CEO compensation and risk-taking at financial firms: Evidence from U.S. federal loan assistance☆

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We examine whether risk-taking among the largest financial firms in the U.S. is related to CEO equity incentives before the 2008 financial crisis. Using data on U.S. Federal Reserve emergency loans provided to these firms, we find that the amount of emergency loans and total days the loans are outstanding are increasing in pre-crisis CEO risk-taking incentives – “vega”. Our results are robust to accounting for endogeneity in CEO equity incentives and selection of financial firms into emergency loan programs. We also rule out the possibility that our results are driven by a bank’s funding base, bank complexity, CEO overconfidence, or matching of CEOs to select banks. We conclude that equity incentives (vega) embedded in CEO compensation contracts were positively associated with risk-taking in financial firms which resulted in potential solvency problems. We also find some evidence, although somewhat weaker, that higher incentive alignment (“delta”) mitigated such problems in those financial firms.

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1. Introduction

Executive compensation at financial firms has received considerable regulatory scrutiny based on a view that compensation contracts incentivized managers at financial firms to undertake excessive risks during the financial crisis of 2008. The Dodd-
Frank Wall Street Reform and Consumer Protection Act of 2010 called for specific proposals limiting incentive compensation for executive officers of financial firms with assets greater than $1 billion.\(^2\)

Equity-based compensation, especially stock options, can mitigate agency problems by inducing risk-averse managers to undertake value-enhancing risky investments (see Haugen and Senbet, 1981, and Smith and Stulz, 1985). There is empirical evidence that the sensitivity of firm-related equity wealth to stock return volatility encourages CEOs to implement riskier investment and financial policies (see, for example, Coles et al., 2006 and Low, 2009).\(^3\) Chen et al. (2006) show that following deregulation of the 1990s, banks have increasingly employed stock option-based compensation, and as a result, the structure of executive compensation induces risk-taking. In fact, some scholars (e.g., Bebchuk and Spamann, 2010) have expressed the concern that executive compensation contracts can intensify risk-taking at financial firms due to implicit risk-shifting incentives resulting from high leverage.

We analyze the role of equity incentives embedded in CEO compensation contracts (i.e., CEO pay-performance sensitivity ("Delta") and risk-taking incentives ("Vega")) in determining bank performance. We use a novel dataset of emergency loans provided by the Federal Reserve during the financial crisis, and measure bank performance by the extent to which a bank received external government support, specifically the amount of U.S. Federal Reserve emergency loan assistance received by a financial firm during the financial crisis. We contribute to this literature by providing an alternate informative variable to measure bank performance especially during crisis times. We argue that bank performance during a crisis depends on a first order basis on whether or not a financial institution will survive the crisis, which in turn depends on the extent of federal financial assistance received by the bank. We provide an analysis of the information content of our variable relative to that of traditional measures of bank performance in Section 4.8.

Our study also complements existing literature on federal assistance to financial firms in terms of equity financing (e.g., Troubled Asset Relief Program (TARP) as analyzed in Bayazitova and Shivdasani (2012) – see Section 4.10 for details) by presenting evidence based on loan (i.e., non-TARP) assistance to financial firms. One potential shortcoming of analyzing TARP is that a number of healthy firms were included in TARP because regulators were concerned that inclusion of weak firms alone could send an adverse signal to market participants about firms selected for TARP assistance. In contrast, there were no such concerns with the loan programs we study here since the identity of recipients was revealed well after the financial crisis had subsided.

We identify sixty-nine large financial institutions (for which we also have compensation data in Execucomp) that received emergency loan assistance from the U.S. government during 2007–2010 through a series of loan programs (see Panel A of Table 1 for details). Data on federal emergency loans were first made publicly available on December 1, 2010. Subsequently, on January 9, 2012, some additional data including details on the Discount Window program were made available to Bloomberg pursuant to its request under the Freedom of Information Act (see Section 3 for details).

We find evidence that the federal loan assistance is strongly related to pre-crisis CEO vega, after controlling for the characteristics of financial firms (firm size, leverage, market-to-book ratio of assets, and pre-crisis stock returns), other attributes of CEO compensation (e.g., CEO Delta), and including fixed effects for the type and timing of Federal program. The associated economic effects are non-trivial. For example, when we consider all programs together, a 10% increase in pre-crisis CEO vega is associated with a 1.67% increase in federal loan assistance.

The above finding suggests that equity incentives embedded in CEO compensation contracts are strongly associated with bank performance. This brings up a related question. What was the source of the poor performance of banks that resulted in them requiring governmental loan assistance?

We start with the explanation that bank CEO risk-taking incentives had an adverse impact on bank solvency. Extant literature has largely argued that compensation contracts create incentives for CEOs to take risks. For example, equity incentives could lead bank CEOs into making riskier acquisitions (see Hagendorff and Vallascas, 2011) and to undertake riskier investment choices (see DeYoung et al., 2013 and Cheng et al., 2015). While there is general agreement in the literature that compensation contracts create incentives for CEOs to take risks (as described above), there is no consensus on whether such risk-taking manifests itself in bank performance. On one hand, Bai and Elyasiani (2013) find that higher CEO vegas lead to greater bank instability (measured by Z-score), whereas on the other hand other studies such as Fahlenbrach and Stulz (2011) and Kolasinski and Yang (2017) find an insignificant relation between pre-crisis CEO vegas and crisis-period bank performance measures, such as buy and hold returns and return on assets, and risk exposures.

This lack of consensus is also closely related to the debate in the literature on liquidity versus solvency. One view is that banks did not take on a higher level of risk but simply faced a liquidity shock, and responded by using the emergency loan assistance facilities (which were specifically designed and set up to solve such liquidity problems). Proponents of the liquidity view (e.g., Fahlenbrach and Stulz, 2011) would argue that the observed positive relation between pre-crisis CEO vega and emergency loan assistance was a result of the liquidity shock that banks were exposed to during the financial crisis rather than solvency problems stemming from risk-enhancing activities. An alternative view is that firms took on a higher level of risk which resulted in potential solvency problems which left these firms with no other option but to use the emergency financial assistance provided by the Federal Reserve. Proponents of the solvency view would suggest that if liquidity-based explanations and other reasons that are


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