Cannot Afford to Let Go:
CEO Risk-taking Incentives When their Predecessors are Firm Creditors

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Abstract

We show evidence of a legacy effect on executive pay when previous CEOs act as unsecured creditors to firms after they retire. We find a negative association between the pension claims of retiring CEOs and the risk-taking incentives imbedded in the pay of their successors. Further, CEOs with higher pension claims are more likely to remain on the board post-retirement. Since these effects are driven by the unfunded and unsecured components of CEO pensions, we argue that retired CEOs with high inside debt act to manage their credit risk exposures. An instrumental variable analysis supports a causal interpretation of our results. Our findings suggest that horizon problems between outgoing and incoming managers may be more enduring than previously thought.

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JEL classifications: G34, G32, M41
EFM classification : 150, 190.

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1. Introduction

When CEOs retire, most become creditors to the firm they previously served. After retiring, the majority of CEOs hold pension claims, which unlike equity and stock option plans, are not settled up when CEOs retire, but are held throughout retirement (Wei and Yermack 2011).[1] Since a large proportion of these CEO pensions are unfunded and unsecured claims on the cash flows of their previous employers, retired CEOs have a continued financial interest in the future ability of a firm to service their pension claims.

In this paper, we study whether the pension claims of retiring CEOs affect the ways in which their successors are remunerated. Specifically, we examine if retiring CEOs attempt to restrict the contractual risk-taking incentives of their successors to protect the value of their pension claims. Our evidence is consistent with this prediction. We show that current executive pay arrangements affect firm outcomes beyond a manager's tenure and in a manner that could potentially hurt shareholder returns, since it lowers the incentive alignment of the future CEO with shareholder interests.

This study makes use of an emerging stream of the executive compensation literature that focuses on debt-like arrangements of executive pay (also known as inside debt) as part of a CEO pay contract (Choy et al. 2014; Anantharaman et al. 2014; Cassell et al. 2012; Bennett et al. 2015). CEO pensions and other types of deferred compensation are an important part of a CEO's inside debt holdings. CEO pension plans promise executives a fixed payoff after retirement, so long as the firm remains solvent. Theory posits that this type of pay arrangements help curb

[1] Dahiya and Yermack (2008) show that fewer than 20% of retiring S&P 500 executives will continue to hold unvested options with the rest of the options being either forfeited or vesting immediately. For those executives holding options into their retirements, most will expire in less than a three year-period.

excessive CEO risk-taking, since their payoff is dependent on the solvency of the firm (Edmans and Liu 2011). In other words, the CEO becomes a creditor to the firm and hence inside debt helps align the interests of shareholders and debtholders. Consistent with this, Wei and Yermack (2011) and Bolton et al. (2010) find a positive (negative) corporate bond (stock) price reaction upon the announcement of high inside debt incentives to their CEOs, which implies a transfer of wealth from shareholders to bondholders.

A number of studies find that debt-like forms of CEO compensation are linked to lower risk taking. Cassel et al. (2012) show a negative relationship between CEO inside debt and how risky firm investments and financial policies are. Belkhir and Boubaker (2013) show that CEO inside debt is linked to more hedging by banks. In the same spirit, Anantharaman et al. (2014) show that higher CEO inside debt leads to fewer debt covenants and lower cost of debt, while Chi et al. (2017) report a negative association between inside debt holdings and corporate tax sheltering, which is linked with future high cash flow volatility. Choy et al. (2014) show that when firms freeze defined benefit pension schemes, various indicators of firm risk increase in the following years.

The aforementioned findings are consistent with the premise that inside debt holdings of *current* CEOs affect firm policies and market indicators of risk during their tenure. We bring a new perspective to this literature. By turning CEOs into long-term bondholders exposed to losses beyond their tenure, CEOs with inside debt holdings have a financial interest in future firm risk policies after they retire. We argue that inside debt holdings should therefore leave a legacy effect and thereby affect firm outcomes beyond the tenure of a CEO.

It is plausible that the expected values of CEO pension claims may not be the only consideration by CEOs that could impact on firm policies even after a CEO exit. Fama (1980)

argues that managerial labor market concerns can mitigate agency problems and hence conjectures that past firm performance can be positively associated with future wage offers in the external managerial labor market. Consistent with this, Brickley et al. (1999) show that a number of retired CEOs remain on the board and that the probability of board appointments for retired CEOs is positively related to firm performance during their tenure as CEO. In the same spirit, Fahlenbrach et al. (2011) show that firms are more likely to retain successful and powerful retired CEOs on their board, and Harford and Schonlau (2013) show that substantial acquisition experience ensures a higher numbers of subsequent board seats for the acquiring and target CEOs. Finally, Cassell et al. (2013) show that when CEOs retain a position with the firm after retirement, they are less likely to have engaged in opportunistic forecasting behavior before retirement.

Our study also comes against the background of studies on the so-called management horizon problems. These studies report evidence of opportunistic behavior of CEOs in their final years in office—where the full implications of opportunistic CEOs for firms would partly materialize after a CEO has retired. For instance, Cassell et al. (2013) show that retiring CEOs issue optimistically biased earnings forecasts relative to previous years. Similarly, Ali and Zhang (2015) find evidence of greater earnings overstatement in a CEOs' final year relative to earnings overstatement during a CEO's earlier years of service.

Our main findings are as follows. We show that retiring CEOs with higher inside debt holdings are succeeded by CEOs awarded with lower risk-taking incentives than CEOs with lower inside debt. Further, CEOs with higher levels of inside debt are more likely to be appointed to the board of directors following their retirement.

Compensation contracts, including pension arrangements, are endogenously determined in a process that matches manager and firm preferences. Therefore, pinpointing causality is extremely challenging and identifying sources of exogenous variation that correlate with one but not with other components in this process are difficult to identify. To some extent, our findings should therefore mainly be interpreted as correlations. However, we believe our research questions are sufficiently interesting to warrant investigation despite these concerns. Additionally, we offer a range of tests that make use of heterogeneity in CEO pension claims that jointly let us believe that the correlations between CEO risk-taking incentives and the long-term credit risks of their predecessors may indeed be causal.

First, we show that our results are driven by retiring CEOs holding supplemental executive retirement plans (SERPs). SERPs are unfunded and unsecured payment plans, meaning that only this component of inside debt gives CEOs an economic interest in the risk-taking policies of the firm after their retirement. Other forms of inside debt which are either partly guaranteed ('rank and file' [RAF] pensions) or settled up shortly after retirement ('other deferred compensation' [ODC]) appear to have no detectable effect on the incentive alignment of the incoming CEO. Second, we demonstrate that when the SERP plan allows CEOs to make withdrawals from their SERPs (and thus opt to reduce their credit risk), we no longer find an association between CEO risk-taking incentives and the inside debt holdings of their predecessors.

Third, we exploit exogenous state-level variation in divorce rates and house returns to capture a CEO's incentives to defer income *into the future* (via inside debt) but we have no theoretical reasons to believe that they correlate with a CEO's risk-taking incentives (vega) *today*. Pension claims are commonly considered marital property if they accrued during a

marriage and any increases in their value would thus be subject to division in the case of divorce. We therefore argue that a higher prevalence of divorces in a state where a firm is headquartered heuristically shapes a CEO's perceived likelihood of separation – and decreases the expected benefits of deferring income today in favor of higher future pension claims. The rationale behind the use of house returns as an instrument is rather straightforward. CEOs may choose to invest in real assets rather than defer their compensation if the former generates higher return. Our results are robust to this instrumental variable approach.

Fourth, we identify circumstances where CEOs are more powerful and should therefore have a stronger say on the pay arrangements for their successors. We find that the effect of SERP claims on vega is stronger for longer-tenured CEOs or when the CEO sits onthe nominating committee. In other words, our findings indicate that as the power of the retiring CEO increases the reductions in the contractual risk-taking incentives of the incoming CEOs become more pronounced.

Our study makes a number of contributions to the corporate governance and executive pay literature. Extant studies on managerial compensation mainly focus on how specific firm and managerial characteristics can shape the levels and structure of executive pay (Core et al. 1999; Himmelberg et al. 1999; Demsetz and Lehn 1985; Core and Guay 1999; Gabaix and Landier 2008; Albuquerque et al. 2013; Graham et al. 2012).[2] We add to this literature by showing that components of a retiring CEO's pay can also impact on the pay arrangements of their successor and thus have a legacy effect on the firm.

[2] Among others, board and ownership characteristics (Core et al. 1999; Himmelberg et al. 1999), firm size, industry membership and performance (Demsetz and Lehn 1985; Core and Guay 1999; Gabaix and Landier 2008), managerial ability, talent and style (Albuquerque et al. 2013; Graham et al. 2012; Rose and Shepard 1997) are important determinants of executive pay contract agreements.

Second, we also contribute to research on manager horizon problems (Cassel et al., 2013; Ali and Zhang, 2015). In the same spirit as our study, Dechow and Sloan (1991) and Kalyta (2009) link horizon problems to the compensation of retiring CEOs. Dechow and Sloan (1991) show that retiring CEOs are prone to underspending on research and development if they have fewer equity-based pay incentives as part of their contract. Kalyta (2009) reports a significant increase in earnings management in cases where CEOs are close to retirement and the expected value of their pension is dependent on company performance. Kalyta (2009) also shows abnormal negative stock returns for these firms post CEO retirement. We thus use the management horizon literature as a point of departure and offer evidence of a new type of legacy effect of retiring CEOs on firms. While the horizon problem literature makes the important point that pay effects of previous CEOs reverberate into the tenure of their successors, we provide evidence consistent with a different type of CEO pay legacy effect. We show evidence consistent with direct interference in the pay arrangements of successor CEOs (where the horizon problem literatures focuses on the tail end of the effects of CEO decisions before retirement). By detecting an effect on the pay of successors, our results also suggest that the horizon problem may be economically larger and more persistent than previously thought.

The study is structured as follows: In section 2 we describe the data collection process and discuss some descriptive statistics. Section 3 presents the main findings and section 4 reports a number of robustness tests and further analysis. Section 5 concludes.

2. Data and Summary Statistics

2.1 CEO Retirements

We use Execucomp to identify 827 CEO departures from 2007 to 2011. We exclude CEO departures which we classify as forced, because unplanned CEO departures do not give the leaving CEO sufficient time to have material input into succession planning or the pay arrangements of their successor (Gao et al. 2015).

Following Parrino et al. (2003) and Naveen (2006), we categorize departures as (voluntary) retirements if CEOs are older than 60 years and the press announcement mentions retirement and not illness, death or acceptance of another position. We therefore examine the press coverage of each CEO departure and exclude departures whenever the press coverage mentions that the CEO was *forced* to resign or retire. Moreover, following Gao et al. (2015), we also classify the departures of CEOs who are younger than 60 as voluntary provided the press announcement mentions retirement as the reason for the departure and the announcement takes place at least six months before the departure date. Overall, we identify 438 cases of CEO retirements. We then link the resulting data to CRSP and Compustat for market and accounting data, respectively.

2.2 Variable Measurement

Inside Debt: We collect information on the debt-like and other forms of compensation for firms with voluntary turnover from ExecuComp. As our main dependent variable, we define *Inside Debt* of the retiring CEOs as the natural logarithm of the present value of benefits accrued under pension and ODC plans at the year of their retirement. Following a 2006 SEC regulation, it has been mandatory for companies to disclose information on the pension claims of its executives (Yermack 2006).

To identify the part of inside debt holdings that is unsecured and unfunded (and, hence, makes the wealth of the retiring CEO sensitive to firm risk under her successor), we hand-collect the balances of various pension plans from proxy statements. This allows us to split the value of CEO inside debt holdings at the point of retirement into three components, namely the present value of benefits accrued under RAF, SERP and ODC plans. *RAF* is a tax-qualified pension plan that is secured to up to $53,000 (in 2015). *SERP* is an unfunded and unsecured payment plan. *ODC* plans claims can be invested in equity and withdrawn flexibly before retirement, thus making them a less debt-like form of inside debt (Anantharaman et al. 2014).

All the components related to inside debt holdings have been scaled by cash compensation (salary plus bonus).

CEO Risk-taking Incentives: The main independent variable is a measure of the risk-related incentive alignment between CEOs and shareholders. Following Fahlenbrach and Stulz (2011), we compute the *vega* of options and stocks grants at the end of the first full year of service. Vega measures the sensitivity of CEO wealth to risk. Vega is the change in CEO wealth due to a one-percentage point change in stock return volatility (Coles et al. 2006; Core and Guay 2002). We hypothesize that CEOs who become larger firm creditors upon retirement will dampen the risk-taking activities of their successors. Therefore, the successors of creditor-CEOs will have lower risk-related dollar incentives. We thus expect a negative relation between the retired CEO's inside debt and the risk-taking dollar incentives (vega) of their successor.

CEO After Retirement: We measure whether the CEO remains in the firm after retirement by comparing the time at which he/she left office and the time at which he/she left the company. If the retiring CEO stays more than 3 months after the new CEO takes office, the dichotomic variable *after-retirement* takes the value of one.

Control Variables: Following prior literature, we control for a number of CEO and firm characteristics in our regressions, which could impact on the pay arrangements of the new CEO. We control for the number of listed company boards that a CEO has been appointed to (*BoardExp*), the number of CEO qualifications (*Qualif*). *FinancExp* is a dummy variable which is one if the CEO has financial experience (and zero otherwise). *FirmExp* is the number of firms the CEO has been employed by. *ExecExp* is a dummy variable, set equal to one if the CEO has been a CEO, CFO or Vice President prior to his current employment (and zero otherwise). *IvyLeague* is equal to one if the CEO has graduated from Brown, Columbia, Cornell, Dartmouth, Harvard, Princeton, Pennsylvania or Yale (and zero otherwise). *Sales* is the logarithm of total sales. *MTB* is the market value divided by the book value of assets. R&D is research and development expenses to total assets. *Leverage* is the value of long term debt plus debt from current liabilities, divided by total assets. Equity Volatility is the standard deviation of monthly returns. *Boardsize* is the number of directors on a board. In our robustness check we also control for the inside debt of the incoming CEO.

Summary Statistics: Table 1, panel A provides summary statistics for the dependent and control variables. The average age of the retiring CEO is almost 61 years, while the average age of the incoming CEO is 52 years. The incoming CEO's wealth will, on average, change by $111,000 at a 1-percentage point increase in stock volatility. The average pension claim of a CEO at the time of retirement is over $10 million of which $ 6 mil are unfunded. We also observe that the incoming CEO has, on average, experience from a larger number of firms while they are less likely to be a graduate of an Ivy League University.

Insert Table 1 about here

3. Empirical Findings

3.1 CEO Inside Debt and the Risk-taking Incentives of Successor CEOs

If retiring CEOs are concerned about the value of their pension claims and this gives rise to a horizon problem, we expect to find the following. The inside debt holdings of retired CEOs (in *t*-1) should be negatively related to the contractual risk-taking incentives (*vega*) of their successors (at time *t*):

$$vega_i = \alpha_0 + \beta_1 inside\ debt_i^{predecessor} + \beta_2 \mathbf{X} + \sum_{t=2007}^{2011} \gamma_t year_t + \sum_{d=1}^{N} \phi_t industry_d + \varepsilon_i \quad (1)$$

We run Regression (1) using a cross-section of CEO turnover events while controlling for CEO and firm characteristics (in **X**) which can affect *vega*. Table 2 reports the results. Our main finding is that retired CEOs with higher inside debt are indeed associated with successors with lower risk-taking incentives compared to CEOs with lower inside debt.

Table 2 also shows that characteristics of the incumbent CEO impact on the received risk-taking incentives. In particular, CEOs with financial expertise receive higher risk-taking incentives as part of their executive pay contracts, while Ivy League graduates receive lower risk-taking incentives. Moreover, larger firms offer risk-taking incentives to the incumbent CEO. The table also demonstrates that new CEOs receive lower risk-related dollar incentives as firm risk and growth opportunities increase.

Insert Table 2 about here

Inside debt has different components that vary in terms of the credit risk that CEOs are exposed to during their retirement. CEO inside debt consists of 'rank and file' RAF plans,

unsecured SERPs, and other deferred compensation (ODC). Table 3 shows that the inside debt of retiring CEOs has a negative impact on the awarded risk-taking incentives of their successor only where these pension claims come from SERP accounts.

Showing that our results are driven by SERP accounts suggests that our findings are indeed driven by credit risk considerations of retired managers. SERP accounts are the only component of a CEO's pension claims that are completely unfunded and unsecured. Out of a CEO's inside debt holdings, SERP claims therefore most resemble unsecured debt-like claims on a firm's cash flows. RAF and ODC plans are largely guaranteed or settled up shortly after retirement, exposing retiring CEOs to little or no credit risk and give retiring CEOs fewer incentives to lower the risk-taking incentives of their successors.

Insert Table 3 about here

3.2 Identification Strategy

Compensation contracts, including pension arrangements, are endogenously determined in negotiations that seek to reconcile firm and manager preferences. Cronqvist et al. (2012) and Graham et al. (2013) show evidence of CEO-firm matching based on risk attitudes. In our empirical set-up, it is quite likely that risk-averse managers (who may negotiate a lower *vega* when joining) self-select into less risky firms where predecessors CEOs have longer tenures (and more valuable pension claims as a result). Generally, omitted variables correlating both with the inside debt holdings of retiring CEOs and the *vega* of their successors could lead us to find a spurious relation between the two variables.

We address potential endogeneity concerns by using an identification strategy that uses two instrumental variables that correlate with a CEO's incentives to defer pay into the future (via

inside debt) but do not plausibly correlate with a CEOs risk-taking incentives (*vega*) today. The first instrument exploits variation in state-level divorce rates to capture a CEO's preference for inside debt over cash compensation[3]. Inspired by Masaint and Detrain (2017), we utilize the following argument to justify our choice. Higher divorce rates decrease the expected benefits of deferring income today in favor of higher future pension claims. Pension claims are commonly considered marital property if they accrue during a marriage and any increase in their value is subject to division in the case of divorce. We therefore argue that a higher prevalence of divorces in a state where a firm is headquartered heuristically shapes a CEO's perceived likelihood of separation from their spouse. Higher divorce rates make it less likely that a CEO will negotiate a larger inside debt claim due to the long-term nature and illiquidity of these claims relative to other types of compensation.

The second instrument is house returns and its rationale for inclusion is that higher house prices raise the opportunity costs of deferring pay via inside debt[4]. Higher house price increases will incentivize CEOs to bring forward their present compensation (perhaps to purchase real estate for private or investment use) and defer less compensation in an inside debt form. We would thus expect a negative relationship between inside debt and changes in the house price index.

The results of the instrumental variable (IV) approach are reported in Tables 4 and 5. In Table 4, our instruments enter the first-stage regression with the predicted sign. Both divorce rates and house returns enter negatively in columns (1), (3), (5), (7) and (9). Further, we report tests to assess the validity of our instruments. For example, column (1) shows that the IV F-

[3] Divorce data is available from the National Center for Health Statistics at http://www.cdc.gov/nchs/nvss/marriage_divorce_tables.htm

[4] We use U.S. residential real estate prices available from FRED, Federal Reserve Bank of St. Louis.

statistic is 42.25; thus, our instruments appear to be strong. To test the exogeneity assumption we compute the Sargan test for overidentifying restrictions and find no evidence against it. Our instruments seem adequate for Inside Debt, Pensions and SERPs. Importantly, these are the regressions for which we would intuitively expect divorce rates and house rates to have an effect on the variable of interest.

Insert Table 4 about here

Our main finding in Table 4 is that when using an IV approach we continue to find that higher inside debt holdings of retired CEOs are associated with lower contractual risk-taking incentives of their successors. Naturally, this line of research is susceptible to matching concerns between managers and firms and makes a clear identification of causal relationship challenging. However, since our IVs use some exogenous variation in a CEO's propensity to defer pay via inside debt, our results suggest that the correlations between CEO inside debt and the vega of their successors may indeed be causal.

3.3 CEO Inside Debt and the Likelihood that a Retiring CEO Remains on the Board

We explore an alternative channel through which retiring CEOs could look after their pension claims after stepping down as CEOs. We test whether the probability of CEOs remaining a member of the board of directors or of a committee post-retirement is higher for CEOs with larger pension claims. Since we do not expect our instruments to be correlated with the probability of a CEO remaining on the board after leaving office, we also use them in this part of the analysis. Our results are presented in Table 5.

Insert Table 5 about here

We do not find a statistically significant relationship between inside debt and the probability of a CEO being part of the board after retirement. We note, however, that the uncertainty attached to an external CEO appointment is likely to be larger than that corresponding to an internal appointment. Thus, we conjecture that CEOs are more likely to stay when they deem closer monitoring necessary. In line with this intuition, we find a positive and statistically significant relationship between inside debt and the probability that a CEO will remain on the board after retirement in the case of external appointments. The results are presented in Table 6.

Insert Table 6 about here

The two-stage probit regressions show similar findings on vega and regarding the validity of the instruments and statistical significance of the different components of inside debt. Importantly, in the second stage, the coefficient for SERPs is negative and statistically significant at the 5% level corroborating our argument that CEOs cannot let go when they are firm creditors. Again, we find that only Pensions and SERPs have an effect on the dependent variable whichis in-line with our expectations that CEOs with pay components that expose them to firm specific credit risk will want some form of influence over decision-making after they retire.

3.4 CEO Power and the Risk-taking Incentives of Successor CEOs

To further aid a causal interpretation of our results, we test the conjecture that if retiring CEOs indeed use their influence to reduce in the risk-related dollar incentives of their successors then this effect should be stronger if CEOs are more powerful at the time of their retirement.

As proxies for CEO power, we use whether the retiring CEO sits on the nominating committee (and can be expected to have a material say over succession decisions), CEO tenure and entrenchment levels. We measure entrenchment using the Bebchuk et al. (2009) index. The index is based on six governance provisions that strengthen CEO control of corporations at the expense of shareholders.[5]

To test our conjecture about power and the risk-taking incentives of incoming CEOs, Figure 1 (figure 2) graphically illustrates the coefficients of a three-way interaction between SERP claims and tenure (entrenchment) by whether or not the retiring CEO sits in the nominating committee. The triple interaction term and all double interactions were added to the base-line specifications that controls for various manager and firm characteristics.

Insert Figures 1 and 2 about here

The graphical results show that the three-way interaction is statistically significant. We find that the effect of SERP claims on vega is larger at higher levels of tenure (entrenchment) when the CEO belongs to the nominating committee and there is no clear interaction between SERP claims and tenure (entrenchment) when the CEO is not part of the nomination process. In other words, the results indicate that as the power of the retiring CEO increases the reductions in

[5] The entrenchment index is the composite of the following six inputs (yes = 1; no = 0): staggered boards, limits to shareholders' by-law amendment, super-majority requirements for mergers, super-majority requirements for charter amendment, poison pills and golden parachutes. Consequently, higher values of this index indicate that mangers are more entrenched.

the contractual risk-taking incentives of the incoming CEOs become more pronounced. This gives further support to our results that the reduction in the pay-based risk-taking incentives is indeed linked to the outgoing CEO.

4. Lump Sum Payments

Next, we identify those SERP plans that allow for the distribution of lump-sum payments after the retirement of the CEO. If CEOs can make withdrawals from their deferred compensation, they can effectively opt out of credit exposure to a firm during retirement. Therefore, CEOs are less likely to have an interest in the prospects of the firm and therefore would not be interested in a low-risk taking CEO who would look after his future pensions.

Insert Table 7 about here

We hand-collect this information directly from the proxy statements. Although we cannot identify whether CEOs will, at some point, withdraw lumps-sums from their pension claims, we can identify those retirement plans that allow for this possibility. Table 7 shows that, consistent with our predictions, the negative and statistically significant effect of the value of the SERP plans on the risk-taking dollar incentives of the incoming CEO is restricted to a sample where lump-sum retirements are not possible.

5. Risk Effects

To provide evidence on the implications of a legacy effect of CEO pay on the pay of their successors, we examine whether the unsecured pension claims of retiring CEOs impact on the probability of stock price crashes.

Edmans and Liu (2011) and He (2015) show that CEO inside debt decreases the probability of stock price crash risk. In our setting, we would expect to find a negative impact for the pension claims of the retired CEO on stock price crash risk. Following Hutton et al. (2009), we use daily returns and define measures of likelihood of crashes based on the number of returns exceeding 3.09 standard deviations below the mean weekly value, with 3.09 chosen to generate a frequency of 0.1% in the normal distribution The variable CRASH is set equal to one for a firm-year if the firm experiences one or more returns falling 3.09 standard deviations below the mean weekly return for that fiscal year; otherwise, CRASH is set equal to zero. We also construct COUNT, a variable that denotes the number of times that the returns of a firm fall 3.09 standard deviations below the mean weekly value within a year. We follow previous literature for the remaining control variables. Crashes are computed at time t+1 whereas control variables are computed at time t.

Insert Table 8 about here

Table 8, column 2 shows that a 1 standard deviation increase in SERP reduces the probability of a crash by 22 percentage points (we note that this specification includes stock-return volatility as a control variable), a result which is economically significant. Our results also hold if we include the risk-taking incentives of the incoming CEO (vega) as a control variable, after excluding the part explained by the unsecured, debt-like pay of the retired CEO (since in our previous analysis we define vega as a function of the SERP plans of the retired CEO). We

achieve this by using the residuals of a regression of SERP on vega in the relevant equation (Table 8, column 3).

6. Robustness Tests and Additional Analysis

We also test for the probability that our results can be mechanically driven by a success factor. It is plausible to assume that a successful CEO who remains in their position for many years has accumulated very large pension claims due to longevity, and has implicitly earned the right to choose their successor. In such a setting we would expect that this is the next in seniority internal manager, or in other words, someone who has in the past been under the authority of the retired CEO (Landier et al. 2013), has accumulated large pension claims and hence is also risk-averse. In fact, CEOs who do poorly are much more likely to be followed by outside hires, who enter the firm with zero inside debt most of the time (Parrino 1997). Our findings could thus be driven by an omitted variable, and not necessarily by the desire of the CEO to protect their own pension claims.

Although the IV approach minimizes potential omitted variable biases, we recognize that if the incumbent CEO's inside debt and the retired CEO's inside debt were both to be included in a regression model, our instruments would not necessarily identify one form from the other. In this case, finding an econometric setting that accounts for endogeneity is challenging. We thus restrict our sample to firms where the successor has no SERPs (i.e. SERP=0) and therefore they are not concerned about their debt-like forms of pay. Our results in Table 9 show that inside debt is still negative and statistically significant, thus we have some evidence against the likelihood that our results are driven by a success factor.

Although we have allowed that characteristics of the incoming CEO to affect their own vega, we recalculate our main regressions using the compensation of the current CEO as an additional explanatory variable. Our results remain practically unchanged[6].

7. Conclusion

Our study demonstrates a legacy effect for elements of CEO pay arrangements beyond a CEO's term in office. We show that CEOs with higher inside debt are succeeded by CEOs who are awarded lower contractual risk-taking incentives. Importantly, this reduction in risk-taking incentives are driven by the components of inside debt that are unfunded and unsecured and therefore expose retired CEOs to credit risk. Consistent with the view that outgoing CEOs use their influence to lower the contractual risk-taking incentives of their successors, we show that the incoming CEO has a lower risk-related incentive alignment if the retiring CEO is more powerful in their final year of service. We also find that the retiring CEO is more likely to remain on the board when the CEO has unsecured claims on the future cash flows of a firm.

Overall our findings offer a new manifestation of the manager horizon problem. However, by presenting evidence of predecessor CEOs dampening the risk-taking incentives of their successors, our results suggest that the horizon problem may be economically larger and more persistent than previously thought. It is quite feasible that the lower risk-taking incentives have implications for long time periods. Therefore, our study has implications for the design of inside debt contracts (see Anantharaman et al. 2014; Cassell et al. 2012); one implication of our

[6] Results available upon request.

findings is that giving incumbent CEOs the option to cash in at retirement can sever the legacy effect of lower risk-taking incentives for the new CEO. That is, CEOs who can take the cash value of their pension at retirement will not remain creditors during their retirement (Bebchuk and Jackson 2005).

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Table 1 Summary Statistics

CEO characteristics		Retired					Hired					Difference
	Definition	**Mean**	**Std Dev**	**p25**	**p50**	**p75**	**Mean**	**Std Dev**	**p25**	**p50**	**p75**	**p-value**
Vega	Sensitivity of CEO wealth to stock volatility	201.393	368.230	21.294	65.869	223.599	111.357	182.228	12.257	41.541	123.756	0.000
Age	Age in years	60.784	5.793	58	61	64	52.689	5.482	49	53	56	0.000
Female	Dichotomic variable	0.019	0.137	0	0	0	0.052	0.223	0	0	0	0.027
Inside Debt	(ODC+Pension)/(Salary+Bonus)	12.912	21.968	0.658	5.658	15.280	2.979	5.452	0	0.657	3.784	0.000
ODC	Other Deferred Compensation/(Salary+Bonus)	4.640	13.005	0	0.825	4.142	1.057	2.799	0	0.070	0.862	0.000
Pension	(SERP+RAF)/(Salary+Bonus)	8.272	15.119	0	2.067	11.896	1.903	3.852	0	0.061	2.401	0.000
SERP	Supplemental Executive Retirement Plans/(Salary+Bonus)	8.136	16.600	0	1.721	11.270	1.687	3.520	0	0.007	2.104	0.000
RAF	Rank and Fille Plans /(Salary+Bonus)	6.917	105.538	0		0.892	0.250	0.545		0.000	0.250	0.000
BoardExp	Quoted boards to Date	3.093	1.847	2	3	4	1.985	1.389	1	2	2	0.000
Qualif	Number of qualifications	1.895	1.009	1	2	2	1.994	0.914	2	2	2	0.185
FinanceExp	Dichotomic variable if finance experience	0.070	0.256	0	0	0	0.127	0.334	0	0	0	0.017
FirmExp	Number of firms to date	3.327	1.905	2	3	4	4.183	2.340	3	4	5	0.000
ExecExp	Dichotomic variable if executive experience (e.g. CEO, CFO, VicePresident)	0.769	0.422	1	1	1	0.896	0.306	1	1	1	0.000
IvyLeague	Dichotomic variable if Brown, Columbia, Cornell, Dartmouth, Harvard, Princeton, Pennsylvania or Yale	0.189	0.392	0	0	0	0.156	0.363	0	0	0	0.272
After-retirement	Dichotomic variable if remains in board	0.696	0.460	0	1	1						

Board Characteristics		Retired					Hired					Difference
	Definition	**Mean**	**StdDev**	**p25**	**p50**	**p75**	**Mean**	**StdDev**	**p25**	**p50**	**p75**	**p-value**
Eindex	Entrenchment Index	3.643	1.235	3	4	5	3.608	1.258	3	3	5	0.28
IndDirectors	Independent Directors to Board_size	0.775	0.135	0.727	0.8	0.857	0.798	0.117	0.75	0.818	0.889	0.989
BoardSize (log)	Executive+Non-Executive Directors	2.303	0.250	2.197	2.303	2.485	2.318	0.233	2.197	2.303	2.485	0.792
Firm Charactersitics		**Retired**					**Hired**					**Difference**
	Definition	**Mean**	**StdDev**	**p25**	**p50**	**p75**	**Mean**	**StdDev**	**p25**	**p50**	**p75**	**p-value**
Sales (log)	Net Sales Turnover	7.919	1.550	6.767	7.787	8.951	7.909	1.571	6.779	7.775	8.962	0.466
MTB	Market to Book (% in regressions)	0.733	0.273	0.533	0.742	0.947	0.741	0.273	0.560	0.762	0.962	0.645
R&D	Research & Development to Assets	0.023	0.048	0	0	0.023	0.023	0.045	0	0	0.023	0.057
CAPEX	Capital Expenditures to Assets (% in regressions)	0.046	0.057	0.013	0.028	0.058	0.042	0.049	0.012	0.028	0.056	0.864
Leverage	Book Leverage to Assets (% in regressions)	11203.920	70495.600	167.429	752.822	2966.500	0.236	0.194	0.102	0.213	0.322	0.453
Volatility	Rolling Regressions using 2 years of monthly data	11.021	10.437	6.289	9.951	14.093	12.931	13.546	7.741	11.096	14.643	0.976

*indicates that logs are used in regressions

Table 2

Successor CEO Risk-Taking Incentives and the Inside Debt of Retiring CEOs

The table reports OLS regressions of the contractual risk-taking incentives (vega) of incoming CEOs on the inside debt holdings of retiring CEOs. Age, qualifications and other CEO characteristics refer to the incoming CEO. All variables are described in Table 1. In parentheses are the standard errors and the asterisks indicate a 1%(***), 5%(**) and 10%(*) level of statistical significance. Standard errors are clustered at industry-level.

	(1)	(2)	(3)	(4)	(5)
Inside Debt	**-2.716*** **	**-3.464*** **	**-3.871*** **	**-3.470*** **	**-3.871*** **
	(0.825)	(0.940)	(1.034)	(0.984)	(1.048)
Age	-2.191	1.187	9.120	0.576	8.997
	(55.399)	(51.832)	(55.567)	(56.498)	(61.502)
BoardExp	4.034	6.171	5.483	6.182	5.486
	(6.055)	(6.743)	(6.204)	(6.720)	(6.128)
Qualif	-4.429	-5.269	-6.106	-5.282	-6.108
	(11.056)	(10.483)	(11.071)	(10.402)	(11.042)
FinanceExp	44.205***	45.913***	46.246***	45.550**	46.179**
	(13.739)	(14.537)	(15.005)	(16.651)	(17.452)
FirmExp	1.853	2.102	1.935	2.079	1.931
	(1.738)	(1.774)	(1.823)	(1.671)	(1.723)
ExecExp	2.857	4.143	3.347	4.211	3.361
	(14.301)	(13.919)	(14.895)	(14.042)	(15.000)
IvyLeague	-30.590***	-32.055***	-30.818***	-31.872***	-30.786***
	(9.620)	(9.508)	(9.967)	(8.899)	(9.096)
Sales	61.152***	60.224***	59.629***	59.938***	59.577***
	(4.267)	(3.960)	(4.117)	(2.939)	(2.860)
CAPEX	-4.773***	-5.056***	-5.093**	-5.036***	-5.089***
	(1.574)	(1.627)	(1.726)	(1.577)	(1.672)
MTB	-1.149***	-1.150***	-1.164***	-1.154***	-1.165***
	(0.208)	(0.192)	(0.199)	(0.200)	(0.202)
Leverage	-0.373	-0.211	-0.173	-0.215	-0.174
	(0.536)	(0.509)	(0.538)	(0.541)	(0.576)
Volatility		-1.433***	-1.459***	-1.428***	-1.458***
		(0.410)	(0.444)	(0.422)	(0.463)
Board Size				4.102	0.755
				(38.037)	(41.241)
IndDirectors			74.155		74.057
			(59.054)		(62.817)
Constant	-242.557	-237.638	-316.274	-242.140	-316.998
	(0.296)	(0.277)	(0.232)	(0.194)	(0.171)
Observations	291	291	291	291	291
R-squared	0.352	0.364	0.366	0.364	0.366
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes

Table 3

Successor CEO Risk-Taking Incentives and the Inside Debt of Retiring CEOs by Type of Inside Debt

The table reports OLS regressions of the contractual risk-taking incentives (vega) of incoming CEOs on the different forms of inside debt holdings of retiring CEOs. Age, qualifications and other CEO characteristics refer to the incoming CEO. All variables are described in Table 1. In parentheses are the standard errors and the asterisks indicate a 1%(***), 5%(**) and 10%(*) level of statistical significance. Standard errors are clustered at industry-level.

	RAF		SERP		ODC	
	(1)	(2)	(3)	(4)	(5)	(6)
Inside Debt	-0.006	-0.735	**-2.141****	**-2.765****	**1.685**	**1.292**
	(1.885)	(2.088)	(0.787)	(0.953)	(1.161)	(1.133)
Age	-6.669	3.781	5.593	17.188	-5.176	1.746
	(50.989)	(56.158)	(52.285)	(57.270)	(52.899)	(58.267)
BoardExp	4.136	5.411	4.317	5.783	4.353	5.764
	(6.300)	(6.275)	(5.943)	(5.979)	(6.157)	(6.163)
Qualif	-4.942	-6.207	-3.843	-5.399	-4.256	-6.043
	(11.137)	(10.798)	(10.760)	(10.666)	(10.168)	(10.279)
FinanceExp	40.680**	41.501**	43.441***	44.000**	36.611**	37.848*
	(14.428)	(18.037)	(14.483)	(18.395)	(14.273)	(17.973)
FirmExp	2.236	2.298	1.890	1.971	2.127	2.377
	(1.940)	(2.063)	(1.947)	(1.961)	(2.044)	(2.026)
ExecExp	-1.209	-1.772	3.544	3.803	-3.365	-3.781
	(14.488)	(15.167)	(14.760)	(15.774)	(14.581)	(15.353)
IvyLeague	-30.523***	-30.613***	-30.546***	-30.314***	-29.695**	-30.119***
	(10.014)	(9.365)	(9.277)	(8.884)	(10.163)	(9.909)
Sales	58.234***	56.038***	60.693***	58.138***	56.344***	54.205***
	(4.023)	(2.345)	(4.160)	(3.098)	(4.268)	(2.588)
CAPEX	-4.731**	-4.983***	-4.698***	-4.939***	-4.656**	-4.935**
	(1.602)	(1.672)	(1.511)	(1.565)	(1.591)	(1.660)
MTB	-1.180***	-1.199***	-1.139***	-1.164***	-1.173***	-1.201***
	(0.207)	(0.200)	(0.209)	(0.204)	(0.208)	(0.205)
Leverage	-0.385	-0.202	-0.387	-0.208	-0.387	-0.215
	(0.533)	(0.573)	(0.541)	(0.587)	(0.540)	(0.585)
Volatility		-1.358***		-1.379***		-1.328***
		(0.439)		(0.432)		(0.428)
BoardSize		1.264		8.321		2.554
		(40.868)		(42.139)		(36.884)
IndDirectors		64.412		73.991		58.261
		(59.489)		(66.389)		(61.717)
Constant	-216.947	-283.033	-282.442	-373.762*	-216.348	-267.011
	(0.309)	(0.186)	(0.205)	(0.097)	(0.327)	(0.235)
Observations	291	291	291	291	291	291
R-squared	0.350	0.362	0.352	0.365	0.351	0.362
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Table 4

Successor CEO Risk-Taking Incentives and the Inside Debt of Retiring CEOs: Instrumental Variable Estimations

The table reports OLS regressions on the contractual risk-taking incentives (vega) of incoming CEOs on total inside debt and the different forms of inside debt holdings of retiring CEOs. All specifications control for Age, BoardExp, Qualif, FinanceExp, FirmExp, ExecExp, IvyLeague, Sales, MTB, and Leverage. CEO characteristics refer to the incoming CEO. Columns (1), (3), (5), (7), are first stage regressions on the inside debt holdings of retiring CEOs using state-level tax rates as instruments. All variables are described in Table 1. In parentheses are the standard errors and the asterisks indicate a 1%(***), 5%(**) and 10%(*) level of statistical significance. Standard errors are clustered at industry-level.

	InsideDebt		ODC		Pension		SERP		RAF	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
InsideDebt		**-4.040****								
		(1.863)								
ODC				**-8.667**						
				(8.143)						
Pension						**-8.533***				
						(5.126)				
SERP								**-5.916*****		
								(1.733)		
RAF										**-0.635**
										(1.764)
DivorceRates	**-31.18*****		**-13.95**		**-16.35***		**-24.58****		**-3.437**	
	(11.47)		**(9.030)**		**(8.611)**		**(10.74)**		**(22.77)**	
HouseReturns	**-259.8*****		**-130.4****		**-115.9***		**-154.1****		**122.5**	
	(84.91)		**(56.58)**		**(67.58)**		**(74.26)**		**(189.8)**	
Constant	22.59	-165.9*	18.91	-92.29	8.426	-191.8	14.70	-149.6	565.2	169.4
	(39.47)	(92.60)	(16.75)	(282.9)	(28.08)	(141.4)	(29.35)	(120.2)	(439.3)	(929.6)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	298	298	300	300	300	300	294	294	294	294
R-squared	0.220	0.123	0.156		0.143		0.148	0.063	0.296	0.268
IV F-stat		42.25		2.760		8.042		8.239		0.286
pF-stat		1.17e-06		0.0771		0.00473		0.00432		0.756

Table 5

Probability that the CEO Remains on the Board after Retirement: Instrumental Variable Estimations

The table reports probit regressions of the probability that the CEO remains in the board post-retirement on total inside debt and the different forms of inside debt holdings of retiring CEOs. All specifications control for Age, BoardExp, Qualif, FinanceExp, FirmExp, ExecExp, IvyLeague, Sales, MTB, and Leverage. CEO characteristics refer to the incoming CEO. Columns (1), (3), (5), (7), are first stage regressions on the inside debt holdings of retiring CEOs using state-level tax rates as instruments. All variables are described in Table 1. In parentheses are the standard errors and the asterisks indicate a 1%(***), 5%(**) and 10%(*) level of statistical significance. Standard errors are clustered at industry-level.

	InsideDebt		**ODC**		**Pension**		**SERP**		**RAF**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
InsideDebt		0.0077								
		(0.100)								
ODC				0.0150						
				(0.0233)						
Pension						0.0146				
						(0.0165)				
SERP								0.0106		
								(0.0144)		
RAF										-0.0271
										(0.0565)
DivorceRate	-33.3**		-15.87*		-16.25*		-24.78**		6.545	
	(11.65)		(8.744)		(8.082)		(10.47)		(16.93)	
HouseReturns	286.3***		135.1**		139.2**		170.5**			
	(89.54)		(53.15)		(68.51)		(73.28)			
Constant	22.13	0.0313	24.77	-0247	-0.624	0.134	8.010	0.277	420.5	11.83
	(33.49)	(0.765)	(21.35)	(0.883)	(25.94)	(0.843)	(26.52)	(0.761)	(335.4)	(2.413)
Observations	302	302	304	304	304	304	304	304	304	304
R-squared	0.196		0.137		0.113		0.130		0.267	
IV F-stat		13.75		5.513		8.815		7.257		0.417
pF-stat		0.000		0.243		0.003		0.0069		0.520

Table 6

Probability that the CEO Remains on the Board after Retirement: Instrumental Variable Estimations

The table reports probit regressions of the probability that the CEO remains in the board post-retirement on total inside debt and the different forms of inside debt holdings of retiring CEOs when the new CEO is an external appointment. All specifications control for Age, BoardExp, Qualif, FinanceExp, FirmExp, ExecExp, IvyLeague, Sales, MTB, and Leverage. CEO characteristics refer to the incoming CEO. Columns (1), (3), (5), (7), are first stage regressions on the inside debt holdings of retiring CEOs using state-level tax rates as instruments. All variables are described in Table 1. In parentheses are the standard errors and the asterisks indicate a 1%(***), 5%(**) and 10%(*) level of statistical significance. Standard errors are clustered at industry-level.

	InsideDebt		**ODC**		**Pension**		**SERP**		**RAF**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
InsideDebt		0.0164								
		(0.0102)								
ODC				0.0285						
				(0.0302)						
Pension						**0.0366****				
						(0.0184)				
SERP								**0.0203****		
								(0.00989)		
RAF										0.297
										(0.278)
DivorceRate	-31.86*		-15.01		-15.79		-29.79*		-1.505	
	(17.75)		(14.89)		(10.82)		(17.00)		(1.954)	
HouseReturns	224.3		152.3**		63.27		110.7			
	(153.9)		(76.66)		(130.3)		(138.8)			
Constant	58.54	-0.436	35.38	-0.625	29.48	-0.624	35.78	-0.192	2.571	-0.00962
	(47.99)	(1.392)	(30.66)	(1.455)	(28.45)	(1.572)	(31.52)	(1.272)	(6.869)	(2.413)
Observations	206	206	206	206	206	206	206	206	206	206
R-squared	0.146		0.127		0.085		0.107		0.041	
IV F-stat		3.443		1.581		10.05		3.814		1.561
pF-stat		0.0631		0.243		0.00230		0.0497		0.234

Table 7

SERPs retirement claims with the option of early lump sum withdrawals

The table reports OLS regressions of the contractual risk-taking incentives (vega) of incoming CEOs on the inside debt holdings of retiring CEOs in the form of SERPs, when there is no option of an early lump sum withdrawal (columns 1-3) and when there is one (columns 4-6). Age, qualifications and other CEO characteristics refer to the incoming CEO. All variables are described in Table 1. In parentheses are the standard errors and the asterisks indicate a 1%(***), 5%(**) and 10%(*) level of statistical significance. Standard errors are clustered at industry-level.

	No Lump Sum			Lump Sum		
	(1)	(2)	(3)	(4)	(5)	(6)
SERP	**-25.948*** **	**-26.058*** **	**-23.230*** **	**-348.861**	**-351.196**	**-355.099**
	(7.267)	(7.287)	(6.084)	(371.649)	(432.328)	(435.911)
Volatility	-1.041**			11.126		
	(0.523)			(14.952)		
Age	91.090*	87.660**	71.335	915.081**	765.008**	736.055***
	(52.968)	(42.133)	(44.286)	(412.022)	(331.478)	(266.084)
BoardExp	5.839**	4.739	2.890	-27.934	-22.014	-24.148
	(2.976)	(3.478)	(3.044)	(64.779)	(63.367)	(63.430)
Qualif	14.605	15.174	13.793	33.344	34.921	32.747
	(9.900)	(10.009)	(9.647)	(69.021)	(70.261)	(68.279)
FinanceExp	29.736**	30.359**	29.165**	181.269**	176.820**	178.601***
	(14.762)	(14.469)	(13.422)	(75.245)	(69.851)	(64.782)
FirmExp	-1.482	-2.191**	-0.994	16.669	17.208	17.870
	(1.237)	(1.106)	(1.372)	(12.608)	(18.843)	(18.895)
ExecExp	34.003*	40.810*	32.105**	-15.869	-196.088	-244.052
	(17.452)	(21.911)	(15.588)	(168.671)	(604.643)	(548.084)
Ivy League	-8.551	-4.573	-8.448	-660.394	-701.316	-701.328
	(38.572)	(40.495)	(35.816)	(519.410)	(642.427)	(667.706)
LogSales	75.531***	70.848***	74.567***	423.189	411.404	409.150
	(8.064)	(5.692)	(7.737)	(319.851)	(340.411)	(355.914)
CAPEX	-2.348	-2.027	-2.398	11.927	16.927	16.427
	(2.426)	(2.261)	(2.412)	(22.011)	(29.101)	(30.079)
MTB	-0.310	-0.331	-0.306	4.961	5.791	5.783
	(0.269)	(0.291)	(0.273)	(5.388)	(7.142)	(7.443)
Leverage	-1.030*	-1.409**	-1.283**	4.801	5.474	5.222
	(0.543)	(0.610)	(0.550)	(5.817)	(6.505)	(6.634)
Board Size		94.463*			-106.154	
		(55.081)			(304.766)	
Constant	-695.585***	-863.178***	-619.674***	-4,930.729**	-3,788.186***	-3,822.077***
	(206.399)	(214.258)	(172.543)	(2,189.579)	(1,316.705)	(1,400.141)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	214	214	214	72	72	72
R-squared	0.069	0.071	0.138			

Table 8
Inside Debt of Retiring CEOs and Stock Price Crash Risk

The table reports logit (columns 1 to 3) and OLS regressions (columns 4-6) of the probability of stock price crash risk on the inside debt holdings of retiring CEOs in the form of SERPs. CRASH, is set equal to one for a firm-year if the firm experiences one or more returns falling 3.09 standard deviations below the mean weekly return for that fiscal year; otherwise CRASH is set equal to zero. COUNT is a discrete variable that denotes the number of times that the returns of a firm fall 3.09 standard deviations below the mean weekly value within a year. All other variables are described in Table 1. In parentheses are the standard errors and the asterisks indicate a 1%(***), 5%(**) and 10%(*) level of statistical significance. Standard errors are clustered at industry-level.

	CRASH			COUNT		
	(1)	(2)	(3)	(4)	(5)	(6)
SERP	**-0.103****	**-0.066*****	**-0.067****	**-0.265***	**-0.288****	**-0.331****
	(0.027)	(0.023)	(0.034)	(0.135)	(0.136)	(0.140)
Vega			0.001*			0.005**
			(0.000)			(0.002)
Volatility		0.868***	0.947***		-0.544	0.103
		(0.163)	(0.121)		(0.488)	(0.277)
BoardSize	0.010	0.108	0.020	0.206	0.144	-0.267
	(0.141)	(0.084)	(0.072)	(0.402)	(0.408)	(0.246)
IndDirectors	0.208	-0.075	-0.246***	0.776	0.953	0.039
	(0.463)	(0.119)	(0.048)	(0.653)	(0.682)	(0.286)
R&D	-2.012***	-0.948***	-0.485	-4.162**	-4.828**	-2.716**
	(0.623)	(0.341)	(0.357)	(1.943)	(2.085)	(1.276)
ROA	-0.568***	0.226	0.353***	-0.172	-0.670	0.003
	(0.211)	(0.186)	(0.116)	(0.376)	(0.513)	(0.190)
LogSales	0.095**	0.079***	0.096**	0.303**	0.313**	0.433***
	(0.042)	(0.023)	(0.039)	(0.131)	(0.123)	(0.150)
CAPEX	0.004	-0.001	-0.000	-0.006	-0.003	0.000
	(0.006)	(0.005)	(0.006)	(0.013)	(0.017)	(0.012)
MTB	0.001	0.002***	0.002***	0.005***	0.005***	0.008***
	(0.001)	(0.001)	(0.000)	(0.002)	(0.002)	(0.003)
Leverage	0.002	0.001	0.001	-0.002	-0.002	-0.001
	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)	(0.004)
Constant	-0.395	-0.788***	-0.663***	-2.551*	-2.305	-2.000**
	(0.455)	(0.292)	(0.246)	(1.515)	(1.403)	(0.819)
Observations	280	280	276	280	280	276
R-squared		0.117	0.235			
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Table 9
Successor CEO Risk-Taking Incentives (without any SERP in place) and the Inside Debt of Retiring CEOs in the form of SERPs

The table reports OLS regressions of the contractual risk-taking incentives (vega) of incoming CEOs on the inside debt holdings of retiring CEOs in the form of SERPs, when the incoming CEO has no SERP in place. Age, qualifications and other CEO characteristics refer to the incoming CEO. All variables are described in Table 1. In parentheses are the standard errors and the asterisks indicate a 1%(***), 5%(**) and 10%(*) level of statistical significance. Standard errors are clustered at industry-level.

	(1)	(2)	(3)
SERP	**-54.117****	**-73.813****	**-51.387****
	(24.005)	(33.449)	(22.201)
Volatility	-0.397		
	(0.532)		
Age	369.430	514.719*	349.853
	(230.352)	(281.799)	(214.509)
BoardExp	33.167***	40.475***	30.991***
	(11.373)	(12.891)	(10.944)
Qualif	39.455	41.173	38.815
	(33.338)	(36.931)	(32.528)
FinanceExp	38.617	42.594	37.935
	(37.605)	(49.969)	(34.747)
FirmExp	-11.235**	-16.360**	-10.451**
	(4.450)	(6.922)	(4.289)
ExecExp	7.453	37.568	4.869
	(49.776)	(82.307)	(45.054)
IvyLeague	-38.762	-14.571	-37.998
	(35.088)	(72.396)	(33.105)
LogSales	69.162***	57.920***	68.178***
	(16.747)	(11.166)	(16.095)
CAPEX	-2.829	-3.267	-2.625
	(3.873)	(4.408)	(3.592)
MTB	-0.246	-0.181	-0.256
	(0.300)	(0.332)	(0.285)
Leverage	-0.728	-1.038	-0.872
	(1.075)	(1.431)	(1.065)
Board_Size		273.186	
		(167.553)	
Constant	-1,742.901*	-2,805.045*	-1,662.847*
	(1,004.216)	(1,481.939)	(936.656)
Industry Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Observations	144	144	144

Figure 1

Economic effects of interactions between SERP claims and retiring CEO tenure depending on whether the retiring CEO sits on the nominating committee

The figure shows that when retiring CEOs sit on the nominating committee (right panel), have a longer tenure and higher SERP claims, they use their influence to reduce the risk-taking incentives of incoming CEOs by larger amounts. The effect of SERPs on the risk-taking incentives of incoming CEOs does not visibly vary by tenure if CEOs do not sit on the nominating committee (left panel).

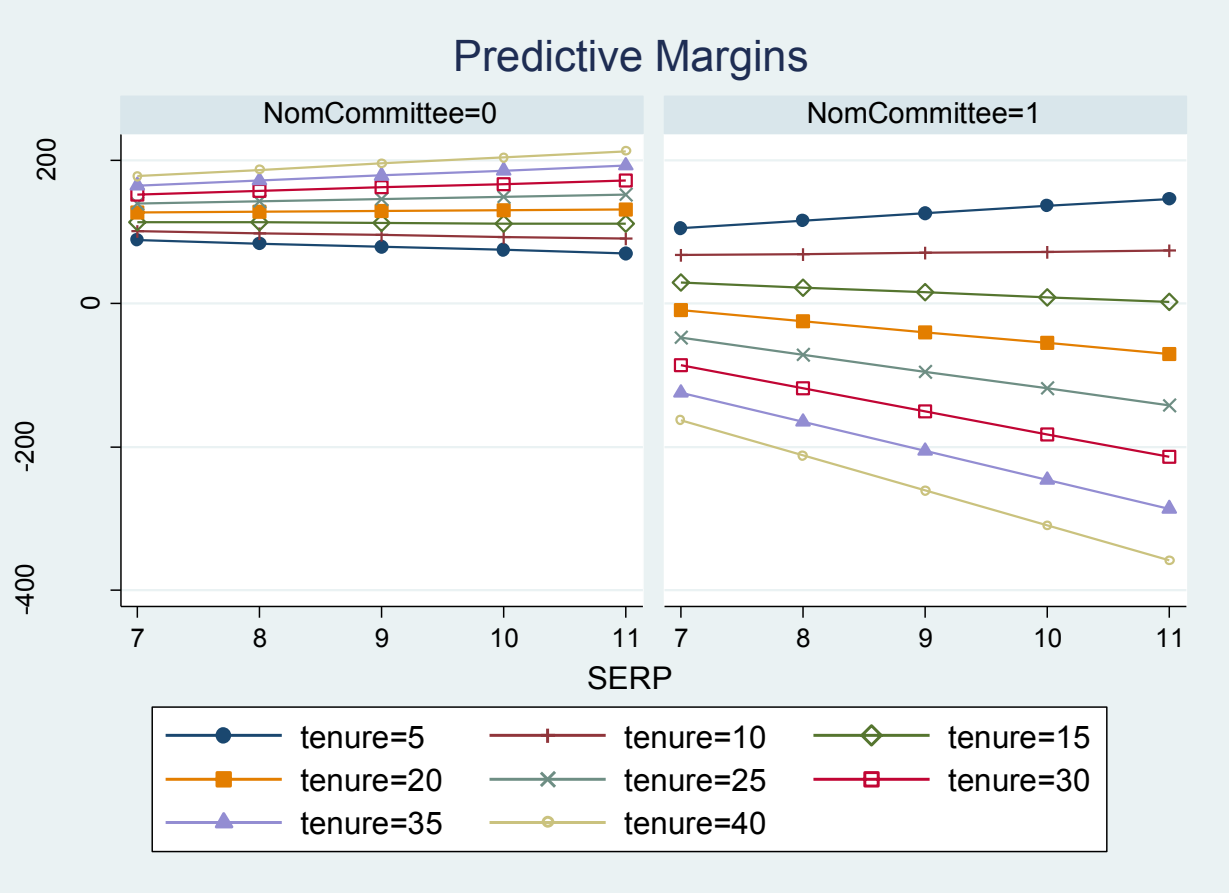

Figure 2

Economic effects of interactions between SERP claims and retiring CEO entrenchment depending on whether the retiring CEOs sits on the nominating committee

The figure shows that when retiring CEOs sit on the nominating committee (right panel), are more entrenched (based on Bebchuk et al.'s (2009) Entrenchment index) and have higher SERP claims, they use their influence to reduce the risk-taking incentives of the incoming CEOs by larger amounts. The effect of SERPS on the risk-taking incentives of incoming CEOs does not visibly vary to the same extent if CEOs do not sit on the nominating committee (left panel).