Pay, Politics and the Financial Crisis

KEVIN J. MURPHY
Kenneth L. Trefftzs Chair in Finance,
University of Southern California - Marshall School of Business
kjmurphy@usc.edu

February 16, 2012

Forthcoming in *Economic Lessons from the Financial Crisis*
(edited by Alan Blinder, Andrew Lo and Robert Solow)
Russell Sage Foundation.

Abstract

The Wall Street bonus culture – coupled with suspicions that the culture facilitated excessive risk taking – led to an effective prohibition on cash bonuses for participants in the government's Troubled Asset Relief Program (TARP) and more-sweeping regulation of executive compensation as part of the July 2010 Dodd-Frank Wall Street Reform Act. This chapter explores the banking bonus culture, its role in inducing risk-taking, and the appropriateness of the regulatory response. While I find little evidence that the pay structures provided incentives for risk-taking among top-level banking executives, there is some evidence of value-destroying performance-measurement problems for lower-level traders, brokers and loan officers. The regulatory reforms imposed in TARP and Dodd-Frank have largely focused on punishing perceived excesses in top-level executive pay, and have not served to reduce risk, improve pay or protect taxpayers. Overall, while incentives for bankers can clearly be improved through well-functioning corporate governance, further government intervention will likely be counterproductive to both shareholders' and taxpayers' interest.

JEL classification: G01, G24, G34, G38, J33, M52

Keywords: Financial Crisis, Executive compensation, Regulation, Financial Services, Corporate Governance

Pay, Politics and the Financial Crisis[1]

Kevin J. Murphy
University of Southern California

1. Introduction

In early 2009, with the United States still enmeshed in the financial crisis and reeling from the bailouts to the banking sector, Congress shifted its attention to the critical task of finding someone (or something) to blame. The most obvious culprit – or perhaps scapegoat – was the "Wall Street bonus culture," the tradition in which traders, brokers, and executives receive most of their compensation not in base salaries but rather in bonuses paid at the end of the fiscal year. Since this tradition rewards success but (allegedly) imposes no real penalties for failure, the Wall Street culture (allegedly) provides incentives for excessive risk taking of the sort that facilitated the crisis.

Public anger over banking bonuses surfaced in January 2009 amid reports that Wall Street bankers were set to receive nearly $20 billion in bonuses for 2008 performance,[2] and heightened with revelations that bailout-recipient Merrill Lynch paid nearly $4 billion in year-end bonuses just prior to completion of its acquisition by Bank of America.[3] Outrage further intensified following the March 2009 revelation that American International Group (AIG) was in the process of paying $168 million in "retention bonuses" to its executives. Revelations that bankers were receiving bonuses when their firms were obviously failing –

---

1 This Chapter draws, in part, from Murphy (2012), Murphy and Jensen (2012), Murphy and Jensen (2011), Conyon, et al. (2011), Murphy (2010), and Murphy (2009).

2 White, "What Red Ink? Wall St. Paid Hefty Bonuses," *New York Times* (2009). The $18.4 billion payout was estimated by the New York State comptroller based on personal income tax collections.

3 Farrell and MacIntosh, "Merrill paid bonuses as losses mounted ahead of sale to BofA," *Financial Times* (2009). The $10 billion bailout to Merrill Lynch in October 2008 was ultimately delayed (pending the merger) and completed on January 9, 2009.

coupled with beliefs that the bonuses were a root cause of the crisis – led to an effective prohibition on cash bonuses for participants in the government's Troubled Asset Relief Program (TARP) and to more-sweeping regulation of executive compensation as part of the July 2010 Dodd-Frank Wall Street Reform Act. In 2011, public anger over Wall Street pay, and calls to reform it, became a major rallying point in the populist "Occupy Wall Street" movement.

In this Chapter, I explore how the recent financial crisis has affected executive compensation in financial services firms. I show that many of the changes in compensation have been in direct response to new rules and regulations. However, in tracing the evolution of the new rules and regulations, an obvious tension emerges between shareholders and taxpayers who want to solve legitimate problems with the banking-bonus culture, versus politicians or populists who want to punish executives in the companies perceived to be responsible for the global meltdown.

I begin by describing the Wall Street bonus culture, and document differences in the level and structure of pay and incentives for executives in broker-dealer firms compared to that in traditional banks and industrial firms. In particular, I show that the Wall Street bonus culture is, indeed, a Wall Street phenomenon, applying to broker-dealer firms (especially large ones) and not to other financial services firms. In addition, I show that the Wall Street bonus culture is, in addition, an equity culture: until the market collapse during the financial crisis, equity incentives and equity ownership were substantially higher for broker-dealer executives than their counterparts in banking and industry.

Next, I review how banking bonuses – or incentive compensation more broadly – can create incentives for excessive risk taking. Bonus plans can provide incentives to take risks

through two channels: (1) asymmetric rewards and penalties, and (2) performance measures that reward risky behavior. I conclude that both of these channels may have, indeed, contributed to excessive risk-taking among lower-level traders and brokers. In contrast, I find no evidence that compensation structures provided such incentives for top-level banking executives.

I then analyze the regulatory responses to perceived excesses in banking bonuses, beginning with the original restrictions on TARP recipients through the ongoing implementation of the Dodd-Frank Act. I show that the responses (and the rhetoric behind the responses) was not to reduce risk, improve pay or protect taxpayers, but rather to attack perceived excesses in pay for top-level executives and to destroy the Wall Street banking culture.

Finally, I address four key questions:

1. Did banking-bonuses cause or contribute to the financial crisis?

2. Were the regulators responding to "excessive risk" or "excessive pay"?

3. Are banking bonuses excessive?

4. Should banking bonuses be regulated?

Ultimately, I find no evidence that the Wall Street bonus culture provided incentives for risk-taking for top-level banking executives: indeed, the general structure of low base salaries and high bonus opportunities paid in a combination of cash, stock, and options should mitigate excessive risk taking. For lower-level traders and loan officers, I identify potentially important performance-measurement problems that – while not necessarily inducing increased risk taking – can nonetheless destroy significant amounts of value.

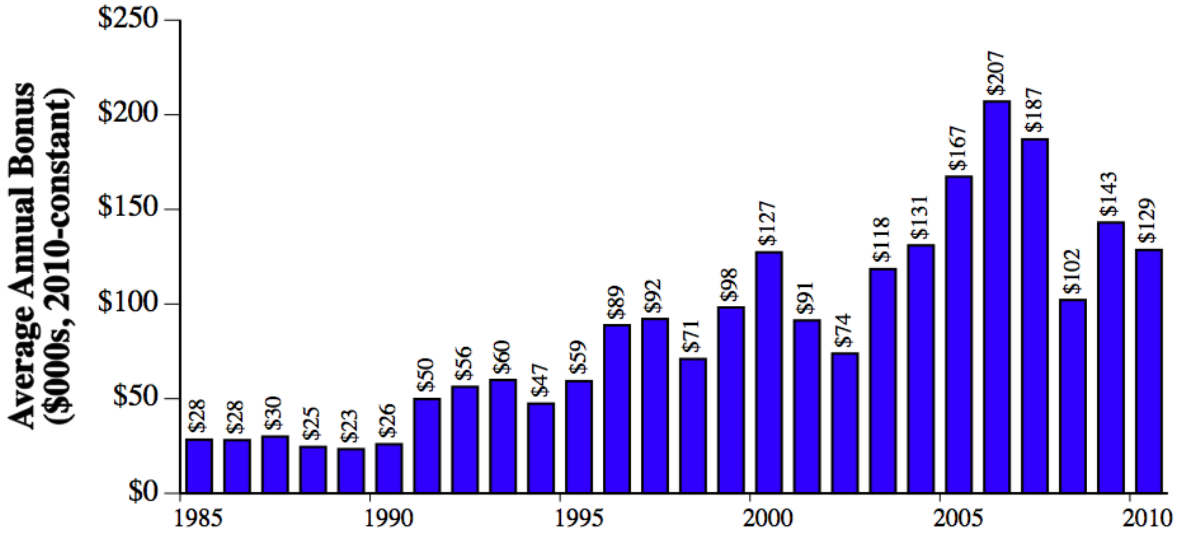
Next, I conclude that the apparent intent of the pay restrictions in TARP and Dodd-Frank are not to reduce risk, improve pay or protect taxpayers, but rather to attack perceived excesses in pay levels and destroy the banking-bonus culture. I then argue that the attacks on banking bonuses are driven primarily by anger, jealousy and envy, and not by evidence that the bonuses are set in a non-competitive market. Finally, while identifying several ways that compensation structures can be approved through better corporate governance, I conclude that further government intervention will predictably be counterproductive to both shareholders' and taxpayers' interest.

2. The Wall Street Bonus Culture

The heavy reliance on bonuses has been a defining feature of Wall Street compensation for decades, going back to the days when investment banks were privately held partnerships. Such firms kept fixed costs under control by keeping base salaries low and paying most of the compensation in the form of cash bonuses that varied with profitability. This basic structure remained intact when the investment banks went public, but the cash bonuses were replaced with a combination of cash, restricted stock, and stock options.

In contrast to non-financial firms – where significant bonus opportunities are limited to relatively senior managers and executives – bonuses comprise the bulk of Wall Street compensation for virtually all professional staff, including entry-level positions (e.g., analysts hired after receiving undergraduate degrees, or associates hired after receiving MBAs). One closely watched source of trends in bonuses is the annual analysis conducted by the New York State Comptroller (DiNapoli (2011)) based on personal income tax withholding collections and industry revenue and expense data. Figure 1 shows the evolution of average

Figure 1 Estimated Average Bonuses on Wall Street, 1985-2010



Note: Average bonuses estimated by DiNapoli (2011) based on personal income tax withholding collections and industry revenue and expense data for New York City-based employees working in the securities industry (NAICS 523); the 2010 report is available at http://osc.state.ny.us/press/releases/feb11/022311a.htm. Dollar amounts in the original report are converted to 2010-constant dollars using the Consumer Price Index.

bonuses from 1985-2008 for New York City-based employees working in the securities industry (NAICS 523), drawn from State Comptroller estimates. Between 1985 and 2006, average bonuses increased from $28,000 (in 2010-constant dollars) to over $200,000, falling to "only" $102,000 in 2008 and rebounding to $129,000 in 2010.

The average bonuses illustrated in Figure 1 mask the important "skewness" in the distribution of Wall Street bonuses, since a relatively small number of traders and executives often receive a disproportionate share of the bonus pool. While details on the compensation of the chief executive officer (CEO), chief financial officer (CFO), and three other highest-paid executive officers are publicly disclosed and widely available, banks have historically been highly secretive about the magnitude and distribution of bonuses for its traders and investment bankers. Indeed, since the SEC disclosure rules only apply to *executive officers*, the banks can have non-officer employees making significantly more than the highest-paid

Table 1 2008 Earnings and Bonus Pools for Nine Original TARP Recipients

Corporation	2008 Earnings/ *(Losses)* ($bil)	2008 Bonus Pool ($bil)	Number of Employees	Number of Employees Receiving Bonuses Exceeding		
				$3 mil	$2 mil	$1 mil
Bank of America	$4.0	$3.3	243,000	28	65	172
Bank of NY Mellon	$1.4	$0.9	42,900	12	22	74
Citigroup	*($27.7)*	$5.3	322,800	124	176	738
Goldman Sachs	$2.3	$4.8	30,067	212	391	953
J P Morgan Chase	$5.6	$8.7	224,961	>200		1,626
Merrill Lynch	*($27.6)*	$3.6	59,000	149		696
Morgan Stanley	$1.7	$4.5	46,964	101	189	428
State Street Corp	$1.8	$0.5	28,475	3	8	44
Wells Fargo & Co.	*($42.9)*	$1.0	281,000	7	22	62

Source: Cuomo (2009). Wells Fargo losses include losses from Wachovia (acquired in December 2008).

officers. Following the Merrill Lynch and AIG revelations, New York Attorney General Andrew Cuomo subpoenaed bonus records from the nine original TARP recipients, arguing that New York law allows creditors to challenge any payment by a company if the company did not get adequate value in return. His report – published in late July 2009 – was provocatively titled: "No Rhyme or Reason: The Heads I Win, Tails You Lose Bank Bonus Culture."

Table 1 summarizes the distribution of bonuses for the nine original TARP recipients, based on data from the Cuomo (2009) report. The table shows, for example, that 738 Citigroup employees received bonuses over $1 million, and 124 received over $3 million, in a year when the bank lost nearly $30 billion. The percentage of employees receiving bonuses above $1 million was especially high in the three broker-dealer firms: Goldman Sachs (5.2%), Morgan Stanley (1.5%) and Merrill Lynch (1.4%).[4] The 2008 bonus pools exceeded

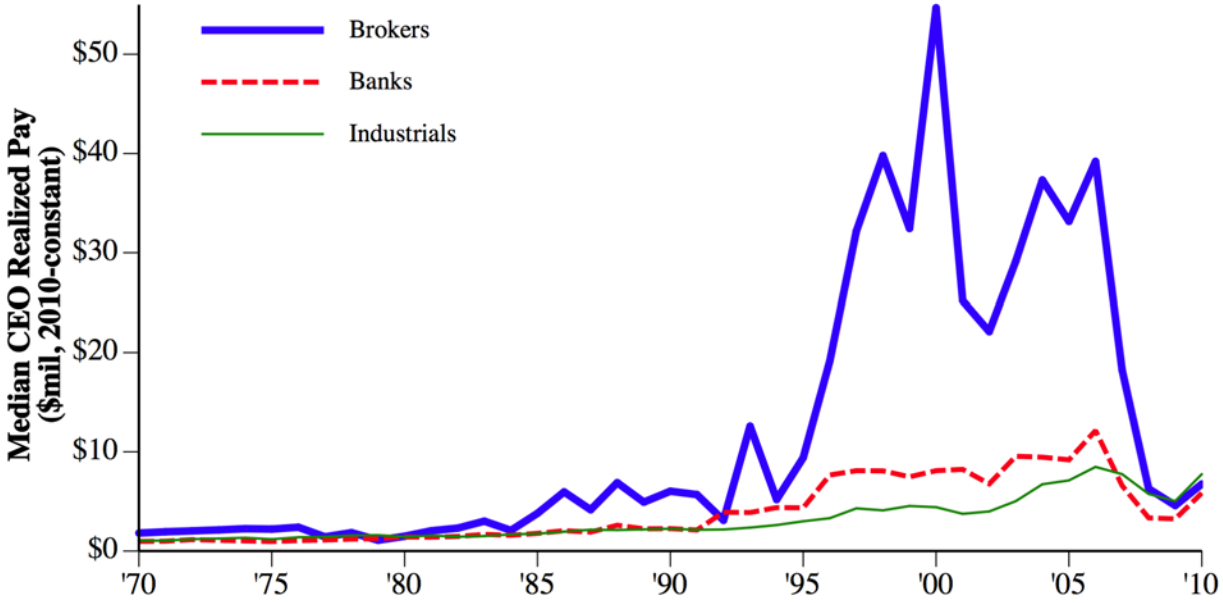
[4] In contrast, the percentage of employees with million-dollar bonuses in the more-traditional banks was 0.3% or less.

annual earnings in six of the nine banks; in aggregate the banks paid $32.6 billion in bonuses while losing $81.4 billion in earnings. Not surprising, the Cuomo report further fueled outrage over Wall Street bonuses on both Main Street and in Washington.

Figure 2 compares 1970-2010 time trends in the median realized compensation for CEOs in S&P 500 Broker-Dealer firms (primary SIC codes 6200 – 6212), Banks (SIC codes 6000 – 6199), and Industrials (excluding financial services and utilities). Realized pay includes salaries, bonuses, payouts from long-term incentive plans (and other non-equity plans), gains from exercising stock options, and the vesting value of restricted shares.[5] Data from 1970-1991 are from *Forbes'* annual surveys of executive compensation, while data from 1992-2010 are from Standard & Poor's ExecuComp Database.

[5] Realized pay under the pre-2006 disclosure rules includes the grant-date rather than vesting value of restricted shares.

Figure 2 Median Realized Compensation for CEOs in S&P 500 Broker-Dealers, Banks, and Industrials, 1970-2010



Note: Realized pay includes salaries, bonuses, payouts from long-term incentive plans (and other non-equity plans), gains from exercising stock options, and the value of restricted shares vesting during the year (data prior to 2006 includes the value of restricted shares at grant rather than at vesting). S&P 500 Broker-dealers are defined as S&P 500 firms with primary SIC codes between 6200 and 6212, Banks have SIC codes between 6000 and 6199, and Industrials have SIC codes below 6000 and above 7000, excluding utilities (4900-4999). Data are from Forbes (1970-1991) and ExecuComp (1992-2010). Dollar amounts are converted to 2010-constant dollars using the Consumer Price Index.

As shown in Figure 2, realized pay in broker-dealer firms closely tracked pay in banks and industrials until the mid-1980s, when several privately held partnerships went public (e.g., Bear Stearns in 1985 and Morgan Stanley in 1986) and as traditional banks began competing for investment-banking talent. In the peak year of 2000 (propelled by trading profits associated with the Internet bubble and revenues from work related to mergers, acquistions and IPOs), the median CEO in the five S&P 500 Broker-Dealer firms took home $54.7 million, almost seven times the median pay in 39 S&P 500 Banks ($8.1 million) and more than twelve times median pay in 371 S&P 500 Industrials ($4.4 million).[6] Median

6 Realized 2000 CEO pay in the S&P 500 Broker Dealer firms included $93.8 million for Philip Purcell (Morgan Stanley), $83.6 million for Richard Fuld (Lehman Brothers), $54.7 million for James Cayne (Bear Stearns), $49.6 million for David Komansky (Merrill Lynch), and $35.5 million for Charles Schwab, Jr. (Charles Schwab).

realized CEO pay in S&P 500 Broker-Dealer firms plummeted 84% between 2006 ($39.2 million) and 2008 ($6.3 million). By 2010, median CEO pay in S&P 500 Broker-Dealer firms ($6.8 million) fell between pay in Banks ($5.8 million) and Industrials ($7.7 million).

The escalation in realized pay in Broker-Dealer firms was not limited to the CEO and was not limited to the largest Wall Street firms. Panel A of Figure 3 shows the median of the average realized pay received by the "Top 5" executives in S&P 500 firms.[7] In the 2000 peak year, the median S&P 500 Broker-Dealer firm paid its Top 5 executives an average of $43 million, compared to $4.7 million and $3.2 million for S&P 500 Banks and Industrials. Panel B of Figure 3 replicates the analysis for firms not in the S&P 500.[8] While the basic pattern remains (broker-dealer executives earning more than their banking and industrial counterparts), the most striking difference between Panel A and Panel B is the scale: companies below the S&P 500 pay considerably less than companies in the S&P 500, regardless of sector.

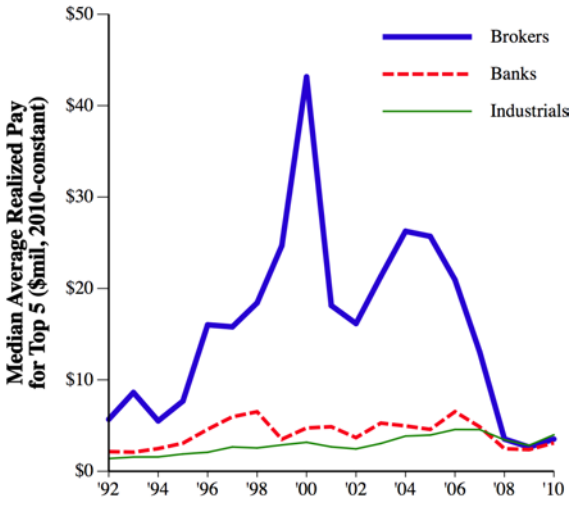
---

7 Following SEC disclosure rules, the CEO (and CFO after 2006) are included among the top five executives even if their compensation is less than that of other executive officers. In cases where firms disclose pay for more than five executives, I use the five highest-paid executives based on grant-date values for stock and options.

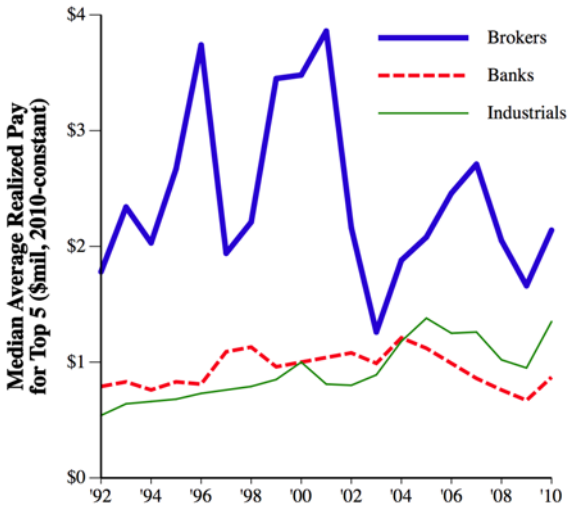
8 ExecuComp tracks firms in the S&P 500, S&P MidCap 400, and S&P SmallCap 600, along with a modest number additional firms included in various S&P indices (or firms that had dropped out of one of the major indices).

Figure 3 Median Realized Pay for the "Average" Top 5 Executives in Broker-Dealers, Banks, and Industrials, 1992-2010

Panel A. S&P 500 Firms



Panel B. Non-S&P 500 Firms

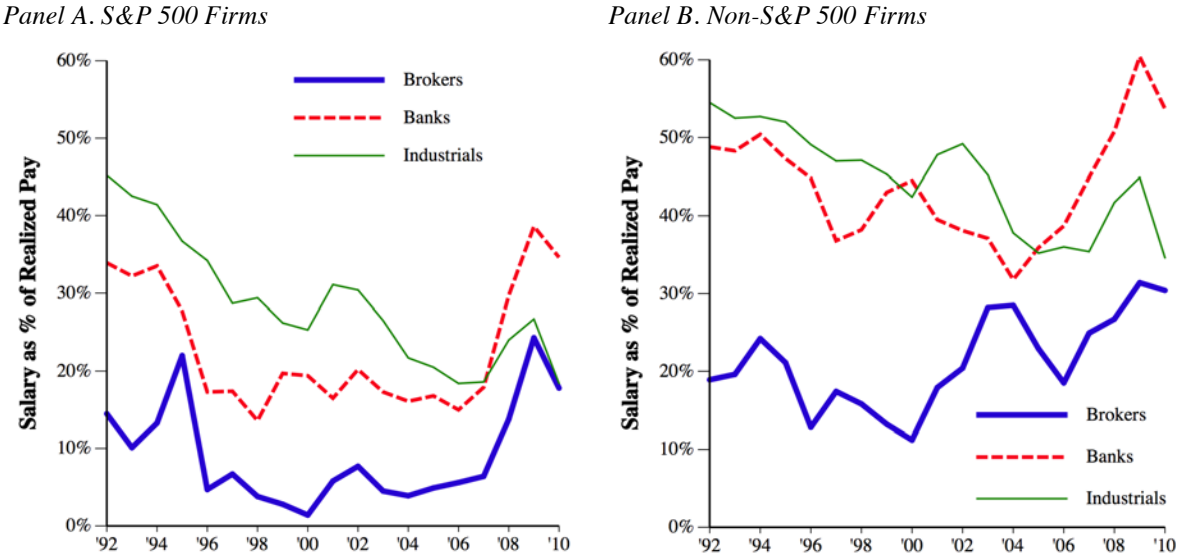


Note: Realized pay includes cash pay, bonuses, payouts from long-term incentive plans (and other non-equity plans), gains from exercising stock options, and the value of restricted shares vesting during the year (data prior to 2006 includes the value of restricted shares at grant rather than at vesting). Broker-dealers are defined as firms with primary SIC codes between 6200 and 6212, Banks have SIC codes between 6000 and 6199, and Industrials have SIC codes below 6000 and above 7000, excluding utilities (4900-4999). Data are from ExecuComp.

The volatility of pay for Broker-Dealer executives suggested by Figure 2 and Figure 3 reflects the Wall Street culture of coupling low (and relatively stable) base salaries with variable pay tied to the profitability of the enterprise. For example, since going public in 1985 and through 2005, base salaries for partners at Bear Stearns were limited to $200,000 annually; base salaries were raised to $250,000 in 2006 but in most years still constituted only about 1% of the realized compensation for Bear Stearns' CEO. Similarly, in 2007 (largely before the market crash), Goldman Sachs paid its CEO (Lloyd Blankfein) a salary of $600,000 and a bonus of $67.9 million for total compensation of $68.5 million; his salary accounted for less than 1% of his total compensation.

Figure 4 shows the average ratio of base salary to total realized compensation for the Top 5 executives in Broker-Dealer firms, Banks and Industrials (the ratio for each firm is calculated by dividing the sum of base salaries for the Top 5 executives by the sum of their

Figure 4 Average Ratio of Salary to Total Realized Pay for Top 5 Executives in S&P Broker-Dealers, Banks, and Industrials, 1992-2010



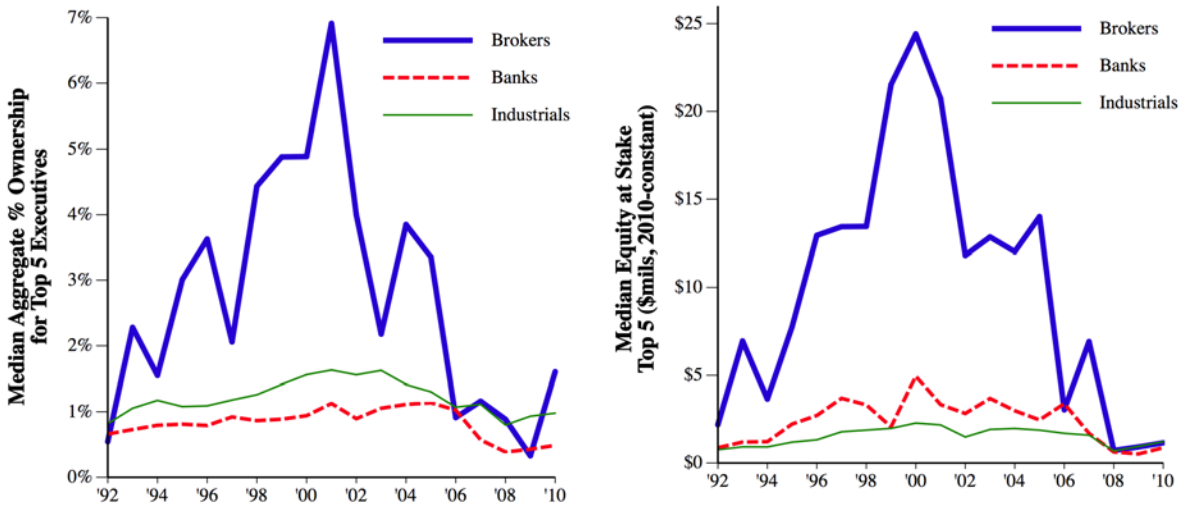
Note: Ratios for the five highest-paid executives are computed by dividing the sum of base salaries by the sum of total pay for each firm. Realized pay includes cash pay, bonuses, payouts from long-term incentive plans (and other non-equity plans), gains from exercising stock options, and the value of restricted shares vesting during the year (data prior to 2006 includes the value of restricted shares at grant rather than at vesting). Broker-dealers are defined as firms with primary SIC codes between 6200 and 6212, Banks have SIC codes between 6000 and 6199, and Industrials have SIC codes below 6000 and above 7000, excluding utilities (4900-4999). Data are from ExecuComp (1992-2010).

realized pay). Panel A shows the average ratio for S&P 500 firms; Panel B is for firms below the S&P 500. For both sets of firms, base salaries constituted a modest fraction of total realized compensation for executives in Broker-Dealer firms compared to their counterparts in Banks and Industrials.

In contrast to the cash bonuses traditionally paid in other sectors, executives in Broker-Dealer firms routinely receive bonuses in a combination of cash, unvested stock awards, and unexercisable stock options. Paying bonuses in the form of equity strengthens the pay-performance relation since the ultimate bonus depends on subsequent performance. For example, in addition to his $250,000 salary in 2006, Bear Stearns' CEO James Cayne received a bonus of $33.6 million, comprised of cash ($17 million), restricted shares ($14.8 million), and stock options ($1.7 million). By the time of the company's collapse in March

Figure 5 Median Effective Percentage Ownership and Equity at Stake for Top 5 Executives in S&P Broker-Dealers, Banks, and Industrials, 1992-2010

Panel A. Effective Ownership Percentage *Panel B. Equity at Stake*



Note: Effective percentage ownership for stock options measured by weighting each option held by that options "Black-Scholes Delta" and dividing by the total number of shares outstanding. Year-end options under the pre-2006 disclosure rules estimated using the procedure described in Murphy (1999). Following Frydman and Jenter (2010), "Equity-at-Stake" is measured as the effective ownership percentage multiplied by 1% of the firms market capitalization. S&P 500 Broker-dealers are defined as S&P 500 firms with primary SIC codes between 6200 and 6212, Banks have SIC codes between 6000 and 6199, and Industrials have SIC codes below 6000 and above 7000, excluding utilities (4900-4999). Data are from ExecuComp (1992-2010). Dollar amounts are converted to 2010-constant dollars using the Consumer Price Index.

2008 and "firesale" to JP MorganCase for $10/share, the (not yet vested) stock Mr. Cayne had received as part of his 2006 bonus was worth only 6% of it grant-date value, and his options expired worthless. Similarly, only $26.8 million of Lloyd Blankfein's $67.9 million 2007 bonus from Goldman Sach's was paid in cash; the rest was paid in restricted stock units ($24.66 million) or options ($16.44 million).[9] By January 2011 (when the stock vested and options became exercisable), Blankfein's 2007 options were underwater, and the restricted stock was worth about 80% of its grant-date value.

[9] Source: Goldman Sach's 2008 and 2009 Proxy Statements. Mr. Blankfein's actual cash bonus was a bit lower, and his stock grant a bit higher, because he voluntarily elected to receive additional shares (at a discount) in lieu of cash compensation. Because of a quirk in SEC reporting rules, bonuses paid in cash for 2007 performance received after fiscal closing are report as 2007 compensation in the 2008 proxy statement, but bonuses paid in stock or options for 2007 performance received after fiscal closing are considered 2008 compensation and reported in the 2009 proxy statement.

As illustrated by the Bear Stearns and Goldman Sachs examples, paying bonuses in the form of equity strengthens the pay-performance relation since the ultimate bonus depends on subsequent performance. While there is no "single way" to measure the incentives from equity ownership, Figure 5 shows time-series and cross-sector patterns in two widely used measures of equity incentives: the effective ownership percentage and "equity at stake." The effective ownership percentage in Panel A (which is essentially Jensen and Murphy (1990b)'s "pay-performance sensitivity") is defined as the change in the value of the executive's wealth for a incremental change in shareholder value and calculated as:

$$\begin{pmatrix}\text{Effective}\\ \text{Ownership \%}\end{pmatrix} = \frac{\text{Restricted and Unrestricted Shares} + \text{(Delta - Weighted)Options}}{\text{Common Shares Outstanding}} .$$

In constructing an aggregate measure of CEO incentives, I weight each option by the "Option Delta," defined as the change in the value of a stock option for an incremental change in the stock price. Option Deltas range from near zero (for deep out-of-the-money options) to near one (for deep in-the-money options on non-dividend paying stock).[10] I call this measure the "effective ownership percentage" to distinguish it from the actual ownership percentage based only on stock (and not option) holdings.

As shown in Panel A of Figure 5, the aggregate effective ownership percentage for Broker Dealer executives (calculated by summing individual ownership percentages across

[10] The percentage option holdings multiplied by the option delta is a measure of the change in CEO option-related wealth corresponding to a change in shareholder wealth. More formally, suppose that the CEO holds N options, and suppose that shareholder wealth increases by $1. If there are S total shares outstanding, the share price P will increase by $\Delta P=\$1/S$, and the value of the CEO's options will increase by $N\Delta P(\partial V/\partial P)$, where V is the Black-Scholes value of each option, and $(\partial V/\partial P)$ is the option delta. Substituting for ΔP, the CEO's share of the value increase is given by $(N/S)(\partial V/\partial P)$, or the CEO's options held as a fraction of total shares outstanding multiplied by the "slope" of the Black-Scholes valuation. For examples of this approach see Jensen and Murphy (1990a), Yermack (1995), and Murphy (1999). Hall and Murphy (2002) offer a modified approach to measure the pay-for-performance incentives of risk-averse undiversified executives. An alternative approach, adopted by Jensen and Murphy (1990b), involves estimating the option pay-performance sensitivity as the coefficient from a regression of the change in option value on the change in shareholder wealth.

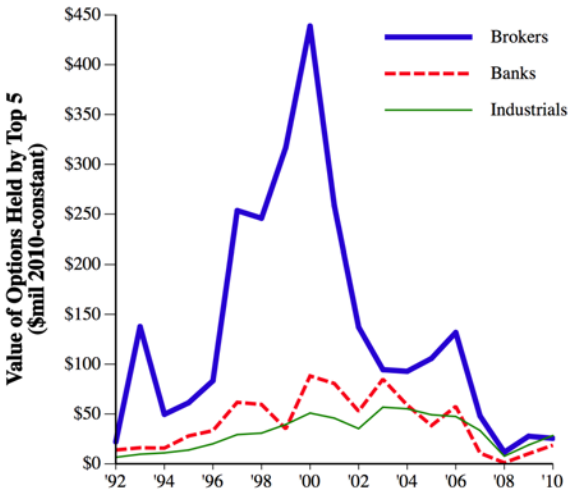
the Top 5 executives) peaked in 2000 and was substantially above the ownership percentage in Banks and Industrials for all years except 1992 and 2006. The decline in effective ownership since 2001 primarily reflects a decline in option deltas (as options fell out of the money) and not massive stock sales.

An alternative measure of executive incentives – introduced by Hall and Liebman (1998) and explored theoretically by Baker and Hall (2004) – is the change in executive wealth for a 1% change in the value of the firm. Panel A of Figure 5 shows the evolution of the Hall-Liebman measure – what Frydman and Jenter (2010) call "equity at stake" – from 1992 to 2010. The equity-at-stake measure is calculated as 1% of the effective ownership percentage multiplied by the firm's market capitalization.[11] In 1999, each 1% change shareholder wealth resulted in a $25.7 million change in wealth for the median executive team in S&P 500 Broker-Dealer firms, compared to only about $2 million executive teams in Banks and Industrials.

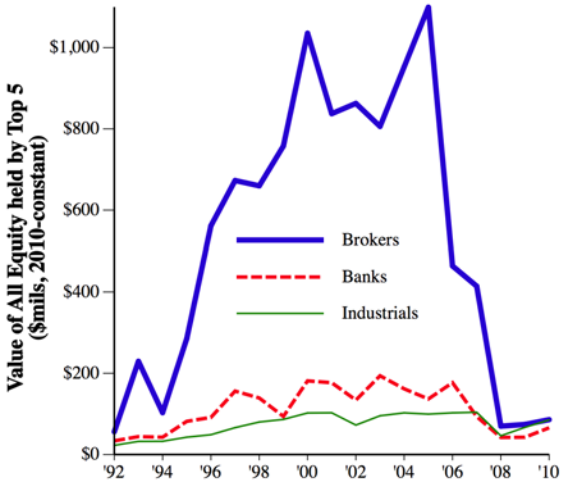
[11] Suppose that the CEO holds M shares and N options, and suppose that the share price P increases by 1%. If there are S total shares outstanding, the value of the CEO's portfolio will increase by $.01P(M+N(\partial V/\partial P))$ or $.01(PS)[(M+N(\partial V/\partial P))/S]$, where PS is the firm's market capitalization and the quantity in the square brackets is the equation for the CEO's effective ownership percentage.

Figure 6 Median Aggregate Value of Options and Equity Held by Top 5 Executives in S&P Broker-Dealers, Banks, and Industrials, 1992-2010

Panel A. Value of Options Held



Panel B. Value of All Equity Instruments



Note: Option values estimated using Black and Scholes (1973). Year-end option holdings under the pre-2006 disclosure rules estimated using the procedure described in Murphy (1999). S&P 500 Broker-dealers are defined as S&P 500 firms with primary SIC codes between 6200 and 6212, Banks have SIC codes between 6000 and 6199, and Industrials have SIC codes below 6000 and above 7000, excluding utilities (4900-4999). Data are from ExecuComp (1992-2010). Dollar amounts are converted to 2010-constant dollars using the Consumer Price Index.

Finally, Figure 6 shows the median year-end value of options (Panel A) and equity (Panel B) held (in aggregate) by the Top 5 executives in S&P 500 firms, by sector. The value of options held by Broker-Dealer executives declined dramatically after 2000, reflecting both the stock market crash (associated with the burst of the Internet Bubble in 2000 and exacerbated by the terrorist attacks on the World Trade Center in 2001) and the shift towards restricted stock. Until stock price collapsed in 2008, the median value of all equity held by Broker-Dealer executives remained substantially above the value held by executives in Banks and Industrials.

To summarize, the purpose of this section has been to provide a background on the Wall Street bonus culture to use when discussing the culpability of banking bonuses in the financial crisis and the ongoing regulatory responses. For data reasons, most of the focus has

been on the top executives, and not on lower-level traders and managers. Nonetheless, several results emerge:

- While the regulatory responses have broadly applied to all financial institutions, the Wall Street bonus culture is, indeed, a Wall Street phenomenon, applying to broker-dealer firms (especially large ones) and not to commercial banks and savings institutions.

- In fact, pay levels, equity incentives, and equity ownership in traditional banks are more similar to that in industrial firms than to that in broker-dealer firms.

- Relative to executive pay in banking and industrials, realized compensation for Wall Street executives (who receive most of their pay in the form of bonuses paid in cash, stock and options) increased in the late 1980s and exploded in the mid-1990s.

- The Wall Street bonus culture is, at least for top-level executives, a Wall Street *equity* culture: until the market collapse during the financial crisis, equity incentives and equity ownership were substantially higher for broker-dealer executives than their counterparts in banking and industry.

- While realized pay, equity incentives, and the value of equity ownership plummeted during the financial crisis across all sectors, the decline was especially pronounced for executives in broker-dealer firms.

- In the aftermath of the crisis, and at least through 2010, the realized pay, equity incentives, and the value of equity ownership for executives in large broker-dealer firms has largely converged to general industry practices.

3. Banking Bonuses, Risk Taking, and the Financial Crisis

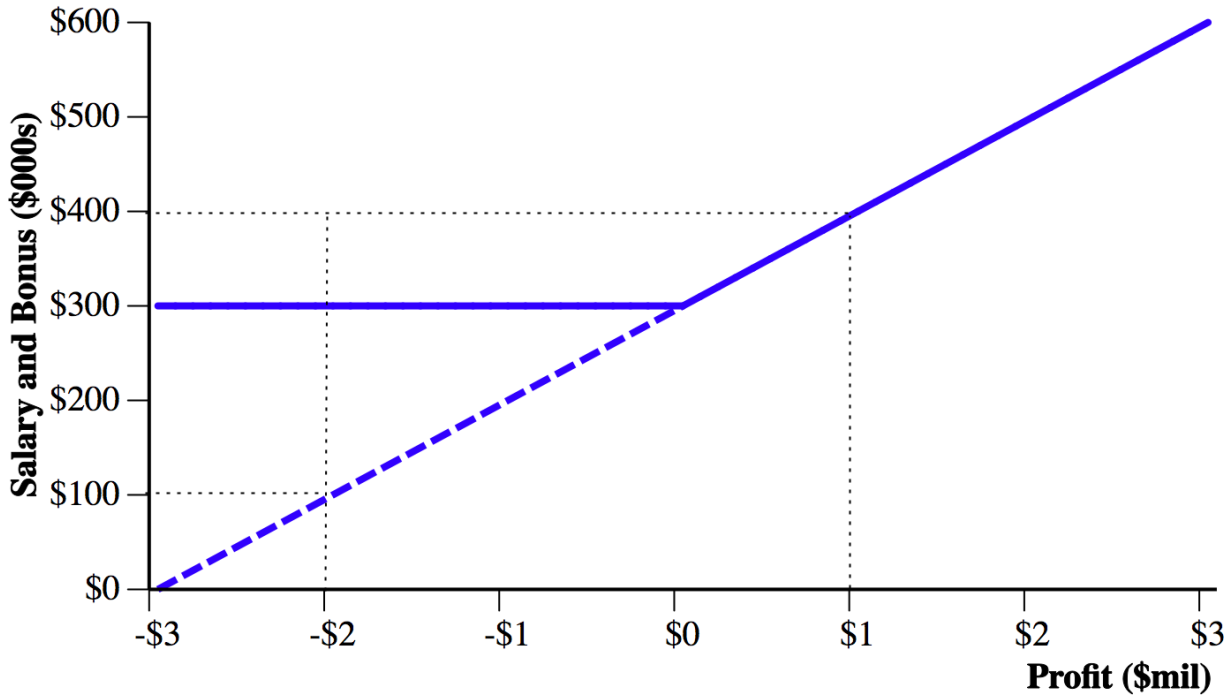
The public and political anger over Wall Street bonuses arguably reflects two primary factors. The first factor is outrage (or incredulity) that the banks would pay *any* bonuses at all given their objective failure and their reliance on government bailouts. Indeed, the bonuses to bankers in bailed-out firms were perceived by many to be an undeserved direct transfer of wealth from taxpayers to already-wealthy bankers. The second factor is the belief that the bonus culture provided incentives to take excessive risks that ultimately caused the crisis. In this section, I analyze economic incentives to take risk, and ask whether the Wall Street culture provided such incentives.

Bonus plans can provide incentives to take risks through two channels: (1) asymmetric rewards and penalties, and (2) performance measures that reward risky behavior. I conclude that both of these channels may have, indeed, contributed to excessive risk-taking among lower-level traders and brokers. In contrast, I find no evidence that compensation structures provided such incentives for top-level banking executives.

3.1. Asymmetric Rewards and Penalties

When executives (or traders or brokers) receive rewards for upside risk, but are not penalized for downside risk, they will naturally take greater risks than if they faced symmetric consequences in both directions. The classic example of asymmetries (or what economists call "convexities") in the pay-performance relation implicit in stock options, providing rewards for stock-price appreciation above the exercise price, but no penalties (below zero) for stock-price depreciation below the exercise price. Executives with options close to expiration that are out of the money have strong incentives to gamble with

Figure 7 Typical compensation structure with asymmetric rewards and penalties



Note: Figure shows the (hypothetical) compensation for a trader with a base salary of $300,000 and a bonus of 10% of (positive) profits

shareholder money; executives with options that are well in the money have fewer such incentives.

To show how asymmetries in rewards and penalties can cause excessive risk taking, the solid line in Figure 7 depicts the compensation structure for a hypothetical trader with a base salary of $300,000 and a cash bonus equal to 10% of his (positive) trading profits. Suppose the trader is considering a trade that will generate $1 million in profits with 50% probability, and $2 million in *losses* with 50% probability. This trade has an expected value of -$500,000; it is clearly a bad gamble. But, since the trader gets a bonus of $100,000 when profits are $1 million (total compensation $400,000) and no bonus when profits are -$2 million (total compensation $300,000), his expected bonus is +$50,000 and it is a good gamble from his perspective.

3.1.1. Creating Linear Bonus Plans

The obvious solution (at least conceptually) to the dilemma in Figure 7 is to extend the "bonus line" so that the trader is punished for negative profits (as well as being rewarded for positive profits). The dashed line in the figure shows his potential compensation when his bonus is set to 10% of both positive and negative profits. In this case, the trader gets a "bonus" (actually a penalty) of -$200,000 when profits are -$2 million (total compensation $100,000). His expected bonus is -$50,000 and the trade is a bad gamble from his perspective. By making his bonus schedule linear for both positive and negative outcomes, we have eliminated the asymmetric rewards and penalties, thereby eliminating the incentives to take excessive risks.

While the solution in Figure 7 is obvious in theory, it is difficult to implement in practice because it effectively requires paying (or charging) "negative bonuses" when there are bad outcomes. Conceptually, negative bonuses can be implemented by asking the executive to write a check back to the company in bad years, but this scheme is difficult to implement, especially after the executive has paid taxes on the bonuses. A more palatable way of achieving negative bonuses is through deferred bonuses that are subject to partial or full forfeiture if performance deteriorates. For example, "bonus banks" can be structured so that a positive bonus is not paid out entirely in cash each period, but is rather deposited into the traders's bonus bank account. The trader receives a cash distribution equal to a fixed fraction of the account balance each year, while the remaining balance is "at risk" to fund negative bonuses in future years.

Another indirect way to impose negative bonuses is by reducing base salaries and offering enhanced bonus opportunities (through reduced bonus thresholds). For example,

suppose the trader's base salary in Figure 7 is reduced from $300,000 to $100,000, and suppose that he starts earning his 10% bonus for profits in excess of -$2 million (instead of profits in excess of zero). While the new contract generates the same total payments for profits above $0, the second contract (depicted by the dotted line) provides *higher* bonuses but *lower* total compensation for operating income below zero.

It likely seems counterintuitive to characterize enhanced bonus opportunities as a negative bonus, but consider the following. For each $1 million reduction in profit below zero, the trader paid under the second contract (with the $100,000 salary) receives $10,000 *less* than he would have received under the first contract (with the $300,000 salary). Although payments for performance between a $2 million loss and zero are reported as bonuses, in fact they are negative bonuses compared to the original contract.

3.1.2. The Agency Cost of Debt and "Too Big to Fail" Guarantees

As emphasized in Section 2 above, the Wall Street bonus culture was largely a Wall Street equity culture: top banking executives had large equity stakes in their companies and strong incentives to increase shareholder value. However, for leveraged firms, excessive focus on shareholder value can lead to inappropriate risk taking. The "asymmetry" comes from the fact that the shareholders receive all the "upside" of investments with positive realizations, but can lose at most the value of their equity for negative realizations: any loss greater than the value of equity is borne by debtholders.

The potential conflict of interest that exists between a company's shareholders and its debtholders was identified by Jensen and Meckling (1976) as the Agency Cost of Debt: shareholders in a leveraged firm prefer riskier investments than those that would maximize firm value, while debtholders prefer safer investments than those that would maximize firm

value. While the Agency Cost of Debt is clearly valid conceptually, there is very little empirical evidence that leverage indeed leads to excessive risk taking, for several reasons. First, precisely because the shareholder-debtholder conflicts are well understood, the potential problem is mitigated through debt covenants and constraints on how the proceeds from debt financing can be used. Moreover, since the problem is "priced" into the terms of the debt (with debtholders charging higher interest rates in situations where executives have incentives to take higher risks), firms anticipating repeat trips to the bond market are directly punished for their risky behavior.

The potential for shareholder-debtholder conflicts are exacerbated, however, when the debtholders (or other fixed claimants, such as depositors) are protected against losses by the government. Such government guarantees can be explicit (such as FDIC insurance on deposits) or implicit (such as "Too Big To Fail" (TBTF) guarantees)). In these situations, the debtholders (or depositors) have little incentive to monitor management or enforce debt covenants, since the government is rationally expected to cover losses.

Bebchuk and Spamann (2010) cite the typical leverage structure of banks as *prima facie* evidence of risk-taking incentives, particularly for executives narrowly focused on shareholder value. However, what is important for risk taking is not the *fraction* of equity in the capital structure, but rather the *value* of the equity relative to the downside of potential bets. For example, consider two banks both with $5 billion in equity, one with $20 billion in debt and deposits, and the other with $50 billion. The potential problems in both banks arise in bets with a downside loss exceeding $5 billion; the risk taking is not expected to be more severe in the more highly levered bank (i.e., the one with $50 billion in debt and deposits). Therefore, the shareholder preferences for prefer risky gambles decline with the value of

their equity, because shareholders as a group have more to lose from unlucky outcomes. Similarly, holding the value of shareholder equity constant, executives with higher-valued equity positions will also have more to lose from unlucky outcomes, and will therefore be less likely to pursue risky bets.

Concerns about leveraged-induced risk taking also led the influential "Squam Lake Working Group on Financial Regulation" (French, et al. (2010)) to recommend that deferred banking bonuses "not take the form of stock or stock options," but rather be a "fixed dollar amount" that would be forfeited if the bank "goes bankrupt or receives extraordinary government assistance." The motivation for this recommendation is that holding deferred compensation in the form of a fixed but unsecured claim will mitigate equity-based incentives for excessive risk taking by aligning the interests of managers and unsecured creditors. However, given the dearth of evidence that the "problem" addressed by the Squam Lake proposal actually exists (i.e., risk taking in levered firms because the executives own too much equity), coupled with the acknowledged incentive benefits of equity ownership (i.e., incentives to pursue value-creating projects and avoid value-destroying projects), requiring deferred pay to be a fixed dollar amount rather than stock reflects a wasted opportunity.

3.2. Performance Metrics That Reward Risk-taking

3.2.1. Rewarding quantity rather than quality

Incentive compensation can create incentives for risk taking when bonuses are paid out based on performance measures that reward risky behavior. For example, in the years leading up to its dramatic collapse and acquisition by JPMorgan Chase at fire-sale prices, mortgage

brokers at Washington Mutual ("WaMu") were rewarded for writing loans with little or no verification of the borrowers assets or income, and received especially high commissions when selling more-profitable adjustable-rate (as opposed to fixed-rate) mortgages.[12] The basic incentive problem at WaMu was a culture and reward system that paid people to write loans rather than to write "good loans" – that is, loans with a decent chance of actually being paid back. In the end, WaMu got what it paid for (i.e., bad loans). Similar scenarios were being played out at Countrywide Finance, Wachovia, and scores of smaller lenders who collectively were not overly concerned about default risk as long as home prices kept increasing. But, home prices could not continue to increase when prices were being artificially bid up by borrowers who could not realistically qualify for or repay their loans.

In the current anti-banker environment, it has become fashionable to characterize plans such as those at WaMu as promoting excessive risk taking. But, the problems with paying loan officers on the quantity rather than the quality of loans is conceptually identical to the well-known problem or paying a piece-rate worker based on the quantity rather than the quality of output. Put simply, these are performance-measurement problems, not risk-taking problems, and characterizing them as the latter leads to impressions that the problems are somehow unique or more important in the banking sector, when in fact they are universal.

Financial innovation contributed to performance measurement problems for loan officers. In the early 2000s mortgages were increasingly pooled together and sold as mortgaged-back securities. While such "securitization" can provide for efficient ex post risk allocation, it creates ex ante "moral hazard" problems since the loan officer will care only about (and be only reward on) the quantitative measures of creditworthiness required for

---

12 Goodman and Morgenson, "By Saying Yes, WaMu Built Empire on Shaky Loans," *New York Times* (2008).

securitization, and will ignore important qualitative aspects that would be considered important if the bank were intending to hold the loan in its own portolio.[13] The loan officer was even further removed from the ultimate repayment when the mortgage-backed securities were restructured as a collateralized-debt obligation (CDOs) and sold to investors in difference tranches according to their purported risk.

3.2.2. Rewarding short-term rather than long-term results

A related set of performance-measurement issues occurs when executives (or traders or investment bankers) are paid on short-term rather than long-term results. For example, bankers trading in illiquid assets might be rewarded on the estimated appreciation of the assets on the bonus-payment date, which may bear little resemblance to the gain (or loss) ultimately realized. If the traders are not held accountable for the long-run value consequences of their actions, they will predictably focus on the quick (if illusionary) profit.

Focusing on short-run profit rather than long-run value is a performance-measurement problem and not a risk-taking problem: indeed, trades that generate profits in the short run are likely less risky than trades generating profits only in the longer run. Nonetheless, rewarding short-run profit can easily destroy long-run value. These problems are exacerbated when the traders have inside information that the trades or deals are likely to go sour after bonuses are paid.

More broadly, bonuses based on short-run results can often result in paying "too much" in a prior year, due to revisions in performance data not apparent until after the bonus was

---

[13] The moral hazard problem in securitization is limited by "early pay default" clauses that require originators to repurchase loans becoming delinquent within 90 days of securitization (Piskorski, Seru and Vig (2010)). We also note that mortgage lenders such as Countrywide kept most of its mortgages in its own portfolio, and CDO underwriters such as Merrill Lynch held onto a large portion of its own mortgage-backed CDOs.

paid. Such revisions include, but are not limited to, formal restatements of accounting numbers such as earnings or revenues due to mistakes, over-optimistic assumptions, "managed earnings," outright fraud or short-term oriented decisions that generated profits in an earlier period but lead to substantial long-run value destruction.

3.2.3. Solving Performance Measurement Problems

For top-level banking executives whose actions directly affect company stock prices, performance-measurement problems can be mitigated by paying bonuses partially in stock or options that vest long after the actions generating the bonuses are taken. Executives taking actions that increase short-run profit at the expense of long-run value will be punished through lower stock-price valuations, while those increasing long-run value will be rewarded through higher valuations. Forcing executives to hold large unvested equity positions also protects debtholders, depositors, and taxpayers from excessive risk taking, since risk-averse executives are less likely to gamble when they personally have more to lose.

The solution to the performance measurement problems discussed above (loan officers rewarded for writing too many mortgages, or traders rewarded for short-term results) is to design pay plans that hold employees accountable for the long-run consequences of their actions. Such solutions can be difficult to implement: consider, for example, that it might take thirty years for broker to know if the mortgage was actually repaid. But, at the very least the brokers and traders should be held accountable for results beyond the first year.

When traders, brokers, or banking executives receive bonuses based on performance measures that are subsequently revised downward, the bank must reserve the right to recover the ill-gained rewards. These ex post adjustments to already-paid bonuses have become known as "clawbacks" since the company is "clawing back" rewards that had already been

paid. Clawbacks were introduced in the 2002 Sarbanes-Oxley Act and significantly expanded for TARP recipients in 2009, and expanded more broadly in the 2010 Dodd-Frank Act. In practice, clawbacks have proved to be hard and costly to enforce, especially for executives who have paid taxes on (or otherwise spent) erroneously awarded bonuses and who may have left the firm.

As an alternative to clawbacks, the ill-gained reward can be deducted from deferred compensation accounts, nonqualified retirement benefits, restricted stock or option holdings, or other funds under the control of the company. Bonus banks, described in Section 3.1.1 as a palatable way of achieving negative bonuses, can also be used as a funding mechanism for bonus recoveries.[14]

3.3. Did Banking Bonuses Encourage Excessive Risk Taking?

3.3.1. Top-Level Banking Executives

As discussed above, the primary way that compensation structures can encourage excessive risk taking is through asymmetric rewards and penalties; that is, high rewards for superior performance but no real penalties for failure. Financial services firms (and especially broker-dealer firms) provide significant penalties for failure in their cash bonus plans by keeping salaries below competitive market levels, so that earning a zero bonus represents a penalty. Put differently, in comparison to other sectors, the bonus plans for top Wall Street executives are effectively linear, which should mitigate rather than exacerbate incentives to take risk.

---

[14] There is a subtle but important difference between "negative bonuses" and "clawbacks." The former occur when the performance metrics appropriately indicate that bonuses should be negative instead of positive. The latter refer to the recovery of bonuses paid based on performance data that are subsequently revised. Deferred bonuses and bonus banks can address both situations.

The "second" way that compensation structures might encourage excessive risk taking is through faulty performance measures. However, at least for top-level banking executives, these potential problems are mitigated by paying a large fraction of the bonus in unvested stock or unexercisable options. As documented above, until the market collapse during the financial crisis, equity incentives and equity ownership were substantially higher for broker-dealer executives than their counterparts in banking and industry.

The substantial equity holdings among banking executives also mitigates potential conflicts between shareholders and debtholders or taxpayers. In particular, concerns over leverage-induced excessive risk taking occur when the total value of equity held by executives (that is, the maximum amount of downside exposure) is small relative to the upside potential of the risky projects being considered. As shown in Figure 6, the median top-management team in broker dealers held over $1 billion in equity instruments in 2005, more than five times the median equity for executives in commercial banks and ten times the median equity for executives in industrials. In order for these structures to provide disproportionate incentives for broker-dealer executives to take excessive risks, the upside potential for broker-dealer "bets" would need to be in excess of five and ten times the upside potential in commercial banks and industrials, respectively.

A heavy reliance on options (rather than restricted stock) can, indeed, provide incentives for risk taking. The pay-performance relation implicit in stock options is inherently convex, since executives receive gains when stock prices exceed the exercise price, but their losses when the price falls below the exercise price are capped at zero. Thus, the value of a stock option increases monotonically with stock-price volatilities, which provides an incentive for executives to take risks that increase such volatilities. However,

compared to their counterparts in banking and industrials, broker-dealer firms have long-favored restricted stock over options.

There is no accepted methodology on measuring incentives for risk in executive option portfolios, or in executive contracts more generally. However, following Fahlenbrach and Stulz (2011)'s analysis of executive compensation and the financial crisis, I computed two option-based measures for incentives to increase stock-price volatilities:

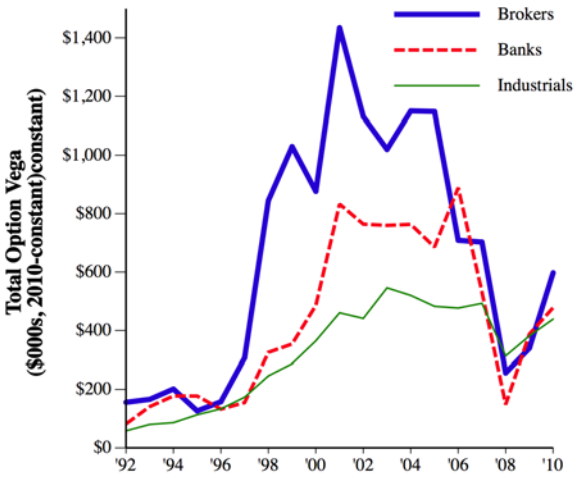
Total Option Vega = Change in value of outstanding options held by the Top 5 executives for a one percentage-point increase in volatility.

Vega Elasticity = Percentage change in value of outstanding options held by the Top 5 executives for a one percentage-point increase in volatility.

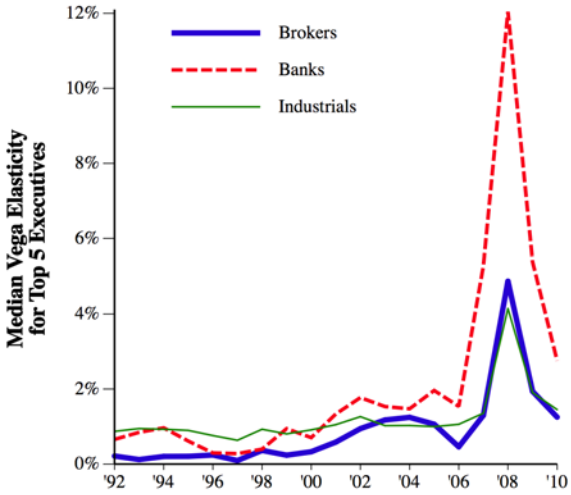
Figure 8 shows time-series and cross-sector patterns the two measures of pay-volatility sensitivities for the median executive team in S&P 500 firms from 1992-2010. As shown in Panel A, the Total Option Vega in broker-dealer firms was generally higher than the corresponding measure in banks and industrial firms for most of the pre-crisis period (although Total Option Vegas for banks and broker-dealers were virtually identical after 2005). In the 2001 peak year, each one percentage-point increase in volatility increased option values by $1.4 million for the median executive team in broker-dealer firms, compared to $833,000 and $460,000 for the median executive teams in banks and industrials. However, total realized compensation for the median broker-dealer firm in 2001 was triple that in banks, and seven time that in industrials (Figure 3). Therefore, as a percentage of total compensation, the Total Option Vega was lower in broker-dealer firms.

Figure 8 Median Aggregate Option Vega and Vega Elasticity Top 5 Executives in S&P Broker-Dealers, Banks, and Industrials, 1992-2010

Panel A. Option Vegas



Panel B. Vega Elasticities



Note: The Total Option Vega is defined as the change in value of outstanding options for a one percentage-point increase in volatility. Vega Elasticity is defined as the percentage change in value of outstanding options for a one percentage-point increase in volatility. S&P 500 Broker-dealers are defined as S&P 500 firms with primary SIC codes between 6200 and 6212, Banks have SIC codes between 6000 and 6199, and Industrials have SIC codes below 6000 and above 7000, excluding utilities (4900-4999). Data are from ExecuComp (1992-2010). Dollar amounts are converted to 2010-constant dollars using the Consumer Price Index.

Panel B of Figure 8 shows that, when measured as an elasticity, risk-taking incentives were typically lower in broker-dealer firms than in other sectors in the pre-crisis years. In addition, the figure shows inconsistencies in the two measures of risk-taking incentives: Total Option Vegas plummeted in 2008, while Vega Elasticities spiked. The differences in the two measures reflect the effect of stock-market movements and, in particular, the market crash at the end of 2008 and the partial rebound by 2010. When stock prices fell (as they did abruptly in 2008, across all sectors of the economy), the options fell out of the money, which implies that the Option Vega for each option becomes smaller (Option Vegas are typically highest when the stock price is close to the exercise price). But, it turns out that, as stock prices fall, the value of the options held fall even faster than the Option Vega. As a result, the value of options that are out-of-the-money increase more in percentage terms (but less in dollar or euro terms) as volatility increases. More generally, the two vega measures – both

legitimate measures for risk-taking incentives – predictably move in opposite directions in market downturns.

Overall, the data in Figure 8 lends do not support the hypothesis that compensation in broker-dealer firms provided incentives to take excessive risks. While the Total Option Vegas for broker-dealer firms was generally higher in broker-dealer firms, this result is reversed after dividing by Total Compensation or by the value of outstanding options (i.e., the Vega Elasticity).

In summary, when compared to bonus plans in other sectors, bonuses for Wall Street executives are effectively linear with (relatively) small salaries, low bonus thresholds, and no caps. Moreover, a major part of the bonuses are paid in the form of unvested stock or unexercisable stock options, which effectively reduces the value of bonuses based on subsequent performance. This culture – and these plans – in general creates incentives to focus on long-run value creation rather than short-run gains. In addition, the primary way that compensation structures might encourage excessive risk taking is through asymmetric rewards and penalties; that is, high rewards for superior performance but no real penalties for failure. Financial services firms provide significant penalties for failure in their cash bonus plans by keeping salaries below competitive market levels, so that earning a zero bonus represents a penalty. These plans reduce (rather than increase) incentives for risk taking.

3.3.2. The Trouble with Traders

While I find little evidence of risk-taking incentives for top-level banking executives, this conclusion does not necessarily extrapolate to traders, loan officers, and other lower-level banking employees whose business activities can potentially subject the institution to large losses. For example, my conclusion relied on evidence of large stock and options

holdings that would be decimated following a bad gamble: lower-level employees will have less accumulated wealth and therefore less to lose. In addition, while it is sensible to tie incentive pay for top-level executives to changes in the overall value of the firm, bonuses for lower-level employees will inherently be based on shorter-term measures of individual performance.

Limits to Linearity

To fully mitigate excessive risk taking, the compensation structure must be linear across the full range of outcomes, including large losses. Given prohibitions against servitude, torture, and murder – coupled with individual-friendly bankruptcy protection – the penalties that can imposed on bankers for huge losses is largely limited to loss of employment, reputation, and existing wealth (including bonus banks, deferred accounts, unvested benefits, and stockholdings). For top-level executives with substantial stockholdings and legacy concerns, the potential losses in personal wealth are arguably sufficient to mitigate incentives for excessive risk-taking. However, for younger traders with less accumulated wealth in the company, the potential gains from excessive risk-taking might seem attractive relative to the limited downside.

It is therefore not surprising that many so-called "rogue" traders are relatively young low-level traders with less wealth to lose. For example, UBS's Kweku Adoboli was only 31 years old when his unauthorized unhedged trades in various S&P 500, DAX, and EuroStoxx index futures in 2011 resulted in a loss to UBS of $2.4 billion.[15] Similarly, Société Générale's Jérôme Kerviel was 31 years old when his unauthorized unhedged trades on

[15] Cimilluca, Ball and Mollenkamp, "UBS Raises Tally on Losses – Details Emerge Behind $2.3 Billion 'Rogue' Trading; Small Problem Got Bigger," *Wall Street Journal* (2011).

stock-index futures in 2006-07 resulted in a loss of $7.2 billion. As an exception that proves the rule, the "limits to linearity" are obvious in the October 2010 judgment against Kerviel: in addition to serving three years in prison, the judge ordered Kerviel to repay his former employer *$6.7 billion*. News accounts at the time noted that it would take him 180,000 years to pay at his current salary.[16]

In both the UBS and Société Générale cases, the traders were charged with criminal fraud and that they were taking unauthorized actions that violated company policy (although there is some evidence in both cases that monitoring was lax). The larger point is that no bonus system in the world can adequately punish a trader (or any employee) for generating billions of dollars in losses.[17] This fact, however, does not justify a condemnation of the banking bonus culture, but rather emphasizes that high-powered incentives must always be coupled with continuous monitoring systems and risk-control systems to ensure that outsized bets never be allowed to occur, and that measured and rewarded performance reflects actions that create rather than destroy value.

Risk Lovers Love High-Powered Incentives

Individuals with a larger appetite for risk will naturally be attracted to firms with higher-powered incentives, even with fully linear bonus plans offering symmetric rewards and penalties. For example, suppose that one bank offered its traders a bonus of 1% of individual profits (positive or negative), while a second otherwise-identical bank offered 10%. Assuming that the "expected total pay" was similar across the two banks, more risk-

16 Gauthier-Villars, Mollenkamp and MacDonald, "French Bank Rocked by Rogue Trader – Societe Generale Blames $7.2 Billion in Losses On a Quiet 31-Year-Old," *Wall Street Journal* (2008).

17 Gauthier-Villars, "Rogue French Trader Sentenced to 3 Years – Kerviel Is Ordered to Repay Societe Generale $6.7 Billion," *Wall Street Journal* (2010).

averse employees would be attracted to the bank with the 1% bonus pool, while more risk-loving traders would prefer the 10% bonus pool.

Therefore, while the Wall Street bonus culture does not necessarily provide incentives for excessive risk-taking, the culture will predictably attract a disproportionate share of risk takers. For similar reasons, the culture will also attract a disproportionate share of high-ability, highly motivated, and highly confident individuals, including the best and the brightest from the top undergraduate and MBA programs.

Undetected Short-Term Cheating

Trades or deals that "look good" when bonuses are paid might fall apart before performance is actually realized. When traders are rewarded based on short-run profits, they have incentives to not only pursue projects that will look good in the short run, but also to take deliberate (and often illegal) actions to make the projects look better (or less risky) than they are. For example, Société Générale's Kerviel's and UBS's Adoboli were both traders who were supposed to take offsetting bets on European stock futures (Kerviel) and ETFs (Adoboli); these strategies were designed as a low-risk way to make a small profit. Instead, both made unhedged bets only in one direction, and created fake trades in the opposite direction to hide the real risk they was taking.[18] The real and fictitious trades balanced out within the traders' risk limit and everything looked relatively normal in the short run.

[18] MacDonald and Abboud, "The Fallout at Societe Generale: Banks' High-Tech Security Can't Keep Up With Traders," *Wall Street Journal* (2008); Gauthier-Villars and Mollenkamp, "The Loss Where No One Looked – How Low-Level Trader Cost Societe Generale," *Wall Street Journal* (2008); Cimilluca, Ball and Mollenkamp, "UBS Raises Tally on Losses – Details Emerge Behind $2.3 Billion 'Rogue' Trading; Small Problem Got Bigger," *Wall Street Journal* (2011).

Clients vs. Counterparties[19]

A final – albeit more speculative – trouble with traders is that they grow up to be executives, taking with them a distorted view of fiduciary duties owed to their stakeholders. In particular, instead of having customers or clients, the traders have "counterparties" (that is, the parties on the other side of the transaction). The formal commitments traders make to their counterparties are minimal, often amounting to little more than a commitment to provide "best execution" of their trades.

The conflict of interest between traders and their counterparties is well understood: the objective of each party is to make a profit at the expense of the other, but not by doing something so blatant or opportunistic that it would jeopardize the future relationship. But, when the clients and customers of the advisory businesses are treated like counterparties, the reputation of the entire firm is at risk, which in turn jeopardizes shareholders, debtholders, and (possibly) taxpayers. This cultural difference between the advisory and trading sides of the business is a very serious and potentially damaging source of conflict inside the firm.

Consider, for example, Goldman Sachs' involvement in the Abacus synthetic collateralized debt obligation (CDO), which ultimately imposed massive losses on Goldman's investors, resulted in a record $550 million fine to settle SEC fraud charges, and severely (and perhaps irreparably) damaged the firm's once-sterling reputation. According to the complaint filed by the SEC in April 2010, hedge-fund manager John Paulson approached Goldman Sachs in January 2007 seeking counterparties and mechanisms that would allow Paulson to "short" various Residential Mortgage-Backed Securities (RMBS) that he believed were overvalued and would default in the near future. Working with Goldman's 31-year old

19 This section draws heavily from our analyses in Murphy and Jensen (2011).

Vice President Fabrice Tourre, Paulson helped select a list of RMBS candidates. Tourre and Goldman then approached ACA Management, LLC, to serve as the "Portfolio Selection Agent" for the $2 billion CDO, telling ACA about Paulson's involvement but suggesting that Paulson would be investing $200 million in a long (rather than short) position. Goldman and ACA then marketed the CDO to clients without revealing that Paulson (and his company) was involved in selecting the initial set of securities in the portfolio (paying Goldman $15 million for the privilege), and intended to sell the Abacus CDO short. Moreover, all this was being done in a context in which Goldman as a whole was betting that home mortgages would decline in value – what was known within the firm as the "big short."[20]

Goldman's involvement in the Abacus deal violated its own guiding principle that "Our clients interests always come first," unless it was viewing its client as Paulson and not the buyers of the CDO. While determining why Goldman risked its reputation in the deal will be debated for years, Murphy and Jensen (2011) speculate that the root causes involve Goldman's 1999 going-public decision and the more-recent shift of power from its advisory services to its traders. After Goldman became a publicly held corporation in 1999 its access to large amounts of outside capital enabled its traders to significantly expand their operations and generate substantial profits. These trading activities now are the major source of Goldman's profits, and Goldman is now essentially run by the traders; the CEO, Lloyd Blankfein is a trader. When Goldman collaborated in the creation and sale of the Abacus securities, without notifying its clients that it was shorting the subprime market, it was treating the buyers of those securities as if they were counterparties rather than clients or customers, and thus violating its core business principle.

---

[20] Goldfarb, "Cheers at Goldman as housing market fell; Senate Panel Releases E-Mails; Executives Reveled In Bets Made Against market," *Washington Post* (2010).

Importantly, there is no evidence that Goldman's involvement can be explained by incentives provided by its executive bonus system. Bonuses were paid in stock and options (as well as cash), and all the senior executives held huge ownership positions in Goldman equity. For example, by year-end 2007, the five named executives in Goldman's proxy statement held illiquid equity and options on Goldman Sachs with a total value of $1.8 billion. Therefore, those executives on balance had no monetary incentives to take actions that would increase Goldman's short-term earnings at the expense of Goldman's long-term equity value. More broadly, it is difficult to find any short-term monetary gains for these executives that would cause them to rationally choose to take the actions Goldman did in the Abacus deal. The cautionary conclusion is that bonus plans cannot be blamed, and cannot solve, all internal organizational problems.

4. Regulatory Responses to "Obscene" Bonuses

Overall, there is little evidence that the Wall Street bonus culture provided incentives for risk-taking among top-level banking executives; indeed, the general structure of compensation, coupled with substantial equity holdings, should mitigate excessive risk taking. Nonetheless, the banking bonus culture came under attack in 2009, reflecting in part, the (largely uncorroborated) suspicion that banking bonuses created incentives for excessive risk taking that led to the meltdown of world financial markets.

In this section, I analyze the regulatory responses to perceived excesses in banking bonuses, beginning with the original restrictions on TARP recipients through the ongoing implementation of the Dodd-Frank Act. I conclude that the responses (and the rhetoric

behind the responses) was not to reduce risk, improve pay or protect taxpayers, but rather to attack perceived excesses in pay levels and destroy the Wall Street banking culture.

4.1. The Emergency Economic Stabilization Act (EESA)

On September 19, 2008 – at the end of a tumultuous week on Wall Street that included the Lehman Brothers bankruptcy and the hastily arranged marriage of Bank of America and Merrill Lynch – Treasury Secretary Paulson asked Congress to approve the Administration's plan to use taxpayers' money to purchase "hundreds of billions" in illiquid assets from U.S. financial institutions.[21] Paulson's proposal contained no constraints on executive compensation, fearing that restrictions would discourage firms from selling potentially valuable assets to the government at relatively bargain prices.[22] Limiting executive pay, however, was a long-time top priority for Democrats and some Republican congressmen, who viewed the "Wall Street bonus culture" as a root cause of the financial crisis. Congress rejected the bailout bill on September 30, but reconsidered three days later after a record one-day point loss in the Dow Jones Industrial Average and strong bipartisan Senate support. The Emergency Economic Stabilization Act (EESA) was passed by Congress on October 3rd, and signed into law by President Bush on the same day.

The original TARP bailout bill included what at the time seemed like serious restrictions on executive pay. For example, while Section 304 of the 2002 Sarbanes-Oxley Act required clawbacks of certain executive ill-gotten incentive payments, the Act only covered the CEO and chief financial officer (CFO), and only covered accounting

---

21 Solomon and Paletta, "U.S. Bailout Plan Calms Markets, But Struggle Looms Over Details," *Wall Street Journal* (2008).

22 Hulse and Herszenhorn, "Bailout Plan Is Set; House Braces for Tough Vote," *New York Times* (2008).

restatements. While applying only to TARP recipients (Sarbanes-Oxley applied to all firms), the October 2008 EESA covered the top-five executives (and not just the CEO and CFO), and covered a much broader set of material inaccuracies in performance metrics. In addition, EESA lowered the IRS cap on deductibility for the top-five executives from $1 million to $500,000, and applied this limit to all forms of compensation (and not just non-performance-based pay). EESA also prohibited new severance agreements for the Top 5 executives, and limited payments under existing plans to 300% of the executives average taxable compensation over the prior five years. When Treasury invited (or, in some cases, coerced) the first eight banks to participate in TARP, a critical hurdle involved getting the CEOs and other top executives to waive their rights under their existing compensation plans.

4.2. The American Reinvestment and Recovery Act (ARRA) amends EESA

In January 2009, reports began surfacing that Merrill Lynch distributed $3.6 billion in bonuses to its 36,000 employees just before the completion of the merger with Bank of America: the top 14 bonus recipients received a combined $250 million, while the top 149 received $858 million (Cuomo (2009)). The CEOs of Bank of America and the former Merrill Lynch (neither of whom received a bonus for 2008) were quickly hauled before Congressional panels outraged by the payments, and the Attorney General of New York launched an investigation to determine if shareholders voting on the merger were misled about both the bonuses and Merrill's true financial condition. The SEC joined in with its own civil complaint, which sued the Bank of America but not its individual executives, and the bank agreed to settle for $33 million. However, a few weeks later a federal judge threw out the proposed settlement, insisting that individual executives be charged and claiming that the

settlement did not comport with the most elementary notions of justice and morality.[23] In February 2010, the judge relented and reluctantly approved the settlement after it had been increased to $150 million.[24]

By the time the Merrill Lynch bonuses were revealed, the U.S. had a new President, a new Congress, and new political resolve to punish the executives in the companies perceived to be responsible for the global meltdown. Indicative of the mood in Washington, Senator McCaskill (D-Missouri) introduced a bill in January 2009 that would limit total compensation for executives at bailed-out firms to $400,000, calling Wall Street executives a bunch of idiots who were kicking sand in the face of the American taxpayer.[25]

On February 4, 2009, President Obama's administration responded with its own proposal for executive-pay restrictions that distinguished between failing firms requiring exceptional assistance and relatively healthy firms participating in TARPs Capital Purchase Program. Most importantly, the Obama Proposal for exceptional assistance firms (which specifically identified AIG, Bank of America, and Citigroup) capped annual compensation for senior executives to $500,000, except for restricted stock awards (which were not limited, but could not be sold until the government was repaid in full, with interest). In addition, for exceptional-assistance firms the number of executives subject to clawback provisions would be increased from 5 under EESA to 20, and the number of executives with prohibited golden parachutes would be increased from 5 to 10. In addition, the next 25 highest-paid executives would be prohibited from parachute payments that exceed one years compensation).

---

[23] Scannell, Rappaport and Bravin, "Judge Tosses Out Bonus Deal – SEC Pact With BofA Over Merrill Is Slammed; New York Weighs Charges Against Lewis," *Wall Street Journal* (2009).

[24] Fitzpatrick, Scannell and Bray, "Rakoff Backs BofA Accord, Unhappily," *Wall Street Journal* (2010).

[25] Andrews and Bajaj, "Amid Fury, U.S. Is Set to Curb Executives' Pay After Bailouts," *New York Times* (2009).

Moreover – in response to reports of office renovations at Merrill Lynch, corporate jet orders by Citigroup, and corporate retreats by AIG – the Obama Proposal stipulated that all TARP recipients adopt formal policies on luxury expenditures. Finally, the Obama Proposal required all TARP recipients to fully disclose their compensation policies and allow nonbinding Say-on-Pay shareholder resolutions.[26]

In mid-February 2009, separate bills proposing amendments to EESA had been passed by both the House and Senate, and it was up to a small conference committee to propose a compromise set of amendments that could be passed in both chambers. On February 13th – as a last-minute addition to the amendments – the conference chairman (Senator Chris Dodd) inserted a new section imposing restrictions on executive compensation that were opposed by the Obama administration and severe relative to both the limitations in the October 2008 version and the February 2009 Obama Proposal. Nonetheless, the compromise was quickly passed in both chambers with little debate and signed into law as the American Recovery and Reinvestment Act of 2009 by President Obama on February 17, 2009.

Table 2 compares the pay restrictions under the original 2008 EESA bill, the 2009 Obama Proposal, and the 2009 ARRA (which amended Section 111 of the 2008 EESA). While the clawback provisions under the original EESA covered only the Top 5 executives (up from only two in SOX), the Dodd Amendments extended these provisions to 25 executives and applied them retroactively.[27] In addition, while the original EESA disallowed severance payments in excess of 300% of base pay for the Top 5 executives, the Dodd

---

[26] TARP recipients not considered exceptional assistance firms could waive the disclosure and Say on Pay requirements, but would then be subject to the $500,000 limit on compensation (excluding restricted stock).

[27] The number of executives covered by the Dodd Amendments varied by the size of the TARP bailout, with the maximum number effective for TARP investments exceeding $500 million. As a point of reference, the average TARP firm among the original eight recipient received an average of $20 *billion* in funding, and virtually all the outrage over banking bonuses have involved banks taking well over $500 million in government funds. Therefore, we report results assuming that firms are in the top group of recipients.

Amendments covered the top 10 executives and disallowed *all* payments (not just those exceeding 300% of base). The Dodd Amendments also retroactively extended the deductibility restrictions to the top 25 executives (and not just the top 5). Most importantly, the Dodd Amendments allowed only two types of compensation: base salaries (which were not restricted in magnitude), and restricted stock (limited to grant-date values no more than half of base salaries). The forms of compensation explicitly prohibited under the Dodd amendments for TARP recipients include performance-based bonuses, retention bonuses, signing bonuses, severance pay, and all forms of stock options.

Finally, the Dodd amendments imposed mandatory Say-on-Pay resolutions for all TARP recipients (the requirements were extended to all publicly traded firms under the 2010 Dodd-Frank Act discussed below). In early 2009 – not long after the Dow Jones Industrial Average hit its crisis minimum at about 6500 – shareholders had an opportunity to provide a non-binding vote of approval on the 2008 compensation received by the top executives at the TARP recipients (i.e., compensation for the year when these firms allegedly dragged the economy into a financial crisis). As an interesting historical footnote, none of the TARP recipients received a majority vote against its executive compensation levels and policies.

As another interesting historical footnote: while almost all attempts to regulate executive compensation have produced negative unintended side affects, the Dodd Amendments produced a positive one. In particular, many TARP recipients found the draconian pay restrictions sufficiently onerous that they hurried to pay back the government in time for year-end bonuses.

Table 2 Comparison of Pay Restrictions in EESA (2008), Obama Proposal (2009), and ARRA (2009)

	A. Limits on Pay Levels and Deductibility
Pre-EESA (IRS §162(m) (1994))	Limits deductibility of top-5 executive pay to $1,000,000, with exceptions for performance-based pay
EESA (2008) All TARP Recipients	Limits deductibility of top-5 executive pay to $500,000, with no exceptions for performance-based pay
Obama (2009) Exceptional Assistance Firms	In addition to deductibility limits, cash pay is capped at $500,000; additional amounts can be paid in restricted shares vesting after government paid back
Obama (2009) Other TARP Recipients	Same as exceptional assistance firms, but pay caps can be waived if firm offers full disclosure of pay policies and a non-binding say on pay vote
ARRA (2009) All TARP Recipients	In addition to deductibility limits, disallows all incentive payments, except for restricted stock capped at no more than one-half base salary. No caps on salary.
	B. Golden Parachutes
Pre-EESA (IRS §280G (1986)	Tax penalties for change-in-control-related payments exceeding 3 times base pay
EESA (2008) Auction Program	No new severance agreements for Top 5
EESA (2008) Capital Purchase Program	No new severance agreements for Top 5, and no payments for top 5 executives under existing plans exceeding 3 times base pay
Obama (2009) Exceptional Assistance Firms	No payments for Top 10; next 25 limited to 1 times base pay
Obama (2009) Other TARP Recipients	No payments for top 5 executives under existing plans exceeding 1 times base pay
ARRA (2009) All TARP Recipients	No payments for Top 10 Disallows all payments (not just excess payments)
	C. Clawbacks
Pre-EESA (Sarbanes-Oxley (2002))	Covers CEO and CFO of publicly traded firms following restatements
EESA (2008) Auction Program	No new provisions
EESA (2008) Capital Purchase Program	Top 5 executives, applies to public and private firms, not exclusively triggered by restatement, no limits on recovery period, covers broad material inaccuracies (not just accounting restatements)
Obama (2009) All TARP Recipients	Same as above, but covers 20 executives
ARRA (2009) All TARP Recipients	Covers 25 executives for all TARP participants, retroactively

As draconian as the Dodd Amendments (triggered by the Merrill Lynch payments) were, things were about to get worse. The next flash point for outrage over bonuses involved insurance giant American International Group (AIG), which had received over $170 billion in government bailout funds, in large part to offset over $40 billion in credit default-swap losses from its Financial Products unit. In March 2009, AIG reported it was about to pay $168 million as the second installment of $450 million in contractually obligated retention bonuses to employees in the troubled unit. (The public outrage intensified after revelations that most of AIGs bailout money had gone directly to its trading partners, including Goldman Sachs ($13 billion), Germanys Deutsche Bank ($12 billion), and Frances Société Générale ($12 billion).) The political fallout was swift and furious: in the week following the revelations seven bills were introduced in the House and Senate aimed specifically at bonuses paid by AIG and other firms bailed out through Treasury's Troubled Asset Relief Program (TARP):

- H.R. 1518, the Bailout Bonus Tax Bracket Act of 2009 imposed a 100% tax on bonuses over $100,000;
- H.R. 1527 imposed an additional 60% tax (on top of 35% ordinary income tax) on bonuses exceeding $100,000 paid to employees of businesses in which the federal government has an ownership interest of 79% or more. (Not coincidentally, the government owned 80% of AIG when the bill was introduced.);
- H.R. 1575, the End Government Reimbursement of Excessive Executive Disbursements Act (i.e., the End GREED Act) authorized the Attorney General to seek recovery of and limit excessive compensation;

- H.R. 1577, the AIG Bonus Payment Bill required the Secretary of Treasury to implement a plan within two weeks to thwart the payment of the AIG bonuses, and required Treasury approval of any future bonuses by any TARP recipient;

- H.R. 1586 sought to impose a 90% income tax on bonuses paid by TARP recipients; employees would be exempt from the tax if they returned the bonus in the year received;

- S. 651, the Compensation Fairness Act of 2009, imposed a 70% excise tax (half paid by the employee and half by the employer) for any bonus over $50,000 paid by a TARP firm;

- H.R. 1664, the Pay for Performance Act of 2009 prohibited any compensation payment (under existing as well as new plans) if such compensation: (1) is deemed unreasonable or excessive by the Secretary of the Treasury; and (2) includes bonuses or retention payments not directly based on approved performance measures. The bill also created a Commission on Executive Compensation to study and report to the President and Congress on the compensation arrangements at TARP firms;

Most of these bills (H.R. 1518, 1527, 1575, 1577 and S. 651) were either stalled in committees or failed in a vote. However, H.R. 1586 and H.R. 1664 (the Pay for Performance Act of 2009) were passed by the House and sent to the Senate. H.R. 1586 was ultimately passed after being stripped of the executive-compensation provisions, while the main features of H.R. 1664 were incorporated into the July 2010 Dodd-Frank Wall Street Reform bill

discussed below.[28] Therefore, the reason to list the bills above is not for their ultimate relevance to policy, but rather as evidence of Congressional outrage and a political resolve to punish Wall Street for its bonus practices.

4.3. Treasury issues Final Rules and appoints a Pay Czar

The Dodd Amendments were signed into law with the understanding that the U.S. Treasury would work out the implementation details. In June 2009, Treasury issued its rulings, along with the simultaneous creation of the Office of the Special Master of Executive Compensation. The Special Master (colloquially known as the Pay Czar) had wide-ranging authority over all TARP recipients, but was particularly responsible for all compensation paid to the top 25 executives in the seven firms deemed to have required special assistance from the US government: Bank of America, Citigroup, AIG, General Motors, Chrysler, and the financing arms of GM and Chrysler.[29]

Since taxpayers had become the major stakeholder in the seven special assistance firms, the government arguably had a legitimate interest in the firm's compensation policies. One could imagine, for example, embracing an objective of maximizing shareholder value while protecting taxpayers, or perhaps maximizing taxpayer return on investment. However, Treasury instructed the Special Master to make pay determinations using the "public interest standard," an ill-defined concept that allows too much discretion and destroys accountability for those exercising the discretion. For example, applying the public interest standard allows Congress to limit compensation they perceive as excessive, without evidence or

---

[28] Without trying to explain (because it is beyond my comprehension), H.R. 1586 was ultimately passed and signed into law as the FAA Air Transportation Modernization and Safety Improvement Act, stripped of any mention of executive bonuses and TARP recipients.

[29] For the record, I (along with Lucian Bebchuk from Harvard) served as academic advisors to Kenneth Feinberg, the Special Master. However, the fact that advice was given does not imply that it was followed.

Table 3 Changes in Pay Imposed by Treasury's Special Master for Seven USA Firms Requiring Special Assistance

Corporation	Percentage Change in Pay from 2008 Levels		Percentage Change in Pay from 2007 Levels		Number of Executives in Top 25
	Cash	Total	Cash	Total	
AIG	-90.8%	-57.8%	-89.2%	-55.7%	13
Bank of America	-94.5%	-65.5%	-92.2%	-63.3%	13
Citigroup	-96.4%	-69.7%	-78.4%	-89.6%	21
General Motors	-31.0%	-24.7%	-46.0%	-16.9%	20
Chrysler	-17.9%	+24.2%	+14.0%	+72.3%	25
GMAC	-50.2%	-85.6%	-42.5%	-78.2%	22
Chrysler Financial	-29.9%	-56.0%	na	na	22

Source: October 22 letters from Special Master to each company, available at the US Treasury website (www.treas.gov).

accountability for the consequences. Similarly, invoking the public interest standard forced the Special Master to navigate between the conflicting demands of politicians (insisting on punishments) and taxpayer/shareholders (concerned with attracting, retaining, and motivating executives and employees).

Ultimately, the Special Master catered to prevailing political and public sentiment, and severely penalized the executives in firms viewed as responsible for the meltdown by drastically reducing their cash compensation. As shown in Table 3, 2009 cash compensation at the three banks regulated by the Special Master were cut by an average of 94%, while total compensation was cut by an average of 64%.

As an example of how the public interest standard can lead to punitive pay cuts, consider the case of Bank of Americas Ken Lewis, who as recently as December 2008 was named American Bankers' Banker of the Year for his firms rescue of Merrill Lynch.[30] In October 2009, Mr. Lewis announced he would step down at the end of the year, and

[30] Fitzpatrick and Scannell, "BofA Hit by Fine Over Merrill – Bank Pays SEC $33 Million in Bonus Dispute; Sallie Krawcheck Hired in Shake-Up," *Wall Street Journal* (2009).

indicated that he would forego his 2009 bonus and the remainder of his 2009 salary. The Special Master decided that was not enough, and demanded that Mr. Lewis return *all* the salary already earned for services rendered the year, or risk a determination that Mr. Lewis contractual pension benefits were contrary to the public interest (and therefore subject to renegotiation).[31] It is difficult to view this decision as anything other than punitive and a misuse of the public interest standard, since Mr. Lewis clearly rendered services on behalf of Bank of America during 2009, and should clearly be compensated for that service.

4.4. The Dodd-Frank Executive Compensation Reform Act (2010-2011)

4.4.1. Pay Restrictions for Financial Institutions

In July 2010, President Obama signed into law the Dodd-Frank Wall Street Reform and Consumer Protection Act or Dodd-Frank Act, which was the culmination of the President and Congress's controversial and wide-ranging efforts to regulate the financial services industry. While the pay restrictions in the TARP legislation applied only to banks receiving government assistance, the Dodd-Frank Act goes much further by regulating pay for *all* financial institutions (TARP recipients and non-recipients, public and private, including Fannie Mae and Freddie Mac and US-based operations of foreign banks). Specifically, Part (a) of Section 956 of the Dodd-Frank Act requires all financial institutions to identify and disclose (to their relevant regulator) any incentive-based compensation arrangements that could lead to material financial loss to the covered financial institution, or that provides an executive officer, employee, director, or principal shareholder of the covered financial institution with excessive compensation, fees, or benefits. In addition, Part (b) of Section 956

---

31 Story, "Pay Czar Doubts Cuts Will Make Bankers Leave," *New York Times* (2009).

of the Dodd-Frank Act prohibits financial institutions from adopting any incentive plan that regulators determine encourages inappropriate risks by covered financial institutions, by (1) providing an executive officer, employee, director, or principal shareholder of the covered financial institution with excessive compensation, fees, or benefits; or (2) that could lead to material financial loss to the covered financial institution.

The responsibility for implementing Section 956 of the Dodd-Frank Act fell jointly to seven agencies: the Securities and Exchange Commission (SEC), the Federal Reserve System, the Office of the Comptroller of the Currency, the Office of Thrift Supervision, the Federal Deposit Insurance Corporation, the National Credit Union Administration, and the Federal Housing Finance Agency. In March 2011, the seven agencies issued a joint proposal for public comment, modeled in part on Section 39 of the Federal Deposit Insurance Act. While the proposal stops short of explicitly limiting the level of executive compensation, it prohibits compensation that is unreasonable or disproportionate to the amount, nature, quality, and scope of services performed. In addition, the proposal calls for firms to identify individuals who have the ability the expose the firm to substantial risk, and demands that (for the larger institutions) such individuals have at least 50% of their bonuses deferred for at least three years; deferred amounts would be subject to forfeiture if subsequent performance deteriorates. Final rules are expected in 2012.

4.4.2. Pay and Governance Reforms for all Publicly Traded Companies

While ostensibly focused on regulating firms in the financial services industry – the authors of the Dodd-Frank Act seized the opportunity to pass a sweeping reform of executive compensation and corporate governance imposed on all large publicly traded US firms across all industries. The new rules include:

SAY ON PAY. Shareholders will be asked to approve the company's executive compensation practices in a non-binding vote occurring at least every three years (with an additional vote the first year and every six years thereafter to determine whether the say on pay votes will occur every one, two, or three years). In addition, companies are required to disclose, and shareholders are asked to approve (again, in a non-binding vote), any golden parachute payments in connection with mergers, tender offers, or going-private transactions.

In January 2011 – and effective for the 2011 proxy season – the SEC adopted rules concerning shareholder approval of executive compensation and "golden parachute" compensation arrangements. Shareholders of 98.5% of the 2532 companies reporting by July 2011 approved the pay plans; over 70% of the companies received more than 90% favorable support.[32]

CLAWBACKS. Companies must implement and report policies for recouping payments to executive based on financial statements that are subsequently restated. The rule applies to any current or former executive officer (an expansion of Sarbanes Oxley, where only the CEO and CFO were subject to clawbacks), and applies to any payments made in the three-year period preceding the restatement (Sarbanes Oxley only applied for the twelve months following the filing of the inaccurate statement).

The SEC intends to propose rules regarding the recovery of executive compensation by mid-2012.

COMPENSATION COMMITTEE INDEPENDENCE. Following Sarbanes-Oxley (2002) requirements for Audit Committees, publicly traded companies are required to have compensation committees comprised solely of outside independent directors (where

32 Holzer, "A 'Yes' In Say On Pay," *Wall Street Journal* (2011b).

independence takes into account any financial ties the outside directors might have with the firm).

In March 2011, the SEC proposed listing standards relating to the independence of the members on a compensation committee, the committee's authority to retain compensation advisers, and the committee's responsibility for the appointment, compensation and work of any compensation adviser. Once an exchange's new listing standards are in effect, a listed company must meet these standards in order for its shares to continue trading on that exchange for compensation committees. Final rules were expected in late 2011.

PROXY ACCESS. The Dodd-Frank Act authorized the SEC to issue rules allowing certain shareholders to nominate their own director candidates in the company's annual proxy statements.

The SEC issued its rules on Proxy Access in August 2010, but delayed implementation after lawsuits by the Business Roundtable and the US Chamber of Commerce claimed that the rules would distract management and advance special-interest agendas. In July 2011, the US Circuit Court of Appeals (Washington, DC) ruled in favor of the business groups and issuing a sharp rebuke to the SEC, saying that the SEC failed in analyzing the cost the rule imposes on companies and in supporting its claim that the rule would improve shareholder value and board performance.[33]

It is too early to assess the ultimate effect of Dodd-Frank on executive compensation, since many of the rules have just been implemented or are still being written. Indeed, attorneys at DavisPolk (2010) calculate that the Act requires regulators to create 243 new rules, conduct 67 studies, and issue 22 periodic reports. Without question, the Dodd-Frank

33 Holzer, "Corporate News: Court Deals Blow to SEC, Activists," *Wall Street Journal* (2011a).

Act as ultimately implemented will provide financial economists with research fodder for years to come.

5. Assessments

5.1. Did Banking Bonuses Cause the Financial Crisis?

The hypothesis that compensation arrangements at financial institutions precipitated the financial crisis has gained considerable political and popular appeal. However, the facts that (1) the financial meltdown involved banks, (2) banks rely heavily on bonuses, and (3) pay levels in banks are high, have led many in the political sector or popular press to presume that banking bonuses much have caused the crisis and thus needs to be reformed. However, connecting-the-dots is not an accepted scientific inquiry, and the empirical evidence in support of such claims is currently not overwhelming.

The emerging academic evidence on banking bonuses and the financial crisis is largely consistent with the findings documented above: there is little evidence that the Wall Street bonus culture provided incentives for risk-taking, at least among top-level banking executives. Fahlenbrach and Stulz (2011) investigate 95 banks in 2006, and follow these through to December 2008. They reject the hypothesis that compensation arrangements at banks were fundamentally flawed. They find that CEOs with incentives that are better aligned to shareholders actually performed worse in the crisis. CEOs took decisions they felt would be profitable for shareholders *ex ante*, but ultimately these turned out to perform badly, *ex post*. If CEOs had advance knowledge that their decisions would not optimize shareholder value, then they would have taken actions to insulate their own personal wealth from adverse price movements. However, Fahlenbrach and Stulz find no evidence of unusual

share selling or other hedging activity by bank executives in advance of the crisis. They also show that CEOs aggregate stock and option holdings is more than eight times the value of annual compensation. The amount of CEO wealth at risk prior to the financial crisis makes it improbable that a rational CEO knew of an impending financial crash, or knowingly engaged in excessively risky behavior.

Similarly, Murphy (2009) documents that executives in banks participating in the TARP program had "more to lose" (i.e., faced larger downside risks) than did executives in banks not participating (or executives outside of the banking sector). Again, if those bank executives had known about an impending crash, then one would have expected to observe them engaging in hedging activities to mitigate such risk – there is no systematic evidence they did so. Other data is consistent with this. Cheng, Hong and Scheinkman (2009) sfind that executives with better incentives (which they defined based on residuals from annual compensation regressions) have higher CAPM betas, higher return volatilities, and are more likely to be in the tails of performance (with especially high pre-crisis performance, and especially low performance during the crash). Adams (2009) compares non-financial to financial firms from 1996 to 2007. She finds that governance arrangements in financial firms are typically no worse than in non-financial firms. Interestingly, she finds that controlling for firm size the level of CEO pay and the fraction of equity-based pay is actually lower in banks, even in 2007. Also, banks receiving bailout money had boards that were more independent than in other banks. Outside of the United States, Bechmann and Raaballe (2009) analyze CEO pay and performance in a sample of Danish banks, and also find that CEOs with more incentive-based compensation (and thus more to lose from poor performance) performed worse than other banks during the crisis. Therefore, while there

appears to be a correlation between compensation structures and performance during the crisis, the companies faring the worst in the crisis are those with better (and not worse) executive incentives.

In contrast, Lucian A. Bebchuk, Cohen and Spamann (2010) and Bhagat and Bolton (2011) conclude that top-level banking executives had incentives to take excessive risks, based on the finding that the amount of cash the executives extracted from their firms between 2000 and 2008 (from salaries, non-deferred cash bonuses, and stock sales) was often more than the losses realized during the crisis. The underlying (though largely unstated) theory is that executives pursued investments that they knew would deliver short-run gains but long-term losses, and were willing to do this because they could extract enough cash in the short run to make the bad investment worthwhile. As discussed Section 3.2.2 above, the underlying theory is not about risk taking at all, but rather about rewarding short-term rather than long-term results. Moreover, the authors present no evidence that the executives knew their investments would ultimately fail, and do not explain why the executives were so inept at cashing out: when the crisis hit, the executives were left with large holdings of vested stock and exercisable options that would presumably have been sold (or exercised and then sold) if the executives truly knew the "long-term" had arrived.

In January 2011, the Financial Crisis Inquiry Commission issued its report on the causes of the financial crisis Angelides, et al. (2011). The Commission's final report was over six hundred pages long, containing twenty-two chapters and supporting material. While providing no direct evidence that pay practices were complicit in the crisis, the report takes a "guilt by association" approach, showing a widening pay gap between bankers and non-bankers and generally criticizing banking bonuses for being too short-term oriented. Six of

the ten Commission members voted to accept the report and four members dissented; the disagreement was serious enough for two dissenting statements reports to be issued. The first dissenting report (Hennessey, Holtz-Eakin and Thomas (2011)) identified ten main factors that caused the crisis: a credit bubble, a housing bubble, non-traditional mortgages, credit rating and securitization, financial institutions correlated risk, leverage and liquidity risk, risks of contagion, common macroeconomic shocks, a severe financial shock, and the financial shock causing the economic crisis in the real economy. Executive and other compensation practices did not figure as a major part of the problem. The second dissenting report (Wallison (2011)) argued that "Wall Street greed and compensation polices" was at most a trivial contributor to the crisis compared to the growth in non-traditional mortgages.

The precise causes of the global financial crisis will be debated for decades (just as the precise causes of the 1930s depression are still being debated). However, the evolving consensus suggests that the risk-taking contributing to the crisis reflected a combination of factors, including social policies on home ownership, loose monetary policies, "Too Big to Fail" guarantees, and poorly implemented financial innovations such as exotic mortgages, securitization, and collateralized debt obligations. These different factors, however, have nothing (or little) to do with the Wall Street bonus culture.

5.2. Are Regulators Responding to "Excessive Risk" or "Excessive Pay"?

Once taxpayers became a major stakeholder in the TARP recipients (and especially in the seven recipients requiring "exceptional assistance"), the government arguably had a legitimate interest in the firms' compensation policies. For example, compensation policies should clearly avoid providing incentives to take excessive risks with taxpayer money. More

generally, one could imagine embracing an objective of "maximizing shareholder value while protecting taxpayers," or perhaps "maximizing taxpayer return on investment."

Similarly, the government arguably has a legitimate interest in banks protected by FDIC insurance, since shareholders receive all of the "upside" rewards from risky activities, while taxpayers share in the downside. The government may also have an interest in firms protected by vague and undefined "too big to fail" guarantees for roughly the same reason, though the legitimacy of the interest here is a bit more dubious and difficult to quantify.

However, in retrospect, the apparent intent of the pay restrictions in TARP and Dodd-Frank are not to reduce risk, improve pay or protect taxpayers, but rather to attack perceived excesses in pay levels and destroy the Wall Street banking culture. Beyond generic demands that pay not provide incentives to take unnecessary or excessive risk (offered without defining excessive risk or suggesting how boards might distinguish between excessive and normal risks), the pay restrictions in the EESA, ARRA and Dodd-Frank offer no obvious protections for taxpayers.

For example, when ARRA with the Dodd amendments was enacted in February 2009, Congress (and the general public) were angry at Wall Street and its bonus culture, and suspicious that this culture was a root cause of the financial crisis. By limiting compensation to uncapped base salaries coupled with modest amounts of restricted stock, the Dodd amendments completely upended the traditional Wall Street model of low base salaries coupled with high bonuses paid in a combination of cash, restricted stock, and stock options. A charitable interpretation is that Congress decided that banking compensation was sufficiently out of control that the only way to save Wall Street was to destroy its bonus

culture. More plausibly, Congress's intention was to punish the executives and firms alleged to be responsible for the crisis.

In return for the TARP investments, the government typically received a combination of preferred stock and warrants to purchase common equity at a pre-determined market price. Taxpayers therefore want executive compensation tied to the contractual dividend payments on (or repurchases of) the preferred stock and on the appreciation of the common stock. Most compensation consultants and practitioners working on behalf of taxpayers would have recommended low base salaries coupled with bonuses tied to company operating performance (likely based on cash flows available for preferred dividends) and stock options, restricted stock, and other plans tied to shareholder-value creation. Taxpayers would also want the ability to pay reasonable signing bonuses to attract executive talent into the company, and to pay reasonable severance to ease the transition of executives leaving the company.

In contrast, the ARRA allowed exactly two forms of compensation (base salary and restricted stock), put no limits on the amount of base salary, but limited restricted stock to be no more than one-half of base salary (i.e., no more than one-third of total compensation). The legislation prohibited signing bonuses, incentive bonuses, severance bonuses, stock options, performance shares, fringe benefits, and other components often found in well-designed compensation plans. The pay restrictions in the legislation were destructive and ultimately harmful for both taxpayers and shareholders.

The attack on perceived excesses in compensation continued under the 2010 Dodd-Frank Act. Since at least the early 1990s, there has always been a tension between shareholders (the firm's legal owners) concerned about CEO incentives, and third parties

(such as politicians and labor unions) concerned about high levels of pay. After the TARP bailouts in the financial crisis, the analogous tension was between taxpayers (who wanted to be protected from excessive risks while receiving and appropriate return on their investment) and politicians who were outraged about perceived excesses in banking bonuses. Section 956 of the Dodd-Frank Act deliberately conflates these tensions, by explicitly defining "excessive compensation, fees, or benefits" as an inappropriate risk. Moreover, the Act requires banks to inform their regulators of compensation plans that provide excessive compensation, delegating to the regulators the Herculean task of defining what compensation is excessive (or, indeed, which risks are inappropriate).

5.3. Are Banking Bonuses Excessive?

When executive compensation is described as "excessive" (or "inappropriate" or "unwarranted") the individual offering the description usually means one of three things. First, the term might refer to cases where compensation is determined not by competitive market forces but rather by captive board members catering to rent-seeking entrenched executives.[34] Second, the term might refer to concerns about the misallocation of resources, such as a belief that top executives shouldn't earn that much more than teachers because teachers are more important to society. Finally, although generally not acknowledged by the participants in these often frenzied debates, the term might reflect one of the least attractive aspects of human beings: jealousy and envy.

Without question, the highest-paid employees in financial services firms are paid more than their counterparts in other industries. The rewards available to top performers have

[34] See, for example, the "managerial power" views advanced by Bebchuk and Fried (2004a); Bebchuk and Fried (2004b); Bebchuk, Grinstein and Peyer (2010); Bebchuk, Fried and Walker (2002); Bebchuk and Fried (2003); Fried (2008a); Fried (2008b); Fried (1998).

attracted the best and brightest college, MBA, and PhD graduates into financial services. While some might argue that it would be better to have the best and brightest graduates become doctors or public servants, a general advantage of a capitalist free-market economy is its propensity to move resources to higher-valued uses.

The fact that pay is *high* does not, however, imply that pay is *excessive* in the sense of not being determined by competitive market forces. Even the most vocal advocates of the view that powerful CEOs effectively set their own salaries rarely apply the view to executives and employees below the very top. The highest-paid employees in financial services firms typically have scarce and highly specialized skills that are specific to their industry but not necessarily to their employer. As a result, employees in financial services are remarkably mobile both domestically and internationally when compared to employees in virtually any other sector in the economy. When the Dodd amendments were enacted in February 2009, the entire global financial system was in crisis and there was a belief that pay could be cut "across the board" since, after all, there was no where else for the employees to go. However, even by the time the Special Master made his pay determinations in October 2009, the world had changed: most formerly constrained recipients had repaid their TARP obligations, were actively hiring and were competing with unconstrained hedge funds and private equity funds for top financial talent.

As evidence of the mobility of financial service executives, consider the following result from Table 3: of the 75 highest-paid executives in AIG, Bank of America, and Citigroup in 2008, only 47 (62%) had remained in their firms through October 2009 (and were thus subject to pay approval by the Special Master). While the 28 departures were not all "regretted resignations" (including several former Merrill Lynch traders and some

resignations encouraged by the Special Master), the departures included several high-performing executives and traders. For example, Andrew J. Hall – the head of Citigroup's Phibro profitable energy-trading division – was set to receive $100 million in bonuses for 2009. Although Citigroup maintained that the bonus should be exempt from the Special Masters' scrutiny because it was based on a contract that pre-dated TARP, the Special Master contended that the contract could be voided because it promoted excessive risk taking and ran counter to the public interest.[35] To avoid the conflict, Citigroup sold the Phibro unit to Occidental Petroleum at approximately its book value, which in turn promptly (and happily) paid Mr. Hall his contractual bonus. The Phibro divestiture deprived taxpayers of approximately $400 million in annual net cash flow that would have been available to pay dividends or retire preferred stock.

Assuming (with good evidence) that banking bonuses are the result of competitive market forces, and assuming (also with good evidence) that capitalist free-market economy are relatively efficient in moving resources to higher-valued uses, the most consistent interpretation of the continued outrage over banking bonuses is that the parties making the attacks are opposed to high banking bonuses *per se*, appearing to go far beyond concerns that such bonuses motivated excessive risk taking.

5.4. Should Banking Bonuses be Regulated?

Compensation practices in financial services can certainly be improved. For example, cash bonus plans in financial services can be improved by extending and enforcing bonus banks or "clawback" provisions for recovery of rewards if and when there is future revision

35 Dash and Healy, "Citi Averts Clash Over Huge Bonus," *New York Times* (2009).

of critical indicators on which the rewards were based or received. Indeed, in the wake of the financial crisis in late 2008 (and before the 2010 Dodd-Frank Act), several financial institutions introduced clawback provisions allowing the firm to recover bonuses paid to traders and other employees on profits that subsequently proved to be incorrect. In November 2008, UBS introduced a "bonus malus" system in which at least two-thirds of senior managers' bonuses in good years are "banked" to offset possible losses in subsequent bad years.[36] In December 2008, Morgan Stanley introduced a clawback feature into its bonuses for 7,000 executives and employees, in which the company could recover a portion of bonuses for employees causing "a restatement of results, a significant financial loss or other reputational harm to the firm."[37] In January 2009, Credit Suisse began paying bonuses in illiquid risky securities that lose value in bad years and could be forfeited if employees quit their job or were fired.[38] These moves as a good start towards a general adoption of clawback provisions.

Bonus plans in financial services can also be improved by ensuring that bonuses are based on value creation rather than on the volume of transactions without regard to the quality of transactions. Measuring value creation is inherently subjective, and such plans will necessarily involve discretionary payments based on subjective assessments of performance.

Compensation practices in financial services can undoubtedly be improved through government oversight focused on rewarding value creation and punishing value destruction. However, it is highly unlikely that compensation practices can be improved through increased government rules and regulations. Indeed, as I emphasize in Murphy (2011a) and

---

36 "UBS to change to the way it pays senior managers," *Associated Press Newswires* (2008).

37 Farrell and Guerra, "Top Executives at Morgan Stanley and Merrill forgo their bonuses," *Financial Times* (2008).

38 Harrington, "Credit Suisse to loan cash bonuses," *Sunday Telegraph* (2009).

Murphy (2011b), the US government has a long history of attempts to regulate executive pay that have systematically created unanticipated side effects that have generally led to higher pay levels and less-efficient incentives.

Part of the problem of governmental regulation of pay is that such interventions – even when well intended – always creates unintended (and usually costly) side effects. For example, laws introduced in 1984 to reduce golden parachute payments led to a proliferation of change-in-control arrangements, employment contracts, and tax gross-ups. Similarly, a variety of rules implemented in the early 1990s is largely responsible for fueling the escalation in pay levels and option grants in the 1990s, and the enhanced disclosure of perquisites in the 1970s is generally credited with fueling an explosion in the breadth of benefits offered to executives. More recently, the Dodd-Frank-inspired rules mandating deferral of bonuses has resulted in large increases in base salaries among financial firms.[39]

In addition, efficient compensation practices will inherently vary across time, sector, and the unique economic circumstances facing individual firms and executives. In contrast, government regulation inherently imposes "one-size-fits-all" rules to disparate organizations. For example, the seven government agencies charged with implementing Section 956 of Dodd-Frank, for example, are attempting to impose a "one-size-fits-all" model to broker-dealers, commercial banks, investment banks, credit unions, savings associations, domestic branches of foreign banks, and investment advisors.

More importantly, regulation is often designed to be punitive rather than constructive, and is inherently driven by politicians more interested in their political agendas rather than

[39] For example, in early 2011, Bank of America, Citigroup, Morgan Stanley, and Goldman Sachs all announced significant increases in base salaries. See, Rappaport, "Goldman Boosts Partners' Base Pay," *Wall Street Journal* (2011).

creating shareholder value. For example, the draconian restrictions on pay for TARP recipients are clearly punitive and politically motivated. Similarly, the provision in the Dodd-Frank Act requiring firms to report the ratio of CEO pay to the pay for the median worker at the firm reflects a political agenda to reduce levels of pay rather than a shareholder agenda to improve pay.

It is important to recognize that the outrage over banking bonuses is emanating not from shareholders but from politicians, labor unions and the general public. While such outrage is understandable – especially for banks paying bonuses after being bailed out by taxpayers – it is often driven by jealously and envy and not by concerns about maximizing value or even protecting taxpayer interests in the future. Moreover, even for those who believe that CEOs can effectively set their own salaries, there is no credible evidence that the compensation arrangements for lower-level bankers, traders, underwriters, or brokers are set in anything other than a highly competitive market for talent. For better or worse, there is an extremely scarce supply of individuals with the highly specialized skills required to understand and trade in increasingly complex derivative instruments, and the market for such individuals is global with little respect for international boundaries. Restricting banking bonuses for TARP recipients led to a drain of talent from those banks to private equity and unrestricted banks (including those that quickly paid the money bank). Similarly, punitive restrictions on financial institutions will lead to both costly circumvention and a drain of talent from restricted to unrestricted sectors.

To summarize, pay practices in the financial-services sector can clearly be improved, and many of the largest banks have made significant changes in their plans in anticipation, or perhaps to pre-empt, government intervention. Ultimately, the question is not whether

banking compensation should be reformed, but whether the government is the efficient agent of reform. Improvements in executive compensation will best emanate through stronger corporate governance, and not through direct government intervention.

References

Adams, Renee B., 2009, Governance and the Financial Crisis, ECGI - Finance Working Paper No. 248/2009.

Andrews, Edmund L., and Vikas Bajaj, 2009, "Amid Fury, U.S. Is Set to Curb Executives' Pay After Bailouts," *New York Times* (February 4).

Angelides, Phil, Brooksley Born, Byron Georgiou, Bob Graham, Heather H. Murren, and John W. Thompson, 2011, *The Financial Crisis Inquiry Report* (January 27)

Baker, George P, and Brian Hall, 2004, CEO Incentives and Firm Size, *Journal of Labor Economics* 22, 767-798.

Bebchuk, Lucian A, and Jesse M Fried, 2004a. *Pay without Performance: The Unfufilled Promise of Executive Compensation* (Harvard University Press, Cambridge, MA).

Bebchuk, Lucian A, and Jesse M Fried, 2004b, Stealth Compensation via Retirement Benefits, *Berkeley Business Law Journal* 1, 291-326.

Bebchuk, Lucian A, Yaniv Grinstein, and Urs Peyer, 2010, Lucky CEOs and Lucky Directors, *Journal of Finance* forthcoming.

Bebchuk, Lucian A., Jesse M. Fried, and David I. Walker, 2002, Managerial Power and Rent Extraction in the Design of Executive Compensation, *University of Chicago Law Review* 69, 751-846. http://papers.ssrn.com/abstract=316590

Bebchuk, Lucian A., and Holger Spamann, 2010, Regulating Bankers' Pay, *Georgetown Law Journal* 98, 247-287.

Bebchuk, Lucian Arye, and Jesse M. Fried, 2003, Executive Compensation as an Agency Problem, *Journal of Economic Perspectives* 17, 71+.

Bechmann, Ken L., and Johannes Raaballe, 2009, Bad Corporate Governance and Powerful CEOs in Banks: Poor Performance, Excessive Risk-taking, and a Misuse of Incentive-based Compensation.

Bhagat, Sanjai, and Brian Bolton, 2011, Bank Executive Compensation And Capital Requirements Reform.

Black, Fischer, and Myron S. Scholes, 1973, The Pricing of Options and Corporate Liabilities, *Journal of Political Economy* 81, 637-654.

Cheng, Ing-Haw, Harrison Hong, and Jose Scheinkman, 2009, Yesterday's Heroes: Compensation and Creative Risk-Taking.

Cimilluca, Dana, Deborah Ball, and Carrick Mollenkamp, 2011, "UBS Raises Tally on Losses – Details Emerge Behind $2.3 Billion 'Rogue' Trading; Small Problem Got Bigger," *Wall Street Journal* (September 19).

Conyon, Martin J., Nuno Fernandes, Miguel A. Ferreira, Pedro Matos, and Kevin J. Murphy, 2011, The Executive Compensation Controversy: A Transatlantic Analysis.

Cuomo, Andrew M., 2009, *No Rhyme or Reason: The 'Heads I Win, Tails You Lose' Bank Bonus Culture* (July 30)

Dash, Eric, and Jack Healy, 2009, "Citi Averts Clash Over Huge Bonus," *New York Times* (October 10).

DavisPolk, 2010, *Summary of the Dodd-Frank Wall Street Reform and Consumer Protection Act, Enacted into Law on July 21, 2010* (July 21)

DiNapoli, Thomas P., 2011, Wall Street Bonuses Declined in 2010, Press release: Office of the New York State Comptroller. http://osc.state.ny.us/press/releases/feb11/022311a.htm

Fahlenbrach, Rudiger, and Rene´ M. Stulz, 2011, Bank CEO Incentives and the Credit Crisis, *Journal of Financial Economics* 99, 11-26.

Farrell, Greg, and Julie MacIntosh, 2009, "Merrill paid bonuses as losses mounted ahead of sale to BofA," *Financial Times* (January 22).

Farrell, Gregg, and Francesco Guerra, 2008, "Top Executives at Morgan Stanley and Merrill forgo their bonuses," *Financial Times* (December 9).

Fitzpatrick, Dan, and Kara Scannell, 2009, "BofA Hit by Fine Over Merrill – Bank Pays SEC $33 Million in Bonus Dispute; Sallie Krawcheck Hired in Shake-Up," *Wall Street Journal* (August 4).

Fitzpatrick, Dan, Kara Scannell, and Chad Bray, 2010, "Rakoff Backs BofA Accord, Unhappily," *Wall Street Journal* (February 23).

French, Kennth R., Martin N. Baily, John Y. Campbell, John H. Cochrane, DOuglas W. Diamond, Darrell Duffie, Anil K. Kashyap, Frederic S. Mishkin, Raghuram G. Rajan, David S. Scharfstein, Robert J. Shiller, Hyun Song Shin, Matthe J. Slaughter, Jeremy C. Stein, and René M. Stulz, 2010. *The Squam Lake Report* (Princeton University Press).

Fried, Jesse M, 2008a, Hands-Off Options, *Vanderbilt Law Review* 61.

Fried, Jesse M, 2008b, Option Backdating and its Implications, *Washington & Lee Law Review* 65.

Fried, Jesse M., 1998, Reducing the Profitability of Corporate Insider Trading Through Pretrading Disclosure, *Southern California Law Review* 71, 303-392.

Frydman, Carola, and Dirk Jenter, 2010, CEO Compensation, *Annual Review of Financial Economics* 2, 75-102.

Gauthier-Villars, David, 2010, "Rogue French Trader Sentenced to 3 Years – Kerviel Is Ordered to Repay Societe Generale $6.7 Billion," *Wall Street Journal* (October 6).

Gauthier-Villars, David, and Carrick Mollenkamp, 2008, "The Loss Where No One Looked – How Low-Level Trader Cost Societe Generale," *Wall Street Journal* (January 28).

Gauthier-Villars, David, Carrick Mollenkamp, and Alistair MacDonald, 2008, "French Bank Rocked by Rogue Trader – Societe Generale Blames $7.2 Billion in Losses On a Quiet 31-Year-Old," *Wall Street Journal* (January 25).

Goldfarb, Zachary A., 2010, "Cheers at Goldman as housing market fell; Senate Panel Releases E-Mails; Executives Reveled In Bets Made Against market," *Washington Post* (April 25).

Goodman, Peter S., and Gretchen Morgenson, 2008, "By Saying Yes, WaMu Built Empire on Shaky Loans," *New York Times* (December 27).

Hall, Brian J., and Jeffrey B. Liebman, 1998, Are CEOs Really Paid Like Bureaucrats?, *Quarterly Journal of Economics* 113, 653-691.

Hall, Brian J., and Kevin J. Murphy, 2002, Stock Options for Undiversified Executives, *Journal of Accounting and Economics* 33, 3-42. http://papers.ssrn.com/abstract_id=252805

Harrington, Ben, 2009, "Credit Suisse to loan cash bonuses," *Sunday Telegraph* (January 18).

Hennessey, Keith, Douglas Holtz-Eakin, and Bill Thomas, 2011, *Financial Crisis Inquiry Commission: Dissenting Statement* (January)

Holzer, Jessica, 2011a, "Corporate News: Court Deals Blow to SEC, Activists," *Wall Street Journal* (July 23).

Holzer, Jessica, 2011b, "A 'Yes' In Say On Pay," *Wall Street Journal* (July 8).

Hulse, Carl, and David M. Herszenhorn, 2008, "Bailout Plan Is Set; House Braces for Tough Vote," *New York Times* (September 29).

Jensen, Michael C., and William H. Meckling, 1976, Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure, *Journal of Financial Economics* 3, 305-360. http://papers.ssrn.com/Abstract=94043

Jensen, Michael C., and Kevin J. Murphy, 1990a, CEO Incentives: It's Not How Much You Pay, But How, *Harvard Business Review* 68, 138-153. http://papers.ssrn.com/Abstract=146148

Jensen, Michael C., and Kevin J. Murphy, 1990b, Performance Pay and Top Management Incentives, *Journal of Political Economy* 98, 225-265. http://papers.ssrn.com/Abstract=94009

Lucian A. Bebchuk, Alma Cohen, and Holger Spamann, 2010, The Wages of Failure: Executive Compensation at Bear Stearns and Lehman 2000-2008, *Yale Journal on Regulation* 27, 257-282.

MacDonald, Alistair, and Leila Abboud, 2008, "The Fallout at Societe Generale: Banks' High-Tech Security Can't Keep Up With Traders," *Wall Street Journal* (January 30).

Murphy, Kevin J, 2010, Executive Pay Restrictions for TARP Recipients: An Assessment, Congressional Oversight Panel Hearing. http://ssrn.com/abstract=1698973

Murphy, Kevin J., 1999, Executive Compensation, in Orley Ashenfelter, and David Card, eds.: *Handbook of Labor Economics* (North Holland).

Murphy, Kevin J., 2009, Congressional Testimony on Compensation Structure and Systemic Risk.

Murphy, Kevin J., 2011a, Executive Compensation: Where we are, and how we got there, in George Constantinides, Milton Harris, and René Stulz, eds.: *Handbook of the Economics of Finance (forthcoming)*.

Murphy, Kevin J., 2011b, The Politics of Pay, in Jennifer Hill, and Randall S. Thomas, eds.: *The Research Handbook on Executive Pay* (Edgar Elgar).

Murphy, Kevin J., 2012, Executive Compensation: Where we are, and how we got there, in George Constantinides, Milton Harris, and René Stulz, eds.: *Handbook of the Economics of Finance (forthcoming)*.

Murphy, Kevin J., and Michael C Jensen, 2011, CEO Bonus Plans and How to Fix Them, Harvard Business School Working Paper; USC Marshall School Working Paper.

Murphy, Kevin J., and Michael C. Jensen, 2012, The Politics of CEO Pay, Harvard Business School Working Paper; USC Marshall School Working Paper.

Piskorski, Tomasz, Amit Seru, and Vikrant Vig, 2010, Securitization and Distressed Loan Renegotiation: Evidence from the Subprime Mortgage Crisis.

Rappaport, Liz, 2011, "Goldman Boosts Partners' Base Pay," *Wall Street Journal* (January 29).

Scannell, Kara, Liz Rappaport, and Jess Bravin, 2009, "Judge Tosses Out Bonus Deal – SEC Pact With BofA Over Merrill Is Slammed; New York Weighs Charges Against Lewis," *Wall Street Journal* (September 15).

Solomon, Deborah, and Damian Paletta, 2008, "U.S. Bailout Plan Calms Markets, But Struggle Looms Over Details," *Wall Street Journal* (September 20).

Story, Louise, 2009, "Pay Czar Doubts Cuts Will Make Bankers Leave," *New York Times* (October 23).

"UBS to change to the way it pays senior managers," 2008, *Associated Press Newswires* (November 17).

Wallison, Peter J., 2011, *Financial Crisis Inquiry Commission: Dissenting Statement* (January)

White, Ben, 2009, "What Red Ink? Wall St. Paid Hefty Bonuses," *New York Times* (January 29).

Yermack, David, 1995, Do Corporations Award CEO Stock Options Effectively?, *Journal of Financial Economics* 39, 237-269.