



Bank stability and managerial compensation

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ABSTRACT

We investigate the relationship between insolvency risk and executive compensation for BHCs over the 1992–2008 period. We employ CEO compensation sensitivity to risk (vega) and pay-share inequality between the CEO and other executives as measures of compensation and employ a system model to account for the endogeneity problem between vega and risk. Five main results are obtained. First, CEO compensation sensitivity to risk of BHCs has risen in response to deregulation to resemble those of the industrial firms. Second, higher vegas lead to greater bank instability. Third, the association between bank stability and managerial compensation is bi-directional; higher vegas induce greater risk and vice versa. Fourth, BHCs in the next to the largest-size group increase CEO vegas the most and have the strongest potential to create instability. Fifth, increased pay-share inequality has effects opposite to those of the increase in vega; greater pay-share inequality is associated with greater stability.

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1. Introduction

Stability of the banking sector is a major concern of bank regulators, deposit insurers, and public at large because of the potential contagion across the financial sector and the possible consequent meltdown of the financial system, clearly manifested in the financial crisis of 2007–2009. To mitigate excessive risk taking by banks, the banking industry is subjected to strict regulatory restrictions in terms of capital requirement, geographic and product diversification, asset-liability mix, and mergers and acquisitions. In particular, in the aftermath of the recent financial crisis, the structure of bank executive compensation has received a great deal of attention because of its perceived contribution to the banking turbulence.¹ It is, therefore, important to understand the relationship between firm instability and the executive compensation structure in the banking industry in general, and the incentive features of the top management compensation contracts, in particular, because top managers

play a crucial role in decisions concerning “tail risk” which may lead to bank failure and system turmoil.

In this context, [Bebchuk and Spamann \(2010\)](#) argue that stocks and options awarded to bank executives strongly tie their payoffs to bets on the value of bank capital, inducing them to take excessive risk and raising the probability of bank failure. In the same context, when proposing the guidelines designed to ensure that incentive compensation policies do not undermine the safety of banks, Federal Reserve Chairman Ben Bernanke stated that: “*Compensation practices at some banking organizations have led to misaligned incentives and excessive risk-taking, contributing to bank losses and financial instability (Federal Reserve press release, October 22, 2009).*”

Several studies have examined the association between managerial compensation and risk for industrial firms ([Agrawal and Mandelker, 1987](#); [Core and Guay, 1999](#)). However, results based on industrial firm data cannot be generalized to banks, at least as long as they are operating in a regulated environment, because they have fewer growth options, substantially greater leverage and coverage by the Federal Deposit Insurance Corporation (FDIC). These factors are likely to result in lesser sensitivity of management compensation to bank risk and, thus, lower riskiness of the bank, as detailed in the next section. In support of this view, [Houston and James \(1995\)](#) find that bank CEOs indeed receive a smaller percentage of their compensation in the form of options and

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¹ Historical legislations to limit bank risk include the Glass Steagall Act (1933) and the Bank Holding Company Act (1956), and others. Recent legislations include the American Recovery and Reinvestment Act (2009) and the Financial Overhaul Bill (2010), both of which contain restrictions on bank executive compensation.

stocks, than CEOs in other industries, curtailing the risk sensitivity of their pay. They conclude that the compensation structure in the banking industry does not promote risk taking.

Another strand of the literature, however, finds that since the deregulation of the banking industry in the 1980s, equity-based compensation (EBC), measured by the shares of stocks and options in bank executive compensation packages, has increased (Crawford et al., 1995; Hubbard and Palia, 1995) and that these greater shares have been associated with greater risk (Chen et al., 2006; Saunders et al., 1990). Moreover, the banking industry underwent another major phase of deregulation when the Gramm-Leach-Bliley Act (GLBA, 1999) provided banks with greater growth opportunities through entering into insurance and investment banking fields. Hagendorff and Vallascas (2011) employing data covering both the regulated and less regulated periods (1993–2007) find support for the view that increased incentive-based compensation leads banks to make riskier choices in their mergers and acquisition decisions. This finding is said to be driven by acquisitions benefiting from ‘too big to fail’ support provisions and those completed after deregulatory steps providing banks with greater risk-taking opportunities. Similarly, DeYoung et al. (forthcoming) employing the data for 1994–2006 report that increased EBC leads to greater riskiness of bank investment choices in the post-deregulation period, with this effect being stronger for the large banks. The conflicting findings in the literature on the relationship between executive compensation and risk, recent changes in the regulatory structure, greater potential for financial crisis due to greater interdependencies in domestic and international financial markets and pervasiveness of the recent financial crisis make further investigation of the subject imperative.

The purpose of the current study is to investigate the relationship between riskiness of banks and their executive compensation structure. Our contributions include the following. First, we explicitly estimate the risk incentive feature of managerial compensation, defined as vega of bank CEOs. Vega measures changes in the CEO wealth associated with one percentage point (.01) change in bank stock return volatility (the standard deviation of bank stock returns) and is positively related to EBC. This measure may also be labeled “risk-sensitivity of compensation”. By estimating vega, we are able to measure the extent of bank CEO wealth change in response to changes in the bank risk, and, therefore, to better estimate the impact of managerial compensation incentive on bank stability.

Second, we examine the effect of pay-inequality among the top executives on bank stability. This issue is important because although all top executives are responsible for major bank decisions, CEOs have a much greater influence on the process and their incentives play a crucial role in determining the final outcome. The impact of pay-share disparity within the top management team on firm risk has received little attention. Most previous studies have focused on the determinants of the pay-level inequality and pay structure differences between CEOs and the other executives in the top management group, rather than their pay-share and its effect on risk (Aggarwal and Samwick, 2003; Ang et al., 2002). An exception is Bebchuk et al. (2007), who investigate the relationship between the relative importance of the CEO pay in the top management team and the performance of industrial firms. They find that greater pay fractions of CEOs among the top executives are associated with a lower firm-specific variability of stock returns. In the same context, Ang et al. (2002) find that there does exist a large pay-inequality between CEOs and the rest of the executives in banks, highlighting the importance of understanding the effect of the pay-inequality among top executives on bank stability. The pay share analysis is applied to the banking industry here for the first time and sheds new light on the relationship between pay structure and risk.

Third, we compare managerial compensation between different sized BHCs. Large BHCs are of particular interest because their failures may have a disastrous impact on the financial industry and the economy. As the “too-big-to-fail” (TBTF) status of a BHC implies greater government support and insurance coverage when it is in distress, depositors of these banks have little incentive to monitor them while their stockholders have greater incentives to encourage risk-taking by the management (O’Hara and Shaw, 1990). Therefore, it is important to examine whether managers in the largest BHCs are awarded compensation packages conducive to greater risk-taking incentives.

Fourth, we examine the impact of managerial compensation on the bank’s insolvency risk. Following Laeven and Levine (2009), we use Z-Score as the primary measure for the overall bank stability. Compared to the market-based risk measures, e.g., the standard deviation of the stock returns or the market beta, Z-Score directly measures the bank’s distance from insolvency (probability of default), which is the primary concern of depositors and deposit insurers. Moreover, we recognize the endogeneity problem between vega and risk and employ a simultaneous equation model to address it.

We obtain several important results. First, in the banking industry, the CEO wealth sensitivity to stock return volatility (vega) increased beginning in the late 1990s, when banks were allowed to enter into investment banking and insurance activities, fell in 2003, when these new opportunities were possibly exhausted, or vegas were possibly tempered by the bank boards (DeYoung et al., forthcoming), and rose again during the crisis perhaps because banking stocks became more volatile (Fig. 2). In contrast to prior studies (e.g., Houston and James, 1995), but consistent with DeYoung et al. (forthcoming), we find that vegas of bank CEOs are comparable in magnitude to those of their counterparts in industrial firms, indicating that the risk taking incentive features of management compensation structure in banking are similar to those of the latter firms, in spite of its regulated character.

Second, we find a negative and significant association between the CEO vega values and bank stability, suggesting that increased sensitivity of bank CEO compensation to stock return volatility, or greater risk-sensitivity of pay, can be destabilizing. Third, the association between vega and the volatility of return on assets (Std (ROA)) is positive and significant, indicating that greater vega values of the bank CEOs are associated with greater bank risk levels. Moreover, the association between vega and the fraction of noninterest income in total income is also positive and significant, suggesting that greater sensitivity of the bank CEO compensations to stock return volatility (higher vegas) are associated with larger ratios of off balance sheet activity revenues to total revenues. This is a channel through which bank executives increase bank risk with increased vega serving as the driving force. Overall, these findings suggest that higher sensitivity of CEO wealth to stock return volatility does induce managers to adopt riskier policy strategies, leading to higher return volatility and reduced bank stability.

Fourth, bank stability is associated positively with CEO pay inequality. Specifically, a larger fraction of CEO pay in the top executive team is associated with a lower noninterest income ratio, lower volatility of return on assets (Std (ROA)) and higher bank stability, as measured by the Z-Score. Our results suggest that the CEO pay sensitivity level and the CEO pay-share in the top management team have opposite impacts on managerial risk taking incentives. As vega strengthens so does bank risk taking, while when the CEO pay-share rises, CEOs become more risk averse and more powerful, and, thus, implement less risky investment policies, resulting in greater bank stability.

Fifth, using a simultaneous equation framework, we find that the association between managerial compensation sensitivity to risk (vega) and bank stability is bidirectional in nature; higher

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