | -5.00*** | -5.71*** | -4.73*** |

* $1 compensation per $1000 market capitalization

**Table 4: Has annual bonus been replaced with something else?**

Table 4 reports the frequency of switches in years 2007 and 2008, respectively. Switch is defined similar to what is typically used in the industry and by media – if there is a simultaneous decrease in BLTIPNE and increase in any other forms of compensation, we call it a switch. If BLTIPNE increase, however, there is no switch from bonus other forms of compensation.

| | | Frequency | Percent |
|---|---|---|---|
| 2007 | BLTIPNE NOT switch to any other forms of compensation | 126 | 57% |
| | BLTIPNE switches to one of the other forms of compensation | 94 | 43% |
| | BLTIPNE NOT switches to FIXED | 160 | 73% |
| | BLTIPNE switches to FIXED | 60 | 27% |
| | BLTIPNE NOT switches to OPTION | 187 | 85% |
| | BLTIPNE switches to OPTION | 33 | 15% |
| | BLTIPNE NOT switches to EQUITY | 183 | 83% |
| | BLTIPNE switches to EQUITY | 37 | 17% |
| 2008 | BLTIPNE NOT switch to any other forms of compensation | 88 | 47% |
| | BLTIPNE switches to one of the other forms of compensation | 101 | 53% |
| | BLTIPNE NOT switches to FIXED | 123 | 65% |
| | BLTIPNE switches to FIXED | 66 | 35% |
| | BLTIPNE NOT switches to OPTION | 150 | 79% |
| | BLTIPNE switches to OPTION | 39 | 21% |
| | BLTIPNE NOT switches to EQUITY | 141 | 75% |
| | BLTIPNE switches to EQUITY | 48 | 25% |

**Table 5: Logistic regression on the switch from BLTIPNE to other forms of compensation:**

Table 5 summarizes results from Logistic regression, Equation (2). The value beneath each parameter estimates is the p-value.

| | from bonus to fixed pay | | from bonus to equity | | from bonus to option | |
|---|---|---|---|---|---|---|
| | **2007** | **2008** | **2007** | **2008** | **2007** | **2008** |
| **Intercept** | -0.687 | -2.772 | -1.741 | -0.744 | -2.448 | -0.322 |
| | 0.61 | 0.03 | 0.26 | 0.6 | 0.14 | 0.84 |
| **d_ANRET** | -1.848 | -0.319 | -0.64 | -0.987 | -0.819 | 0.256 |
| | 0.01 | 0.58 | 0.39 | 0.11 | 0.35 | 0.69 |
| **d_RISK** | -13.233 | 5.718 | -4.261 | 2.679 | 3.643 | 3.731 |
| | 0.29 | 0.26 | 0.77 | 0.62 | 0.83 | 0.5 |
| **d_MTOB** | 0.483 | 0.2 | -0.385 | -0.05 | 1.21 | -0.623 |
| | 0.33 | 0.61 | 0.39 | 0.89 | 0.13 | 0.1 |
| **d_SIZE** | 0 | 0 | 0 | 0 | 0 | 0 |
| | 0.74 | 0.29 | 0.62 | 0.29 | 0.23 | 0.27 |
| **AGE** | 0.004 | 0.013 | 0.006 | -0.026 | -0.003 | -0.068 |
| | 0.86 | 0.58 | 0.84 | 0.32 | 0.9 | 0.02 |
| **d_OWNERSHIP** | -0.007 | 0 | -0.101 | -0.038 | -0.18 | 0.009 |
| | 0.93 | 1 | 0.24 | 0.41 | 0.08 | 0.39 |
| **EINDEX** | -0.2 | 0.3 | -0.084 | 0.091 | 0.054 | 0.529 |
| | 0.13 | 0.04 | 0.59 | 0.57 | 0.74 | 0.01 |
| **DUAL** | -0.286 | -0.083 | -0.045 | 1.016 | 0.965 | 0.944 |
| | 0.45 | 0.82 | 0.92 | 0.01 | 0.04 | 0.03 |
| **Psuduo R2** | 9% | 8% | 3% | 10% | 12% | 16% |
| **log likelyhood** | -106.3 | -104.15 | -86.06 | -89.12 | -78.29 | -78.9 |
| **obs switched** | 55 | 58 | 34 | 42 | 32 | 36 |
| **obs-switched** | 129 | 113 | 150 | 129 | 152 | 135 |
| **Obs-total** | 184 | 171 | 184 | 171 | 184 | 171 |