Prosociality and Layoffs*

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Abstract

Many managers describe layoffs as the hardest and most painful decisions of their careers; yet, standard economic models treat human and physical capital adjustments alike. We collect novel data on layoffs by U.S. public firms using NLP techniques, which allows us to establish several facts that are jointly hard to reconcile with existing models. First, firing decisions have large adverse healthof effects on CEOs, with distress-induced layoffs estimated to reduce CEO lifespan by 1.85 years. Second, CEOs become more reluctant to make layoffs over their tenure as they form more connections inside the firm. After plausibly-exogenous CEO changes, instead, new CEOs make more and shareholder value-increasing layoff decisions. Third, CEOs' increasing reluctance to lay off employees intensifies when layoffs are more painful for employees, such as during recessions or the holiday season, or more painful for managers to witness, such as when they affect socially or geographically close employees. Fourth, the documented layoff reluctance is substantially more pronounced among CEOs with higher empathy-related traits. We also show that long-tenured CEOs are more likely to cut R&D spending during recessions, offsetting forgone savings from layoffs. Our results imply the need to adjust models of managerial decision-making for a "human" component of layoff avoidance. Prosocial, or empathy-related, motives provide a unifying explanation.

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1. Introduction

In the standard firm investment model, the adjustment of human capital is treated akin to the adjustment of physical capital: every period, the firm optimizes over all factor inputs, subject to potential adjustment costs. In practice, CEOs describe their personal experiences with hiring and firing in rather different terms. In a worldwide survey of 2,000 senior executives, 60% state that hiring and firing was "the toughest decision" in their careers (Martin 2005). Similarly, the senior managers of Fortune 500 firms interviewed in Hallock (2005) express that the "entire layoff process is gut wrenching" because it is "a human decision." It is also common to find a CEO describing the impact on them personally as "something that took a heavy toll on me ... something I don't ever want to do again."[1] These first-hand accounts depict hiring and firing decisions as different in nature from the purchase, write-down, and divestment of machines.

Prior work on frictions in human capital choices has focused on "classical" adjustment costs in hiring and firing that arise from new hire training, job advertising and interviewing, as well as labor-market policies such as severance pay and mandatory advance notices of mass layoffs (Hamermesh 1989).[2] In this paper, we propose a complementary, novel type of "behavioral adjustment costs" firms may face with respect to labor—but not capital—that captures layoffs being "a human decision." The proposed channel builds on prior evidence on managerial prosociality towards workers, both from the laboratory and the field.[3] While previous studies have linked CEO prosocial attitudes to CEOs' corporate social responsibility (Cheng et al. 2023; Cronqvist and Yu 2017), we focus on the context of mass layoffs. In the context of layoff decisions, CEOs can negatively affect the lives of many employees, and public perception regards such actions as among the most morally objectionable (Iliewa et al. (2025)).

We assemble a new, comprehensive dataset covering layoff announcements by S&P 1500 firms (and other firms in Execucomp) over the last two decades. While prior work typically proxies for layoffs by changes in net employment (e.g., Landier et al. 2009, Schmieder et al. 2022), we use a combination of natural language processing (NLP) and hand-coding to identify actual layoffs and their characteristics in news-like text data. We utilize the data on "Discontinued Operations and Downsizings" in the S&P Capital IQ Key Developments database. Unlike existing datasets, our data allows us to distinguish *involuntary* layoffs from employee reassignments or voluntary departures,

[1] Quote from a former executive at Siemens AG in the 2016 documentary titled "Lonely at the Top: Top-Level Managers at Their Limit," available (in German) at youtube.com/watch?v=FcRH3r0nEDE.

[2] Correspondingly, classical adjustment costs for physical capital include interruptions of the production process, installation costs, and site cleanup costs after disinvestment (Rothschild 1971, Doms and Dunne 1998, Teisberg 1993).

[3] Chen and Li (2009) find prosocial behavior to be strong towards in-group members, and Fehr and List (2004) find it to be pronounced among experimental subjects who are real-life CEOs. Relatedly, Taylor (2010) estimates large personal disutility costs of board members from firing CEOs (which could reflect a distaste for firing) to explain low CEO turnover rates.

such as early retirement. We also collect information on layoff severity and geography, i. e., the numbers of employees laid off and layoff sites. Our final dataset covers more than 12,000 layoff announcements.

We utilize the data to perform several empirical tests regarding the effects and determinants of layoff decisions. Our tests are guided by a simple conceptual framework that allows for CEOs to experience a reduction in their utility from the act of firing workers. The proposed underpinning for the disutility cost comes from the psychology literature on *empathy*, which is the affective response to other people's (actual or inferred) emotional state (Decety and Jackson 2004)—in this case, a CEO's affective response to workers' distress from losing their jobs. Empathy has been shown to grow over time as attachment to others increases ("friends-vs-strangers") and to depend on the perceived closeness or similarity to others ("self-other overlap"), see Meyer et al. (2013) and Morelli et al. (2015). Motivated by these insights, the framework predicts that a CEO's layoff propensity decreases in (i) CEO tenure (as CEOs become more attached to their workforce over time), (ii) the disutility experienced by workers from a layoff (e.g., around Christmas and during recessions), and (iii) workers' geographical and social proximity to the CEO, as defined below.

In the first part of our empirical analysis, we estimate the personal health costs of firing for CEOs. We document a significant reduction in the longevity of CEOs who implement layoffs in response to industry distress shocks. The estimated effect size is large, roughly corresponding to that of a two-year increase in CEO age, and is robust to controlling for the direct effect of industry distress (cf. Borgschulte et al. (2023)) as well as firm performance. By contrast, layoff decisions that were not necessitated by an industry distress shock have no significant mortality effect.[4]

The estimated health costs are consistent with the proposed prosociality channel as well as other mechanisms that make firing particularly stressful. But they are hard to reconcile with preferences that reflect social considerations, but do not involve actual stress induced by the act of firing, such as social-image concerns or a response to social pressure from the media or stakeholders.

In the second part of the analysis, we analyze CEOs' proclivity to implement layoffs over the course of their tenure as they develop deeper social connections inside the firm. Guided by our theoretical framework, we proceed in three steps.

In the first step, we contrast the firing decisions of newly appointed CEOs to those of incumbent CEOs in the same industry. We utilize plausibly-exogenous CEO changes due to the death or the illness of the incumbent CEO, which have been previously used as an instrument for CEO turnover (e.g., Fee et al. 2013). Comparing treated firms (with exogenous turnover) to untreated firms in the same industry over the five years before and the five years after treatment, we estimate a significant

[4] Consistent with recession-induced layoffs being particularly scarring, managers surveyed in Martin (2005) respond that "[o]ver the years the toughest decision was letting someone go, not based on their performance, but based on the firm's condition" and that the "goal is to never terminate a good employee." The (non-)finding might also reflect selection effects.

8.7 percentage points (pp) increase in the propensity to lay off employees. These additional layoffs are accompanied by large, positive announcement returns, averaging more than 2%. By contrast, layoff announcements by control firms (as well as the sample-wide average layoff announcement) come with a small, negative announcement return. These contrasting patterns suggest frictions in firing among CEOs who have been leading their company for some time, to the detriment of shareholders.

In the second step, we show that CEOs' propensity to make layoffs strongly declines over their tenure. An interquartile increase in CEO tenure (from 3 to 11 years) predicts a reduction in layoff propensity of 11% (1.5 pp) relative to the baseline annual layoff probability of 13%. The negative tenure-layoff relation is not explained by firm size (e.g., assets and employment), profitability, labor and capital productivity, year fixed effects, industry fixed effects, or firm fixed effects. The latter implies that endogenous matching, where long-tenured CEOs prefer companies that generally avoid firing, does not explain the result. The finding is also robust to controlling for the *CFO*'s tenure.

Unlike in the analysis of newly appointed CEOs, we do not have plausibly exogenous variation in the analysis of layoff decisions over the course of a CEO's tenure. To probe the causality of the estimated tenure-layoff link, we implement the instrumental variables (IV) approach first proposed by Altonji and Shakotko (1987) and also applied by Graham et al. (2020). Specifically, we instrument tenure with the proportion of total tenure completed. As discussed in Graham et al. (2020), the proportion of tenure completed is correlated with tenure but orthogonal to fixed individual CEO characteristics or CEO-firm match quality, which affect tenure length, as all CEOs begin with 0% and end with 100% of their tenure completed. Thus, the instrument addresses the concern that the estimated decline in layoff propensity might reflect inherently different layoff propensities of different CEO "types" (with long versus short tenure), or that long-tenured CEOs face different economic circumstances that also influence layoff propensity. All results replicate using instrumented tenure.

In the third step, we show that internally hired CEOs are significantly less likely to lay off employees than externally hired CEOs. Since internal hires have been at the firm for longer, the result is consistent with the tenure-layoff relation being driven by CEOs' attachment to firm employees.

We also show that the estimated decline in layoff propensity is distinct from "CEO investment cycles", which involve increasing investment in physical and human capital, as well as decreasing disinvestment, over a CEO's tenure and which have been attributed to increasing CEO power (Pan et al. 2016). While the documented link to CEO power does not extend to disinvestment (and hence to layoffs), we test directly whether our estimates of declining layoff propensity are explained by existing measures of CEO power or entrenchment. We reject such a link using a wide range of measures, including time-varying board co-option, CEO duality, the Bebchuk et al. (2009) index, among others.

In summary, the results of this second set of analyses indicate that CEOs' layoff propensity decreases over the course of their tenure as they deepen their connections inside the firm, consistent with increasing managerial prosociality towards employees. While other explanations that involve stressors associated with firing, such as lawsuits by employees, could explain the first set of results on adverse CEO health effects, they cannot explain the second set of results since they do not tend be increasing in the CEO's tenure.

In the final part of the analysis, we implement several heterogeneity tests guided by the empirical evidence on the determinants of empathy and our resulting theoretical predictions when prosocial concerns should be more or less pronounced. One prediction is that layoff decisions become more costly to the manager when their effect on employees is more severe. Examples include layoffs during economic downturns, which have more adverse consequences for displaced workers than layoffs at other times (Jacobson et al. 1993), and layoffs during the holiday season. We show that, over their tenure, CEOs become more averse to these "painful" layoffs and are significantly less likely to implement them, both unconditionally and conditional on making a layoff in a given year. The within-year layoff timing is particularly difficult to reconcile with alternative explanations of the tenure-layoff link. The results are again robust to using instrumented tenure.

For another set of heterogeneity tests motivated by our framework, we identify layoffs that might be more painful for the CEO to witness, holding workers' disutility constant. One such type of variation is geographical closeness. We compare layoffs at or near the firm's headquarters to layoffs at sites that are further away. Layoffs at geographically distant sites might affect CEOs less since they are not witnessing the effects of the layoff and are also less likely to know the laid-off employees personally. Another type of variation is social closeness. We build on evidence of "familiarity" or "similarity" affecting the degree of prosociality (Chen and Li 2009, Meyer et al. 2013), and compare CEOs' proclivity to lay off socially closer white-collar workers compared to blue-collar workers. In both cases, we find that CEOs' reluctance to lay off workers over the course of their tenure is driven by employees who are (geographically or socially) close to the CEO. As before, all results are robust to instrumenting tenure using the approach of Altonji and Shakotko (1987) and Graham et al. (2020). These findings complement prior evidence showing that survey participants reduce their support for layoffs when their geographical and social distance from affected workers is exogenously reduced (Jacobson et al. 1993).

Finally, we conduct an auxiliary analysis assessing how longer-tenured CEOs manage the financial costs of their layoff avoidance, especially during times of economic distress: how do they offset the high payroll cost during an economic downturn? We show that the reduction in layoffs appears to come at the expense of other firm activities, such as investment in research and development (R&D). That is, longer-tenured CEOs reduce R&D spending during recessions, when financing constraints are more likely to bind, while also avoiding layoffs.

The analyses thus far have established three sets of facts about frictions in layoff decisions: a link between layoffs and adverse CEO health outcomes, a link between CEO tenure (or attachment to their firm) and layoff avoidance, and evidence on the heightened aversion of more painful layoffs during economic distress and holiday seasons and among socially or geographically close employees. All results are consistent with a "human" component of layoff avoidance in the spirit of the empathy literature, i. e., reflecting a CEO's affective response to workers' distress.

As an additional piece of evidence in support of the proposed interpretation, we leverage prior work on the personality characteristics of CEOs, which has linked variation in empathy-related managerial attributes to CEO behavior. Specifically, Kaplan et al. (2012) use detailed personality assessments of U.S. CEO candidates to measure their personality characteristics, and identify managerial overconfidence (resoluteness) versus empathy as a primary distinguishing dimension of CEOs. Kaplan et al. (2022) corroborate the distinction between overconfident and empathetic CEO types, and show that the widely used *Longholder* overconfidence measure from Malmendier and Tate (2005), predicts significantly lower managerial scores on empathy-related attributes. Motivated by this evidence, we use the *Longholder* measure to empirically distinguish between less empathetic (Longholder) and more empathetic (non-Longholder) CEOs. We find that the decline in layoff propensity over a CEO's tenure is driven by non-overconfident, more empathetic CEOs.

Overall, a psychological underpinning of prosociality arising from managers' empathetic concern for employees is consistent with all of our empirical evidence. Our analysis uncovers new evidence on a human dimension in layoff decisions that suggests the need to adjust existing models of the firm's optimization problem. These findings contribute to the "social economics" paradigm (Hirshleifer 2020), which calls for more work on the "social processes that shape economic thinking and behavior."

Literature. Our paper makes four main contributions to the literature. First, we advance the literature on the effects of CEOs' job duties and stressful job environments. Bandiera et al. (2018) and Bandiera et al. (2020) document the intense demands and long work hours of CEOs, especially non-family-firm CEOs. Bertrand and Mullainathan (2003) and Cronqvist et al. (2009) provide evidence on more labor-friendly policies such as higher employee pay when managers are more able to "enjoy the quiet life." The interviews in Hallock (2005) provide first-hand evidence from senior managers on the taxing nature of layoff decisions in particular.

Most directly related to our result on layoffs and CEO mortality, Borgschulte et al. (2023) provide evidence that plausibly exogenous variation in CEOs' job demands, including from industry crises, has significant health consequences in terms of aging and mortality. In a related vein, Kárpáti and Renneboog (2023) find increased use of antidepressants by employees of Dutch firms, including by higher-paid individuals, when their firm faced financing difficulties during the Great Recession.

We extend the prior work by providing direct empirical evidence that layoffs are a major contributor to the demanding nature and adverse health effects of the CEO role and by showing, in turn, a direct effect of these consequences on layoff decision-making. Our paper also integrates a mechanism for these effects, rooted in managerial prosocial concerns for workers. As such, this paper contributes to the research on nonstandard managerial decision-making (see Malmendier (2018) and Guenzel and Malmendier (2020) for recent surveys).

The findings linking layoffs and health outcomes among the top-level managers responsible for these decisions also complement prior work on the effects of layoffs on dismissed employees, both in terms of subsequent labor market outcomes (Jacobson et al. 1993) and in terms of health and other outcomes, such as mortality (Sullivan and Von Wachter 2009, Roelfs et al. 2011), alcoholism (Deb et al. 2011), and depression (Kuhn et al. 2009).

Second, we contribute to the literature on CEO effects, particularly tenure effects, on firm investment. Pan et al. (2016) document a link between CEO tenure and investment as well as disinvestment, including asset sales. We instead focus on labor decisions and propose managerial prosocial concerns as an underlying channel. Consequently, while the prior work relies on downsizing announcements in the S&P Capital IQ data, we use the subset of the data that identifies layoffs to construct a pure worker-related measure. We specifically focus on involuntary layoffs that result in unemployment for affected workers.

Moreover, complementary to our approach of assembling a dataset on actual layoffs, Bertheau et al. (2022) field a large-scale survey of private firms in Denmark that elicits underlying reasons for firms' labor decision-making, particularly during the COVID-19 crisis. Additionally, using survey data from one large U.S. firm, Hoffman and Tadelis (2021) provide evidence that managerial interpersonal skills (as assessed by employees) are associated with lower rates of employee turnover.

Bai and Mkrtchyan (2023) analyze a sample of manufacturing firms and find that, following the appointment of an external (rather than an internal) CEO, more factories are closed or see employment reductions. In our data, which includes non-manufacturing firms, external CEOs exhibit a higher propensity to make layoffs. Collectively, our findings suggest that a key underlying mechanism is that internal CEOs have more extensive or deeper pre-existing relations with employees.

Third, our findings add to the literature on employee-related social considerations in corporate decision-making. Prior work generally does not use data on actual layoffs but instead changes in firms' employment count (which, as we show in Section 3, is often only a weak proxy for layoff activity). Landier et al. (2009) find that divisions located closer to firms' headquarters are less likely to experience significant employment reductions. We link the geographic variation in layoff propensity to managers' attachment to their firm and employees, as measured by managers' tenure. Other related work includes Matsa and Miller (2013, 2014), who establish gender differences in managerial preferences toward workers, documenting fewer employment reductions in female-owned

private firms in the U.S. during the Great Recession and in firms with a board gender quota in Norway. Consistent with a role for geographical closeness, Yonker (2017) finds that following industry distress, establishments in CEOs' hometowns are less likely to experience pay or employment reductions. Keum and Meier (2023) find smaller firm-wide net employment growth rates after state-level expansions of unemployment insurance, which help mitigate the economic impact of job loss. This pattern is pronounced in firms with internally promoted and Democratic CEOs.

A growing literature on moral preferences in finance further underscores the role of empathy-related factors in corporate decision-making. Iliewa et al. (2025) experimentally document that public concerns over layoffs surpass other social issues, linking these findings to moral considerations that are plausibly rooted in empathy. Moral considerations have also recently expanded to other related aspects, such as firm ethics (Bonnefon et al. 2025).

Finally, our findings also relate to the broader literature on managers' social considerations. Acemoglu et al. (2022) find that managers' inclination to share profits with employees varies with their exposure to business-school, shareholder-value-oriented education. Jenter and Lewellen (2015) show that managerial preferences are influenced by social norms (in the context of retirement choices). To explain low CEO turnover rates, Taylor (2010) estimates large personal disutility costs for board members, which could reflect a distaste for firing. Additionally, Cheng et al. (2023) and Cronqvist and Yu (2017) examine CEO prosocial attitudes as well but link them to corporate social responsibility rather than labor demand.

The rest of the paper is structured as follows. Section 2 introduces a simple conceptual framework. Section 3 describes the data. Sections 4 to 6 present our results. Section 7 concludes.

2. Conceptual Framework

2.1 Framework and Testable Predictions

To fix ideas, we outline a stylized conceptual framework that extends the classical model of firm production decisions to incorporate managerial prosociality. Details and proofs are provided in Appendix-Section A.

Setup. Consider a single firm in a simple three-period framework. In period 0, labor is exogenously determined, e. g., by a previous manager. In periods $t \in \{1, 2\}$, the firm's manager chooses capital k_t and labor n_t subject to expenditures (i. e., capital costs and wages) not exceeding availabe cash c_t. The firm follows a Cobb-Douglas production function with constant returns to scale.[5] The firm faces i.i.d. stochastic shocks to cash on hand c_t at the beginning of each period.

[5] All predictions hold for any standard production functions with decreasing marginal returns to capital and labor.

Layoffs are reductions in employment ($n_t < n_{t-1}$). We denote worker i's period-t utility as $u^s_{t,i}$, where s denotes the employment status, $s \in \{emp, unemp\}$ and which is higher if employed than unemployed ($u^{emp}_{t,i} > u^{unemp}_{t,i}$).

A standard manager's objective is to maximize total profits, $\max_{n_t,k_t} \pi_1(n_1, k_1) + \pi_2(n_2, k_2)$. By contrast, a prosocial manager also considers the well-being of employees. Specifically, we model prosocial managers as placing weight on the utility of those employees she has worked with for at least one period.[6] Consequently, the prosocial manager maximizes

$$\max_{n_1,k_1} \pi(n_1, k_1) + \mathrm{E}_1 \left[\max_{n_2,k_2} \pi(n_2, k_2) + \underbrace{\int_0^{n_1} f_{2,i}\left(u_{2,i}\right) \, \mathrm{d}i}_{\text{prosociality}} \right], \tag{1}$$

where $f_{2,i}\left(u_{2,i}\right)$ captures the effect of the state-dependent utility of a period-1 employee i in period 2 on the manager's utility.[7] We define

$$f_{2,i}(u_{2,i}) = \mathbb{1}\left\{s_{2,i} = unemp\right\} \alpha_{2,i} \cdot \left(u^{unemp}_{2,i} - u^{emp}_{2,i}\right),$$

where $\alpha_{2,i} > 0$ specifies the manager's prosociality towards employee i in the spirit of Becker (1981), Bandiera et al. (2005), and Hjort (2014).[8] Hence, period-2 layoffs of $n_1 - n_2$ workers impose a *personal disutility* cost $\int_{n_2}^{n_1} \alpha_{2,i} \left(u^{emp}_{2,i} - u^{unemp}_{2,i}\right) \mathrm{d}i$ on a prosocial manager.

This stylized framework allows us to illustrate the key predictions arising from managerial prosociality regarding labor decision-making.

Prediction 1 (CEO Layoff Disutility Cost). *A prosocial manager incurs a direct disutility cost from making layoffs.*

Prediction 1 follows directly from the model setup, but is worth highlighting. When managers consider layoffs, they face a trade-off between the benefits to firm value and their personal disutility. We test Prediction 1 empirically by examining the effect of undertaking layoffs on CEO mortality as a proxy for reduced utility.

Prediction 2 (CEO Turnover Effect). *For a given number of workers employed in the prior period, a new manager has a higher propensity to make layoffs than an incumbent prosocial manager.*

Note that, in Prediction 2 (as well as in the subsequent predictions), we compare identical firms, holding not only prior employment levels, but also production functions and budgets constant. In

[6] Broader formulations could include job candidates, other stakeholder groups, or even any member in the workforce at the CEO's arrival. The more restrictive formulation above best aligns with managers' survey responses and quotes.

[7] We model hiring over a continuum of employees to avoid edge cases.

[8] Correspondingly, we assume $\alpha_{1,i} = 0$.

the empirical analysis, we explicitly control for the firm's number of employees and incorporate various proxies for its financial condition, such as profitability and economic distress.

We test Prediction 2 by examining the layoff propensity of new CEOs (after an exogenously induced turnover) relative to incumbent CEOs within the same industry.

Prediction 3 (CEO Tenure Effect). *Compared to a shorter-tenured prosocial manager, a longer-tenured prosocial manager*

(i) has a lower propensity to make layoffs (extensive margin);
(ii) lays off fewer employees, conditional on a layoff (intensive margin),

holding constant the number of workers employed in the prior period.

In the model, the contrast between shorter- and longer-tenured CEOs amounts to comparing their behavior at $t = 1$ versus $t = 2$. We test Prediction 3(i) by studying managers' layoff propensity over the course of their tenure as their longer tenure allows them to build stronger connections within the firm. In additional tests, we also inspect differences between internally and externally hired CEOs.[9] Similarly, we test Prediction 3(ii) by examining the fraction of the workforce laid off each year as CEO tenure increases. Here, a prosocial manger opts for smaller layoffs (as their tenure increases) since the disutility cost of layoffs varies with the number of employees laid off.

Prediction 4 (Employee Heterogeneity). *Compared to a shorter-tenured prosocial manager, a longer-tenured prosocial manager reduces their layoff propensity and layoff size more strongly*

(i) when layoffs affect employee utility more adversely and
(ii) for employees whose utility the manager weighs more heavily,

holding constant the number of workers employed in the prior period.

Prediction 4 states that the more severe the adverse effects of layoffs on affected employees are, the more pronounced are the effects on the extensive and intensive margins. For our empirical tests of Prediction 4(i), we proxy for variation in the adverse effects on employees using the timing of layoffs relative to recessions—when displaced employees experience more severe long-term losses of earnings (Jacobson et al. 1993)—and relative to the holiday season. For our empirical tests of Prediction 4(ii), we hypothesize that managers place greater weight on employees who are "closer." We examine geographical closeness (i.e., propensity to lay off employees near versus far from headquarters) as well as social closeness (i.e., the propensity to lay off white- versus blue-collar employees).

[9] As Levitt and List (2007) discuss, social preferences are expected to be less pronounced among strangers, and more pronounced in the presence of social relations. Consistent with this, Bandiera et al. (2005) find that social preferences among co-workers are more pronounced when friendship networks are stronger.

Prediction 5 (Labor-Capital Trade-Off). *Managers who avoid layoffs due to their prosocial motives will reduce their capital spending to offset the higher labor costs.*

Prediction 5 lays out the implication of managerial prosociality for capital spending. A prosocial manager's reluctance to initiate layoffs leads to a higher payroll. To offset the higher labor cost, the manager must reduce capital spending. We test Prediction 5, in conjunction with 4(i), by examining the relationship between layoffs and R&D spending during periods of industry distress. In such periods, financing constraints are more likely to bind; however, as our empirical test of Prediction 4(i) shows, the difference in layoff propensity between short- and long-tenured prosocial managers widens during industry distress. We focus on R&D spending because it is a key component of investment and tends to be more responsive to financing constraints than long-term physical capital investments.

Prediction 6 (CEO Heterogeneity). *Higher prosociality over a CEO's tenure predicts a steeper decline in layoff propensity and layoff size over time, holding constant the number of workers employed in the prior period.*

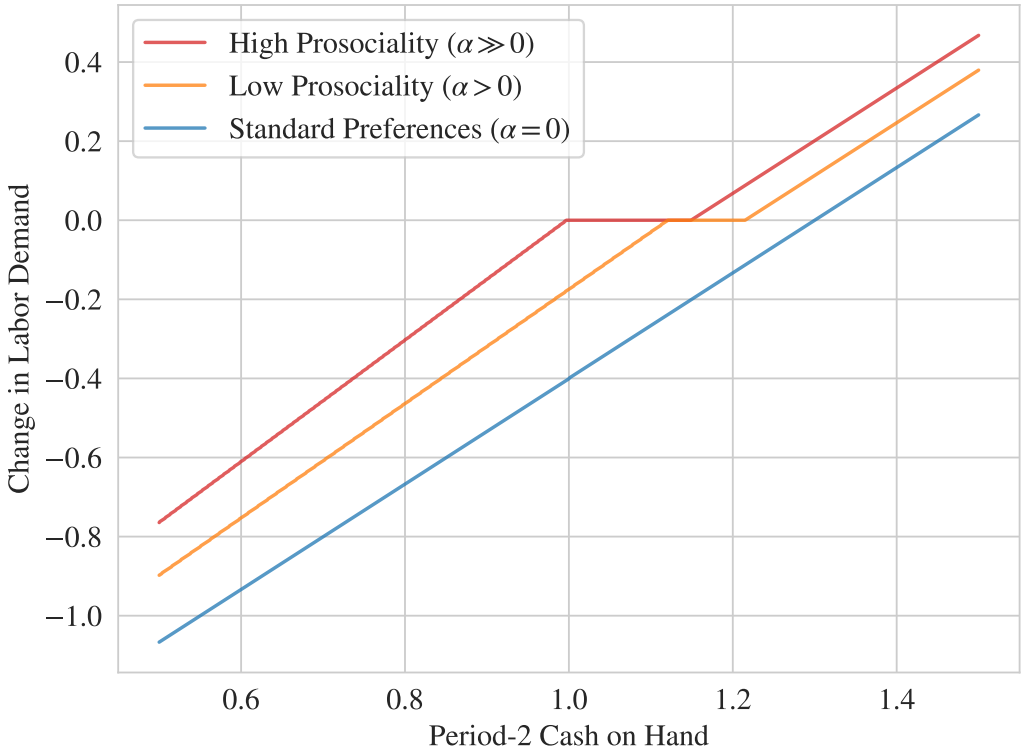
Intuitively, Prediction 6 states that the more a manager's prosocial motive strengthens throughout their tenure, the steeper the corresponding decline both in layoff propensity and layoff size. Motivated by Kaplan et al. (2012), who document that managerial overconfidence (resoluteness) is contrary to empathy—the unifying underpinning of prosociality in our setting—we test this prediction using empirical variation along this dimension.

Graphical Illustration. Figure 1 illustrates the relation between prosociality and labor choices graphically. It plots the change in labor demand (hiring and firing) between period 1 and period 2 as a function of of the firm's financial situation, i. e., cash available in period 2. The labor choices of managers with standard preferences are shown in blue, those with moderate prosociality ($\alpha > 0$) in orange, and those with high prosociality ($\alpha \gg 0$) in red.

The figure illustrates three regimes. When cash on hand is high and the firm's spending is less constrained, all manager types hire additional employees.[10] At moderate levels of cash on hand, prosocial managers maintain their period-1 labor levels to avoid the disutility cost of layoffs, whereas standard managers continuously adjust labor downward. When cash on hand is even lower, all manager types engage in layoffs, but the magnitude of the workforce reduction is smaller for more prosocial managers. The differences in prosocial weights in the figure map to our framework representing newly appointed managers not exhibiting prosociality ($\alpha = 0$), and incumbent managers exhibiting positive—and potentially heterogeneous—levels of prosociality ($\alpha > 0$ or $\alpha \gg 0$).

[10] Prosocial managers increase labor slightly more as they "shade" hiring in period 1 to avoid laying off employees they come to care about.

Figure 1. Change in Labor Demand (Period 2 Vs. Period 1)



Notes: The figure plots the change in labor demand from period 1 to period 2 for different realizations of period-2 cash on hand, c_2, conditional on the choice of n_1, for a period-1 cash-on-hand level of $c_1 = 1.3$. The distribution of cash on hand is given by $c_t \overset{iid}{\sim} \mathcal{U}[.5, 1.5]$. Production is Cobb-Douglas with capital share $\gamma = \frac{1}{3}$ and labor share $\nu = \frac{2}{3}$. The rental cost of capital is $r = 0.2$, and the per period wage is $w = 0.5$. The difference in utility between states is $u_{2,i}^{emp} - u_{2,i}^{unemp} = 1$ for all employees. The prosocial weights for the high and low managers are $\alpha^{high} = 0.4$ and $\alpha^{low} = 0.2$ with respect to all employees who were employed in period 1. Additional details on the numerical solution are in Appendix-Section A.4.

2.2 Underpinnings of Managerial Prosociality

Before turning to the empirical tests of our predictions, we discuss potential underpinnings as well as alternative explanations for the behavior attributed to managerial prosociality towards employees, i. e., the $\alpha_{2,i}$ weights in equation (1). We include both neoclassical interpretations and interpretations within the realm of prosocial preferences.

Norms and Implicit Contracts. One possibility is that managerial social considerations arise from norms or implicit contracts between management and employees. Gorton and Zentefis (2020) argue that social norms form inside firm and are directed by management to ensure a well-functioning organization. A mechanism based on implicit contracts and social norms is consistent with some, but not all of our evidence. For example, in line with our empirical results, establishing implicit

contracts, e. g., by avoiding layoffs, might become more important later in a CEO's tenure, and potentially in particular for white-collar employees. This mechanism does not predict, however, personal disutility cost from implementing layoffs. The social-contract mechanism predicts that the manager takes employee interests into account in the optimization but *if* layoffs are warranted in that process, the "act of firing" does not lead to disutility costs. By contrast, we will show in Section 4 that making layoffs predicts long-run CEO mortality, holding fixed the firm's and industry's overall condition.

Career Concerns. Another possibility is that CEOs avoid layoffs because of career concerns. Career-concern motives imply, however, that managers maximize their self-interested utility, also when making layoff decisions, which is again hard to reconcile with increased mortality. Further, one might argue that layoffs in good times should hurt reputation more than those in recessions (e.g., Grenadier et al. 2014), whereas our heterogeneity tests find evidence consistent with stronger prosocial considerations during downturns. Additionally, career concerns predict that managers should be more likely to make layoffs closer to retirement when their career is near its end, which is the opposite of what we find.

Relatedly, concerns about hiring in the future and risk aversion would point towards more layoffs closer to retirement.

Social Pressure. Alternatively, it is possible that CEOs display prosocial behavior as a result of social pressure from other stakeholders and agents, such as unions, (local) governments, or the media. Depending on the nature of such external pressures, this mechanism could be consistent with some of our results. For example, it could explain geographic layoff heterogeneity, if pressures from local agents loom larger. However, it is again not easily reconcilable with our finding of personal health costs of firing for CEOs. Under a social-pressure mechanism, the CEO implements layoff decisions as "guided" or called for by others, effectively leaving little room for incurring personal disutility costs from such decisions.

Social Image. Further, managers' prosociality could be driven by social-image concerns, which may increase with tenure, and which can generate time-varying and heterogeneous prosociality weights. To what extent a social-image mechanism is consistent with all our findings depends on the precise nature of social-image formation. On the one hand, it is plausible that social-image concerns might intensify during recessions. On the other hand, it is plausible that a manager's social image might suffer more when laying off blue-collar workers as opposed to white-collar workers, which would predict amplified effects for blue-collar workers, whereas empirically we find stronger effects for socially-close white-collar employees.

Empathy. The mechanism that most aligns with the full set of our results is managerial empathy. Empathy has been described as "the affective experience of the other person's actual or inferred emotional state ... feeling what another person is feeling, knowing what another person is feeling, and

having the intention to respond compassionately to another person's distress" (Decety and Jackson 2004). This characterization of empathy corresponds closely to the disutility cost formulation in our conceptual framework (equation (1)).

Various additional facets of empathy align with our empirical approach and findings. For one, psychologists emphasize a distinction between negative empathy (i.e., empathetic concern) and positive empathy (Morelli et al. 2015), implying in our setting that layoffs and new hires are unlikely to serve as "substitutes" for prosocial managers. Additionally, prior work in neuropsychology documents stronger empathetic responses when the degree of self-other overlap is larger, and that this effect grows over time as attachment to others increases ("friends-versus-strangers"). For example, Meyer et al. (2013) use neuroimaging-based techniques to show that when subjects observe friends suffering socially, pain-processing brain areas are activated that are associated with feeling pain and firsthand experiences of exclusion. When subjects observe strangers, activated brain areas instead are those associated with merely understanding others' states and intentions.[11] These findings are consistent with our evidence of amplified managerial concerns for socially-close white-collar employees. Our empirical distinction between overconfident and empathy-driven CEOs, along with evidence on resulting heterogeneity in layoff reluctance, also provides direct evidence supporting this microfoundation. Overall, a psychological underpinning of prosociality arising from managers' empathetic concern for employees is consistent with all of our empirical findings.

3. Data

This section discusses data and descriptive statistics, with an emphasis on our newly assembled layoff dataset. Appendix-Section B contains further information on data sources and data processing, including more detail on the text-processing algorithms to identify layoffs, as well as variable definitions.

3.1 2002-2020 Layoff Data

The starting point for the construction of our new dataset on layoff announcements is the Standard and Poor's (S&P) Capital IQ Key Developments database. This database has reliable coverage starting in 2002 (Edmans et al. 2018; Cohn et al. 2020), and we restrict the sample period to 1/2002–2/2020, i. e., omit the COVID-19 period.

The database covers more than 250,000 companies worldwide. Since we rely on Execucomp for details about CEOs (see Section 3.2), we collect key developments for firms in Execucomp.

[11] The study concludes that their findings "support the idea that self-other overlap with a target may allow us to recruit brain mechanisms that indicate that we ourselves are experiencing the target's situation."

We extract information for all observations where the type of announcement is categorized as "Discontinued Operations/Downsizings," amounting to 18,019 key developments as of the download date (January 28, 2022).

Each key development entry in the database includes a date, headline, and situation summary, which is a short news-like text description. The content is based on a variety of sources including news aggregators, stock exchanges, regulatory websites, and company websites.

We leverage NLP techniques, augmented by hand-coding, to (1) classify each article as a layoff, closure, or neither; (2) extract the number or percentage of workers laid off; (3) identify the layoff location at the international, state, and city level; and (4) classify layoffs as blue-, pink-, or white-collar.

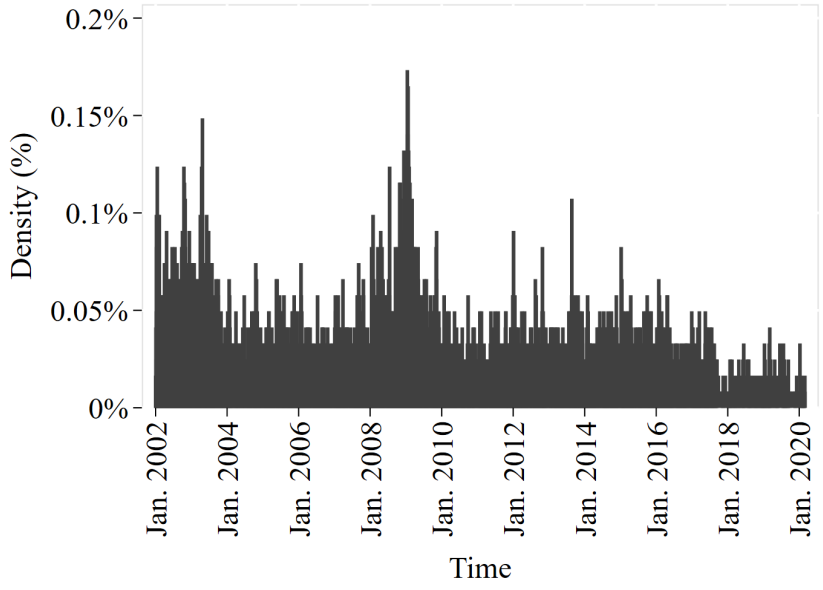
For (1), we first lemmatize the headline and situation summary, i. e., standardize verbs and nouns. For example, "cutting" becomes "cut" and "jobs" is reduced to "job." We then create several word lists to aid in identifying layoffs and closures (of, e.g., a factory or branch): (i) layoff verbs, such as "cut" and "slash," (ii) closure verbs such as "mothball" or "shut down," and (iii) worker-related nouns, including words for synonyms of jobs like "position" or "role," words for occupations such as "accountant" or "banker," and collective job words, such as "headcount" or "workforce." A key development is classified as a layoff if the headline or a sentence in the summary includes a layoff-related verb as well as a noun from one of the three worker-related lists specified above. If it contains only a layoff-related verb or worker-related noun, it is classified as a layoff with low confidence and flagged for additional attention when manually reviewed. A key development is classified as a closure if it includes a closure-related verb and is not classified as a layoff. If neither set of criteria is met, it is classified as neither.

All key developments are manually reviewed for accuracy, with special attention given to low-confidence observations. We consider the key developments for a given firm in the order they were announced, allowing us to identify and drop any duplicate layoff announcements. The manual review also allowed for using criteria that NLP could not easily capture. Since closures frequently result in layoffs, especially when entire plants or branches are closed, we treat them as layoffs *unless* the key development specifically mentions that a closure comes with no layoffs, e. g., due to employee reassignments. We also separate layoff announcements from business sales without effects on employees. Moreover, we distinguish involuntary layoffs from employee reassignments and voluntary departures such as early retirement.

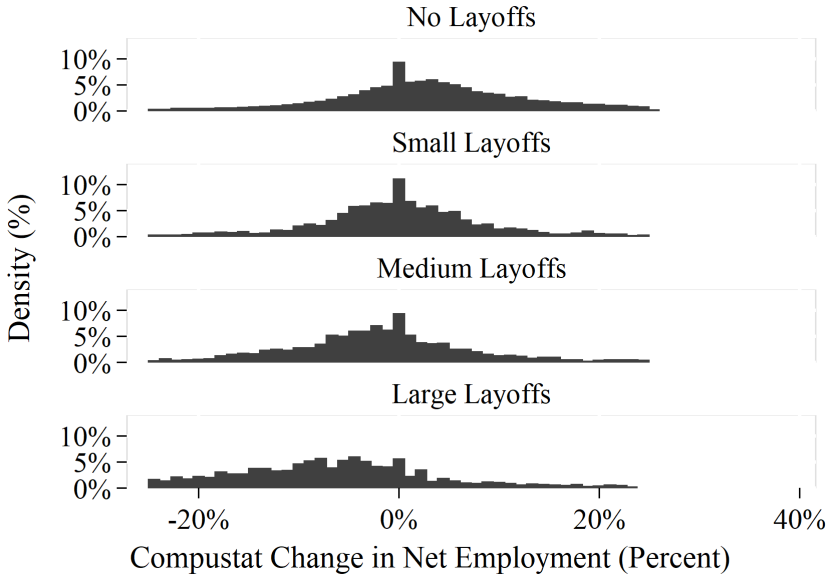
Figure 2a plots the resulting distribution of all identified layoffs across time. The number of layoffs peaks during the Great Recession and is lower than average in the pre-COVID-19 years, when unemployment was very low (Petrosky-Nadeau et al. 2019).

For (2), we extract the number and percentage of workers laid off. We use restricted text searches, commonly referred to as regular expressions, to capture all of the common ways to describe

Figure 2. Layoff Events



(a) Layoffs by Month



(b) Layoffs Versus Net Employment Change

Notes: Panel (a) plots the number of all identified layoffs extracted from the S&P Capital IQ Key Developments database by month. Panel (b) plots the distribution of year-over-year net employment change from Compustat (in percent) for CEO-firm-years with no layoffs in the 2002-2020 S&P Capital IQ Key Developments data (top figure), as well as CEO-firm-years with layoff size data separated into small, medium, and large (bottom figure) layoff years, as defined by terciles of the proportion of the firm laid off.

the count or proportion of jobs cut. For example, one pattern for percentages is *verb, other words, job words, other words, percent words*. The statement "reduce its workforce by 5%" would fall into this category. Corresponding patterns are used for "count" statements. These numbers are also manually reviewed.

The detailed count of layoffs represents a significant improvement over previous measures of layoffs, which have relied on proxies such as net employment changes. Figure 2b compares layoffs identified in our sample directly to firms' net employment changes from Compustat. The figure plots the distribution of year-over-year net employment changes (in percent) for CEO-firm-years with no, small, medium, and large layoff activity, where the size of the layoff activity is determined by the proportion of the firm laid off.[12] With increasing layoff size, the distribution of net employment changes shifts to the left, implying that both variables are related. Yet, there remains a large dispersion in distribution of employment changes within each layoff group, including a significant fraction of firm years with a shrinking workforce despite no layoffs, and another sizable portion growing despite high layoff activity. Employment changes that are not driven by involuntary layoffs can include, for example, voluntary departures as well as early retirement. Overall, changes in the net employment count appear to be a highly imprecise proxy of layoffs. Another source for layoffs is Worker Adjustment and Retraining Notification (WARN) Act filings. We examined the situation summaries for the key developments and found multiple direct references to WARN filings which suggests that our dataset likely captures relevant WARN filings.

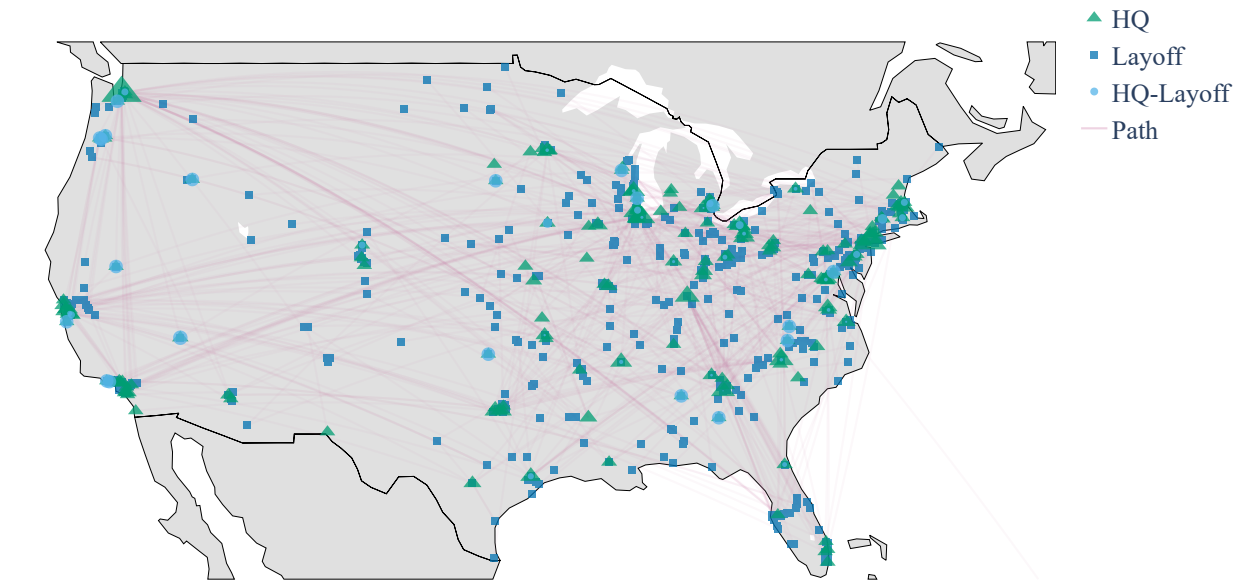
For (3), we collect the geographic location of the layoff up to the city level for U.S. layoffs and up to the country level for foreign layoffs. We also record layoffs that are specified as global, international, or similarly described, and review all geographic classifications manually.

Figure 3 shows the geography of layoffs for two years in our sample: 2009 and 2015, allowing us to compare layoff patterns in the Great Financial Crisis versus a later point in time. The geographic separation between firms' headquarters (HQs) and layoff sites is frequently substantial, indicated by the lines connecting HQs (green triangles) and layoff locations (dark blue squares). Light blue dots identify HQ-city layoffs, which are rare compared to more distant layoffs. Comparing the two maps, we can see that layoff activity is substantially higher in 2009 than 2015.

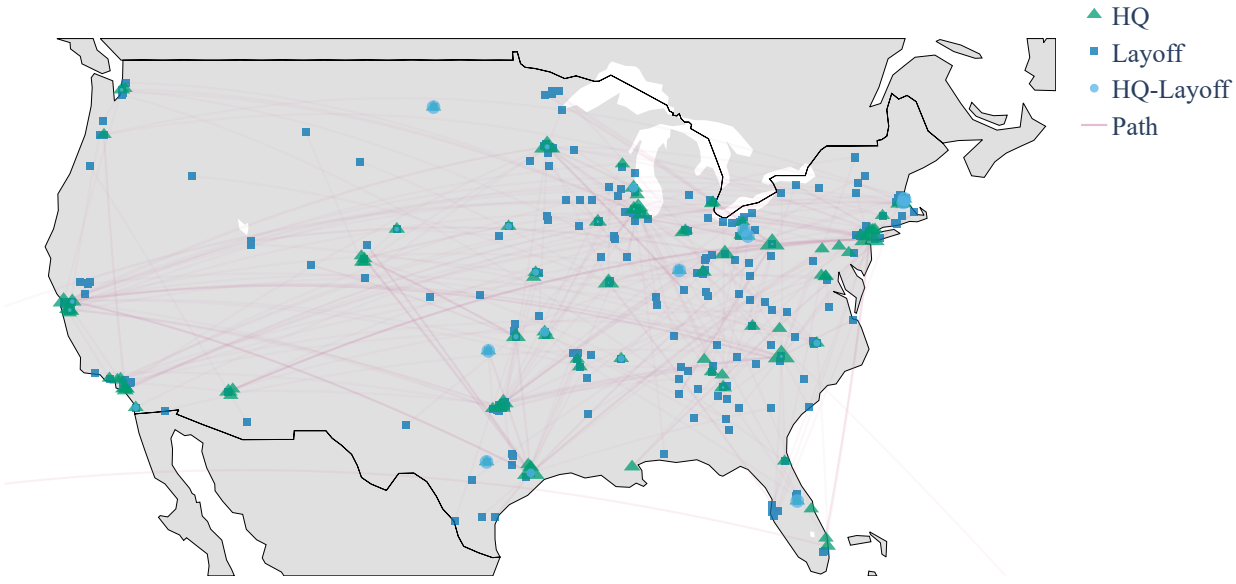
For step (4), we identify blue-, pink-, and white-collar layoffs based on a compilation of the 500 most common words in the sample overall. Among these words, we classify keywords that indicate blue-collar (e.g., factory, plant), pink-collar (service-oriented jobs; e.g., retail, store), and white-collar (e.g., corporate, headquarters) layoffs and categorize our layoff events correspondingly.

[12] Our sample contains 2,258 firm-years with more than one CEO. This can be due to co-CEOs or a CEO turnover for which we include observations for both for the departing and the new CEO. Including both CEOs in the turnover year ensures that the layoff is correctly attributed to the CEO who made the decision. We calculate the proportion laid off as the sum of the proportions laid off in all layoffs in a given CEO-firm-year. Small, medium, and large activities are defined by terciles of the resulting distribution.

Figure 3. Layoffs Across Space



(a) Layoffs in 2009



(b) Layoffs in 2015

Notes: Panel (a) plots layoffs in 2009, and Panel (b) layoffs in 2015, both from the 2002-2020 Layoffs dataset whenever location data is available. Lines connect firms' headquarters and layoff locations. Green triangles identify headquarters. Dark blue squares identify layoff locations. Light blue dots identify headquarters-city layoffs.

We verify that the resulting classifications are sensible using city-level data on occupation frequencies from the 2000 U.S. Census (see Appendix-Section B for additional details).

In our main empirical analyses, we focus on significant layoff events, namely, CEO-firm-years when a firm laid off at least 1% of the workforce or had at least three separate layoff events. For CEO-firm-years with fewer than three layoffs and that do not meet the 1% layoff size criterion but have missing information on layoff size for at least one of the layoff events, we manually search on the web and LexisNexis to obtain this information, to ensure precise measurement of variables. We are able to find the layoff size information for about 10% of these layoff events, suggesting that this information is usually included in the key development text when it is publicized. Our results are robust to using either the resulting indicator for significant layoff events or a layoff indicator based on *any* layoff activity in a given year. We use the indicator for *any* layoff activity when we study location-specific, month-specific, or employee-type-specific layoff activity in Tables 9 through 11.

3.2 Firm and CEO Data

We combine the new layoff dataset from Section 3.1 with standard firm and CEO data from CRSP, Compustat, and Execucomp.

Data on CEOs, CFOs, and their tenure comes from Execucomp. We identify exogenous CEO changes by merging in the open-source database of CEO turnovers and dismissals by Gentry et al. (2021), which contains classifications for CEO turnovers. Data on firm characteristics, such as assets, employees, and profitability, comes from Compustat. We use log assets and log employees as proxies for firm size. Firm profitability is measured as operating income before depreciation divided by assets. We lag these variables in all analyses. Stock price data come from CRSP, and we calculate cumulative abnormal returns for our event study analysis based on the market-adjusted model.[13] Similar to prior work (Opler and Titman 1994; Acharya et al. 2007; Babina 2020), we define an industry-year as in distress if the two-year stock return of the median firm in a given SIC3 industry is -30% or less, where we consider both the prior two years and the prior and current year for the two-year horizon.[14] We also use governance data from the Institutional Shareholder Services (ISS, formerly RiskMetrics), to calculate measures of co-opted directors, described further in Section 5.2. The resulting CEO-firm-year panel dataset, which we refer to as the *2002–2020 Firm–Layoffs Dataset* going forward, covers 2,779 unique firms.

[13] For the market return, we use the value-weighted return on the NYSE, AMEX, NASDAQ, and ARCA exchanges.

[14] We find that this definition of distress is even more strongly associated with layoff activity in our data than an alternative definition based on two-year forward-looking stock price changes.

3.3 1970–1999 Layoff Data and CEO Mortality Data

To study long-term CEO health outcomes associated with implementing layoffs, we rely on an earlier layoff dataset from Hallock (1998), Billger and Hallock (2005), and Farber and Hallock (2009). This dataset covers all firms listed in the *Fortune 500* between 1970 and 1999 and provides a comprehensive list of layoff announcements collected from the *Wall Street Journal*.

We merge this layoff dataset with the mortality dataset from Borgschulte et al. (2023), which is an extension of the data in Gibbons and Murphy (1992) and covers all CEOs included in the *Forbes* Executive Compensation Surveys from 1975 to 1991. These surveys are based on corporate proxy statements and include the executives of the largest U.S. firms. The exact dates of CEOs' birth and death are sourced from ancestry.com, newspapers, and obituaries. CEOs who did not pass away by the cutoff date of October 1st, 2017 are censored.

After further merging with Compustat and CRSP data, the final *CEO Mortality Dataset* contains 31,917 CEO-year observations from 1,131 CEOs across 658 firms.

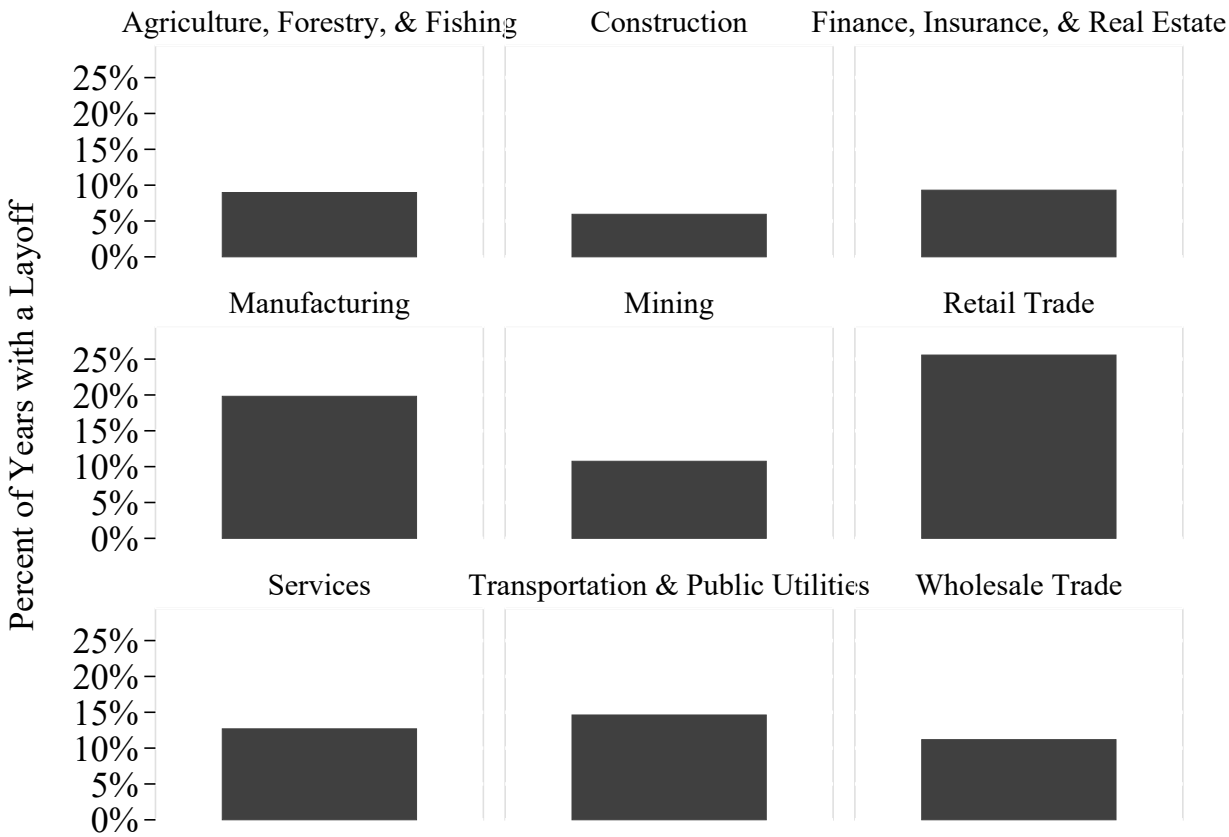
3.4 Descriptive Statistics

Table 1, Panel (a), presents summary statistics for the *2002–2020 Firm–Layoffs Dataset*. One observation corresponds to a CEO-firm-year. The average CEO tenure is 8 years and the average CFO tenure is 5 years. 19% of observations are CEO-firm-years in industry distress, and 13% are classified as layoff-years.

Figure 4 decomposes layoffs by industry. It shows that layoffs are particularly likely in the retail trade industry, which features seasonal labor demand (Anderson 1993), and the manufacturing sector, which has been affected by offshoring and automation (Slaper 2019). We note these statistics abstract from the distribution of firms within our sample. For example, 40% of firms in our sample are in the manufacturing sector which accounts for about 20% of years with a layoff. Meanwhile, only 8% of firms are in the retail trade sector which accounts for about 25% of years with a layoff.

Table 1, Panel (b), presents summary statistics for the *CEO Mortality Dataset* at the CEO level. The median CEO was born in 1928 and, conditional on having passed, died at age 82. 11% of CEOs experienced layoffs during times of distress and 38% experienced layoffs during nondistressed times. 43% of CEOs experienced industry distress. The minimum stock performance, defined as the worst stock performance in any six-month period during a CEO's tenure, is -30% on average in our sample.

Figure 4. Layoffs by Industry



Notes: The figure plots the distribution of layoffs from our sample by industry classification based on SIC code. Data on layoffs assembled using NLP text processing and classification as well as hand-coding of S&P Key Developments data as detailed in Appendix-Section B. SIC codes are provided by Compustat.

4. Personal Cost of Firing for CEOs

We first examine personal long-term health consequences for CEOs associated with implementing layoffs as a direct way to detect firing-induced "disutility costs," and specifically examine accelerated mortality. This analysis builds on Borgschulte et al. (2023), who document adverse aging and mortality outcomes for CEOs arising from more stressful work environments, including industry crises.

We estimate survival models to detect predictors of CEO mortality in the *CEO Mortality Dataset*. Our key variable of interest is whether the CEO implemented a layoff during their tenure. We allow for heterogeneous mortality effects depending on whether the CEO implements layoffs during industry distress or nondistressed times. Layoffs during economy-wide or industry downturns

are particularly painful and damaging for affected workers (Anderson 1993, Martin 2005, Hallock 2005). Downturns may also frequently force firms to lay off employees for reasons unrelated to their performance. Both aspects suggest particularly high and detectable CEO disutility costs associated with layoffs in times of crisis. Our main specification is of the following form:

$$\begin{aligned}\text{Prob}(CEODeath_{i,t}) = \alpha + \beta_1\, \textit{DistressLayoff}_{i,t} + \beta_2\, \textit{NonDistressLayoff}_{i,t} \\ + \gamma_1 \textit{IndustryDistress} + \boldsymbol{X}'_{i,t}\gamma_2,\end{aligned} \tag{2}$$

where $CEODeath_{i,t}$ is one if CEO i passes away in year t and zero otherwise. *DistressLayoff* and *NonDistressLayoff* are indicator variables for whether a CEO has experienced a distress or non-distress layoff, respectively, with the indicator remaining on once set to one. *IndustryDistress* controls for the direct mortality effect of experiencing industry distress, and $\boldsymbol{X}$ is a vector of control variables, including CEO age, proxies for firm size (assets and employment), firm profitability, and year (or, alternatively, year fixed effects). In addition, we include state and industry fixed effects, as discussed below.

We estimate equation (2) both as a logit model and as a hazard model. In the logit estimation, shown in Table 2, we include an explicit event time control, i. e., control for the time that has passed since a CEO first assumed their position.[15] As in Borgschulte et al. (2023), one observation corresponds to a CEO-year, and we continue to follow CEOs over time after they leave the CEO position until they pass away or the censoring date is reached.

In column (1), we include our main variables of interest, distress layoff and non-distress layoff experience, controlling for the direct effect of industry distress, CEO age, firm controls (assets, employees, and profitability), and time. We also include HQ state fixed effects and industry fixed effects, as in Borgschulte et al. (2023). We cluster standard errors at the industry level as this is the level at which distress experience is defined (Abadie et al. 2017).

We find that distress layoff experience significantly accelerates mortality, consistent with these layoff experiences leaving long-run marks on CEOs. The logit coefficient estimate of $+0.294$, significant at the 5% level, implies that the mortality effect of distress layoff experience corresponds to that of an increase in age by 1.85 years. This effect is large and of the same magnitude as the mortality effects associated with more stressful job environments documented in Borgschulte et al. (2023). By contrast, we find no evidence for mortality effects associated with layoffs during nondistressed times. We also note that the indicator for Industry Distress does not enter significantly. These results remain unchanged when replacing the linear time control with year fixed effects in column (2).

One potential concern regarding the estimates in columns (1) and (2) is heterogeneity in distress

[15] The time variable is created when the dataset is specified as a time-to-event dataset. See Efron (1988), Jenter and Kanaan (2015), and Guenzel (2023) for more details and finance applications of this approach.

driving the results. That is, one might worry that an omitted variable reflecting the severity of distress experienced by a given firm drives both distress layoffs and mortality. To alleviate this concern, in column (3), we control for the worst stock performance in any six-month period during the CEO's tenure. This variable captures the severity of (possibly endogenous) firm distress over the course of a CEO's tenure and introduces variation in "CEO experience," holding fixed whether a CEO has experienced industry distress. The coefficient on Distress Layoff does not change substantially. This suggests that our results are driven by the experience of and responsibility for distress-induced layoffs, not simply by severe distress.

Robustness. We include several robustness tests in the Appendix. First, we re-estimate equation (2) using Cox (1972) hazard models instead of the logit estimations from Table 2. As expected, given the close link between logit models (with an explicit time control) and hazard models, we find very similar results (Appendix-Table A.1). Second, in Appendix-Tables A.2 and A.3, we repeat the logit and the hazard model estimations, adding a control for CEOs' cumulative tenure, in light of our results below that longer-tenured CEOs are less likely to initiate layoffs. (We omit the CEO tenure control in our preferred specification, in line with Borgschulte et al. (2023), since distress and layoff experience may themselves affect tenure length.) In practice, adding CEO tenure as a control makes little difference. Longer tenure is associated with decreased mortality, suggesting that healthy, resilient CEOs select into serving as a CEO for longer. Regardless, we continue to estimate large adverse effects of distress layoff experience on CEO mortality.

5. Variation in Layoffs by CEO Tenure

Having established a direct and personal cost of firing for CEOs, this section presents a series of empirical facts showing that CEOs with longer attachment to the firm are significantly less likely to lay off employees. We consider plausibly-exogenous CEO turnover events, variation over the course of a CEO's tenure, and comparisons between externally and internally hired CEOs.

5.1 Layoff Propensity Around Plausibly-Exogenous CEO Turnovers

As a first step in identifying frictions in layoffs among CEOs who might be more attached to their employees, we examine how firms' layoff propensity varies around plausibly-exogenous CEO changes. Following prior work (e.g., Fee et al. 2013), we use in-office death or illness of the incumbent CEO to identify plausibly-exogenous CEO changes. Note that the differential mortality patterns by CEO layoff experience documented in Section 4 are not inconsistent with this approach to identification as the former results only materialize in the long run, *after* CEOs have stepped down and retired. The median CEO in the full *CEO Mortality Dataset* passes away at age 82, whereas

the median CEO who is exogenously replaced due to a health shock is 60 years old at the time of replacement. We will also show that the identified exogenous CEO departures are not associated with any pre-trends in terms of key variables of interest (i. e., layoff propensity).

Stacked Difference-in-Differences Analysis. There are 115 CEOs in the *2002–2020 Layoffs Dataset* who depart due to death or illness as per the Gentry et al. (2021) data. Since these events occur at different points in time, we implement a *stacked difference-in-differences* (DiD) analysis similar to Gormley and Matsa (2011) (cf. Goodman-Bacon 2021). For each year with an exogenous CEO change in firm j, we construct a cohort c of treated and untreated firms in the same three-digit SIC industry k. We follow these cohorts from five years before to five years after the year of the CEO's exogenous departure, limiting the post-period to the tenure of the CEO who follows the turnover if it is shorter than five years. As in Gormley and Matsa (2011), we do not require firms to be in the data for all ten years around the event year. We then aggregate the cohort-event-time data across cohorts into one panel and estimate:

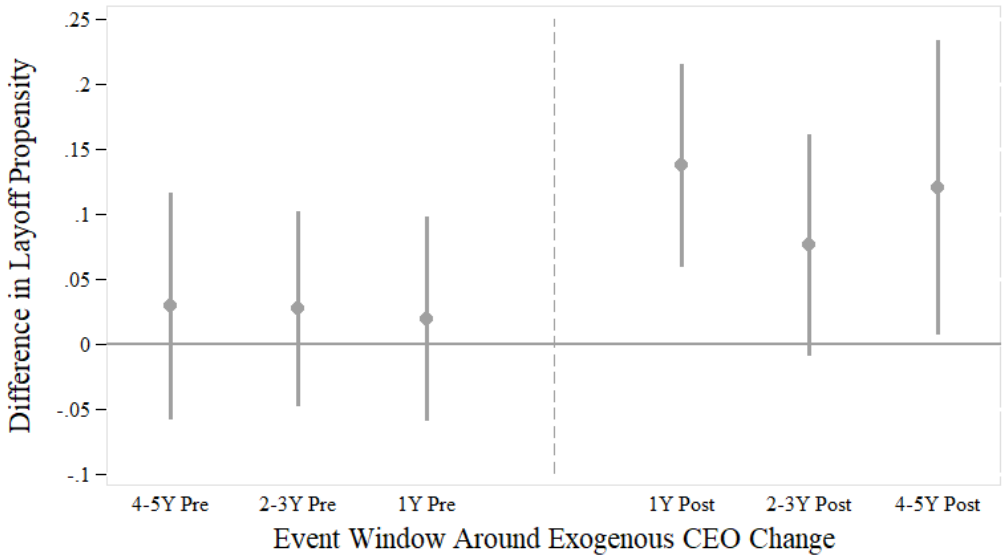
$$\begin{aligned} \textit{Layoff}_{j,k,c,t} = \alpha + \alpha_{k,c} + \alpha_{c,t} + \beta_1\, ExogCEOChange_{j,k,c} \\ + \beta_2\, \textit{ExogCEOChange}_{j,k,c} \times \textit{Post}_{c,t} + \varepsilon_{j,k,c,t} \end{aligned} \tag{3}$$

where $\textit{Layoff}_{j,k,c,t}$ is an indicator for layoff-years, and $ExogCEOChange_{j,k,c}$ identifies treated firms with an exogenous death- or illness-driven CEO departure. $\textit{Post}_{c,t}$ identifies post-treatment years. To reduce the residual variance and improve precision, we also include the firm control variables from Panel (a) of Table 1 and allow coefficients on the controls to vary between the pre- and post-period (Angrist and Pischke 2009). In addition, we include cohort-SIC3-industry fixed effects $\alpha_{k,c}$, which account for time-invariant differences between industries (within cohorts), and cohort-year fixed effects $\alpha_{c,t}$, which control for time trends (within cohorts) and also absorb the non-interacted $Post_{c,t}$ control. We now cluster at the firm level at which "treatment" is assigned (Abadie et al. 2017).

Figure 5 presents the stacked DiD results graphically, where equation (3) is slightly modified to allow for time-varying coefficients on the interaction term of interest (β_2) within the pre- and post-periods.

The figure shows that, consistent with the assumptions of no pre-trends and parallel trends in the counterfactual state, treated and control firms evolve similarly with respect to their layoff propensity in years prior to the CEO change. In the year after the CEO transition, the difference in layoff propensity between firms with exogenously replaced CEOs and control firms jumps to $+13.7$ pp, becomes statistically significant at the 1% level, and remains elevated afterward. When we estimate equation (3) (Appendix-Table A.4), we find an average effect of 8.7 pp over the five-year period following the turnover, statistically significant at the 1% level. Hence, newly appointed CEOs exhibit significantly higher layoff propensities than their longer-tenured predecessors.

Figure 5. Layoff Propensity Around Exogenous CEO Changes



Notes: The figure plots the difference in layoff propensity around exogenous CEO departures relative to non-treated firms in the same industry cohort. Exogenous CEO changes are those occurring due to CEO death or illness of the incumbent CEO as identified in Gentry et al. (2021). The 95% confidence intervals are based on standard errors clustered at the firm level.

These results are consistent with layoffs increasing following a disruption in the social connections between the CEO and employees and, hence, a role for prosocial attitudes of incumbent CEOs, who serve an average of seven years prior to being exogenously replaced.

Checks for Potential Confounds. While health- and death-related turnover events have been established as the most stringent approximation of plausibly exogenous CEO changes, we consider a number of potential confounds. These concern the potential predictability of such departures, a lower match quality of the successor, and a potential shift in strategy by the successor, all of which might predict differences in layoffs. As for concerns about the possible predictability of CEO departures, we conduct several tests using the data from the pre-period. We find that none of the firm characteristics (assets, employees, or profitability) predict CEO death- and health-related departures.

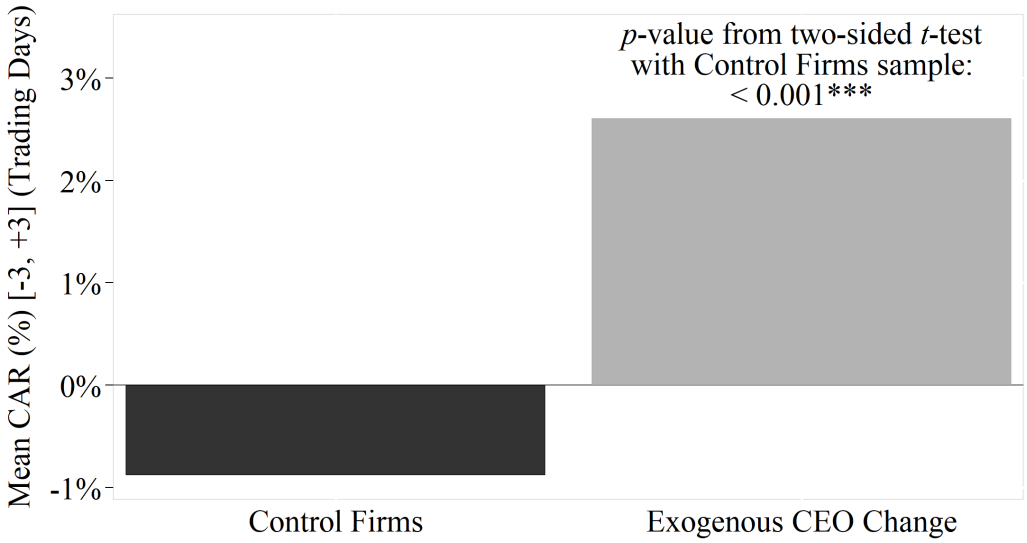
Turning to the concern that the exogenously replaced CEOs were superior matches for their firms, we estimate the market reaction to the announcement of the exogenous CEO departures. The average +/-3-day announcement return to the firm's stock is insignificantly positive in our sample (average CAR $= 0.08\%, p = 0.87$), leaving little room for the proposed confound.

Regarding a shift in corporate strategy, we implement a Romer and Romer (2010)–style narrative approach of the layoff announcement descriptions after exogenous CEO turnovers. That is, we return to the key developments data and re-read the description of the key development for all layoffs

implemented by the new CEO in our *2002-2020 Layoffs Dataset*. We find that not a single text mentions a shift in strategy due to the new CEO as a layoff reason. As a second test regarding a potential shift in corporate strategy, we analyze potential changes in other corporate outcome variables. Specifically, we implement a placebo test with firm leverage as the dependent variable and find neither pre- nor post-trends with respect to the financial side of the firm, as shown in Appendix-Figure A.1. This finding is consistent with Fee et al. (2013), who similarly do not find significant changes in leverage (nor in book asset growth or ROA) around exogenous CEO turnovers.

Market Reaction to Layoffs After Exogenous CEO Turnovers. We next study how investors react to layoffs made by newly appointed CEOs after exogenously determined turnovers. If the sharp increase in layoff propensity post-turnover reflects frictions prior to the CEO replacement, we would predict a significantly positive market reaction.

Figure 6. Layoff Announcement Returns After Exogenous CEO Changes



Notes: The bar plots present the average CAR (in %) to layoff announcements at control firms (left bar) and firms that had an exogenous CEO change (right bar) during the five-year post period as specified in the DiD analysis. Exogenous CEO changes are due to the death or illness as reported in Gentry et al. (2021).

We calculate the +/-3-day announcement effects to layoff announcements by firms with exogenous CEO changes during the post-turnover period. We define the window in terms of trading days and require that return data is available for at least four of the seven days. The abnormal return is defined as the stock return minus the market return, the latter as defined in Section 3.2. As indicated by the right bar in Figure 6, these layoff announcements trigger a pronounced positive reaction (average CAR $= +2.61\%$). For comparison, layoff announcements in the matched control firms from the stacked difference-in-differences analysis (i. e., same-industry firms with no exogenous

CEO change) trigger a slight negative market reaction of -0.9% during the post-period on average, similar to the average announcement effect in the full 2002-2020 sample (-0.3%). The difference in average layoff announcement returns between control and treated firms is highly statistically significant (two-sample t-test, p-value < 0.001). We can also reject that the announcement return samples have the same median (nonparametric equality-of-medians test, p-value < 0.001) or are from the same distribution (two-sample Wilcoxon rank-sum test, p-value < 0.001).

Overall, the evidence in Figures 5 and 6 points to sizable layoff frictions under incumbent CEOs that are detrimental to shareholder value. One possible interpretation is that incumbent CEOs have developed more pronounced social concerns towards workers. Upon replacement, these social connections are eliminated, and the new CEO's concern for employees, as captured by the weight $\alpha_{t,i}$ in the conceptual framework (in Section 2) shrinks, leading to behavior that is closer to value-maximizing, including a higher propensity to make layoffs (cf. Prediction 2).

5.2 Layoff Propensity over the Course of a CEO's Tenure

If CEOs' concerns for their employees ($\alpha_{t,i}$) increase over time, we would expect layoff activity to decrease over the course of CEOs' tenure (cf. Prediction 3 from Section 2).

We estimate the relationship between the layoff propensity of CEO i at the helm at firm j in year t and the CEO's tenure using the following specification:

$$\textit{Layoff}_{i,j,t} = \alpha_j + \alpha_t + \beta\, \textit{CEOTenure}_{i,j,t} + \boldsymbol{X}'_{i,j,t}\gamma + \varepsilon_{i,j,t}\ , \tag{4}$$

where $\textit{Layoff}_{i,j,t}$ is an indicator equal to 1 in layoff-years, $\textit{CEOTenure}_{i,j,t}$ is accumulated tenure of the CEO measured in years, and α_j and α_t are firm and year fixed effects. (Below we also estimate models with more no, fewer, and more granular fixed effects.) We continue to cluster standard errors at the firm level (Abadie et al. 2017).

Column (1) of Table 3 shows a strongly negative raw association between layoff propensity and CEO tenure. A one-year increase in tenure is associated with a reduction in the probability of a layoff in a given year by 0.427 pp. We expect this effect to be partially driven by "standard channels" such as a firm performance, i. e., better-performing firms seeing no need to either fire the CEO or lay off employees.

To account for this, we add a battery of firm- and industry-level controls to the empirical model, including lagged firm profitability and an indicator for industry-wide distress, as well as log assets, log employment, year fixed effects, location fixed effects, and Fama and French (1997) 49-industry fixed effects. (Using SIC-3 industry fixed effects produces very similar results.) As shown in column (2), the association between layoff propensity and CEO tenure remains strong, both economically and statistically, with these added controls and fixed effects. The size of the coefficient is reduced

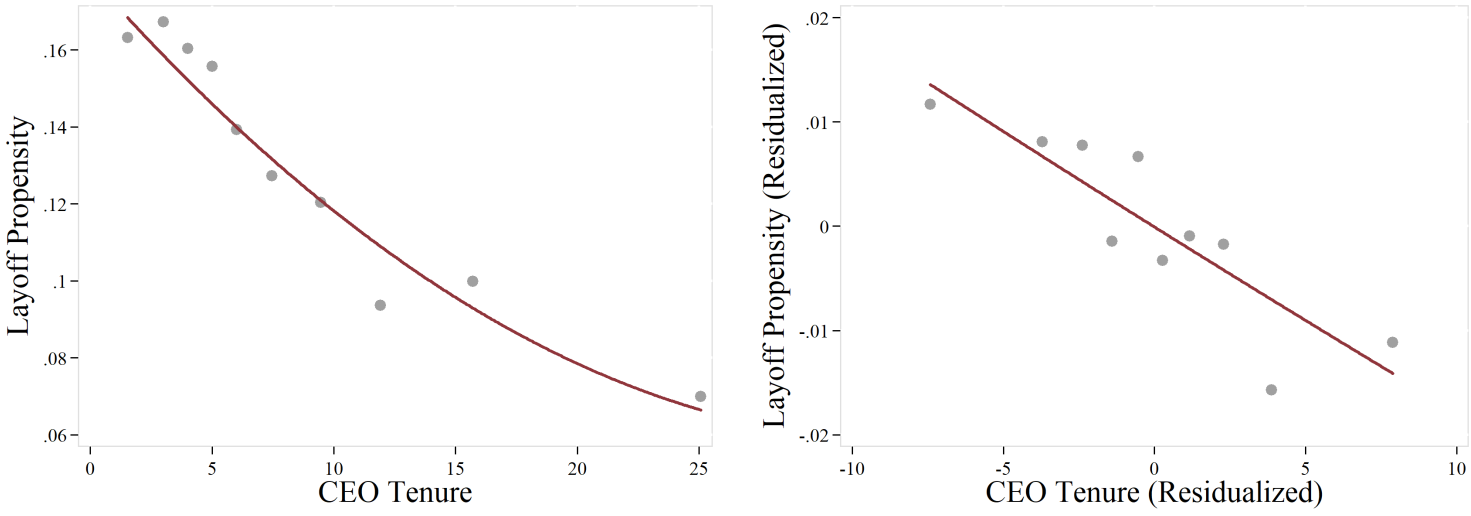
to 0.269 pp, though, while firm profitability emerges as another significantly negative predictor. Industry distress, instead, predicts a substantially higher layoff probability, as does firm size (number of employees or total assets).

The layoff–CEO tenure relationship persists when we add firm fixed effects in column (3), albeit with a further reduction in magnitude to 0.187 pp. This robustness check accounts for any time-invariant firm characteristics and corresponding CEO matching that might affect the estimation results. For example, it rules out that we pick up an effect where firms with long-serving CEOs have a preference (firm culture) for long-term relationships with employees across hierarchy levels.

Our interpretation is further strengthened in column (4) when we additionally include the CFO's tenure at the firm. While CEO and CFO tenure are meaningfully correlated ($\rho = 0.20$, $p - \text{value} < 0.001$), the coefficient on CEO tenure remains almost unchanged after including CFO tenure as an additional explanatory variable, suggesting that there is a distinct CEO effect in this setting.

In terms of magnitudes, the estimates in column (4) imply that an interquartile increase in CEO tenure (8 years) predicts a reduction in layoff propensity by 1.5 pp, or by 11% relative to the baseline probability of a layoff of 13% (see Table 1). Figure 7 visualizes the relationship between layoff propensity and CEO tenure graphically, plotting the raw relation on the left and the residualized relation (from column (4)) on the right.

Figure 7. Layoff Propensity and CEO Tenure



Notes: The figure shows binned scatterplots of the relation between firms' layoff propensity and CEO tenure. The left figure plots the raw data. The right figure plots the relationship after residualizing on the controls and fixed effects from column (4) of Table 3.

Robustness. The estimation results are robust to including various combinations of more granular fixed effects. In Appendix-Table A.5, we show the resulting coefficient estimates after including (1) state×year fixed effects to control for any state-specific economic fluctuations, (2) industry×year fixed effects to control for any industry-specific fluctuations, (3) both state×year and industry×year fixed effects, and (4) both state×year and industry×year fixed effects in addition to firm fixed effects. In all cases, the coefficient estimates on *CEO Tenure* remain very similar to the corresponding estimates from the baseline models estimated in Table 3, both without and with firms FE (columns (2) and (3), respectively).

Alternative Explanations. While these results on the relation between *CEO Tenure* and layoff propensity are robust, they are correlational and not causal evidence of behavioral frictions. In the next subsection, we aim to strengthen the plausibility of the proposed interpretation by conducting several heterogeneity tests that are implied by a model of prosocial behavior, but inconsistent with other explanations.

Before turning to those analyses, we first directly assess several leading alternative explanations.

Firm (Under-)Performance. One alternative explanation for our results might be unobserved determinants of firm performance. That is, CEOs' layoff choices might not be explained by their concern about workers but instead reflect fluctuations in firms' growth potential and investment opportunities. While such determinants are not necessarily increasing in CEO tenure, one might posit that they play an increasing role over the course of a CEO's tenure or that they are characteristic of CEOs who ultimately achieve long tenure.

To address such concerns, we extend our empirical model to include several additional measures of physical- and human-capital investment opportunities. Our baseline analysis in Table 3 already includes several measures related to firm productivity or performance, including firm profitability. In Appendix-Table A.6, we add several additional controls for employment growth, investment opportunities, debt maturity, and default risk. (See Appendix B.2 for details on the construction of variables.) We consider two measures of capital productivity: lagged market-to-book ratio (Jovanovic and Rousseau 2002) and a more complex definition of Q from Livdan and Nezlobin (2021). As a measure of worker productivity, we use lagged net employment growth, based on Bilal et al. (2022). As a measure of debt maturity, we use long-term debt (debt with maturity greater than two years) as a percentage of total debt, following Chen et al. (2021). As a measure of default risk, we use the naïve probability of default from Bharath and Shumway (2008), which they show outperforms the more computationally intensive application of Merton (1974) by Moody's KMV both in- and out-of-sample.[16]

[16] KMV, acquired by Moody's in 2002, developed a model based on Merton (1974) to calculate the probability that a firm will default on its debt within the next year. For more details, see Bharath and Shumway (2008).

As shown in Appendix-Table A.6, the tenure coefficient remains highly significant in all specifications and moves very little relative to the corresponding baseline specifications (without or with firm fixed effects) from Table 3. As expected, firms with higher labor and capital productivity, higher debt maturity, and a lower probability of default are less likely to implement layoffs. At the same time, the size and statistical significance of the coefficient on CEO tenure remains unaffected with the additional controls. Thus, measures of the marginal products of labor and capital, which are closely related to investment opportunities or debt maturity, do not appear to affect or drive our results.

CEO Power and Co-Opted Directors. Another alternative explanation relates to prior evidence on CEOs accumulating power over the course of their tenure. Pan et al. (2016) document a positive association between CEO tenure and firm investment, and a negative association with disinvestment. They attribute the investment pattern primarily to increasing CEO power, measured by the fraction of the board appointed by the incumbent CEO.[17] While they do not link the decline in disinvestment to CEO power, we test for its role, in combination with empire building, as an underlying mechanism in our setting. To this end, we construct the percentage of new directors appointed during a CEO's tenure using data from the Institutional Shareholder Services (ISS), as well as additional indicator variables capturing a CEO's concentration of titles, specifically CEO–president and CEO–chairperson duality (Adams et al. 2005).

Table 4 performs "horse race" regressions as in Pan et al. (2016), with both CEO tenure and the CEO power measures as independent variables. In columns (1) and (3), we include only the new CEO power variables (the percent of co-opted directors as well as the duality measures) without including CEO tenure. In this case, we observe a negative link between new directors appointed and layoff propensity. However, when we add CEO tenure in columns (2) and (4), the CEO tenure effect dominates, whereas the CEO power effect becomes insignificant or changes sign. We conclude that increasing power of empire-desiring CEOs is unlikely to be a primary mechanism of our findings.

Going beyond the measures employed in Pan et al. (2016), we also consider the CEO entrenchment index of Bebchuk et al. (2009), which aggregates six governance provisions: staggered boards, limits to shareholder by-law amendments, poison pills, golden parachutes, and supermajority requirements for mergers and charter amendments. Since 2007, the first four measures above have been collected by ISS.[18] Using the ISS data, we construct a partial E-index, which ranges from 0 to 4, increasing by $+1$ for each provision. The resulting index is available for approximately two-thirds of our observations from our *2002–2020 Layoff Data*. Columns (1) and (3)

[17] The idea is that director appointments during a CEO's tenure are, at least to some extent, under the CEO's influence, which empire-desiring CEOs may be able to use to their advantage, and increasingly so over their tenure. This idea was first formalized in Hermalin and Weisbach (1998); see also Coles et al. (2014).

[18] The primary source of data in Bebchuk et al. (2009) is the Investor Responsibility Research Center (IRRC). However, the IRRC stopped producing this data after 2006.

of Appendix-Table A.7 regress layoffs on a dummy for each level of the E-index from one to four as well as the two duality controls. None of the E-index dummy variables have statistically significant coefficients. When we add back the CEO Tenure variable in columns (2) and (4), the estimated coefficients on *CEO Tenure* are similar to our baseline estimates, both in terms of magnitude and statistical significance.

Taken together, our results suggest that CEO entrenchment neither significantly drives layoff propensity nor serves as a primary mechanism for our findings.

First-Year Effects. We also consider the possibility of endogenous "first-year effects," such as new CEOs being hired with the explicit purpose of "taking a big bath" and implementing layoffs. While such effects cannot explain the post-turnover jump in layoff propensity from Figure 5, given the quasi-exogenous nature of the turnovers considered there, they might explain the behavior of other CEOs in their first year. More generally, CEOs may face less judgment for layoffs in the initial window of their tenure.

To address such concerns about special first-year effects, we re-estimate our empirical model excluding the first year of each CEO's tenure. As shown in Appendix-Table A.8, the tenure coefficient estimates remain highly statistically significant in spite of the reduced sample size, and their magnitudes are, if anything, slightly larger and more stable than in our baseline regressions. In particular, they are even less affected by the introduction of firm fixed effects than the estimates on the full sample.

Other CEO Differences. A more general concern is that the estimated CEO tenure–layoff link might reflect other CEO traits that are correlated with tenure. To check for systematic differences in the propensity to lay off workers across CEOs who attain shorter versus longer tenure, we take a two-pronged approach.

First, we group our sample of CEOs into bins by their total tenure: short (up to five years), medium (above five and up to 10 years), and long (above 10 years). This split results in comparable subsample sizes in terms of the number of CEOs in each group ($N = 1,578$, $N = 1,426$, and $N = 1,674$, respectively). We then calculate the average layoff propensity tenure-year-by-tenure-year across CEOs within each subsample. As shown in Appendix-Figure A.2, the year-by-year layoff probabilities closely match each other across groups (i. e., up to 5 years for all groups, and up to 10 years for the groups with medium and long total tenure). That is, the graph suggests that the year-by-year propensities to lay off workers do *not* systematically differ across groups of CEOs who ultimately achieve shorter or longer tenure. Moreover, the graph confirms the strong association between cumulative tenure up to the layoff year and layoff probability, regardless of whether the CEO ultimately serves a shorter or longer overall tenure.

Going one step further in addressing concerns about CEO differences that might be correlated with tenure, we implement the approach of Graham et al. (2020) and Altonji and Shakotko (1987),

using the fraction of a CEO's total tenure completed so far as an instrument for tenure (measured in years).[19] The authors argue that the fraction measure serves as a plausible instrument, since the fraction of tenure completed is correlated with actual tenure (in years) but orthogonal to the CEO-firm match quality and other CEO characteristics that might affect tenure length. As they point out, all CEOs start at zero percent and complete one hundred percent of their tenure, which explains why the variation in the proportion of tenure completed cannot be correlated with CEO-firm pair-specific traits or other characteristics, such as match quality. Intuitively, this instrument purges the estimation of differences in average tenure across CEO-firm pairs.

Implementing this approach in Appendix-Table A.9, we estimate a strong first stage, both in the specification without firm fixed effects (column (1)) and in the specification with firm fixed effects (column (3)), with the F-statistic well above 10. In addition, the estimated effect of CEO tenure on the probability of a layoff remains significantly negative after instrumenting. The coefficients remain very similar in magnitude to the coefficients in Table 3 and are, in fact, larger after including firm fixed effects. These results lend additional support to the idea that the documented layoff–CEO tenure relation is not simply driven by cross-CEO differences.

In summary, we provide evidence that firm performance, CEO power, first-year effects, or time-invariant CEO traits (that are correlated with total tenure) are unlikely to explain our results.

In the next section, we perform additional tests that more directly evaluate the proposed mechanism of behavioral frictions.

Layoff Size and CEO Tenure. Our detailed layoff data allow us to also take into account the number of employees laid off. Prediction 3(ii) states that prosocial considerations will not solely reduce layoff propensity but also reduce layoff size.[20] Table 5 replaces the layoff indicator with the *fraction of employees laid off* in a given year, defined as zero for non-layoff years. CEO tenure also strongly predicts layoff size. As in Table 3, the CEO tenure coefficient is significant at the 1% level across specifications. Using the more stringent specifications with firm fixed effects, an increase in CEO tenure from the 10th to the 90th percentile is associated with a layoff size effect size about three-quarters as large as that corresponding to industry distress. These results also hold for the instrumented tenure variable, see Appendix-Table A.10, which replicates columns (2) and (3) of Table 5 using the IV approach.

[19] Specifically, the instrument is *CEO Tenure Prop* $\equiv (Tenure_{i,j,t} - \overline{Tenure_{i,j}})/\max_t Tenure_{i,j,t}$.

[20] The results in Table 3 could, in principle, arise from new CEOs, who are presumably less familiar with many parts of the firm, making more frequent layoffs involving fewer employees per layoff, without the *layoff size* actually changing over the CEO's tenure.

5.3 Layoff Propensity of Internally Versus Externally Hired CEOs

Finally, we also compare the layoff propensities of internally versus externally hired CEOs to capture an additional source of variation in the attachment the CEO may have developed toward employees. Internally promoted CEOs were previously employed by the firm, have pre-existing ties within the firm, and may thus be more reluctant than externally hired CEOs to implement layoffs. In fact, Bai and Mkrtchyan (2023) show for manufacturing firms that, under external CEOs, more factories are closed or see employment reductions. We build on their evidence, analyzing a broader set of firms and layoff decisions. Of course, the selection of internal CEOs can reflect a wide range of determinants, and it is not possible to find sources of quasi-random variation, as we did for CEO turnover in Section 5.1. Nevertheless, this correlational analysis serves to complement the preceding and subsequent analyses.

One data limitation is that the Execucomp variable JOINED_CO, which is necessary to identify when a given CEO joined the firm (in any position), is oftentimes missing (cf. Landier et al. 2013). Hence, our classification of CEOs as external versus internal hires leads to a reduction in sample size of more than two-thirds. Nonetheless, in columns (1) and (2) of Table 6, we use the reduced sample to reestimate columns (2) and (3) from Table 3, including an indicator for internally hired CEOs, *Internal CEO*. In column (1), with year, state, and industry fixed effect, we find that internal CEOs are 2.9 percentage points less likely to conduct a layoff in a given CEO-firm-year, a 22% reduction from the baseline. In column (2), with year and firm fixed effects, we find that internal CEOs are 4.8 percentage points less likely to conduct a layoff, a 37% reduction relative to the baseline. While we cannot fully remedy endogeneity concerns in these estimations, we can rule out that the type of firms that appoint internal CEOs are also firms with lower layoff frequencies. Further, in both columns, the estimated effect of CEO tenure on layoff propensity is significant and substantially more negative than in Table 3. This strongly suggests the CEO tenure effect we document is not driven by the selection of internal CEOs. In columns (3) and (4) of Table 6, we reestimate the same regressions, restricting the sample to non-manufacturing firms, i.e., sectors not studied in Bai and Mkrtchyan (2023). This further reduced sample is less than 20% of our baseline sample used in Table 3. In column (1), with year, state, and industry fixed effects, we estimate, albeit marginally insignificantly ($p = .11$), that internal CEOs are 2 percentage points less likely to have a layoff in a given CEO-firm-year, a 15% reduction from the baseline. In column (2), with year and firm fixed effects, we find that internal CEOs are 5.3 percentage points less likely to conduct a layoff. This estimate is statistically significant at the 5% level, in spite of the small sample size, and constitutes a 40% reduction relative to the baseline. Overall, Table 6 shows that internally hired CEOs display significantly lower layoff propensity, robust to including firm fixed effects, and extends the findings in Bai and Mkrtchyan (2023) to non-manufacturing firms.

6. Variation in Layoffs by Layoff Type

This section turns to heterogeneity in the effect of CEOs on layoff decisions, guided by the predictions of the conceptual framework in Section 2 regarding the conditions under which managerial prosocial concerns for workers are likely to be particularly pronounced.

6.1 Heterogeneity in the Consequences of Job Loss

We first focus on heterogeneity in how painful job losses are for workers and its relation to the effect of CEO tenure on layoff propensity.

Layoffs During Recessions. Our mortality evidence in Section 4 shows that CEOs' disutility costs of implementing layoffs are particularly large for layoffs during crisis times. Consistent with prosocial concerns being more pronounced for "pain–inducing" layoffs during recessions, the long-term adverse effects of job loss are especially severe for workers displaced during downturns (Jacobson et al. 1993). Considering this evidence, Table 7 tests whether CEOs' tenure-induced prosocial concerns for workers are particularly impactful in recession times (cf. Prediction 4(i)). We find that the effect of CEO tenure on layoff propensity is approximately twice as large in periods of recessions compared to tranquil times. This holds true across columns, including when we interact all control variables with the distress indicator (in columns (3) and (4)). These results reinforce the prosocial-concerns interpretation of the CEO tenure effect from Table 3. Consistent with theory, it indicates heterogeneity in the degree of prosocial concerns based on how bleak the job loss implications for workers are. These findings are also generally robust when we use the instrumented tenure variable, particularly when firm fixed effects are included, as detailed in Appendix-Table A.11, which replicates Table 7 using the IV approach.

Layoffs During Recessions: R&D Expenditures. As an auxiliary analysis, we turn our attention to how other firm activities are affected during times of distress, which may simultaneously tighten budget constraints and increase the disutility CEOs experience from laying off workers. We specifically focus on R&D expenditures, testing Prediction 5 in conjunction with Prediction 4. Given that, in subsection 6.1, we document that CEO tenure is associated with a reduction in the propensity to lay off employees, particularly during recessions, it is possible that reductions in layoffs come at the expense of other firm activities, including investment in R&D. These trade-offs might be exacerbated during periods of economic distress, when financing is more difficult.[21] (We note that given the fact that our framework has a binding financing constraint, it is particularly applicable to distress.)

[21] For example, Campello et al. (2010) find that CFOs report financing constraints were more likely to affect investment during the credit crisis of 2008 than during normal times.

While one might initially expect a tradeoff between human capital investment and physical capital investment, the literature suggests that the latter does not respond strongly or negatively to recessions (Campello et al. 2010, Opler and Titman 1994).[22] Instead, Brown and Petersen (2009) find that while investment-cash flow sensitivity for physical capital largely disappeared between 1970 and 2006, it remained comparatively strong for R&D. Further, Brown et al. (2009) find that R&D investment for young firms is strongly driven by access to internal and external equity finance. Therefore, we might expect that firms with longer-tenured CEOs, who are less likely to lay off employees during recessions, may cut R&D expenditures in these times.[23] While our framework only incorporates capital and labor, capital broadly captures all short term expenditures other than labor and, given its greater cash flow sensitivity, R&D expenditures may more closely parallel the capital investment in the framework than capital expenditures.

Next, we formally test how CEO tenure, and in particular tenure during distress, affects R&D expenditures. To normalize R&D expenditures across firms, we follow Pan et al. (2016) by focusing on the R&D rate, defined as the ratio of R&D expenditures in the current year to total assets at the beginning of the year. Further, we limit our sample for R&D analysis to firms with positive R&D expenditures in at least one year in our sample period. To examine how CEO tenure during recessions affects R&D expenditures, Table 8 reestimates the same regressions as in Table 7 but with the R&D rate as the dependent variable. Consistent with Pan et al. (2016), we do not find a consistently statistically significant relationship between CEO tenure and R&D expenditures, although we estimate positive point estimates throughout. Additionally, we find that the interaction between CEO tenure and industry distress is significantly negative, indicating that longer-tenured CEOs reduce R&D expenditures during recessions, consistent with the idea that longer-tenured CEOs cut R&D expenditures to avoid layoffs during recessions. Based on the estimate in column (4) of Table 8, an interquartile increase in CEO tenure is associated with a 0.16 percentage point decrease in the R&D rate during recessions, which is a 2% reduction relative to the average R&D rate of 7.3% and a 4% reduction relative to the median R&D rate of 4.2%. These results are generally robust when using the instrumented tenure variable, especially with firm fixed effects, as detailed in Appendix-Table A.12, which replicates Table 8 using the IV approach.

In sum, these findings suggest that CEOs offset the reduced cost savings from a reduction in layoffs during recessions by cutting other investment expenditures, particularly in R&D.

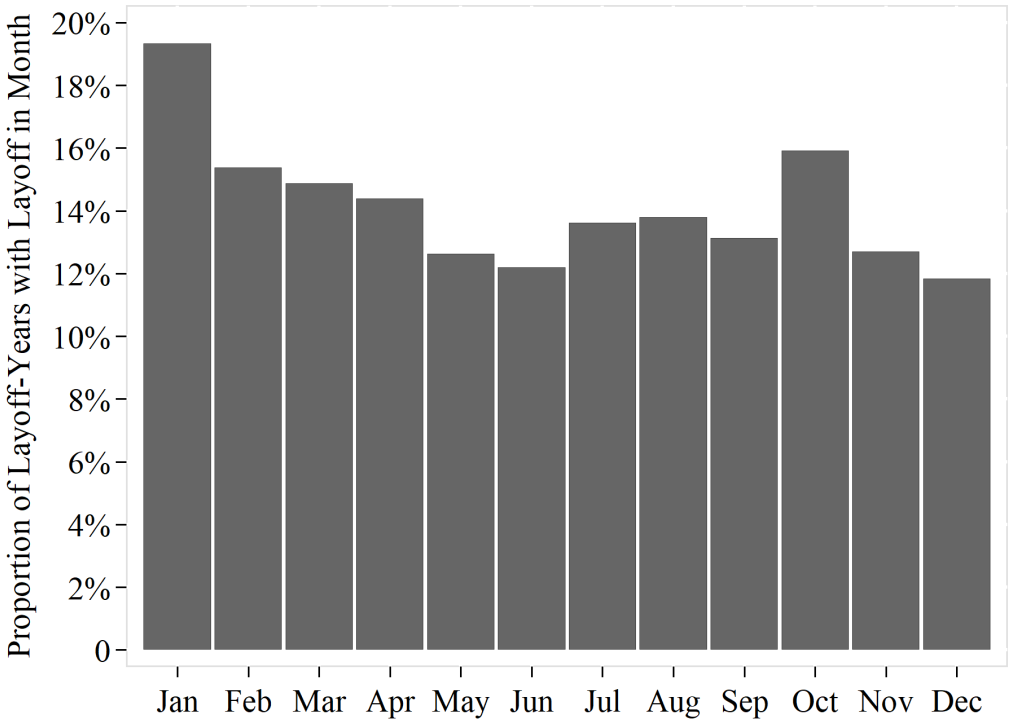
Layoffs Around the Holiday Season. A second differentiator in how pain-inducing layoffs

[22] Campello et al. (2010) find that, during the 2008 credit crisis, CFOs of publicly traded US firms expected cuts in all categories surveyed, except for capital expenditures. Further evidence that capital expenditures remain stable or growing during distress is found by Opler and Titman (1994), who find that capital expenditure growth increases during industry distress.

[23] Pan et al. (2016) find that CEO tenure is positively associated with capital expenditures, but note no such correlation for R&D expenditures. Given that longer-tenured CEOs are not associated with higher R&D expenditures, this is consistent with R&D being a form of investment a long-tenured CEO may be most willing to cut.

are is their timing within the year. The interviews with top managers in Hallock (2005) contain many responses that convey reluctance to implement layoffs around the holidays.[24] Figure 8 presents, for each calendar month, the percent of layoff-years in which a layoff occurs. Consistent with managers' responses, we observe that December has the lowest percent of layoff-years with a layoff. January has the highest percent of layoff-years with a layoff, followed by October. This pattern could result from managers delaying layoffs to January or undertaking them in October before the holiday season begins. Table 9 tests whether CEOs' tenure-driven prosocial considerations for workers are intensified around the holiday season (cf. again Prediction 4). In columns (1) and (2), we examine how the unconditional probability of a December layoff depends on the CEO's accumulated tenure. An interquartile shift in tenure is associated with a strong reduction in the probability of a December layoff by 0.5 percentage points, which is 25% of the baseline unconditional probability.

Figure 8. Layoffs By Month of the Year



Notes: This figure plots the percent of layoff-years with a layoff in each calendar month. See Appendix-Section B for details on data construction.

In columns (3) and (4), we examine how the occurrence of holiday layoffs varies with CEO tenure *conditional* on the firm announcing a layoff in a given year. Here, an interquartile tenure

[24] For example, one senior manager noted that they "didn't want to have layoffs in December for emotional reasons...[not] at Christmas" while another executive commented "Is that appropriate to be laying people off around the holidays?."

increase is estimated to lower the inclination of a holiday layoff by about 2.9 percentage points, or again 25% relative to the baseline conditional probability. These conditional results are particularly indicative of intensifying prosocial considerations over a CEO's tenure, as they are derived from *when*—rather than whether—CEOs implement layoffs. That is, endogeneity concerns related to whether a CEO implements a layoff do not apply in this case.

The results are robust to extending the layoff window we condition on to include the first, or the first and second, quarters of the subsequent calendar year (cf. Appendix-Table A.13). The results also hold when using the instrumented tenure variable, as presented in Appendix-Table A.14, which replicates Table 9 using the IV approach.

Overall, these results imply that within-year layoff timing, i.e., the *choice* to avoid holiday layoffs, becomes more important to CEOs as they develop deeper connections within the firm over the course of their tenure.

Finally, we note that the decreasing December-layoff propensity with CEO tenure is *not* predicted by CEOs learning over time to "strategically" release bad news. On the contrary, investors appear *more* distracted during the December holiday season (Chava and Paradkar (2016)), and December layoff announcements do not come with significantly different announcement returns ($p = .21$).

6.2 Heterogeneity in Social or Geographic Proximity

We next focus on heterogeneity in "closeness," which might proxy for the intensity of social interactions between CEOs and employees (cf. Prediction 4(ii) of the framework in Section 2). We consider both "social proximity," as captured by the distinction of white-, blue- and pink-collar employees, and geographic closeness, as captured by the geographic location of the layoff site relative to the headquarters.

Layoffs of White-Collar Employees. We first examine social proximity. The literature on other-regarding preferences shows that social preferences tend to be more pronounced for in-group compared to out-group members (Chen and Li 2009). Further, as discussed in Section 2.2, neuroimaging-assessed empathetic responses are found to be stronger both toward individuals within one's close social circle compared to strangers and when there is a greater degree of self-other overlap (Meyer et al. 2013).

We leverage our classifications of layoffs as blue-collar, pink-collar, and white-collar layoffs (see Section 3.1) to test whether, particularly as tenure increases, managers become more prosocial towards white-collar employees ($\alpha_{i,white,t} - \alpha_{j,blue,t} > 0$ and increasing in t).[25]

[25] The anecdotal evidence from the practitioners-oriented book by Martin (2005) is consistent with this hypothesis, with one respondent saying, "[a]lways, the most difficult decisions are those that affect families of people that have become friends."

Table 10 shows the results for the relation between CEO tenure and layoffs of white-collar employees. Columns (1) and (2) show that as CEOs' tenure increases, the probability of white-collar layoffs significantly drops. In column (2), an interquartile increase in tenure is associated with a 0.79 pp reduction in the probability of a white-collar layoff. This is a 25% drop relative to the baseline white-collar layoff probability of 3.2%, which is roughly double the estimated decrease from the baseline probability in Table 3 using all layoff types.

Columns (3) and (4) estimate the effect of CEO tenure on white-collar layoffs, conditional on the CEO-firm-year being one in which layoffs occurred. Conditionally, white-collar layoffs become substantially less likely as the CEO remains at the top for longer. For example, in column (4) with firm fixed effects, an interquartile increase in tenure is associated with a 3.2 pp decrease in the probability of a white-collar layoff in a year with layoffs. This constitutes a 16% reduction relative to the baseline probability of 19.4% that a CEO-firm-year with layoff activity involves white-collar layoffs. The baseline results hold when using the instrumented tenure variable, as seen in Appendix-Table A.15, which replicates Table 10 using the IV approach. The conditional results are directionally consistent but much smaller.

Layoffs Close to Firm's Headquarters. As a second way to capture heterogeneity in social interactions, we examine the geographic, rather than social, proximity of laid off employees ($\alpha_{i,close,t} - \alpha_{j,distant,t} > 0$ and increasing in t), leveraging the geographic detail of our layoff dataset. Column (1) of Table 11 shows that layoff activity in the state of the firm's HQ declines in CEO tenure. An interquartile increase in tenure reduces the propensity of HQ-state layoffs by 0.6 percentage points, or 15% relative to the baseline probability of HQ-state layoffs of 4%. Column (2) shows that longer CEO tenure is also associated with fewer HQ-city layoffs. Here, an interquartile tenure increase is associated with a 0.38 percentage point reduction in same-city HQ, or 21% relative to the baseline probability of just 1.8%.

Similar to the preceding analyses, columns (3) and (4) condition on years with layoff activity. In column (3), conditional on a year involving layoffs, an interquartile tenure increase is associated with a 1.4 percentage point reduction in the propensity of HQ-city layoffs, or 13% relative to the baseline conditional probability of 11%. In column (4), conditional on a year involving layoffs in the HQ-state, an interquartile tenure increase is associated with a 3.7 percentage point reduction in the layoff propensity of HQ-city layoffs, or 8% relative to the baseline conditional probability of 45%. However, standard errors increase substantially in this most narrowly defined subsample, and the point estimate is statistically insignificant ($p = 0.118$).[26] The baseline results also hold when using the instrumented tenure variable, as detailed in Appendix-Table A.16, which replicates columns (1), (2), and (3) of Table 9 using the IV approach. The coefficient for the regression conditional on

[26] All columns in Table 11 include industry and location fixed effects. We estimate similar economic magnitudes when we include firm fixed effects instead, though we lose power in the conditional specifications in columns (3) and (4).

layoff-years is consistent in sign and magnitude, but not statistically significant.

Overall, the results in Tables 10 and 11 are consistent with a prosociality-based explanation of layoff decision-making and increasing social considerations of longer-tenured CEOs, especially in relation to socially and geographically close employees.

6.3 CEO Heterogeneity in Prosociality

In addition to examining heterogeneity based on the severity of job loss for affected employees and the closeness between managers and employees, we also test whether there is detectable variation in prosocial concerns across CEO—specifically, whether some CEOs exhibit a greater increase in prosociality as their attachment to the firm grows (cf. Prediction 6).

Testing for differences in prosociality across managers is challenging, as it requires direct proxies that capture variation in the level of prosociality across high-profile individuals. Many initial possible proxies exhibit inherent shortcomings, for two key reasons. A first challenge is that, for many proxies, it is unclear to what extent they capture the precise variation of interest in our setting, i.e., variation in empathetic concern for others and variation in the extent to which one takes on the feelings and emotions of others (cf. the discussion of psychological underpinnings in Section 2.2).[27] A related, second challenge is that the shortcomings of many proxies are particularly significant in the case of wealthy individuals, i.e., our population of interest.

For example, consider donation behavior. While empathy and prosociality may serve as potential motivators for individuals to donate, including for wealthy individuals, a large literature in (behavioral) economics and finance has identified a variety of other determinants of giving behavior that are less easily associated with *other-regarding* prosocial motives. For example, Kumru and Vesterlund (2010) provide evidence that individuals donate for selfish reasons to gain social status. Similarly, and directly relevant for our context, Yermack (2009) finds that high-profile CEOs frequently nominally contribute to charities in order to reduce their personal tax liability.

Given these challenges, we instead strive to isolate variation in the level of managerial prosociality by leveraging prior work that has directly assessed personality characteristics among U.S. CEOs and established a link between variation in empathy-related managerial attributes and well-known measures of CEO behavior that can be constructed for a larger sample.

Specifically, Kaplan et al. (2012) use detailed personality assessments of U.S. CEO candidates to identify primary dimensions along which managers differ. Particularly informative for our purposes, they find that managerial overconfidence (resoluteness) and empathy represent a primary

[27] See, e.g., this Forbes article for a non-academic summary of the concept of empathy, emphasizing that empathy refers to "experiencing a fraction of [others'] emotions and feelings because you see things from their perspective" (forbes.com/sites/forbescoachescouncil/2018/08/13/the-critical-difference-between-sympathy-and-empathy/?sh=1262df5016a3).

distinguishing dimension of CEOs. Corroborating the distinction between overconfident and empathetic CEO types, Kaplan et al. (2022) find that the widely used *Longholder* overconfidence measure from Malmendier and Tate (2005), based on a CEO's decision not to exercise own-firm stock options, predicts significantly lower managerial scores on empathy-related attributes. For example, non-overconfident managers score significantly higher on *Listening Skills* (= lets others speak and seeks to understand their viewpoints) as well as *Commitments* (= lives up to verbal and written agreements, regardless of personal cost).[28]

Motivated by this evidence, we use the *Longholder* measure to empirically distinguish between less empathetic (*Longholder* $= 1$) and more empathetic (*Longholder* $= 0$) CEOs. Our prediction is that the declining layoff propensity of CEOs with tenure and as they form more connections inside the firm should be driven by non-overconfident, more empathetic CEOs. Of course, one concern is that the *Longholder*-based overconfidence-vs-empathy distinction may contain other differences across managers that are not related to empathy and prosociality, such as actual overconfidence and general ability. After presenting our results, we discuss how our specific empirical setup helps alleviate such concerns.

Table 12 mirrors Table 3, separating the effect of CEO tenure on layoff propensity by whether we classify the CEO as overconfident or empathetic (non-overconfident). Column (1) is the same as Column (3) of Table 3. Column (2) re-estimates Column (1) on the subsample for which the *Longholder* measure is available, finding a similar baseline economic effect of CEO tenure on layoff propensity, albeit standard errors increase somewhat as a result of the reduced sample size.[29] Column (3) separates the effect of CEO tenure by CEO type. The decline in layoff propensity over CEOs' tenure is fully driven by empathetic CEOs. An interquartile increase in tenure is estimated to reduce the propensity to implement layoffs by 22% relative to the baseline for empathetic CEOs of 12% ($p < 0.01$), whereas the relation between layoff propensity and tenure is close to zero for remaining CEOs. The p-value for the difference between the coefficients on the interaction terms in Column (3) is 0.055.

In sum, the evidence in Table 12 is consistent with our hypothesis of managerial prosociality affecting labor decisions and more empathetic CEO types driving the reduction in layoff propensity as CEOs' connections inside the firm deepen over the course of their tenure.

As a further corroborating analysis, we also test whether CEOs' increasing tendency to avoid layoffs during the holiday season—i.e., their decision as to when, as opposed to whether, to implement layoffs—is driven by empathetic CEOs as per the *Longholder* measure. As Appendix-Table A.17 shows, this is indeed the case. As before, Columns (1) and (2) re-estimate the baseline relation

[28] Interestingly, the description of *Commitments* as "regardless of personal cost" maps quite closely to our framework and formulation of disutility costs to managers when "terminating commitments to workers" and making layoffs.

[29] The *Longholder* measure reduces the sample size by approximately 25%.

between holiday layoffs and CEO tenure, conditional on the firm making layoffs at some point during the year, in the full sample and the *Longholder*-subsample. Column (3) shows that the tenure-induced reduction in holiday layoffs is once again driven by empathetic CEOs, with the estimated economic magnitude being four times as large as for remaining CEOs.

As alluded to above, one concern with using the *Longholder* measure to distinguish overconfident and empathetic CEOs is other differences across these managerial types that are not related to empathy and prosociality, such as actual overconfidence and general ability. Two empirical aspects help to at least partially ameliorate such concerns. First, in both Tables 12 and A.17 above, our prediction is about the Longholder/empathy *interaction* effect with CEO tenure. This alleviates alternative interpretations that instead operate through a level effect, such as a lower general need for layoffs under higher-ability managers. Second, since in Table A.17 we examine layoff *timing* during the year by conditioning on firm-years with layoff activity, we can mitigate additional alternative explanations, such as increasing levels of CEO overconfidence with tenure reducing the propensity to make layoffs over time.

Altogether, despite the possible limitations of our proxies for variation in managerial empathy, the combined evidence corroborates the conclusion that managerial prosocial concerns for employees significantly predict layoff decisions within firms as well as the variation in these decisions over time and across firms.

6.4 Layoffs and CEO Pay

In a final analysis, our setting allows us to also study to what extent managers may be compensated for implementing difficult and personally costly decisions such as layoffs. The literature on compensating differentials predicts that more demanding working conditions induced by the stress and resulting adverse health effects of laying off employees should be associated with higher CEO pay. Conversely, when non-executive employees face layoffs, CEOs' capacity to negotiate for higher pay may be constrained by heightened public scrutiny of top-level benefits, or due to the underlying adverse economic circumstances.

We examine the empirical association between layoffs and CEO pay in Table 13. Columns (1) and (2) regress CEOs' total compensation (in logs) on an indicator for layoffs occurring in the same CEO-firm-year and include the same controls and fixed effects as columns (2) and (3) of Table 3. Reflecting some stickiness in pay schemes, CEO pay is not significantly correlated with contemporaneous layoff activity. By contrast, columns (3) and (4) uncover a significant lead-lag relationship between CEO pay and layoffs. In the year after CEOs implement layoffs, CEO pay *decreases* by an average of 3–4%, controlling for (twice-lagged) firm characteristics such as profitability. The negative layoff–pay relation is robust to additionally controlling for firm

profitability in the year in which the layoff occurs, as opposed to only the prior year.

In summary, these findings reveal substantial limitations in CEOs' ability to negotiate compensation that reflects the underlying demands and costs of the role.

7. Conclusion

This paper offers a new perspective on firms' human capital choices and examines the role of CEO prosocial considerations in layoff decisions. We establish a number of results that point to the "human component" of layoffs being more important than captured in prior theoretical and empirical models. First, CEOs responsible for layoffs during recessions incur substantial personal health costs, detectable even in the long run, in the form of accelerated mortality. Second, consistent with incumbent CEOs being shaped by prosocial concerns, exogenous CEO turnovers trigger increased layoffs accompanied by large, positive stock market announcement returns. This effect appears to deepen over time with more social interactions, as layoff propensity declines with CEO tenure. Third, the tenure effect is amplified in contexts where prosocial motives are likely to play a greater role—specifically, when job loss consequences are more severe, when CEO-employee social interaction is more intense, or when CEOs exhibit more empathy-related traits.

Our findings open several avenues for further research. One question is how the effects of managerial prosociality interact with institutional features. Is the mechanism weaker when employees are unionized as the CEO-employee relationship becomes more contentious? Is it stronger in family firms where managers may have deeper relational ties to employees, and where employees who identify strongly with the firm may experience greater distress from termination?

Another promising direction concerns the delegation of layoff execution to third-party consultants or restructuring firms, which is common in corporate practice. This form of organizational outsourcing may serve to buffer or dilute managers' psychological cost of layoffs. As such, it may function to align managerial decisions with shareholder value by shifting the perceived responsibility for layoffs to agents less affected by prosocial concerns.

Our findings also carry new corporate governance implications. In line with Cheng et al. (2023), our results suggest that from the perspective of shareholder-value maximization a broad range of managerial activities needs to be monitored. Monitoring activities should, of course, be concerned with traditional CEO pet projects and perks (see, e.g., Yermack 2006, Décaire and Sosyura 2022), but may also need to extend to decisions that are influenced by managers' prosocial considerations. Considering our evidence on increasing prosocial tendencies over the course of a CEO's tenure, one could imagine shareholder activists proposing the introduction of CEO term limits—a common practice in the political realm but rare in corporate governance. Vice versa, it is also conceivable that more talented workers might be more attracted to more prosocial firms, which could ultimately

be firm value-increasing in the long run (cf. Agrawal and Matsa 2013). This contrast also highlights that distinguishing between the ex-ante and ex-post effects of managerial prosociality is a promising direction for future research.

Finally, the long-term personal costs associated with the CEO role and the empirical absence of compensating wage differentials associated with difficult layoff decisions suggest that certain "types" of individuals may be more or less likely to select into the CEO position. Our findings highlight the importance of accounting for the interplay between CEO (prosocial) preferences, job demands, and both labor market and personal outcomes.

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Table 1. Summary Statistics

(a) 2002–2020 Firm-Layoffs Sample (Sections 3.1 and 3.2)

	N	Mean	SD	P25	Median	P75
Layoff	34,683	0.13	0.34	0.00	0.00	0.00
Layoff (Unrestricted)	34,683	0.17	0.37	0.00	0.00	0.00
December Layoff	34,683	0.02	0.14	0.00	0.00	0.00
White Collar Layoff	34,683	0.03	0.18	0.00	0.00	0.00
HQ-State Layoff	34,683	0.04	0.20	0.00	0.00	0.00
HQ-City Layoff	34,683	0.02	0.13	0.00	0.00	0.00
Frac. Laid Off	33,251	0.01	0.03	0.00	0.00	0.00
CEO Tenure	34,683	8.12	6.94	3.00	6.00	11.00
CFO Tenure	32,433	4.64	3.55	2.00	4.00	6.00
Industry Distress	34,683	0.19	0.39	0.00	0.00	0.00
Ln Assets	34,683	7.68	1.85	6.39	7.57	8.86
Ln Employment	34,683	1.44	1.77	0.26	1.46	2.62
Firm Profitability	34,683	0.11	0.11	0.06	0.11	0.17
Exogenous CEO Turnovers:						
CEO Age at Turnover	115	60.75	9.13	54.00	61.00	65.00

(b) CEO Mortality Sample (Section 3.3)

	N	Mean	SD	P25	Median	P75
Age Appointed CEO	1,131	53.49	6.45	49.00	54.00	58.00
Year Born	1,131	1928.12	8.50	1922.00	1928.00	1934.00
Year Dead/Censored	1,131	2010.33	9.58	2004.83	2015.00	2017.75
CEO Age at Death	680	80.80	9.72	75.00	82.00	88.00
Ever Distressed Layoff	1,131	0.11	0.32	0.00	0.00	0.00
Ever Non-Distressed Layoff	1,131	0.38	0.49	0.00	0.00	1.00
Ever Industry Distress	1,131	0.43	0.50	0.00	0.00	1.00
Ln Assets	1,131	7.35	1.66	6.33	7.38	8.42
Ln Employment	1,131	9.61	1.40	8.78	9.67	10.56
Firm Profitability	1,131	0.14	0.07	0.09	0.13	0.18
Minimum Stock Performance	1,131	0.70	0.15	0.60	0.71	0.80

Notes: Panel (a) shows summary statistics for the *2002–2020 Firm–Layoffs Dataset*. One observation is a CEO-firm-year observation. Panel (b) shows summary statistics for the *CEO Mortality Dataset*. One observation is a CEO. More details about the data are in Section 3 and Appendix-Section B.

Table 2. Layoffs and CEO Mortality

	(1)	(2)	(3)
Distress Layoff	0.294^{**}	0.296^{**}	0.287^{**}
	(0.137)	(0.138)	(0.139)
Non-Distress Layoff	-0.031	-0.038	-0.052
	(0.098)	(0.098)	(0.099)
Industry Distress	0.149	0.156	0.132
	(0.110)	(0.111)	(0.118)
CEO Age	0.159^{***}	0.161^{***}	0.163^{***}
	(0.010)	(0.010)	(0.010)
Ln Assets	-0.137^{*}	-0.134^{*}	-0.130^{*}
	(0.078)	(0.079)	(0.078)
Ln Employment	0.064	0.061	0.067
	(0.074)	(0.075)	(0.075)
Firm Profitability	0.669	0.628	0.808
	(0.688)	(0.697)	(0.728)
Year	0.009		
	(0.009)		
Minimum Stock Performance			-0.326
			(0.349)
Year FE	No	Yes	Yes
State FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	31,917	31,917	31,917

Notes: This table reports estimated coefficients from logit regressions where the dependent variable is an indicator that equals one if the CEO dies in a given year. Distress Layoff is an indicator equal to one in year t if, prior to or in year t, a CEO has undertaken a layoff during industry-wide distress. Industry distress is an indicator equal to one if the median firm of the industry had a stock price decline of at least 30% in the two years prior or the prior and current year. CEO Age is the CEO's age at time t. Minimum stock performance is defined as the worst stock performance in any six-month period during the CEO's tenure. Ln assets and Ln employees from the first year that the CEO assumed the top office are included in all specifications. Firm profitability is included for all years that the CEO is in office and then profitability from the CEO's final year in office thereafter. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by industry, are in parentheses. Significance levels are indicated by $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 3. Layoffs and CEO Tenure

	(1)	(2)	(3)	(4)
CEO Tenure / 100	-0.427^{***}	-0.269^{***}	-0.187^{***}	-0.181^{***}
	(0.034)	(0.029)	(0.039)	(0.041)
Industry Distress		0.057^{***}	0.046^{***}	0.040^{***}
		(0.007)	(0.007)	(0.007)
Ln Assets		0.029^{***}	0.028^{***}	0.029^{***}
		(0.003)	(0.007)	(0.007)
Ln Employment		0.026^{***}	0.050^{***}	0.055^{***}
		(0.003)	(0.008)	(0.008)
Firm Profitability		-0.280^{***}	-0.251^{***}	-0.255^{***}
		(0.023)	(0.030)	(0.032)
CFO Tenure / 100				-0.096
				(0.071)
Year FE	No	Yes	Yes	Yes
State FE	No	Yes	No	No
Industry FE	No	Yes	No	No
Firm FE	No	No	Yes	Yes
Observations	34,683	34,683	34,565	32,301

Notes: This table reports coefficients from linear regressions where the dependent variable is equal to one for significant layoff events, defined as CEO-firm-years with at least three layoff events or where 1% of the firm is laid off and 0 otherwise. Industry distress is an indicator equal to one if the median firm of the industry had a stock price decline of at least 30% in the two years prior or the prior and current year. Ln assets is the log of total assets. Ln employment is the log of total employment. Firm profitability is operating income before depreciation divided by total assets. CEO and CFO tenure are the number of years the CEO and CFO have been in their respective positions, respectively. We normalize tenure by dividing by 100. Firm characteristics are from the beginning of the year. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 4. Layoff Propensity and CEO Tenure—CEO Power

	(1)	(2)	(3)	(4)
CEO Tenure / 100		-0.407^{***}		-0.213^{***}
		(0.053)		(0.081)
% of New Directors	-0.039^{***}	0.030^{**}	-0.015	0.017
	(0.010)	(0.013)	(0.012)	(0.018)
CEO and Chair	0.001	0.008	-0.001	0.002
	(0.007)	(0.007)	(0.008)	(0.008)
CEO and President	-0.005	-0.007	0.006	0.004
	(0.006)	(0.006)	(0.007)	(0.007)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State FE	Yes	Yes	No	No
Industry FE	Yes	Yes	No	No
Firm FE	No	No	Yes	Yes
Observations	23,621	23,621	23,425	23,425

Notes: This table reports coefficients from linear regressions where the dependent variable is equal to one for significant layoff events, defined as CEO-firm-years with at least three layoff events or where 1% of the firm is laid off and 0 otherwise. Controls are industry distress, log assets, log employment and firm profitability. % of new directors is between 0 and 1 and is calculated as the percent of directors appointed in the years following the CEO's appointment. CEO and Chair is a dummy equal to one if the CEO is also the chair of the board. CEO and President is a dummy equal to one if the CEO is also the president of the firm. Industry distress is an indicator equal to one if the median firm of the industry had a stock price decline of at least 30% in the two years prior or the prior and current year. Ln assets is the log of total assets. Ln employment is the log of total employment. Firm profitability is operating income before depreciation divided by total assets. CEO tenure is the number of years the CEO has been in that position. We normalize tenure by dividing by 100. Firm characteristics are from the beginning of the year. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 5. Layoffs and CEO Tenure—Fraction of Employees Laid Off

	(1)	(2)	(3)	(4)
CEO Tenure / 100	-0.027^{***}	-0.019^{***}	-0.017^{***}	-0.016^{***}
	(0.003)	(0.003)	(0.004)	(0.004)
Industry Distress		0.007^{***}	0.006^{***}	0.006^{***}
		(0.001)	(0.001)	(0.001)
Ln Assets		0.002^{***}	0.002^{***}	0.003^{***}
		(0.000)	(0.001)	(0.001)
Ln Emp.		0.001^{**}	0.003^{***}	0.003^{***}
		(0.000)	(0.001)	(0.001)
Firm Profitability		-0.021^{***}	-0.019^{***}	-0.021^{***}
		(0.002)	(0.004)	(0.004)
CFO Tenure / 100				-0.010^{*}
				(0.006)
Year FE	No	Yes	Yes	Yes
State FE	No	Yes	No	No
Industry FE	No	Yes	No	No
Firm FE	No	No	Yes	Yes
Observations	33,251	33,251	33,130	30,941

Notes: This table reports coefficients from linear regressions where the dependent variable is the proportion of the firm laid off in that CEO-firm-year. Industry distress is an indicator equal to one if the median firm of the industry had a stock price decline of at least 30% in the two years prior or the prior and current year. Ln assets is the log of total assets. Ln employment is the log of total employment. Firm profitability is operating income before depreciation divided by total assets. CEO and CFO tenure are the number of years the CEO and CFO have been in their respective positions, respectively. We normalize tenure by dividing by 100. Firm characteristics are from the beginning of the year. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 6. Layoff Propensity and Internally Versus Externally Hired CEO

	Full Sample		Non-Manufacturing	
	(1)	(2)	(3)	(4)
Internal CEO	-0.029^{***}	-0.048^{**}	-0.020	-0.053^{**}
	(0.010)	(0.019)	(0.012)	(0.026)
CEO Tenure / 100	-0.369^{***}	-0.247^{***}	-0.368^{***}	-0.228^{*}
	(0.056)	(0.095)	(0.073)	(0.119)
Industry Distress	0.060^{***}	0.046^{***}	0.078^{***}	0.064^{***}
	(0.013)	(0.013)	(0.016)	(0.016)
Ln Assets	0.027^{***}	0.033^{**}	0.020^{***}	0.010
	(0.005)	(0.014)	(0.006)	(0.015)
Ln Emp.	0.039^{***}	0.060^{***}	0.038^{***}	0.052^{***}
	(0.005)	(0.017)	(0.005)	(0.017)
Firm Profitability	-0.327^{***}	-0.270^{***}	-0.251^{***}	-0.247^{***}
	(0.044)	(0.063)	(0.063)	(0.085)
Year FE	Yes	Yes	Yes	Yes
State FE	Yes	No	Yes	No
Industry FE	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes
Observations	10,952	10,872	6,280	6,224

Notes: This table reports coefficients from linear regressions where the dependent variable is equal to one for significant layoff events, defined as CEO-firm-years with at least three layoff events or where 1% of the firm is laid off and 0 otherwise. Internally hired CEOs are CEOs who have been with the firm for at least one year before assuming the CEO position. Industry distress is an indicator equal to one if the median firm of the industry had a stock price decline of at least 30% in the two years prior or the prior and current year. Ln assets is the log of total assets. Ln employment is the log of total employment. Firm profitability is operating income before depreciation divided by total assets. CEO tenure is the number of years the CEO has been in that position. We normalize tenure by dividing by 100. Firm characteristics are from the beginning of the year. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 7. Layoff Propensity and CEO Tenure—Recession Periods

	(1)	(2)	(3)	(4)
CEO Tenure / 100	-0.229^{***}	-0.141^{***}	-0.239^{***}	-0.150^{***}
	(0.029)	(0.039)	(0.028)	(0.039)
Industry Distress	0.074^{***}	0.067^{***}	0.018	0.005
	(0.010)	(0.010)	(0.030)	(0.031)
CEO Tenure / 100 × Industry Distress	-0.221^{***}	-0.261^{***}	-0.170^{**}	-0.222^{***}
	(0.078)	(0.075)	(0.079)	(0.076)
Controls	Yes	Yes	Yes	Yes
Control Interactions	No	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State FE	Yes	No	No	No
Industry FE	Yes	No	No	No
Firm FE	No	Yes	Yes	Yes
Observations	34,683	34,565	34,683	34,565

Notes: This table reports coefficients from linear regressions where the dependent variable is equal to one for significant layoff events, defined as CEO-firm-years with at least three layoff events or where 1% of the firm is laid off and 0 otherwise. Control variables are beginning-of-year firm profitability, log assets, and log employees. Control interactions are interactions between each of the control variables and industry distress. Industry distress is an indicator equal to one if the median firm of the industry had a stock price decline of at least 30% in the two years prior or the prior and current year. Ln assets is the log of total assets. Ln employment is the log of total employment. Firm profitability is operating income before depreciation divided by total assets. CEO tenure is the number of years the CEO has been in that position. We normalize tenure by dividing by 100. Firm characteristics are from the beginning of the year. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $*p < 0.10$, $**p < 0.05$, $***p < 0.01$.

Table 8. Research and Development Expenditures and CEO Tenure

	(1)	(2)	(3)	(4)
CEO Tenure / 100	0.066^{***}	0.018	0.066^{***}	0.018
	(0.026)	(0.012)	(0.026)	(0.012)
Industry Distress	0.004	0.005^{***}	0.013	0.005
	(0.003)	(0.002)	(0.015)	(0.010)
CEO Tenure $\times$ Industry Distress	-0.065^{***}	-0.035^{**}	-0.066^{***}	-0.038^{**}
	(0.024)	(0.015)	(0.024)	(0.015)
Controls	Yes	Yes	Yes	Yes
Control Interactions	No	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State FE	Yes	No	Yes	No
Industry FE	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes
Observations	15,052	14,994	15,052	14,994

Notes: This table reports coefficients from linear regressions where the dependent variable is research and development expenditures divided by assets at the beginning of the year. Control variables are beginning-of-year firm profitability, log assets, and log employees. Control interactions are interactions between each of the control variables and industry distress. Industry distress is an indicator equal to one if the median firm of the industry had a stock price decline of at least 30% in the two years prior or the prior and current year. Ln assets is the log of total assets. Ln employment is the log of total employment. Firm profitability is operating income before depreciation divided by total assets. CEO tenure is the number of years the CEO has been in that position. We normalize tenure by dividing by 100. Firm characteristics are from the beginning of the year. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 9. Layoff Propensity and CEO Tenure—Layoffs Around Holiday Season (December)

	Full Sample		Layoff-Years	
	(1)	(2)	(3)	(4)
CEO Tenure / 100	-0.067^{***}	-0.065^{***}	-0.331^{***}	-0.392^{***}
	(0.010)	(0.016)	(0.077)	(0.135)
Industry Distress	0.008^{***}	0.005	0.026^{**}	0.042^{**}
	(0.003)	(0.003)	(0.013)	(0.018)
Ln Assets	0.006^{***}	0.003	0.006	0.005
	(0.001)	(0.003)	(0.006)	(0.023)
Ln Emp.	0.006^{***}	0.011^{***}	0.010	0.016
	(0.001)	(0.003)	(0.006)	(0.022)
Firm Profitability	-0.046^{***}	-0.026^{**}	-0.075	0.015
	(0.008)	(0.010)	(0.052)	(0.089)
Year FE	Yes	Yes	Yes	Yes
State FE	Yes	No	Yes	No
Industry FE	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes
Observations	32,301	32,301	5,325	4,806

Notes: This table reports coefficients from linear regressions where the dependent variable is equal to one for years with at least one layoff in December and zero otherwise. Layoff-years are CEO-firm-years with at least one layoff. Industry distress is an indicator equal to one if the median firm of the industry had a stock price decline of at least 30% in the two years prior or the prior and current year. Ln assets is the log of total assets. Ln employment is the log of total employment. Firm profitability is operating income before depreciation divided by total assets. CEO tenure is the number of years the CEO has been in that position. We normalize tenure by dividing by 100. Firm characteristics are from the beginning of the year. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 10. Layoff Propensity and CEO Tenure—Layoffs of White-Collar Employees

	Full Sample		Layoff-Years	
	(1)	(2)	(3)	(4)
CEO Tenure / 100	-0.091^{***}	-0.099^{***}	-0.272^{***}	-0.400^{***}
	(0.014)	(0.020)	(0.092)	(0.152)
Industry Distress	0.018^{***}	0.014^{***}	0.024	0.011
	(0.004)	(0.004)	(0.015)	(0.018)
Ln Assets	0.013^{***}	0.009^{***}	0.021^{***}	-0.009
	(0.001)	(0.003)	(0.008)	(0.026)
Ln Emp.	0.010^{***}	0.014^{***}	0.015^{*}	0.040
	(0.001)	(0.003)	(0.008)	(0.028)
Firm Profitability	-0.061^{***}	-0.036^{***}	-0.044	0.028
	(0.011)	(0.014)	(0.069)	(0.114)
Year FE	Yes	Yes	Yes	Yes
State FE	Yes	No	Yes	No
Industry FE	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes
Observations	34,683	34,565	5,722	5,174

Notes: This table reports coefficients from linear regressions where the dependent variable is equal to one for years with at least one white-collar layoff and zero otherwise. Layoff-years are CEO-firm-years with at least one layoff. Industry distress is an indicator equal to one if the median firm of the industry had a stock price decline of at least 30% in the two years prior or the prior and current year. Ln assets is the log of total assets. Ln employment is the log of total employment. Firm profitability is operating income before depreciation divided by total assets. CEO tenure is the number of years the CEO has been in that position. We normalize tenure by dividing by 100. Firm characteristics are from the beginning of the year. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 11. Layoff Propensity and CEO Tenure—Geographic Proximity of Layoffs

	HQ-State Layoff	HQ-City Layoff		
	(1)	(2)	(3)	(4)
CEO Tenure / 100	-0.079^{***}	-0.048^{***}	-0.179^{**}	-0.458
	(0.015)	(0.011)	(0.089)	(0.293)
Industry Distress	0.013^{***}	0.008^{***}	0.019	0.031
	(0.004)	(0.003)	(0.012)	(0.038)
Ln Assets	0.014^{***}	0.007^{***}	0.018^{***}	0.012
	(0.002)	(0.001)	(0.007)	(0.021)
Ln Emp.	0.010^{***}	0.004^{***}	-0.006	-0.008
	(0.001)	(0.001)	(0.007)	(0.024)
Firm Profitability	-0.087^{***}	-0.042^{***}	-0.044	0.016
	(0.013)	(0.009)	(0.058)	(0.209)
Sample	Full	Full	Layoff-Years	HQ-State Layoff-Years
Year FE	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	34,683	34,683	5,722	1,406

Notes: This table reports coefficients from linear regressions where the dependent variables is equal to one if a firm makes at least one layoff at the respective geographic level in a given year and zero otherwise. Layoff-years are CEO-firm-years with at least one layoff. HQ-state layoff-years are CEO-firm-years with any layoff in the state of the firm's headquarters. Industry distress is an indicator equal to one if the median firm of the industry had a stock price decline of at least 30% in the two years prior or the prior and current year. Ln assets is the log of total assets. Ln employment is the log of total employment. Firm profitability is operating income before depreciation divided by total assets. CEO tenure is the number of years the CEO has been in that position. We normalize tenure by dividing by 100. Firm characteristics are from the beginning of the year. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 12. Layoff Propensity and CEO Tenure–Heterogeneity in Prosociality

	Full Sample	CEO Empathy / OC Sample	
	(1)	(2)	(3)
CEO Tenure / 100	-0.187^{***}	-0.155^{***}	
	(0.039)	(0.057)	
CEO Tenure × Empathy			-0.330^{***}
			(0.111)
CEO Tenure × Overconfidence			-0.084
			(0.065)
CEO Overconfidence		-0.006	-0.018
		(0.010)	(0.012)
p-value for equality of coefficients on CEO Tenure × Empathy and CEO Tenure × Overconfidence			0.0549
Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Observations	34,565	25,391	25,391

Notes: This table reports coefficients from linear regressions where the dependent variable is equal to one for significant layoff events, defined as CEO-firm-years with at least three layoff events or where 1% of the firm is laid off and 0 otherwise. *CEO Overconfidence* is an indicator variable defined based on the *Longholder* measure of managerial overconfidence (Malmendier and Tate 2005, Malmendier et al. 2023). *CEO Empathy* is an indicator variable equal to one if the CEO is not classified as overconfident, motivated by Kaplan et al. (2012) and Kaplan et al. (2022) that overconfidence and empathy are primary distinguishing characteristics of managers. Industry distress is an indicator equal to one if the median firm of the industry had a stock price decline of at least 30% in the two years prior or the prior and current year. Ln assets is the log of total assets. Ln employment is the log of total employment. Firm profitability is operating income before depreciation divided by total assets. CEO and CFO tenure are the number of years the CEO and CFO have been in their respective positions, respectively. We normalize tenure by dividing by 100. Firm characteristics are from the beginning of the year. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 13. Layoffs and CEO Pay

	(1) Log TC, t	(2) Log TC, t	(3) Log TC, $t+1$	(4) Log TC, $t+1$
Layoff	-0.003	-0.011	-0.044^{***}	-0.036^{***}
	(0.015)	(0.012)	(0.016)	(0.012)
CEO Tenure / 100	-0.256^{*}	0.114	-0.324^{**}	0.060
	(0.152)	(0.143)	(0.163)	(0.166)
Industry Distress	-0.054^{***}	-0.047^{***}	-0.068^{***}	-0.048^{***}
	(0.018)	(0.014)	(0.019)	(0.015)
Ln Assets	0.356^{***}	0.216^{***}	0.350^{***}	0.138^{***}
	(0.012)	(0.019)	(0.013)	(0.021)
Ln Emp.	0.051^{***}	0.062^{***}	0.051^{***}	0.084^{***}
	(0.011)	(0.020)	(0.012)	(0.021)
Firm Profitability	1.003^{***}	0.751^{***}	0.916^{***}	0.485^{***}
	(0.099)	(0.086)	(0.100)	(0.087)
Year FE	Yes	Yes	Yes	Yes
State FE	Yes	No	Yes	No
Industry FE	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes
Observations	32,686	32,568	27,639	27,490

Notes: Table reports coefficients from linear regressions where the dependent variable is log total compensation of the CEO. Layoff is a variable equal to one if there are at least three layoff events or 1% of the firm laid off in that CEO-firm-year and zero otherwise. Industry distress is an indicator equal to one if the median firm of the industry had a stock price decline of at least 30% in the two years prior or the prior and current year. Ln assets is the log of total assets. Ln employment is the log of total employment. Firm profitability is operating income before depreciation divided by total assets. CEO tenure is the number of years the CEO has been in that position. We normalize tenure by dividing by 100. Firm characteristics are from the beginning of the year. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Online Appendix
Prosociality and Layoffs

Not For Publication

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A. Conceptual Framework: Proofs and Numerical Solution

A.1 Additional Framework Details

We assume that managers maximize the sum of current and future utility without discounting, for simplicity. Utility is the sum of firm profits and a prosociality term that is a function of employees' utility.

$$u(n_t, k_t) = \pi(n_t, k_t) + \int_0^{n_{t-1}} f_{t,i}\left(u_{t,i}\right)\, \mathrm{d}i,$$

subject to the spending constraint, $wn_t + rk_t \leq c_t$, where c_t is the firm's cash on hand in period t, w is the wage, and r is the rental cost of capital. c_t is drawn from an independent and identically distributed (i.i.d.) atomless distribution with a strictly positive density over support $[c_l, c_h]$ with the probability density function (PDF) denoted as $q(\cdot)$. Firm production is Cobb-Douglas with constant returns to scale, so the firm's profit is given by

$$\pi(n_t, k_t) = n_t^{\nu} k_t^{\gamma} - wn_t - rk_t,$$

where ν and γ are both positive and sum to one. There is an exogenously assigned employment level $n_0 \in (\nu c_l, \nu c_h)$. We define

$$f_{t,i}(u_{t,i}) = \mathbb{1}\left\{s_{t,i} = \text{unemp}\right\} \alpha_{t,i} \cdot \left(u_{t,i}^{\text{unemp}} - u_{t,i}^{\text{emp}}\right),$$

where $\alpha_{t,i} > 0$ specifies the manager's prosociality towards employee i in period t. To ensure the manager chooses to operate the firm, we assume that the $\alpha_{t,i}$ is sufficiently small that the manager's utility is always positive (assuming an outside option of zero). We also assume that the marginal products of labor and capital are sufficiently high relative to costs that cash on hand is always fully utilized.

For all proofs for predictions, we use a three-period framework. Unless otherwise stated, we assume $\alpha_{2,i}$, $u_{2,i}^{\text{emp}}$, $u_{2,i}^{\text{unemp}}$ are the same for all i and thus we can drop the subscript i. This allows us to simplify the notation, as in this case $\int_0^{n_1} f_{2,i}\left(u_{2,i}\right)\, \mathrm{d}i = \alpha_2(u_2^{\text{emp}} - u_2^{\text{unemp}}) \min\{n_2 - n_1, 0\}$. Only in the proof of Prediction 4 will we consider heterogeneity across employees. We define a standard manager as a manager with $\alpha_t = 0$ for all t. We define a prosocial manager as a manager with $\alpha_1 = 0$ and $\alpha_2 > 0$. Define $\tilde{\alpha}_t \equiv \alpha_t(u_t^{\text{emp}} - u_t^{\text{unemp}})$ and $\Psi_t = -\frac{\partial}{\partial n_t} \mathrm{E}_t\left[u(n_{t+1}^*, k_{t+1}^*)|n_t\right]$ where $\mathrm{E}_t\left[u(n_{t+1}^*, k_{t+1}^*)|n_t\right]$ is the expected utility in period 2 assuming the optimal employment and capital levels n_2^* and k_2^* are chosen for c_2 given the choice n_1. Note that $\Psi_2 = 0$ by construction.

A.2 Lemmas

In this subsection, we provide the proofs for the lemmas that are used in the proofs of the predictions.

Lemma 1. *The general solution for the optimal choice of labor is given by*

$$n_t = \begin{cases} H\left(\Psi_t \mid c_t\right) & \text{if} \quad n_{t-1} \leq H\left(\Psi_t \mid c_t\right) \\ n_{t-1} & \text{if} \quad H\left(\Psi_t \mid c_t\right) < n_{t-1} \leq H\left(\Psi_t - \tilde{\alpha}_t \mid c_t\right) \\ H\left(\Psi_t - \tilde{\alpha}_t \mid c_t\right) & \text{if} \quad n_{t-1} > H\left(\Psi_t - \tilde{\alpha}_t \mid c_t\right) \end{cases}$$

where $H\left(\cdot \mid c_t\right) \equiv h^{-1}\left(\cdot \mid c_t\right)$ *and*

$$h\left(x \mid c_t\right) \equiv \frac{x^{\nu-1}\left(\frac{c_t - wx}{r}\right)^{\gamma-1}\left(\nu c_t - wx\right)}{r}.$$

Proof of Lemma 1. The Lagrangian for the prosocial manager in period 1 is

$$\begin{aligned} \mathcal{L} =& n_t^{\nu} k_t^{\gamma} - w n_t - r k_t + \lambda_t (w n_t + r k_t - c_t) \\ &+ \tilde{\alpha}_t \min\{n_t - n_{t-1}, 0\} + \mathrm{E}_t\left[u(n_{t+1}^*, k_{t+1}^*) | n_t\right], \end{aligned}$$

where λ_t is the Lagrange multiplier for the spending constraint in period 1. The three first-order conditions can be combined, by substituting out λ_t and k_t, to give the following expression for the optimal employment level in the second period:

$$\frac{n_t^{\nu-1}\left(\frac{c_t - w n_t}{r}\right)^{\gamma-1}\left(\nu c_t - w n_t\right)}{r} = \tilde{\alpha}_t \mathbb{1}_{n_t < n_{t-1}} + \Psi_t. \tag{A.1}$$

Using the above definition for h, we can rewrite the above equation as $h\left(n_t \mid c_t\right) = \Psi_t + \tilde{\alpha}_t$. Note that

$$\frac{\partial}{\partial x} h\left(x \mid c_t\right) = \frac{c_t^2(\nu-1)\nu x^{\nu-2}\left(\frac{c_t - wx}{r}\right)^{\gamma}}{\left(c_t - wx\right)^2} < 0$$

for $x \in (0, \frac{c_t}{w})$ as $(\nu - 1) < 0$. Monotonicity of h implies a single-valued inverse function $H \equiv h^{-1}$ exists. Further, by the inverse function theorem, $H\left(x \mid c_t\right)$ is strictly decreasing in x and thus $H\left(\Psi_t \mid c_t\right) < H\left(\Psi_t - \tilde{\alpha}_t \mid c_t\right)$. Thus, there is no case where both interior solutions are valid. If $n^*_{2,\text{standard}} < n_1 < n^*_{2,\text{layoff}}$, then an interior solution does not exist, and the boundary solution n_1 is the optimal choice for n_2. This follows from the concavity of the optimization problem, which implies that the marginal utility is increasing from both sides of the boundary solution towards it. Thus, $H(\Psi_t \mid c_t)$ or $H(\Psi_t - \tilde{\alpha}_t \mid c_t)$ is the optimal solution if it is greater or less than n_{t-1}, respectively. If neither of these conditions are satisfied, then n_{t-1} is the optimal solution.

□

Lemma 2. Ψ_1 *is weakly positive.*

Proof of Lemma 2. Define $\hat{\hat{c}}$ as the value of c that satisfies the equation $H(0 \mid \hat{\hat{c}}) = n_1$. Define $\hat{c}$ as the value of c that satisfies the equation $H(-\tilde{\alpha}_2 \mid \hat{c}) = n_1$. The expected value for period 2 in

period 1, given n_1, can thus be written as

$$E_1\left[u(n_2^*, k_2^*)|n_1\right] = \int_{c_l}^{\hat{c}} q(c)\left(\pi(H(-\tilde{\alpha}_2 \mid c), (1/r)(c - wH(\tilde{\alpha}_2 \mid c))) + \tilde{\alpha}_2(H(-\tilde{\alpha}_2 \mid c) - n_1)\right) dc$$
$$+ \int_{\hat{c}}^{\hat{\hat{c}}} q(c)\left(\pi\left(n_1, \frac{c - n_1 w}{r}\right)\right) dc$$
$$+ \int_{\hat{\hat{c}}}^{c_h} q(c)\left(\pi(H(0 \mid c), (1/r)(c - wH(0 \mid c)))\right) dc.$$

Taking the derivate with respect to n_1, yields

$$\frac{\partial}{\partial n_1} E_1\left[u(n_2^*, k_2^*)|n_1\right] = -\int_{c_l}^{\hat{c}} q(c)\tilde{\alpha}_2 dc$$
$$+ \int_{\hat{c}}^{\hat{\hat{c}}} q(c)\left(\frac{n_1^{\nu-1}\left(\frac{c-n_1 w}{r}\right)^{\gamma}(n_1 w - c\nu)}{n_1 w - c}\right) dc \leq 0.$$

Note that while $\hat{c}$ and $\hat{\hat{c}}$ both depend on n_1, the terms that arise from applying the Leibniz rule cancel out exactly in this derivative. The first term is clearly negative as long as $\hat{c}$ is in the support of q and 0 otherwise. The second term is negative as long as $\hat{\hat{c}}$ is in the support of q and 0 otherwise because the denominator is clearly negative and by the definition of $\hat{\hat{c}}$, $\forall_{c<\hat{\hat{c}}} n_1 w - c\nu > 0$. Thus, we have shown that

$$\frac{\partial}{\partial n_1} E_1\left[u(n_2^*, k_2^*)|n_1\right] \leq 0.$$

This implies that $\Psi_1 = -\frac{\partial}{\partial n_1} E_1\left[u(n_2^*, k_2^*)|n_1\right] \geq 0$. □

A.3 Proofs

Proof of Prediction 1. For the prosocial manager, the utility in period 2 is given by $\pi(n_2, k_2) + \tilde{\alpha}_2 \min\{n_2 - n_1, 0\}$. It is clear that $\tilde{\alpha}_2 \min\{n_2 - n_1, 0\}$ is a manager-specific disutility cost of layoffs that does not affect firm value or managers who are not prosocial. If $n_2 < n_1$ a layoff occurs and the manager suffers a direct disutility cost $\tilde{\alpha}_2(n_2 - n_1) < 0$. □

Proof of Prediction 2. Suppose that both the new and incumbent managers have the initial level of labor from the previous period $\bar{n}$ and the same cash on hand $\bar{c}$. By Lemma 1, a new manager will choose $n_1 = H(\Psi_1 \mid \bar{c})$ by and not consider n_0 as $\alpha_1 = \tilde{\alpha}_1 = 0$. An incumbent manager will choose $n_2 \geq H(0 \mid \bar{c})$. By Lemma 2 and the monotonically decreasing property of H noted in the proof of Lemma 1, $H(0 \mid \bar{c}) \geq H(\Psi_1 \mid \bar{c})$. Thus for any values of $\bar{n}$, such that $H(0 \mid \bar{c}) \geq \bar{n} \geq H(\Psi_1 \mid \bar{c})$, the new manager will choose a layoff and the incumbent manager will not. □

Proof of Prediction 3. Part (i) is equivalent to the statement in Prediction 2 that a new, alternatively shorter-tenured, prosocial manager has a higher propensity to make layoffs than an incumbent, alternatively longer-tenured, prosocial manager given the manager only makes decisions for two-periods.

We thus only need to prove part (ii). Let the level of cash-on-hand be given by $\bar{c}$. By Lemma 1, conditional on a layoff by a shorter-tenured manager and longer-tenured prosocial manager, the shorter-tenured manager will choose $n_1 = H(\Psi_1 \mid \bar{c})$ and the longer-tenured manager will choose

$n_2 = H(-\tilde{\alpha}_2 \mid c_2)$. By the strictly decreasing property of h noted in the proof of Lemma 1, $H(-\tilde{\alpha}_2 \mid c_2) > H(\Psi_1 \mid c_1)$. Thus, the reduction in labor from the initial/previous period level will be smaller for the longer-tenured ($t = 2$) prosocial manager since $\bar{n} - n_2 \leq \bar{n} n_1$ which is part (ii) of Prediction 3. □

Proof of Prediction 4. We begin with the statement regarding the extent to which layoffs affect employee utility. Note that an increase in the adverse effect of being laid off on employee utility (i.e., an increase in $u_2^{\text{emp}} - u_2^{\text{unemp}}$) is an effective increase in $\tilde{\alpha}_2$. Thus, we need to show that an increase in $\tilde{\alpha}_2$ for a prosocial manager to $\tilde{\alpha}_2'$ for a more prosocial manager leads to a larger reduction in layoff propensity and layoff size.

First, we consider layoff size. Conditional on a layoff for both managers, the prosocial manager will choose $n_2 = H(-\tilde{\alpha}_2 \mid c_2)$ and the more prosocial manager will choose $n_2 = H(-\tilde{\alpha}_2' \mid c_2)$. By the strictly decreasing property of H noted in the proof of Lemma 1, $H(-\tilde{\alpha}_2' \mid c_2) > H(-\tilde{\alpha}_2 \mid c_2)$. Thus, the reduction in labor from the initial/previous period level will be smaller for the more prosocial manager.

Next, we consider layoff propensity. The lowest realization of c_2, denoted $\hat{c}$, before a prosocial manager will undertake layoffs is characterized by $H(-\tilde{\alpha}_2|\hat{c}) = n_1$. This is

$$n_1^{\nu-1} (c_2 - n_1 w)^{\gamma-1} (c_2 \nu - n_1 w) = -r^{\gamma} \tilde{\alpha}_2.$$

We then apply the implicit differentiation technique to find the derivative of c_2 with respect to $\tilde{\alpha}_2$ to get

$$\frac{dc_2}{d\tilde{\alpha}_2} = \frac{-r^{\gamma}}{\frac{\partial}{\partial c_2}\left(n_1^{\nu-1} (c_2 - n_1 w)^{\gamma-1} (c_2 \nu - n_1 w)\right)}.$$

Since $\frac{\partial}{\partial c_2}\left(n_1^{\nu-1} (c_2 - n_1 w)^{\gamma-1} (c_2 \nu - n_1 w)\right) > 0$, we can conclude that $\frac{dc_2}{d\tilde{\alpha}_2} < 0$. This implies that the lowest value of c before layoffs are undertaken is decreasing in $\tilde{\alpha}_2$, meaning that a manager with a greater $\tilde{\alpha}_2$ parameter is weakly more likely to conduct layoffs. The difference is only weak as there may be no c_2 realizations low enough to necessitate a layoff for the considered $\tilde{\alpha}_2$ values.

Now, we turn to the statement regarding heterogeneity across employees in the weights that the manager assigns to employee utility. We aim to show that, compared to a short-tenured prosocial manager, a long-tenured prosocial manager reduces layoff propensity and layoff size more strongly for employees whose utility the manager weighs more heavily. In order to do so, we allow $\alpha_{2,i}$ to vary across i. For simplicity, suppose that there are two types of employees, l and h, for which $\alpha_{2,l} < \alpha_{2,h}$. Among the mass n_1 time $t = 1$ employees, let mass $\frac{n_1}{2}$ be of either type. In this setting,

$$\begin{aligned}\int_0^{n_1} f_{2,i}(s_{2,i})\, di &= \int_0^{n_1} \mathbb{1}_{\{s_{2,i}=\text{unemp}\}}\, \alpha_{2,i}\, (u_2^{\text{unemp}} - u_2^{\text{emp}})\, di \\ &= \alpha_{2,l} \int_0^{n_1/2} \mathbb{1}_{\{s_{2,i}=\text{unemp}\}}\, (u_2^{\text{unemp}} - u_2^{\text{emp}})\, di + \alpha_{2,h} \int_{n_1/2}^{n_1} \mathbb{1}_{\{s_{2,i}=\text{unemp}\}}\, (u_2^{\text{unemp}} - u_2^{\text{emp}})\, di\end{aligned}$$

At time $t = 2$, the long-tenured manager solves

$$\begin{aligned}\max_{n_2,k_2} \pi(n_2, k_2) + \alpha_{2,l} \int_0^{n_1/2} \mathbb{1}_{\{s_{2,i}=\text{unemp}\}}\, (u_2^{\text{unemp}} - u_2^{\text{emp}})\, di \\ + \alpha_{2,h} \int_{n_1/2}^{n_1} \mathbb{1}_{\{s_{2,i}=\text{unemp}\}}\, (u_2^{\text{unemp}} - u_2^{\text{emp}})\, di\end{aligned}$$

Consider a corresponding solution (n_2^*, k_2^*). Fixing the solution, it is clear that, if $n_2^* < n_1$ (i.e., if a layoff occurs), the manager will optimally lay off mass $\min\left(\frac{n_1}{2}, n_1 - n_2^*\right)$ employees of type

l and mass $\max\left(0, \frac{n_1}{2} - n_2^*\right)$ of type h. Intuitively, the manager will always prefer to lay off a type l employee over a type h employee. Hence, if c_l is the cash threshold below which a layoff involving type l employees occurs, the corresponding threshold for type h employees c_h must satisfy $c_h < c_l$. So, any reduction in layoff propensity for type l employees implies a further reduction in layoff propensity for type h employees. Similarly, for any layoff-inducing n_2^*, the mass of type l employees laid off is weakly greater than the mass of type h employees laid off: $\min\left(\frac{n_1}{2}, n_1 - n_2^*\right) \geq \max\left(0, \frac{n_1}{2} - n_2^*\right)$. Hence, any reduction in layoff size for type l employees implies at least as large of a reduction in layoff size for type h employees (with equality only if $n_2^* = 0$). □

Proof of Prediction 5. Recall that the budget constraint holds with equality and thus given n_t and c_t, $k_t = \frac{c_t - w n_t}{r}$. Thus, the proof for Prediction 3, which finds higher n_2 for a higher-tenured prosocial manager than a lower-tenured prosocial manager, implies that k_2 is lower for the higher-tenured prosocial manager given the same value of cash-on-hand, thus proving the prediction. □

Proof of Prediction 6. Note that a greater increase in prosociality over a CEO's tenure (i.e., a greater $\alpha_2 - \alpha_1$) is equivalent to a larger $\tilde{\alpha}_2$, given that we assume $\alpha_1 = 0$. Hence, we can prove the prediction by showing that and increase from $\tilde{\alpha}_2$ to $\tilde{\alpha}_2'$ leads to a larger reduction in layoff propensity and layoff size. This was shown directly in the proof of Prediction 4. □

A.4 Numerical Results

We discretize the cash-on-hand distribution and the labor choice variable using 1,001 gridpoints for each. The framework is solved using backward induction where the second period is solved first by finding the optimal choice of n_2 for all potential choices for n_1 and all potential realizations of c_2. We then calculate the expected value for the second period for each choice of n_1 and solve for the optimal choice of n_1 in the first period.

B. Data Appendix

B.1 2002–2020 Layoff Data: Construction

This section provides more details about the Standard and Poor's (S&P) Capital IQ Key Developments database, our data processing using NLP, and manual review. The goal is to identify all significant layoff events in each of our sample firms as well as detailed information about those events (size, location, type of employees laid off). The default definition of significant layoff events (and the main dependent variable in our empirical analysis) includes all cases where a firm has either a layoff affecting 1% or more of the firm's employees or has at least three layoff events in a given year. (Our results are robust to removing these restrictions.)

Each key development in the Capital IQ Key Developments data entry includes the announcement date, the date entered into the database, the last date the entry was modified, a short headline, a situation summary, a type, a source, a company role, and other identifiers. We use the announcement dates, headlines, and situation summaries. The headlines are typically a phrase and the summaries are generally between one sentence and a small paragraph. According to S&P, the content is based on a variety of sources including "news aggregators, stock exchanges and regulatory websites as well as company websites." For our analyses, we use and classify all key developments given the "Discontinued Operations/Downsizings" type which includes layoff announcements and closure announcements.

As discussed in the main text, we leverage NLP techniques to extract key data points from the text. Specifically, we automate four functions: (1) classifying each article as a layoff, closure, or neither, (2) extracting the number of workers laid off and/or the percentage of workers laid off, (3) identifying relevant geographies at the international, state, and city levels, and (4) classifying layoffs as blue-, pink-, or white-collar.

For (1), we first lemmatize the headline and situation summary and construct three lists of words to aid in identifying layoffs and closures: (i) layoff verbs, such as "cut" and "slashed," (ii) closure verbs such as "mothball" or "shut down," and (iii) worker-related nouns, including (iii.α) job words for synonyms of jobs like "position" or "role," (iii.β) occupations words for industry-specific jobs such as "accountant" or "banker," and (iii.γ) collective job words referring to jobs generally, such as "headcount" or "workforce." A key development is classified as a layoff if the headline or sentence in the summary includes a layoff-related verb as well as a noun from one of the three worker-related lists specified above. Key developments were identified as low confidence layoffs if only either a layoff-related verb or worker-related noun is present. If the key development does not contain a layoff-related verb or worker-related noun, but contains a closure-related verb, then it is classified as a closure. Additionally, we eliminate any layoff or closure that is a speculation or consideration. We create a list of words that indicate uncertainty, such as "pondering" or "considering." If the sentence contains the relevant layoff-related verb, worker-related noun, and/or closure-related verb also includes a word indicating uncertainty, then the key development is not classified as a layoff or closure.

Next, for (2) we extract the number and/or the percentage of workers laid off when available.[IA.1] In addition to the restricted text searches (regular expressions) for percentages and numbers discussed

[IA.1] If only the percent of a subset of workers being laid off is referenced, this number is not collected since we only have the number of total employees at the firm in Compustat.

in the main text, we also use these patterns to extract the percentages or numeric values that are not expressed as numbers. We use a list of common number and proportion words for fractions like "one half" or "two-thirds" and numbers like "thirty", and convert them to their numerical integer values. For general quantities like "hundreds" or "thousands," we encode them as the largest possible value, i.e. 999 or 9999, respectively. If none of the patterns patterns were present, proportions or counts from sentences with a layoff-related verb or a worker-related noun were still extracted, but denoted as low confidence for the manual review.

For (3), the geographic location of the layoff, we collect the location up to the city level for US layoffs and up to the country level for foreign layoffs. At the international level, we identify foreign locations in the text of each key development based on lists of country names, demonyms for people from the respective countries, and names of large global cities, such as Tokyo. If no specific country can be identified, we record words that would imply layoffs outside the US (e.g., foreign, international, etc.). We also note if the US or a US state is mentioned since this might imply that at least some employees were laid off domestically. At the domestic level, we identify states by their names or variants (e.g., Alaska, Alas., AK). We identify cities from constructions of the form "city, state" (e.g., "Buffalo, NY") and from a list of the 1,000 largest cities in the US based on 2013 Census data.[IA.2] If only a city name was identified, then the NLP would include a list of all states with a city of the same name in parentheses ordered by population.

After NLP-based steps (1) to (3), we conduct a manual review of the prepopulated data for all key developments, regardless of how they are classified by NLP, with the goal of ensuring accuracy, checking low-confidence cases, adding missing information, applying more complex screening criteria and calculations, and eliminating duplicates. Reviewers were given comprehensive instructions about how to classify each case in both text and video form consistent with the description here. The key development data was put into Microsoft Excel along with the classifications, layoff sizes, and locations from NLP. Low-confidence classifications were highlighted and it was made clear to reviewers that they should pay close attention to these cases. Reviewers examined all of the output from NLP and updated the relevant data columns to make them accurate. Reviewers were instructed to classify a key development as a layoff if it described a layoff where "it is clear people lost their jobs." Thus, business sales, including exits via sales where no jobs were lost, and temporary furloughs were not coded as layoffs. If workers were having their job terminated, but being reassigned to other positions within the company or taking early retirement, this was not considered a layoff. If some portion of the workers laid off were reassigned or retired early, they were subtracted from the total layoff size. A key development was classified as a closure if it described a closure (and not also a layoff) and neither if it did not describe either. Additionally, precise instructions were given to not consider any layoffs and closures that were only speculative or under consideration, as neither a closure nor a layoff.

In the case, that only a US city name was listed without a specific state, the reviewer would make their best guess for the state the layoff occurred in. If the city name was identified in the top 1,000, the NLP algorithm would list the state with the highest population first making this a straightforward best guess if no additional information was available. In some situations, it may be clear or likely that the layoff occurred in a specific state based on the context from other key developments. Reviewers did not use outside information generally; however, reviewers were told to use additional research to determine the state if it was otherwise unclear and could quickly be

[IA.2] We exclude York and Knoxville to avoid confusion with places/names that may contain these names.

determined (e.g., through a Google search with the city name and company name). Additionally, if there was a place listed with a clear location (e.g., a very specific mall) where the city could be easily identified, but was not included in the text, the reviewer may also have used outside information to determine the city if straightforward (e.g., a Google search of a specific mall's name).

As part of the manual review, duplicate layoffs/closures are noted when possible, e. g., when the summary notes that the announced layoff was part of an earlier announcement or the execution of an alternative announcement, or when it is obvious from context, e. g., if the text specifies a certain factory being shut down in two announcements. In some cases, the announcement of a closure may take place separately from, and potentially earlier than, the announcement of a related layoff that is part of the closure. All duplicates are removed from the dataset to prevent double counting of layoff events and the number of people laid off. If two duplicates contain the same information, then the earlier announcement is chosen. If one of the duplicates contains more information (e.g., number of people laid off, location), then that one is chosen. In such cases, the closure announcement is followed by a separate announcement, which specifies an associated layoff. In this case, the closure announcement is classified as a duplicate. We classify the closure announcement as a duplicated since, by definition, it does not contain details about the workers being affected.

Lastly, in case of an error during manual review. We also double-checked certain cases noted as atypical or with formatting errors. We checked all key developments where the percent of the firm laid off was entered as less than 1%. Further, if we identified more than two-thirds of the firm was laid off across all layoffs in a given firm-year, we checked all layoff entries for that firm. We also checked cases where we identified the percent laid off column had an entry recorded as a date in Excel or there were parentheses in a city or state entry for one of the key developments.

After constructing an initial data set with NLP and manual review, we conducted an additional search for data on all key developments in our baseline regression sample with missing information on layoff size in layoff-years that did not (yet) qualify as significant layoff events, i. e., that had fewer than three layoffs and less than 1% of firm employment laid off included so far. For this subset of layoff, we conducted manual searches for layoff size using the web and LexisNexis in an effort. When the original news source is included in the data, that was the preferred source for the layoff size when found. If it could not be found or was missing, another source would be used if available. The additional searches generated the missing information on layoff size for about 10.67% of the key developments, suggesting that this information is usually included in the key development text when it is publicized.

We also conducted manual reviews (e.g., by using a search engine) for identifying locations. Examples include searches for states when only the city was specified, and searches for cities when only non-city locations such as business complexes were specified.

Duplicates were specified as "when an observation is believed to be a duplicate of a previous observation."

With these refinements and additions, we turned to NLP step (4) in order to classify layoff events into blue-, pink-, and white-collar layoffs. Here, we utilize the count of words from each category in the layoff description. If a description does not contain any blue-collar or pink-collar words and at least one white-collar word, we classify it as a white-collar layoff. We classify the remaining layoffs that contain at least one blue-collar word or pink-collar word as the type that it contains more words from, defaulting to blue-collar in the case of a tie. The reason for employing a higher hurdle towards white-collar classification is that, when a blue- or pink-collar word appears in the description, we found it to be almost certainly not a white-collar layoff as the latter would

typically not discuss factories or retail stores.

As mentioned in the main text, to verify our classification of layoff type leveraging the data on the locations of layoffs from the 2000 US Census downloaded from Social Explorer, a third-party data tool. Using the "Occupation For Employed Civilian Population 16 Years And Over" data at the geographic level of "Places," which includes cities and townships, linked to our layoff location data, we construct a proxy for the percent of predominantly blue-collar occupations, white-collar occupations, and pink-collar occupations in a given city (layoff location). There are 13 broad occupation categories, and we designate "Management, business, and financial operations occupations" and "Professional and related occupations" as white-collar, "Construction, extraction, and maintenance occupations" and "Production occupations" as blue-collar, and "Personal care and service occupations" and "Sales and related occupations" as pink-collar. We calculate the proportion of the employed population in the city in each of these categories. If the layoff or closure takes place in more than one city, we take the average of the proportions across the cities for all cities where data is available. We are able to construct this proxy for 80.4% of the layoff and closure events in our sample where we identify at least one city. We find that the proportion of the city, or average proportion of the cities, employed in white-collar jobs is 37.2% for the key developments text-based NLP classifies as white-collar compared to only 33.5% for the other key developments. While this difference may not seem large it is statistically significant with p-value of less than 0.0001 for a two-sample t-test. We also conduct analogous two-sample t-tests for layoffs/closures classified as blue-collar and pink-collar and find p-values of less than 0.0001 in both cases as well.

B.2 2002–2020 Layoff Data: Variable Definitions

Layoff. We classify a CEO-firm year as a layoff if there are three separate layoff events or at least 1% of the workforce is laid off. For our analyses focusing on location- or month-specific layoffs, we define a layoff as any layoff event in the relevant time period.

CEO Tenure. We identify CEOs using ExecuComp's classification, where the CEOANN variable has the value "CEO". CEO tenure is calculated using the "BECAMECEO" variable as the starting year when it is available. Otherwise, we calculate it using the Execucomp panel, which starts in 1992.

CFO Tenure. We identify CFOs using ExecuComp's classification, where the CFOANN variable has the value "CFO" or a close variation such as "Chief Financial Officer." Otherwise, we identify CFOs from the text of their title. Following Jiang et al. (2010), we employ the following order of titles: CFO, chief financial officer, treasurer, controller, finance, and vice president-finance. If more than one person in a year has the the same title then the person with the higher age is chosen as the CFO.

CEO Power (% of New Directors). We construct the percent of new directors appointed during a CEO's tenure using data from the Institutional Shareholder Services (ISS). The ISS data covers S&P 1500 firms since 1996 and includes the directors in each year for each firm and the year they became a director. As with the Execucomp data, if no year is listed for the director's first year we use their first year in the data as the start year of their directorship. To match the ISS data between the current and legacy samples, we also rely on the director link between the current and legacy samples published as a part of, and described in, Coles et al. (2014). The link is necessary as

it fills in missing director IDs from surrounding years, corrects errors in the ISS data, and resolves inconsistencies between the current and legacy director identifiers.

Industry Distress. As in prior literature, we define an industry-year as in distress if the median firm's stock price declined by at least 30% over a two-year horizon. For the context of layoffs, we consider both the prior two years and, alternatively, the prior and current year, and set the Industry Distress indicator equal to 1 if the firm is in distress over either horizon. Following Babina (2020), we (i) use SIC3 industry classes, (ii) restrict to single-segment CRSP/Compustat firms, i. e., drop firms with multiple segments in the Compustat Business Segment Database (CBSD), (iii) drop firms if the reported single-segment sales differ from those in Compustat by more than 5%, (iv) restrict to firms with sales of at least \$20m, and (v) exclude industry-years with fewer than four firms. We use firms' modal SIC code across CRSP, Compustat, and CBSD, and the latter in case of a tie.

Ln Assets. Natural log of total assets (AT) from Compustat.

Ln Employment. Natural log of total employment (EMP) from Compustat.

Firm Profitability. Measured as $\frac{OIDBP}{AT}$, where $OIDBP$ is operating income before depreciation and AT is total assets, both from Compustat. This variable is winsorized at the 1st and 99th percentiles.

Market-to-Book Ratio. Defined as $\frac{PRCC_F \cdot CSHO}{AT}$, where $PRCC_F$ is the annual closing stock price from CRSP, $CSHO$ the number of common shares outstanding from CRSP, and AT total assets from Compustat. This variable is winsorized at the 1st and 99th percentiles.

Tobin's Q. Defined as $\frac{DLC+DLTT+PRCC_F \cdot CSHO}{PPEGT}$, where DLC is debt in current liabilities from Compustat, $DLTT$ long-term debt from Compustat, and $PPEGT$ gross property, plant and equipment from Compustat. We use the variable winsorized at the 5th and 95th percentiles and one-period lagged. We winsorize Q at the 95th percentile as this measure is substantially more right-skewed than market-to-book, though our results do not depend on this winsorizing approach.

Employment Growth. Defined as $\frac{EMP_t - EMP_{t-1}}{EMP_{t-1}}$, where EMP is total employment from Compustat. This variable is winsorized at the 1st and 99th percentiles.

Debt Maturity. Defined as $\frac{DLTT-DD2}{DLC+DLTT}$, which is the fraction of total debt maturing in more than two years. $DD2$ is the fraction of debt maturing in two years. This variable is winsorized at the 1st and 99th percentiles.

P(Default). Defined as $\mathcal{N}(-\text{naïve } DD))$ from Bharath and Shumway (2008), where naïve DD is the naïve distance-to-default and $\mathcal{N}$ is the cummulative distribution function for the normal distribution. naïve $DD)$ is defined as $\frac{\ln[(E+F)/F] + \left(r_{it-1} - 0.5 \text{ naïve } \sigma_V^2\right)}{\text{naïve } \sigma_V}$, where E is the equity value of the firm, F is the face value of the debt, r_{it-1} is the stock return over the previous year, and σ_V is the volatility of firm value. E is defined as the fiscal year end share price times the number of shares outstanding from Compustat, $PRCC_F \cdot CSHO$. F is defined as the face value of short term debt plus one half the face value of long term debt from Compustat, $DLC + \frac{1}{2}DLTT$. r_{it-1} is defined as the proportion by which equity has increased (e.g., the ex-dividend return), approximated by the log difference in equity value from one year to the next following the SAS code corresponding to the Bharath and Shumway (2004), a pre-publication version of Bharath and Shumway (2008). Intuitively, this is consistent with a simple model of firms which do not issue dividends. A firm which issues dividends suddenly reduces its value and thus moves closer to default. σ_V is defined as $\frac{E}{E+F}\sigma_E + \frac{F}{E+F}(0.05 + 0.25 * \sigma_E)$, where σ_E is the standard deviation of r_i, the log difference in equity value from one year to the next.

B.3 CEO Mortality Data: Variable Definitions

Death. Based on hand-collected mortality data from Borgschulte et al. (2023). Censored at a cutoff date of October 1st, 2017.

Layoff. Layoffs are based on data from Hallock (1998), Billger and Hallock (2005), and Farber and Hallock (2009). This dataset provides a comprehensive list of layoff announcements collected from the *Wall Street Journal*.

Age. Based on hand-collected birth data from Borgschulte et al. (2023).

Industry Distress. The variable used in our analysis is equal to one if the CEO has experienced industry distress, as defined in Section B.2.

Ln Assets. We define log assets as the natural log of total assets from Compustat, variable code AT. We use assets as of the first year that the CEO has assumed the top position. When values are missing, we interpolate the missing values or, at the beginning and end of the sample, use the closest available year.

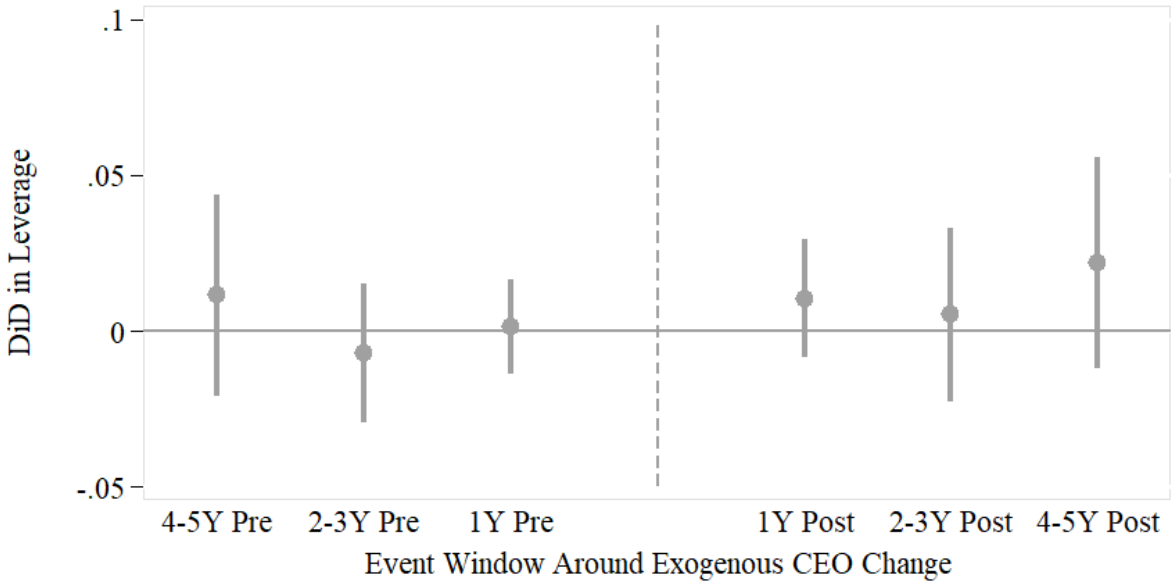
Ln Employment. We define log employment as the natural log total employment from Compustat, variable code EMP. We use employees as of the first year that the CEO has assumed the top position. When values are missing, we interpolate the missing values or, at the beginning and end of the sample, use the closest available year.

Firm Profitability. Firm profitability is measured as $\frac{OIDBP}{AT}$. We use profitability as of the first year that the CEO has assumed the top position. This variable is winsorized at the 1st and 99th percentiles. When values are missing, we interpolate the missing values or, at the beginning and end of the sample, use the closest available year.

Minimum Stock Performance. Minimum stock performance is defined as the worst stock performance in any six-month period during a CEO's tenure.

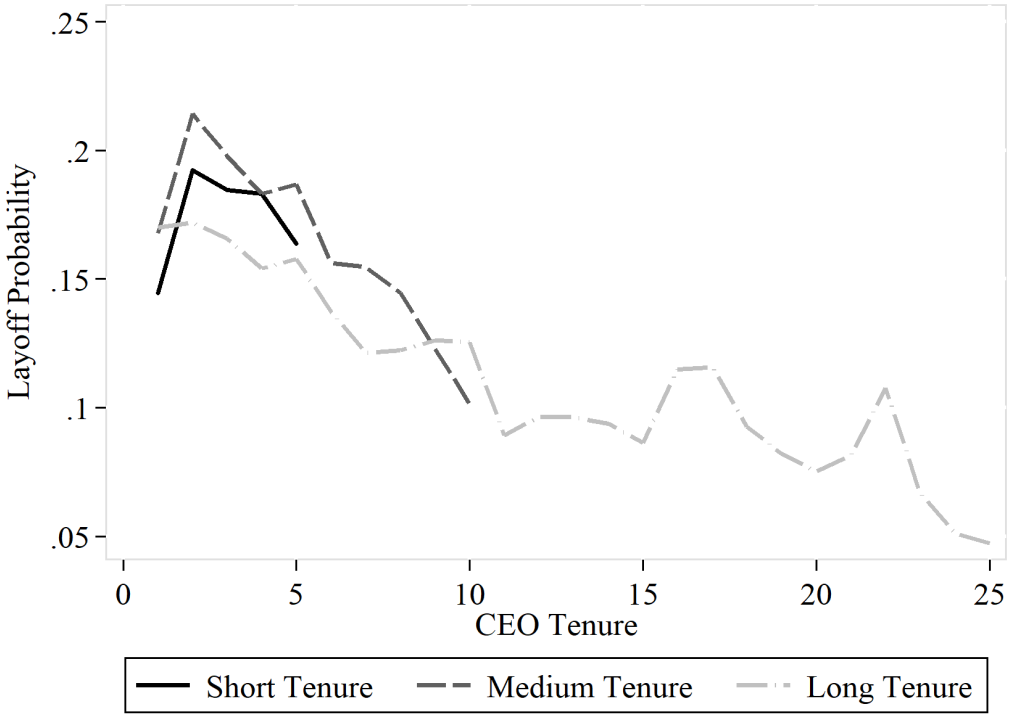
C. Additional Figures and Tables

Appendix-Figure A.1. Placebo Test



Notes: The figure plots the change in firm leverage (long-term debt over assets) around exogenous CEO departures relative to non-treated firms (stacked difference-in-differences analysis; see equation (3)). Exogenous CEO changes are defined as those occurring due to CEO death or illness of the incumbent CEO and come from Gentry et al. (2021). See Section 5.1 for additional details. The figure also plots 95% confidence intervals based on standard errors clustered at the firm level.

Appendix-Figure A.2. Layoff Propensity and Tenure—Fixed CEO Differences?



Notes: Layoff propensity by year of tenure plotted for three different CEO types based on overall/total tenure. Short tenure is up to five years. Medium tenure is more than five and up to ten years. Long tenure is more than ten years. Data on layoffs assembled using NLP text processing and classification as well as hand-coding of S&P Key Developments data as detailed in Appendix-Section B. CEO tenure based on Execucomp data.

Appendix-Table A.1. Layoffs and CEO Mortality—Stratified Cox Hazard Model

	(1)	(2)	(3)
Distress Layoff	0.292**	0.287**	0.283**
	(0.138)	(0.135)	(0.135)
Non-Distress Layoff	−0.103	−0.106	−0.112
	(0.094)	(0.092)	(0.094)
Industry Distress	0.088	0.097	0.087
	(0.115)	(0.114)	(0.122)
CEO Age	0.136***	0.138***	0.139***
	(0.009)	(0.009)	(0.009)
Ln Assets	0.004	0.005	0.006
	(0.073)	(0.071)	(0.071)
Ln Employment	−0.035	−0.038	−0.035
	(0.070)	(0.070)	(0.072)
Firm Profitability	0.651	0.591	0.667
	(0.697)	(0.700)	(0.725)
Year	−0.007		
	(0.009)		
Minimum Stock Performance			−0.145
			(0.332)
Year FE	No	Yes	Yes
State FE	Yes	Yes	Yes
Observations	31,917	31,917	31,917

Notes: Table reports hazard ratios estimated from a Cox (1972) proportional hazards model. The dependent variable is an indicator that equals one if the CEO dies in a given year. Distress Layoff is an indicator equal to one in year t if, prior to or in year t, a CEO has undertaken a layoff during industry-wide distress. Industry distress is an indicator equal to one if the median firm of the industry had a stock price decline of at least 30% in the two years prior or the prior and current year. CEO Age is the CEO's age at time t. Minimum stock performance is defined as the worst stock performance in any six-month period during the CEO's tenure. Log assets and log employees from the first year that the CEO assumed the top office are included in all specifications. Firm profitability is included for all years that the CEO is in office and then profitability from the CEO's final year in office thereafter. More details about the data are in Section 3 and Appendix-Section B. Survival models are stratified by firms' industry affiliation. Standard errors, clustered by industry, are in parentheses. Significance levels are indicated by *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

Appendix-Table A.2. Layoffs and CEO Mortality—CEO Tenure Control

	(1)	(2)	(3)
Distress Layoff	0.305**	0.308**	0.295**
	(0.139)	(0.140)	(0.142)
Non-Distress Layoff	0.034	0.023	0.007
	(0.105)	(0.105)	(0.106)
Industry Distress	0.196*	0.200*	0.166
	(0.119)	(0.120)	(0.126)
Cumulative CEO Tenure	−0.027*	−0.026*	−0.030**
	(0.014)	(0.014)	(0.014)
CEO Age	0.148***	0.151***	0.152***
	(0.010)	(0.011)	(0.011)
Ln Assets	−0.158**	−0.154**	−0.152**
	(0.076)	(0.077)	(0.076)
Ln Employment	0.058	0.057	0.067
	(0.075)	(0.076)	(0.075)
Firm Profitability	0.487	0.454	0.726
	(0.704)	(0.715)	(0.735)
Year	0.007		
	(0.010)		
Minimum Stock Performance			−0.536*
			(0.325)
Year FE	No	Yes	Yes
State FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	31,917	31,917	31,917

Notes: This table reports estimated coefficients from logit regression where the dependent variable is an indicator that equals one if the CEO dies in a given year. The dependent variable is an indicator that equals one if the CEO dies in a given year. Distress Layoff is an indicator equal to one in year t if, prior to or in year t, a CEO has undertaken a layoff during industry-wide distress. Industry distress is an indicator equal to one if the median firm of the industry had a stock price decline of at least 30% in the two years prior or the prior and current year. Cumulative CEO tenure is CEO tenure while CEO and total tenure thereafter. CEO Age is the CEO's age at time t. Minimum stock performance is defined as the worst stock performance in any six-month period during the CEO's tenure. Log assets and log employees from the first year that the CEO assumed the top office are included in all specifications. Firm profitability is included for all years that the CEO is in office and then profitability from the CEO's final year in office thereafter. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by industry, are shown in parentheses. Standard errors, clustered by industry, are in parentheses. Significance levels are indicated by $*p < 0.10$, $**p < 0.05$, $***p < 0.01$.

Appendix-Table A.3. Layoffs and CEO Mortality—Stratified Cox Hazard Model With Tenure Control

	(1)	(2)	(3)
Distress Layoff	0.313**	0.306**	0.296**
	(0.139)	(0.136)	(0.137)
Non-Distress Layoff	0.006	0.001	−0.014
	(0.104)	(0.103)	(0.104)
Industry Distress	0.161	0.171	0.142
	(0.127)	(0.126)	(0.133)
Cumulative CEO Tenure	−0.044***	−0.043***	−0.047***
	(0.015)	(0.015)	(0.015)
CEO Age	0.118***	0.121***	0.122***
	(0.010)	(0.010)	(0.010)
Ln Assets	−0.023	−0.023	−0.021
	(0.071)	(0.069)	(0.069)
Ln Employment	−0.046	−0.047	−0.039
	(0.072)	(0.072)	(0.072)
Firm Profitability	0.430	0.370	0.604
	(0.738)	(0.742)	(0.751)
Year	−0.010		
	(0.009)		
Minimum Stock Performance			−0.484
			(0.309)
Year FE	No	Yes	Yes
State FE	Yes	Yes	Yes
Observations	31,917	31,917	31,917

Notes: Table reports hazard ratios estimated from a Cox (1972) proportional hazards model. The dependent variable is an indicator that equals one if the CEO dies in a given year. Distress Layoff is an indicator equal to one in year t if, prior to or in year t, a CEO has undertaken a layoff during industry-wide distress. Industry distress is an indicator equal to one if the median firm of the industry had a stock price decline of at least 30% in the two years prior or the prior and current year. Cumulative CEO tenure is CEO tenure while CEO and total tenure thereafter. CEO Age is the CEO's age at time t. Minimum stock performance is defined as the worst stock performance in any six-month period during the CEO's tenure. Log assets and log employees from the first year that the CEO assumed the top office are included in all specifications. Firm profitability is included for all years that the CEO is in office and then profitability from the CEO's final year in office thereafter. More details about the data are in Section 3 and Appendix-Section B. Survival models are stratified by firms' industry affiliation. Standard errors, clustered by industry, are in parentheses. Significance levels are indicated by *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

Appendix-Table A.4. Layoff Propensity Around Exogenous CEO Changes

	(1)	(2)
Treat	−0.022	−0.002
	(0.029)	(0.019)
T minus 5	−0.012	
	(0.049)	
T minus 4	0.062	
	(0.055)	
T minus 3	0.012	
	(0.047)	
T minus 2	0.040	
	(0.044)	
T minus 1	0.019	
	(0.040)	
T plus 1	0.137***	
	(0.040)	
T plus 2	0.103*	
	(0.058)	
T plus 3	0.047	
	(0.050)	
T plus 4	0.120*	
	(0.067)	
T plus 5	0.120	
	(0.073)	
Treat × Post		0.087***
		(0.031)
Controls	Yes	Yes
Cohort-Year FE	Yes	Yes
Cohort-Industry FE	Yes	Yes
Observations	39,864	39,864

Notes: Stacked difference-in-differences analysis estimating the change in layoff propensity around exogenous CEO changes relative to non-treated firms. Exogenous CEO changes are those due to the death or illness of the incumbent CEO as identified in Gentry et al. (2021). The pre-period is the five years before the exogenous CEO change, and the post-period is the five years after the exogenous CEO change or the tenure of the CEO immediately following the exogenous turnover, whichever is shorter. Column 1 estimates equation (3) modified by using indicators for each pre- and post-year (instead of one indicator for Post) interacted with the treatment indicator. Column (2) estimates equation (3). Controls are log assets, log employment, and profitability. Control variable coefficients are estimated separately for pre- and post-periods. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $*p < 0.10$, $**p < 0.05$, $***p < 0.01$.

Appendix-Table A.5. Layoff Propensity and CEO Tenure—Time-Varying Fixed Effects

	(1)	(2)	(3)	(4)
CEO Tenure / 100	-0.267^{***}	-0.266^{***}	-0.265^{***}	-0.173^{***}
	(0.030)	(0.029)	(0.030)	(0.041)
Ln Assets	0.030^{***}	0.029^{***}	0.029^{***}	0.024^{***}
	(0.003)	(0.003)	(0.003)	(0.007)
Ln Emp.	0.026^{***}	0.027^{***}	0.027^{***}	0.053^{***}
	(0.003)	(0.003)	(0.003)	(0.008)
Firm Profitability	-0.279^{***}	-0.283^{***}	-0.285^{***}	-0.239^{***}
	(0.024)	(0.024)	(0.024)	(0.031)
Industry Distress	0.054^{***}			
	(0.008)			
State FE	No	Yes	No	No
State-Year FE	Yes	No	Yes	Yes
Industry FE	Yes	No	No	No
Industry-Year FE	No	Yes	Yes	Yes
Firm FE	No	No	No	Yes
Observations	34,610	34,671	34,597	34,477

Notes: This table reports coefficients from linear regressions where the dependent variable is equal to one for significant layoff events, defined as CEO-firm-years with at least three layoff events or where 1% of the firm is laid off and 0 otherwise. Industry distress is an indicator equal to one if the median firm of the industry had a stock price decline of at least 30% in the two years prior or the prior and current year. Ln assets is the log of total assets. Ln employment is the log of total employment. Firm profitability is operating income before depreciation divided by total assets. CEO tenure is the number of years the CEO has been in that position. We normalize tenure by dividing by 100. Firm characteristics are from the beginning of the year. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $*p < 0.10$, $**p < 0.05$, $***p < 0.01$.

Appendix-Table A.6. Layoff Propensity and CEO Tenure—Additional Controls

	(1)	(2)	(3)	(4)
CEO Tenure / 100	-0.265^{***}	-0.252^{***}	-0.172^{***}	-0.163^{***}
	(0.036)	(0.036)	(0.049)	(0.050)
Industry Distress	0.057^{***}	0.058^{***}	0.050^{***}	0.050^{***}
	(0.009)	(0.009)	(0.009)	(0.009)
Ln Assets	0.033^{***}	0.038^{***}	0.026^{***}	0.035^{***}
	(0.003)	(0.004)	(0.009)	(0.009)
Ln Emp.	0.022^{***}	0.017^{***}	0.053^{***}	0.048^{***}
	(0.003)	(0.003)	(0.009)	(0.010)
Firm Profitability	-0.244^{***}	-0.266^{***}	-0.183^{***}	-0.225^{***}
	(0.031)	(0.030)	(0.045)	(0.044)
Debt Maturity	-0.028^{***}	-0.028^{***}	-0.011	-0.010
	(0.009)	(0.009)	(0.009)	(0.009)
P(Default)	0.077^{***}	0.081^{***}	0.065^{***}	0.070^{***}
	(0.019)	(0.020)	(0.020)	(0.020)
Employment Growth	-0.071^{***}	-0.063^{***}	-0.041^{***}	-0.040^{***}
	(0.012)	(0.012)	(0.012)	(0.012)
Market-to-Book	-0.007^{***}		-0.013^{***}	
	(0.002)		(0.004)	
Q		-0.002^{***}		-0.002^{***}
		(0.000)		(0.001)
Year FE	Yes	Yes	Yes	Yes
State FE	Yes	Yes	No	No
Industry FE	Yes	Yes	No	No
Firm FE	No	No	Yes	Yes
Observations	24,242	23,767	24,045	23,573

Notes: This table reports coefficients from linear regressions where the dependent variable is equal to one for significant layoff events, defined as CEO-firm-years with at least three layoff events or where 1% of the firm is laid off and 0 otherwise. Independent variables are defined in B.2. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Appendix-Table A.7. Layoff Propensity and CEO Tenure—CEO Entrenchment

	(1)	(2)	(3)	(4)
CEO Tenure / 100		-0.260^{***}		-0.166^{***}
		(0.036)		(0.051)
E-Index = 1	0.018	0.021	0.038	0.036
	(0.040)	(0.039)	(0.040)	(0.041)
E-Index = 2	0.020	0.021	0.024	0.021
	(0.039)	(0.037)	(0.038)	(0.038)
E-Index = 3	0.019	0.019	0.035	0.033
	(0.038)	(0.037)	(0.038)	(0.038)
E-Index = 4	0.012	0.012	0.027	0.025
	(0.039)	(0.038)	(0.039)	(0.039)
CEO and Chair	-0.005	0.009	0.001	0.009
	(0.006)	(0.006)	(0.007)	(0.007)
CEO and President	0.005	0.002	0.022^{***}	0.018^{***}
	(0.005)	(0.005)	(0.006)	(0.006)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State FE	Yes	Yes	No	No
Industry FE	Yes	Yes	No	No
Firm FE	No	No	Yes	Yes
Observations	23,323	23,323	23,241	23,241

Notes: This table reports coefficients from linear regressions where the dependent variable is equal to one for significant layoff events, defined as CEO-firm-years with at least three layoff events or where 1% of the firm is laid off and 0 otherwise. Controls are industry distress, log assets, log employment and firm profitability. The E-index is defined as the count of four key governance provisions (staggered boards, limits to shareholder bylaw amendments, poison pills, and golden parachutes) which the firm has implemented. CEO and Chair is a dummy equal to one if the CEO is also the chair of the board. CEO and President is a dummy equal to one if the CEO is also the president of the firm. Industry distress is an indicator equal to one if the median firm of the industry had a stock price decline of at least 30% in the two years prior or the prior and current year. Ln assets is the log of total assets. Ln employment is the log of total employment. Firm profitability is operating income before depreciation divided by total assets. CEO tenure is the number of years the CEO has been in that position. We normalize tenure by dividing by 100. Firm characteristics are from the beginning of the year. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Appendix-Table A.8. Layoffs and CEO Tenure—Drop First CEO-Year

	(1)	(2)	(3)	(4)
CEO Tenure / 100	-0.454^{***}	-0.295^{***}	-0.229^{***}	-0.220^{***}
	(0.035)	(0.030)	(0.041)	(0.044)
Industry Distress		0.059^{***}	0.046^{***}	0.040^{***}
		(0.007)	(0.007)	(0.008)
Ln Assets		0.030^{***}	0.029^{***}	0.029^{***}
		(0.003)	(0.007)	(0.007)
Ln Emp.		0.026^{***}	0.049^{***}	0.054^{***}
		(0.003)	(0.008)	(0.008)
Firm Profitability		-0.267^{***}	-0.241^{***}	-0.244^{***}
		(0.024)	(0.030)	(0.033)
CFO Tenure / 100				-0.054
				(0.074)
Year FE	No	Yes	Yes	Yes
State FE	No	Yes	No	No
Industry FE	No	Yes	No	No
Firm FE	No	No	Yes	Yes
Observations	31,595	31,595	31,469	29,465

Notes: Table reports coefficients from linear regressions where the dependent variable is equal to one if there are at least three layoff events or 1% of the firm laid off in that CEO-firm-year and 0 otherwise. The sample is restricted to CEO-firm-years where the CEO has been in office for at least one year. Industry distress is an indicator equal to one if the median firm of the industry had a stock price decline of at least 30% in the two years prior or the prior and current year. Ln assets is the log of total assets. Ln employment is the log of total employment. Firm profitability is operating income before depreciation divided by total assets. CEO and CFO tenure are the number of years the CEO and CFO have been in their respective positions, respectively. We normalize tenure by dividing by 100. Firm characteristics are from the beginning of the year. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Appendix-Table A.9. Layoff Propensity and CEO Tenure—IV Approach

	1st Stage	2nd Stage	1st Stage	2nd Stage
	(1)	(2)	(3)	(4)
CEO Tenure Proportion	0.128^{***}		0.138^{***}	
	(0.002)		(0.002)	
CEO $\widehat{\text{Tenure}}$ / 100		-0.182^{***}		-0.264^{***}
		(0.069)		(0.066)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State FE	Yes	Yes	No	No
Industry FE	Yes	Yes	No	No
Firm FE	No	No	Yes	Yes
Observations	34,683	34,683	34,565	34,565

Notes: Table reports coefficients from two-stage linear regression. The dependent variable in the first stage is CEO tenure. The dependent variable in the second stage is equal to one if there are at least three layoff events or 1% of the firm laid off in that CEO-firm-year and 0 otherwise. CEO Tenure Proportion is defined as $(Tenure_{i,j,t} - \overline{Tenure_{i,j}})/\max_t Tenure_{i,j,t}$ for CEO i at firm j in year t. The instrumented values of CEO tenure are used in the second stage. CEO tenure is the number of years the CEO has been in that position. We normalize tenure by dividing by 100. Controls are industry distress, log assets, log employment and firm profitability. Control variables are from the beginning of the year and defined in B.2. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Appendix-Table A.10. Fraction Laid Off and CEO Tenure—IV Approach

	1st Stage	2nd Stage	1st Stage	2nd Stage
	(1)	(2)	(3)	(4)
CEO Tenure Proportion	0.128^{***}		0.139^{***}	
	(0.002)		(0.002)	
CEO $\widehat{\text{Tenure}}$ / 100		-0.014^{**}		-0.027^{***}
		(0.006)		(0.006)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State FE	Yes	Yes	No	No
Industry FE	Yes	Yes	No	No
Firm FE	No	No	Yes	Yes
Observations	33,251	33,251	33,130	33,130

Notes: Table reports coefficients from two-stage linear regression. The dependent variable in the first stage is CEO tenure. The dependent variable in the second stage is the proportion of the firm laid off in that CEO-firm-year. CEO Tenure Proportion is defined as $(Tenure_{i,j,t} - \overline{Tenure_{i,j}})/\max_t Tenure_{i,j,t}$ for CEO i at firm j in year t. The instrumented values of CEO tenure are used in the second stage. CEO tenure is the number of years the CEO has been in that position. We normalize tenure by dividing by 100. Controls are industry distress, log assets, log employment and firm profitability. Control variables are from the beginning of the year and defined in B.2. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Appendix-Table A.11. Layoffs and CEO Tenure—Recession Periods, IV Approach

	(1)	(2)	(3)	(4)
CEO $\widehat{\text{Tenure}}$ / 100	-0.137^{*}	-0.196^{***}	-0.116	-0.177^{**}
	(0.074)	(0.072)	(0.074)	(0.072)
CEO Tenure / $\widehat{100 \times \text{Industry Distress}}$	-0.260	-0.383^{*}	-0.406^{*}	-0.516^{**}
	(0.231)	(0.222)	(0.226)	(0.217)
Controls	Yes	Yes	Yes	Yes
Control Interactions	No	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State FE	Yes	No	Yes	No
Industry FE	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes
Observations	34,683	34,565	34,683	34,565

Notes: Table reports coefficients from the second stage of two-stage linear regression. The dependent variables in the first stage regressions are CEO tenure and CEO Tenure interacted with industry distress. The dependent variable in the second stage is the proportion of the firm laid off in that CEO-firm-year. CEO Tenure Proportion is defined as $(Tenure_{i,j,t} - \overline{Tenure_{i,j}})/\max_t Tenure_{i,j,t}$ for CEO i at firm j in year t. The instrumented values of CEO tenure are used in the second stage. CEO tenure is the number of years the CEO has been in that position. We normalize tenure by dividing by 100. Controls are industry distress, log assets, log employment and firm profitability. Control variables are from the beginning of the year and defined in B.2. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Appendix-Table A.12. R&D and CEO Tenure—IV Approach

	(1)	(2)	(3)	(4)
CEO $\widehat{\text{Tenure}}$ / 100	0.008	0.037***	0.006	0.036***
	(0.019)	(0.013)	(0.019)	(0.013)
CEO Tenure / $\widehat{100 \times \text{Industry Distress}}$	−0.097*	−0.098***	−0.089*	−0.089***
	(0.052)	(0.030)	(0.051)	(0.029)
Controls	Yes	Yes	Yes	Yes
Control Interactions	No	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State FE	Yes	No	Yes	No
Industry FE	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes
Observations	15,052	14,994	15,052	14,994

Notes: Table reports coefficients from the second stage of two-stage linear regression. The dependent variables in the first stage regressions are CEO tenure and CEO Tenure interacted with industry distress. The dependent variable in the second stage is research and development expenditures divided by assets at the beginning of the year. CEO Tenure Proportion is defined as $(Tenure_{i,j,t} - \overline{Tenure_{i,j}})/\max_t Tenure_{i,j,t}$ for CEO i at firm j in year t. The instrumented values of CEO tenure are used in the second stage. CEO tenure is the number of years the CEO has been in that position. We normalize tenure by dividing by 100. Controls are industry distress, log assets, log employment and firm profitability. Control variables are from the beginning of the year and defined in B.2. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

Appendix-Table A.13. Layoff Propensity and CEO Tenure—Layoffs Around Holiday Season With Extended Layoff-Year Window

	Layoff-Years + Q1		Layoff-Years + Q1 + Q2	
	(1)	(2)	(3)	(4)
CEO Tenure / 100	-0.271^{***}	-0.298^{***}	-0.249^{***}	-0.261^{**}
	(0.061)	(0.112)	(0.057)	(0.106)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State FE	Yes	No	Yes	No
Industry FE	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes
Observations	6,585	6,144	7,133	6,787

Notes: The table reports coefficients from linear regressions where the dependent variable is equal to one for years with at least one layoff in December and zero otherwise. Layoff-Years + Q1 are CEO-firm-years with at least one layoff either in the CEO-firm-year or the three following months. Layoff-Years + Q1 + Q2 are CEO-firm-years with at least one layoff either in the CEO-firm-year or the six following months. Controls are industry distress, log assets, log employment and firm profitability. Industry distress is an indicator equal to one if the median firm of the industry had a stock price decline of at least 30% in the two years prior or the prior and current year. Ln assets is the log of total assets. Ln employment is the log of total employment. Firm profitability is operating income before depreciation divided by total assets. CEO tenure is the number of years the CEO has been in that position. We normalize tenure by dividing by 100. Firm characteristics are from the beginning of the year. More details about the data are in Section 3 and Appendix-Section B. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Appendix-Table A.14. Layoff Propensity and CEO Tenure—Holiday Layoffs, IV Approach

	Full Sample		Layoff-Years	
	(1)	(2)	(3)	(4)
CEO $\widehat{\text{Tenure}}$ / 100	-0.177^{***}	-0.174^{***}	-0.925^{***}	-1.116^{***}
	(0.030)	(0.029)	(0.179)	(0.201)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State FE	Yes	No	Yes	No
Industry FE	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes
Observations	34,683	34,565	5,722	5,174

Notes: Table reports coefficients from the second stage of two-stage linear regression. The dependent variable in the first stage is CEO tenure. The dependent variable in the second stage is equal to one for years with at least one layoff in December and zero otherwise. CEO Tenure Proportion is defined as $(Tenure_{i,j,t} - \overline{Tenure_{i,j}})/\max_t Tenure_{i,j,t}$ for CEO i at firm j in year t. The instrumented values of CEO tenure are used in the second stage. CEO tenure is the number of years the CEO has been in that position. We normalize tenure by dividing by 100. Controls are industry distress, log assets, log employment and firm profitability. Control variables are from the beginning of the year and defined in B.2. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $^*p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Appendix-Table A.15. Layoff Propensity and CEO Tenure—White Collar, IV Approach

	Full Sample		Layoff-Years	
	(1)	(2)	(3)	(4)
CEO $\widehat{\text{Tenure}}$ / 100	-0.060^{*}	-0.060^{*}	-0.043	-0.057
	(0.034)	(0.033)	(0.195)	(0.219)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State FE	Yes	No	Yes	No
Industry FE	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes
Observations	34,683	34,565	5,722	5,174

Notes: Table reports coefficients from the second stage of two-stage linear regression. The dependent variable in the first stage is CEO tenure. The dependent variable in the second stage is equal to one for years with at least one white-collar layoff and zero otherwise. CEO Tenure Proportion is defined as $(Tenure_{i,j,t} - \overline{Tenure_{i,j}})/\max_t Tenure_{i,j,t}$ for CEO i at firm j in year t. The instrumented values of CEO tenure are used in the second stage. CEO tenure is the number of years the CEO has been in that position. We normalize tenure by dividing by 100. Controls are industry distress, log assets, log employment and firm profitability. Control variables are from the beginning of the year and defined in B.2. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Appendix-Table A.16. Layoff Propensity and CEO Tenure—Geography, IV Approach

	HQ-State Layoff	HQ-City Layoff	
	(1) HQ-State Layoff	(2) HQ-City Layoff	(3) HQ-City Layoff
CEO $\widehat{\text{Tenure}}$ / 100	-0.091^{**}	-0.066^{**}	-0.245
	(0.042)	(0.028)	(0.164)
Sample	Full	Full	Layoff-Years
Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
State FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Firm FE	No	No	No
Observations	34,683	34,683	5,722

Notes: Table reports coefficients from the second stage of two-stage linear regression. The dependent variable in the first stage is CEO tenure. The dependent variables in the second stage are indicator variables that equal one if a firm makes at least one layoff at the respective geographic level in a given year and zero otherwise. Layoff-years are CEO-firm-years with at least one layoff. CEO Tenure Proportion is defined as $(Tenure_{i,j,t} - \overline{Tenure_{i,j}})/\max_t Tenure_{i,j,t}$ for CEO i at firm j in year t. The instrumented values of CEO tenure are used in the second stage. CEO tenure is the number of years the CEO has been in that position. We normalize tenure by dividing by 100. Controls are industry distress, log assets, log employment and firm profitability. Control variables are from the beginning of the year and defined in B.2. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Appendix-Table A.17. Layoff Propensity and CEO Tenure—Holiday Layoffs, Heterogeneity in Prosociality

	Full Sample	CEO Empathy / OC Sample	
	(1)	(2)	(3)
CEO Tenure / 100	-0.407^{***}	-0.365^{**}	
	(0.129)	(0.180)	
CEO Tenure × Empathy			-0.771^{***}
			(0.278)
CEO Tenure × Overconfidence			-0.194
			(0.215)
CEO Overconfidence		-0.025	-0.050^{*}
		(0.023)	(0.029)
p-value for equality of coefficients on CEO Tenure × Empathy and CEO Tenure × Overconfidence			0.0608
Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Observations	5,174	3,732	3,732

Notes: Table reports coefficients from linear regressions where the dependent variable is equal to one for years with at least one layoff in December and zero otherwise. *CEO Overconfidence* is an indicator variable defined based on the *Longholder* measure of managerial overconfidence (Malmendier and Tate 2005, Malmendier et al. 2023). *CEO Empathy* is an indicator variable equal to one if the CEO is not classified as overconfident, motivated by Kaplan et al. (2012) and Kaplan et al. (2022) that overconfidence and empathy are primary distinguishing characteristics of managers. Industry distress is an indicator equal to one if the median firm of the industry had a stock price decline of at least 30% in the two years prior or the prior and current year. Ln assets is the log of total assets. Ln employment is the log of total employment. Firm profitability is operating income before depreciation divided by total assets. CEO tenure is the number of years the CEO has been in that position. We normalize tenure by dividing by 100. Firm characteristics are from the beginning of the year. More details about the data are in Section 3 and Appendix-Section B. Standard errors, clustered by firm, are shown in parentheses. Significance levels are indicated by $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.