Public bailouts, executive compensation and retention: A structural analysis

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ABSTRACT

We study the effects of institutional constraints on incentive contracts by estimating a structural model of executive compensation and retention during financial crises. We use the model to analyze the effects of a cap on executive compensation for firms accepting public bailouts. Policy simulations include the following results. Estimated probabilities of bailout acceptance are low, suggesting that the costs to firms of accepting future constraints on executive pay are large. The policy reduces CEO retention rates, raises total compensation and firm profit, and distorts compensation contracts, yielding base pay (a slope) that is inefficiently low (high).

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1. Introduction

The design of executive compensation contracts is typically studied in idealized settings that lack institutional constraints such as tax law and other government regulations affecting pay. Although the insights from such work provide a useful benchmark, in reality contracts are designed in environments impacted by institutional constraints that change over time. In this study we offer a flexible framework for analyzing such constraints. In particular, we develop a structural model of CEO compensation, hiring and retention during financial crises. We use the model to analyze a provision of the American Recovery and Reinvestment Act of 2009 (ARRA) that caps executive compensation at $500,000 per year (with the exception of restricted stock grants) for firms accepting public bailout funds under the Troubled Asset Relief Program (TARP). The model treats as endogenous executive hiring and retention decisions, contract design, a firm's decision about whether to accept public bailout assistance, and the firm's survival or closure.

First, we construct a two-period model describing a "baseline regime" in which no policy exists. A single firm hires a risk-averse CEO at the start of each period, with an option to retain a high-performing first-period CEO in the second period. A financial crisis hits at the start of the second period, imposing unavoidable losses on the firm. Performance is expected to grow over time for retained CEOs, due to acquisition of firm-specific human capital. Motivated by the compensation contracts set by the firm,

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CEOs exert effort each period. They also have time-invariant ability and stochastic components of performance that are both persistent and idiosyncratic. The firm closes at the end of the second period if the sum of profits over both periods is negative.

Second, we extend the model to describe a "policy regime" in which the government responds to the financial crisis by offering the firm a public bailout payment in exchange for incurring inefficient future contracts resulting from a cap on executive base pay. Compared to the baseline regime, in the policy regime the firm's second-period discrete choice set expands given that there are two binary decisions (retain the CEO or hire a new one, accept or reject the bailout). As in the baseline regime the firm chooses optimal contracts at the start of each period, though if the bailout is taken (and the cap on base pay binds) second-period contracts are distorted.

Third, we estimate the parameters of the model's baseline regime via the method of simulated moments, using data from Computat and ExecuComp from both the pre-crisis (2002–2006) and post-crisis (2007–2009) periods.

Fourth, given the parameter estimates from the baseline regime, and given two policy parameters (the bailout amount and the cap) that we calibrate, we simulate outcomes for pay contracts, CEO hiring and retention, bailout acceptance or rejection, and firm survival or closure. We then compare the simulated outcomes from the baseline and policy regimes.

A broad objective of our analysis is to deepen our understanding of the effects of regulatory constraints (in general) on both the contract space and executive turnover. The framework we present is flexible and could easily be adapted to analyze other restrictions on the contract space, so we believe that the value of the contribution extends beyond the application to the ARRA.[1] However, the ARRA cap is interesting and worthy of study in its own right. One reason is that the cap applies to a number of firms and institutions that have significant market positions and influence in their respective industries (e.g. AIG, Fannie Mae and Freddie Mac, and GM). Table 1 shows that 706 banks and financial firms received assistance (ranging from $0.3 million to $25 billion for each firm, with a total amount of about $205 billion) from the Capital Purchase Program (CPP) under the TARP during 2008 and 2009. Table 1 also reveals that 71% of recipient firms had at least one top executive subjected to the cap.

Critics of the policy have argued that the cap impedes firms' efforts to attract and retain top talent.[2] Although the logic for this claim would make sense if the cap were on total compensation, since the cap excludes restricted stock grants its implications for CEO retention are not obvious. The problem for the firm is not that it is impossible to meet the participation constraint of a high-quality CEO but rather that the firm may have to meet the constraint in a suboptimal fashion.[3] Our approach allows us to evaluate this critique of the policy by estimating the effect of the policy on retention, explicitly accounting for behavioral responses.

We conduct policy simulations and use a graphical approach to summarize the results, which quantify the extent to which the outcomes of interest vary with the bailout amount and the level of the cap. Our main results are as follows. First, the relatively low estimated probability of bailout acceptance (around 0.12) suggests that the cost to the firm of accepting constraints on future executive pay contracts is substantial. Second, our results are consistent with the popular criticism that the policy hinders firms' efforts to retain CEOs; simulated retention rates are higher in the bailout case than in the baseline regime (10 to 13%, versus 8%). We find that the probability the CEO leaves is increasing in both the bailout amount and the cap. For low bailout payments the probability that the firm declines the bailout and retains the first-period CEO is quite high.

Third, the bailout policy distorts the structure of compensation contracts. The contract slope is considerably steeper when the bailout is accepted than when it is refused. This result is not obvious, since for some configurations of parameters the model could deliver the opposite result (i.e. the contract slope flattens when the cap is imposed, so that base pay and the slope are complements). We find that the empirically relevant case is that base pay and the contract slope are *substitutes*, which is an interesting data-driven result that highlights an advantage of structural estimation (which yields a unique set of parameter estimates for a given sample) over calibration.[4] Given that executive effort is directly proportional to the contract slope in our model, these results concerning the contract slope also reveal the effect of bailout receipt on CEO effort. Fourth, second-period executive performance tends to increase in the bailout amount when the bailout is rejected (due to a composition effect) and decrease in the bailout amount when the bailout is accepted. Finally, the maximized profit function is increasing in both the bailout magnitude and the cap because the firm's choice set expands with the introduction of the policy.

Our work contributes to a literature that develops structural models of firm behavior, which has been described by Strebulaev and Whited (2012) as a growth area in empirical finance.[5] To our knowledge, this is the first structural analysis of the relationship between executive compensation and turnover in the context of government restrictions on the design of incentive contracts.[6] We

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[1] Examples of other constraints on the contract space that have been investigated in prior research include tax deductibility (or not) to the company of executive compensation above a certain level, and restrictions on board independence or size.

[2] For example, AIG claimed "We cannot attract and retain the best and brightest talent to lead and staff the AIG businesses, which are now being operated principally on behalf of the American taxpayers — if employees believe their compensation is subject to continued and arbitrary adjustment by the U.S. Treasury." More recently, GM complained about the pay restrictions in their 2012 proxy statement and in a meeting with the Treasury Secretary that TARP pay restrictions restrict GM from paying its executives sufficiently.

[3] As noted by Bebchuck, "While the new restrictions seem to have been motivated by a desire to limit total pay, it is the pay structure that they tightly regulate." See Bebchuk in the Wall Street Journal: "Congress gets punitive on executive pay", February 17, 2009.

[4] Calibration will not yield a unique set of parameter values that determine the sign of this effect. Some calibrations might yield a result of substitutes whereas other valid calibrations might yield complements. Our results – identified by variation across firms in their optimal choices and outcomes in a single data sample – reveal that the empirically relevant case is *substitutes*.

[5] Examples include Hennessy and Whited (2005, 2007), Strebulaev (2007), Riddick and Whited (2009), and Coles, Lemmon, and Meschke (2012).

[6] Taylor (2010) estimates a structural model of CEO compensation and turnover but does not consider public bailouts or the effect on turnover of restrictions on CEO pay. Gayle, Golan, and Miller (2011) estimate a structural equilibrium model of the market for top executives. The model incorporates moral hazard, human capital, career concerns, bargaining, and market competition. One particularly attractive feature of that analysis is its equilibrium approach that takes into account market competition. The focus of that analysis is not on institutional constraints on executive pay contracts.