What doesn't kill you will only make you more risk-loving: Early-life disasters and CEO behavior

Gennaro Bernile, Vineet Bhagwat, and P. Raghavendra Rau*

The Journal of Finance, forthcoming

ABSTRACT

The literature on managerial style posits a linear relation between a CEO's past experiences and firm risk. We show that there is a non-monotonic relation between the intensity of CEOs' early-life exposure to fatal disasters and corporate risk-taking. CEOs who experience fatal disasters without extremely negative consequences lead firms that behave more aggressively, whereas CEOs who witness the extreme downside of disasters behave more conservatively. These patterns manifest across various corporate policies including leverage, cash holdings, and acquisition activity. Ultimately, the link between CEOs' disaster experience and corporate policies has real economic consequences on firm riskiness and cost of capital.

Keywords: CEO Formative Experiences, CEO Behavior, Risk-taking, Managerial Style

* Gennaro Bernile: Lee Kong Chian School of Business, Singapore Management University, 50 Stamford Road, Singapore 178899, gbernile@smu.edu.sg; Vineet Bhagwat: Lundquist College of Business, University of Oregon, Eugene, OR, 97403, vineet@uoregon.edu; and P. Raghavendra Rau: University of Cambridge, Trumpington Street, Cambridge CB2 1AG, UK, r.rau@jbs.cam.ac.uk. We are grateful to Michael Roberts (editor), two anonymous referees, and Michael Anderson, Michelle Baddeley, Yosef Bonaparte, David de Cremer, Henrik Cronqvist, Peter Cziraski, Larry Dann, David Feldman, Ben Hardy, Jianfeng Hu, Mark Humphery-Jenner, Ivalina Kalcheva, Steve McKeon, Shimon Kogan, Maurizio Montone, Vikram Nanda, Lalitha Naveen, Micah Officer, Chris Parsons, David Reeb, Adam Reed, Andreas Richter, Vidya Sharma, Avanidhar Subrahmanyam, Jo-Ann Suchard, Scott Yonker, Bohui Zhang, Weina Zhang, and seminar participants at the Ig Nobel MIT Lecture 2015, Western Finance Association 2015 meetings, ISB CAF conference 2015, IFABS conference 2015, Asian Finance Association 2015 meetings, China International Finance Conference 2015, European Finance Association 2014 meetings, the UBC summer finance conference 2014, the University of Alberta 2014 Frontiers of Finance conference, the Erasmus University Research in Behavioural Finance Conference 2014, Arizona State University, Frankfurt School of Finance & Management, London Business School, National University of Singapore, Norwich Business School, Singapore Management University, University of Adelaide, University of Cambridge, University of New South Wales, University of Sussex, and the University of Oregon for comments and suggestions. We also thank Carina Cuculiza, Daniel Dodson, Eric Higgins, and Dee Zaster for their valuable research assistance. *I have read the Journal of Finance's disclosure policy and have no conflicts of interest to disclose.*

"I know of no one who has achieved something significant without also in their own lives experiencing their share of hardship, frustration, and regret…if you're like me and you occasionally want to swing for the fences, you can't count on a predictable life."
Tim Cook, CEO of Apple Inc., Auburn University Spring 2010 Commencement

Chief executive officers' (CEO) managerial styles explain a large fraction of the variation in firm capital structure, investment, compensation, and disclosure policies (e.g., Bertrand and Schoar (2003), Bamber, Jiang, and Wang (2010), Graham, Li, and Qiu (2012)). Moreover, the evidence indicates that at least part of the heterogeneity in CEOs' managerial styles reflects the variation in individual life and career experiences (e.g., Graham and Narasimhan (2005), Malmendier and Tate (2005), Malmendier, Tate, and Yan (2011), Benmelech and Frydman (2014), Lin, Ma, Officer, and Zou (2014), Schoar and Zuo (2013), Dittmar and Duchin (2015)).

A common thread underlying this line of research is the existence of a monotonic relation between treatment and effect. Specifically, existing studies indicate that exposure to a particular macroeconomic, personal, or career-specific event has a unidirectional effect on risk-taking by the CEO and consequently on corporate policies. In this study, we test whether the *intensity* of early-life experiences has a non-monotonic impact on CEOs' attitudes toward risk and thus on the corporate policies that they influence. In medical terms, this is the possibility that the strength of the dosage, in addition to whether a treatment is administered, also affects the outcome of the treatment. This hypothesis, relatively unexamined in the finance and economics literature, is a standard prediction in the psychiatry literature (e.g., Yerkes and Dodson (1908)).

Early-life exposure to the consequences of environmental risk may affect a CEO's risk-taking in several ways. CEOs with exposure to fatalities from natural disasters may be more sensitized to the consequences of risk, and therefore be wary of decisions that increase firm risk. However, it is also plausible that childhood exposure to natural disasters may give the CEOs experience in dealing with risky situations and increase their confidence when making decisions involving firm risk. Hence, the effect of exposure to natural disasters on subsequent behavior may be non-monotonic, as Castillo and Carter (2011) find with respect to trust and reciprocity between individuals. CEOs with disaster experience that is not significantly fatal would develop a higher risk tolerance, whereas those with exposure to major fatal disasters would be sensitized to the negative consequences of risk and therefore tend to behave more conservatively.[1]

To test this conjecture, we examine the relation between CEO early-life exposure to fatal disasters and subsequent corporate financial and investment policies adopted by the firms that employ the CEOs. Specifically, we identify the name, date, and place of birth of 1,508 U.S.-born CEOs in a sample of S&P1500 firms from 1992 to 2012. We also assemble a unique database of U.S. county-level natural disaster events over the period 1900–2010, including earthquakes, volcanic eruptions, tsunamis, hurricanes, tornadoes, severe storms, floods, landslides, and wildfires. Then we combine the two databases to infer the CEOs' likely exposure to the consequences of natural disasters during their formative years, that is age 5 to 15 (Nelson (1993)).

In our baseline tests, we group CEOs based on the number of disaster-related fatalities scaled by the birth-county population during the formative years of their childhood. We then examine

the relation between CEO early-life disaster experience and several firm decisions and outcomes pertaining to capital structure, acquisition activity, and return volatility.

Our results provide a consistent picture across the firm decisions and outcomes on which CEOs typically have a large influence (e.g., Graham, Harvey, and Puri (2012, 2013)). Specifically, we find a robust inverse U-shaped relation between a CEO's early-life exposure to fatal disasters and corporate risk taking. For example, all else equal, firms whose CEOs experienced a *moderate* level of fatalities from disasters have a 3.4% *higher* leverage ratio than firms whose CEOs experienced no fatal disasters, a magnitude comparable to the depression babies effect documented in Malmendier and Nagel (2011). In contrast, firms whose CEOs experienced *extreme* levels of fatalities from disasters have a 3.7% *lower* leverage ratio than firms whose CEOs have no fatal disaster experience (and hence an overall 7.1% lower leverage ratio than firms whose CEOs have a moderate level of fatal disaster experience). These results are due to active financing choices made by the CEOs. Specifically, CEOs with moderate levels of fatal disaster experience are significantly more likely to fill their net financing deficit with debt rather than equity, pay higher interest expenses and loan spreads on their debt, and their debt is likely to be rated lower than CEOs with no fatal disaster experience. Their firms are also significantly more likely to go through bankruptcy. In contrast, CEOs with extreme levels of fatal disaster experience display diametrically opposite patterns.

Similarly, CEOs with moderate (extreme) levels of fatal disaster experience hold significantly less (more) cash, announce more (fewer) acquisitions, are less (more) likely to pay for acquisitions with stock, and are more (less) likely to announce unrelated acquisitions than

CEOs with no fatal disaster experience. Consistent with excessive risk taking, acquisitions by CEOs with moderate fatal disaster experience earn worse announcement returns. Firms managed by moderate disaster CEOs also display higher volatility, especially idiosyncratic volatility, than CEOs with no disaster experience, while again CEOs with extreme disaster experience display opposite patterns.

Overall, our results support the notion that experiencing fatal disasters without extreme consequences desensitizes CEOs to the negative consequences of risk. In contrast, CEOs who experienced extreme fatal disasters and witnessed the downside potential of risky situations appear to be more cautious in approaching risk when at the helm of a firm.

All our empirical specifications include time, state of birth, year of birth, and firm fixed effects, which effectively purge cohort effects from our analysis. Moreover, all our tests control for the historical incidence of disaster-related fatalities in the CEO's county of birth, over the period 1900-2010, allowing us to differentiate the effect of a CEO growing up in a "high-risk" county versus actually living through fatal disasters during the formative years. For example, a CEO who did not experience any major fatalities despite growing up in the "tornado belt" (states like Kansas, for example), may underestimate the expected costs of tornadoes (and by extension, other risky events).[2] For the same reason, we conduct a difference-in-difference analysis on CEOs that experienced major fatal disasters relative to CEOs who did not experience a major disaster and were within the age of 5 to 15 years old in *unaffected* neighboring counties (within 100 miles from the disaster), and find results consistent with our baseline evidence.

A potential concern with our empirical method is that we do not directly observe a CEO's disaster experience, but infer it based on the CEO's county and year of birth. It is possible that the CEO did not actually live in the county of birth for fifteen years after birth. We address this concern in three ways. First, we verify that our results are robust to using alternative windows to measure a CEO's early life experiences, for example, years 5-10 after birth. Second, we show that our results are robust to restricting our sample to CEOs for whom we can verify that the county of birth is in the state where they also received their Social Security number – typically in their teenage years according to Yonker (2012).[3] Third, we conduct a placebo test where we assign a random birth county to each CEO and find no statistically significant effects of the correspondingly random disaster experience on our outcome variables. Overall, our robustness tests indicate that even though we may not directly measure each CEO's disaster experience, whatever measurement error exists is most likely random noise.

Finally, we conduct a difference-in-difference analysis on a small set of exogenously timed CEO turnover events available in our sample where the risk tolerances of the incoming and old CEOs are different. We find that changes in corporate policies around these turnover events reflect the differences in risk-tolerances of the new and old CEOs as measured by our childhood disaster experience proxy. This evidence suggests that CEOs' risk preferences may have a causal impact on corporate policies or, at the very least, are a determining factor in CEO hiring decisions by boards that aim for swift changes in their firms' risk profiles.

Our analysis contributes to the literature that examines how managerial styles relate to CEOs' life experiences such as marital status (Roussanov and Savor (2013)), holding a pilot

license (Cain and McKeon (2014)), political affiliation (Hutton, Jiang, and Kumar (2014)), military experience (Malmendier, Tate, and Yan (2011)), and past career experiences (Schoar and Zuo (2013)). To various degrees, the experiences analyzed in these studies are endogenous, which makes drawing a causal link with respect to CEOs' risk preferences a challenge. An appealing feature of our setting is that early-life exposure to fatal disasters provides a sensible exogenous source of variation in an individual's life. In this sense, an important contribution of our analysis is that it identifies an exogenous primitive in an individual's life that determines rather than manifests his or her attitude toward risk.

Since we infer CEO early-life experiences based on date and county of birth, our approach is more similar to the cohort-based studies that examine the effect of early-life experiences, for example, having lived through the U.S. Great Depression (Malmendier, Tate, and Yan (2011)). However, one important advantage in our setting is that we are able exploit within-cohort heterogeneity to purge our tests of cohort effects and bolster the identification of early-life experiences on corporate outcomes. In addition, given the nature of our measure, we are able to examine how the *intensity* of early-life experiences affects subsequent risk-taking behavior and show for the first time that exogenous *non-economic* events shape CEOs' attitudes toward *economic* risk.

It is noteworthy that CEOs in our sample have roughly the same likelihood of experiencing fatal disasters in childhood as a typical member of the US population. Thus, the likelihood of becoming a CEO seems to be independent from fatal disaster experience, which suggests that our results may have broader implications beyond CEOs' risk taking. In that regard, our results may

be important for research on the effects of life experiences on capital market participants' behavior (e.g., Knüpfer, Rantapuska, and Sarvimäki, 2014; Guiso, Sapienza, and Zingales, 2013; Kim and Lee, 2014). Existing studies focus on the linear relation between risk exposure and investor behavior. Our results suggest that examining non-monotonic effects of risk exposure could be fruitful in the context of investor behavior.

The rest of the paper proceeds as follows. Section I motivates our hypotheses. Section II describes the data. Section III discusses our main results and Section IV presents the results of various robustness tests. Section V concludes.

I. Motivation

Managers' ability to assess and cope with risk has pervasive effects on corporate decision-making (Ben-David, Graham, and Harvey (2007)) and CEOs are arguably among the most influential corporate decision-makers (Graham, Harvey, and Puri (2012, 2013)). Indeed, CEO fixed effects explain variation in corporate policies that traditional firm-level determinants cannot explain (e.g., Bertrand and Schoar (2003), Bamber, Jiang, and Wang (2010), Graham, Li, and Qiu (2011)) and there is a growing consensus that CEOs' past experiences in life account for the differences in corporate risk taking (e.g., Bertrand and Schoar (2003), Graham and Narasimhan (2004), Bamber, Jiang, and Wang (2010), Malmendier, Tate, and Yan (2011), Schoar and Zuo (2013), Dittmar and Duchin (2015)).[4] A unifying thread in this literature is the notion that exposure to a particular life experience has a unidirectional effect on a CEO's risk-taking propensity and hence on corporate policies.

In the psychology literature, however, Yerkes and Dodson (1908) posit a non-monotonic relation between arousal and performance: performance would increase with arousal up to a point and decrease when levels of arousal are too high. In various contexts, the empirical evidence is consistent with such nonlinear relation between stress and performance (e.g., Hammarberg and Silver (1994), Kleim and Ehlers (2009), Colville and Cream (2009)). Importantly for our purposes, traumatic experiences predict high stress levels long after the events (Holman and Silver (1998)) and, among these, exposure to natural disasters has large and lasting effects on individuals (Elder (1999)). Moreover, there is evidence that natural disaster exposure affects short run *financial* decision-making of both individuals (e.g., Cameron and Shah (2013), Cassar, Healy, and von Kessler (2011)) and firms (e.g., Ramirez and Altay (2011), Dessaint and Matray (2013)). In fact, Bucciol and Zarri (2013) find that natural disaster experiences have long-lasting effects on investor portfolio decisions.

Recent medical research suggests a possible mechanism underlying these patterns. First, neuroscience and epigenetics studies indicate that adverse experiences affect subsequent behavior at least partly due to permanent physiological and biological changes in the brain (e.g., Lyoo et al. (2011), Labonté et al. (2012), Mehta et al. (2013)). Second, evolutionary biologists argue that biological systems with an original function commonly adapt to different functions, a phenomenon known as 'co-option' (Futuyma (1998)). Hence, if brain development and function are physiologically altered by trauma, it is plausible that the brain functions affected by non-economic risk may be subsequently co-opted to deal with economic risk.[5] It seems thus

reasonable that early-life experiences of fatal disasters could have long-term effects on an individual's psyche, neurobiology, and economic decision-making.[6]

II. Data description

A. CEOs' birth dates and places

We collect names of CEOs from *Compustat*'s *Execucomp* database, which covers firms in the S&P1500 from 1992 to 2012. We retrieve CEO biographical data from *Marquis Who's Who*, *Standard and Poor*'s *Register of Directors and Executives*, and *US Executive Compensation database* on *Lexis-Nexis*, *NNDB.com*, or via *Google* searches in the last instance. We are able to obtain reliable place and date of birth information for 2,102 CEOs of the 6,804 CEOs in the initial database. After excluding foreign-born CEOs, those where we cannot determine the county of birth, and those with missing firm-level data, we are left with a sample of 1,508 U.S.-born CEOs of firms in the S&P1500 from 1992 to 2012. Over this period, the sample CEOs span 8,533 firm-year observations for which we are able to obtain the data required to conduct the baseline tests pertaining to firms' capital structure, acquisitiveness, and stock volatility.

B. U.S. County-level Natural Disasters

The set of natural disaster events that we use comprises earthquakes, volcanic eruptions, tsunamis, hurricanes, tornadoes, severe storms, floods, landslides, and fires. For each event, we collect county-level data on the date of the event, the reported number of injuries and fatalities, and the estimated dollar losses related to crop and property damage in 2009 dollars.

Our database of U.S. county-level natural disaster events spans the period from 1900 to 2010. To construct the natural disaster database, we begin by retrieving all available records from the *United States Spatial Hazard Events and Losses Database* (*SHELDUS*™) of the University of South Carolina for the period from 1960 to 2010.[7] This is a county-level dataset that includes the beginning date, U.S. county location, property losses, crop losses, injuries, and fatalities associated with various natural hazard event types. However, because a majority of CEOs in our sample are born prior to 1960, we use available historical records to construct a county-disaster event database equivalent to *SHELDUS*™ that spans the period from 1900 to 1959. Details of our data sources are provided in the Appendix.

Panel A of Table I provides summary statistics of the natural disasters in our sample. Most events in our sample are weather-related (e.g., floods, thunderstorms, hail, etc.) and tend to be inconsequential in terms of human injuries and fatalities as well as of the resulting economic damages. In contrast, the least frequent events such as earthquakes, fires, and hurricanes tend to have the direst consequences, both in terms of fatalities and economic damages.[8]

[Insert **TABLE I** here]

C. CEO Early-life Disaster Experience

We measure early-life disaster experience based on the severity of the disasters in the CEO's county of birth starting 5 years and ending 15 years after the CEO's birth year. We focus on this period because medical research shows that the formation of lasting childhood memories tends to start around the 5th birthday, while the 15th birthday is a natural stopping time for "early

childhood" memories (Nelson (1993)). The results are robust to using alternative windows to calculate our measure, for example, [t+5, t+10].

Starting from the county-disaster event database, for each county-year, we calculate the total number of all fatalities from natural disasters and divide it by the population of that county in that year. Then, we calculate the mean of this variable for each CEO-county over the relevant 10 year period after birth.

Our main measure of a given CEO's disaster experience is a categorical variable that groups CEOs into three categories based on the 10-year disaster-related average fatality measure. Those who experience no fatal disasters in their county of birth during the relevant years are in the *No Fatality* group. CEOs in the top decile of the distribution of our measure are in the *Extreme Fatality* group, while all the others are in the *Medium Fatality* group.

We also employ several other measures of early-life disaster experience to ensure our results are not dependent on one particular metric. We alternatively measure disaster experience using inflation-adjusted economic damages (crop and property damage) in the birth county over the relevant 10-year period. In addition, instead of defining *Extreme Fatality* as the top 10% of the fatality experience distribution, we alternatively define it as the top 15% or the top 5% of the distribution in later tests. Lastly, we employ a continuous measure of fatalities per capita from natural disasters instead of indicators for the three categories based on this measure. Our results are consistent across all these alternative measures, as discussed in Section IV.

Panel C of Table I reports the top ten birth-states of CEOs in our sample and the distribution of disaster experience of CEOs from those states. The modal birth state is New York, accounting

for 251 CEOs in our sample. Of these, 27.49% did not experience any fatal disasters between the ages of 5 and 15 in their birth county, 11.16% experienced extreme levels of fatal disasters, while the remaining 61.35% fall in the *Medium Fatality* group. Although the distribution of CEO birth states is not uniform, there is considerable variation in the disaster experiences of CEOs from the same birth state.

In Table II, we compare our sample CEOs' disaster experience to the U.S. population. Using the historical annual population and disaster experience of each county, in a given year, 21.09% of the population experienced at least one disaster in our database, 10.7% experienced a fatal disaster, 1.2% a disaster with major fatalities, and 1.1% experienced a disaster with major economic damages.[9] Compared to a typical ten year period, our sample CEOs are just as likely to experience a fatal disaster during the relevant ten years of their childhood as the US population (66.80% versus 67.86%), a disaster with major fatalities (11.73% versus 10.22%), and a disaster with major economic damages (10.56% versus 10.87%).

[Insert **TABLE II** here]

That CEOs in our sample are roughly as likely to experience disasters that are fatal or have major consequences as a typical member of the U.S. population is potentially important. In particular, if disaster experience does not materially affect the likelihood of becoming a CEO, our inferences about the effects of early-life fatal disaster experience on risk taking may apply beyond the narrow context of individuals who later become CEOs of publicly traded firms. A natural research question here is why would disaster experiences manifest themselves when

choosing policies like corporate leverage, but not careers? However, while risk preferences may indeed affect career choices, becoming a CEO is not quite a choice variable. Therefore, although disaster experiences may well affect career choices, investigating this link appears to be beyond the scope of this paper given that our analysis is in-sample (i.e., focusing on a sample of executives that do in fact become CEOs).

D. Firm Characteristics

Table III reports summary statistics of the main firm characteristics used in our analysis. The first two columns report the mean and standard deviation of those characteristics for the entire sample of firm-years, while the remaining columns report similar statistics for the subsamples segmented by CEO disaster experience. We do not discuss these statistics here because, as noted below, the lack of controls for cohort effects leaves us unable to draw meaningful comparisons from these statistics.

[Insert **TABLE III** here]

Since we are not able to locate the birthplace for all CEOs in *Execucomp*, we also assess the differences between CEOs and firms in our sample versus those in the *Execucomp* and *Compustat* universes (not tabulated for brevity in the main paper).[10] Compared to the typical *Compustat* firm, the average firm in our sample is significantly larger – about seven times larger; has more fixed assets; uses more financial leverage; holds less cash; is more likely to pay dividends; and has lower stock return volatility. The differences between the two samples are not surprising given that CEOs of larger, more prominent firms are more likely to have public

sources documenting their biography and birth place. We thus acknowledge an inherent bias in our data collection leading to some CEOs being omitted, and do not take a formal stance on how generalizable our results may be to other CEOs that are not in the sample. However, we see no obvious reason why these differences should imply that our inferences regarding the effects of CEO's early-life exposure to natural disasters would be biased *within the sample* that we can obtain.

III. Main Results

In this section, we examine the relation between CEO attitude toward risk, as captured by early-life natural disaster experiences, and various firm decisions and outcomes pertaining to firm capital structure, acquisitiveness, and stock volatility. Various papers in this area focus on cohort effects, most prominently the cohort affected early in life by the Great Depression (e.g., Malmendier and Nagel (2011), Malmendier, Tate and Yan (2011)).

In contrast, our approach is not specific to a single cohort. In particular, in all our empirical models, we include firm, year, and CEO birth year and state of birth fixed effects. Including all four types of fixed effects enables us to effectively wash out all cohort effects. To illustrate why it is important to purge cohort effects, consider an example. At a particular point in time, a CEO growing up in Florida may experience a major hurricane while another CEO of the same age growing up in California does not. But states may also differ on a cultural basis. People born in Florida may be culturally more or less risk averse on average than people born in other states and we would not want these differences to contaminate our estimates. Similarly, a CEO who

experienced Hurricane Andrew in Florida might not be comparable to a CEO born 10 years earlier in Florida. Within a state, as populations ebb and flow and economic conditions change, time-varying differences in state-level characteristics have the potential to affect our inferences. Hence, by controlling for all four types of fixed effects, our tests only exploit within-cohort heterogeneity across CEOs. It is worth noting, however, that our results are robust to excluding one or more of these fixed effects.

To absorb the effect of certain counties being more disaster prone, all tests also control for the non-linear effect of the expected disaster fatality rate in the CEOs' birth counties during the period from 1900 to 2010. As a result, a CEO's residual disaster experience during a particular ten year period should be effectively random.[11]

Since we model the effect of CEO disaster experience using a nonlinear specification, we also allow for the relation between each dependent variable and the birth county average fatality rate to be non-linear by including its square in all baseline specifications. In a similar spirit, in alternative specifications, we augment the baseline model specifications to ensure that our treatment effects are not capturing unmodeled nonlinearities between the dependent variables and any other control variable.

The standard set of controls across all tests includes: natural log of book assets, market-to-book ratio, asset tangibility (fixed assets/book assets), dividend paying indicator, ROA, sales growth, CEO age and age squared, and CEO female indicator.

A. CEO Early-life Disaster Experience and Corporate Financial Policies

Table IV reports the estimates from OLS regressions where the dependent variables are the year-end book financial leverage (Columns 1-3) and cash-to-asset ratio (Column 4-6) of the firms in the sample. Across policies and model specifications, the evidence consistently indicates that there is a non-monotonic relation between CEO experiences with fatal disasters during childhood and corporate risk-taking. Simply put, compared to CEOs with no disaster experience, moderate disaster fatality experience is associated with riskier corporate policies, while extreme disaster fatality experience is associated with less risky policies.

[Insert **TABLE IV** here]

Specifically, the evidence in Column 1 shows that there is an inverse-U shaped relation between fatal disaster experience and firm financial leverage. All else equal, firms whose CEOs experienced a moderate level of fatalities from natural disasters have a 3.3% *higher* leverage than firms whose CEOs have no fatal disaster experience. In contrast, firms whose CEOs experienced an extreme level of fatalities from disasters have a 3.5% *lower* leverage than firms whose CEOs have no fatal disaster experience (and thus, 6.8% lower leverage than firms whose CEOs have a medium level of fatal disaster experience). The economic magnitude of the effects documented in Column 1 is large relative to the sample mean (25.4%) and standard deviation (18.2%) of financial leverage. For example, the difference in leverage between *Medium* and *Extreme Fatality* CEOs is comparable to the effect of a four standard deviation change in the

Market-to-Book ratio (-1.1%×1.41×4 = -6.21%), traditionally one of the strongest documented determinants of capital structure.

The estimates reported in Column 4 mirror those reported in Column 1, indicating that there is a U-shaped relation between the firms' propensity to hold cash and CEO disaster experience. All else equal, firms whose CEOs experienced a moderate level of fatalities from natural disasters hold 1.2% *less* cash per dollar of assets than firms whose CEOs experienced no fatal disasters. In contrast, firms whose CEOs experienced an extreme level of fatalities from disasters hold 2.2% *more* cash per dollar of assets than firms whose CEOs have no fatal disaster experience. As in the case of financial leverage, the economic magnitude of the effects is notably large: the difference in cash holding intensity between *Medium* and *Extreme Fatality* CEOs (3.7%) is equivalent to one third of the sample mean intensity and one quarter of its sample standard deviation.

A potential concern with the results in Columns 1 and 3 of Tables IV is that the documented relation between CEO disaster experience and corporate financial policies may be due to spurious correlations resulting from unmodeled nonlinearities between corporate risk-taking and the other control variables. To account for this possibility, we follow two distinct approaches that relax the assumption of linear relations between corporate policies and all other control variables, in Columns 2 and 5 or 3 and 6, respectively.

In Columns 2 and 5 of Table IV (for leverage and cash holdings, respectively), we replace each continuous control variable with sample decile indicators. This approach saturates the models with step functions for each continuous control variable and ensures that the step

function for CEO experience captures nonlinearities uniquely associated with disaster fatalities as opposed to a confounding source of variation. Alternatively, in Columns 3 and 6 of Table IV, we augment the baseline specifications by including higher order polynomials (up to the 3rd degree) for each continuous control variable.

Across all columns, the results are very similar. Although their magnitude decreases slightly, the coefficient estimates of interest retain the same signs and remain highly statistically and economically significant. Therefore, it seems unlikely that the non-monotonic relation between CEO fatal disaster experience and corporate financial policies stems from spurious correlations due to nonlinearities between corporate risk-taking and other control variables.

Overall, the results in Table IV indicate that there is a non-monotonic relation between CEO's fatal disaster experience early in life and corporate financial policies that affect firm risk. In particular, CEOs with some fatal disaster experience are associated with riskier policies (i.e., higher leverage, lower cash holdings), whereas CEOs who witnessed extreme levels of disaster-related fatalities are associated with more conservative corporate policies. This evidence supports the notion that CEOs with experience of risky events having ex post minor (major) consequences may be desensitized (sensitized) to the downside of risky behavior and take on more (less) risk when at the helm of a firm.

A.1. Do Difference in Financial Policies Reflect Active Financing Decisions?

The literature shows that corporate financial policies are sticky. Hence, it is plausible that the results in Table IV are due to CEOs only partially adjusting their firms' capital structure over

time. Following Shyam-Sunder and Myers (1999), we examine the effect of CEOs' disaster experience on their propensity to actively fill firm financing gaps via debt, external equity, or internal equity. Specifically, for each firm-year, we calculate the firm net financing deficit (FD) as cash dividends plus net investment plus change in working capital minus cash flows after interest and taxes, all scaled by lagged assets, as in Malmendier, Tate, and Yan (2011). Also, we compute net new debt issues as long-term debt issues minus long-term debt repayment, net new equity issues as sale of common and preferred stock minus repurchases, and changes in accumulated internal equity as the change in retained earnings, all scaled by lagged assets. Then we estimate OLS regression models where the dependent variable is the net new (debt, external or internal equity) capital and the main independent variable is FD interacted with indicators for CEOs disaster experience. Following Malmendier, Tate, and Yan, we include firm fixed effects and their interactions with FD. Hence, in these models, there is a separate intercept *and* slope for each firm, with the latter absorbing the average effect of changes in FD. In addition, we include all the control variables in Frank and Goyal (2003) and their interactions with FD: book leverage, changes in profitability, tangibility of assets, logarithm of sales, and Q. Lastly, as in our earlier tests, we include the average fatality risk of the CEO's birth county, its square, and fixed effects for year, CEO birth state, and birth year.

[Insert **TABLE V** here]

Table V reports the results of these tests. To provide a benchmark, the specifications in Columns 1, 3, and 5 include FD as the only independent variable in the net debt, net external

equity, and net internal equity models, respectively. The corresponding coefficient estimates imply that, on average, firms finance a dollar of financing deficit by issuing 69 (33) cents of new debt (external equity) or drawing down 14 cents of accumulated internal equity. The magnitude of the net debt model, in particular, is very similar to those reported in Shyam-Sunder and Myers (1999) and Frank and Goyal (2003).[12]

In Columns 2, 4, and 6 of Table V, we augment the baseline models by including indicators for *Medium Fatality* and *Extreme Fatality* CEOs, their interactions with FD, and all other control variables. The evidence reveals that CEOs with different disaster experience systematically resort to different sources of capital to fill in their firms' financing gaps. In particular, in the net debt model (Column 2), the coefficient on the interaction between *Extreme Fatality* and FD is negative and significant, while the interaction with *Medium Fatality* is positive and significant. The coefficients imply that *Extreme Fatality* CEOs use 15 cents less debt financing than *No Fatality* CEOs to cover financing deficits, while *Medium Fatality* CEOs use almost 5 cents more debt. This 20 cents difference in active debt financing per dollar deficit between the *Medium* and *Extreme Fatality* CEOs is economically sizable compared to the average marginal propensity documented in Column 1, 69 cents. Although the coefficient estimates in the external equity model have signs similar to the debt model (Column 4), the differences across CEO types are not significant. In contrast, the evidence shows that the propensity to accumulate and draw down internal equity (Column 6) differs significantly across CEO types, in a way that compensates for the differences in their reliance on external sources of capital. Specifically, when the firm has no financing deficit or a financing surplus (deficit), *Extreme Fatality* CEOs accumulate (tap into

accumulated) internal equity more heavily. Consistent with our main conjecture, these patterns suggest that CEOs' disaster experience affects firms' propensity to build (equity) reserves, which may be tapped into in times of need and reduce the firm reliance on external (debt) capital.

Overall, the evidence in Table V suggests that differences in capital structure across CEO-types stem from active financing decisions, rather than sticky leverage ratios due to passive adjustments. In particular, the dynamics of firms' reliance on external debt versus internal equity capital are consistent with greater (lower) appetite for risk by *Medium* (*Extreme*) *Fatality* CEOs.

A.2. CEO Experience, Credit Risk, and Cost of Debt Capital

The differences in firm-level financing decisions across CEO types should affect the firm credit risk and ultimately the cost of debt capital, if they are in fact due to differential risk-taking propensity rather than opportunistic behavior. In Table VI, we begin by investigating how firm credit ratings and likelihood of bankruptcy vary with CEO disaster experience.

To conduct the ratings analysis, we categorize credit ratings in the *Capital IQ's Entity Ratings* database on an integer scale from 0 to 26, with 0 corresponding to the lowest rating (i.e., 'D') and 26 to the highest rating (i.e., 'AAA') in our sample. The modal rating in our sample is a BBB, in 15.34% of firm-years, while the median rating is a BBB+. Column 1 of Table VI reports estimates from an Ordered Probit model and Column 2 reports OLS coefficients. Both estimation approaches suffer some shortcomings. On the one hand, OLS estimation is less sensitive to the large number of fixed effects in the model, but requires a potentially problematic assumption that the "distance" between two adjacent rating categories is constant across the full range of ratings.

On the other hand, the Ordered Probit estimation accommodates varying distances between adjacent rating categories, but is potentially more sensitive to the large number of fixed effects. Therefore, we report the results from both approaches. Both models include all the standard controls and fixed effects from the baseline specification in Table IV. The sample size in this analysis drops by roughly half due to missing credit ratings.

[Insert **TABLE VI** here]

In line with our interpretation of earlier results, we find that firms with *Medium Fatality* CEOs have lower credit ratings, while firms with *Extreme Fatality* CEOs have higher credit ratings than the baseline group of firms with *No Fatality* CEOs. The difference between a firm with *Medium Fatality* CEOs and one with *Extreme Fatality* CEOs is approximately one whole (two-thirds of a) credit rating category based on the Ordered Probit (OLS) estimates. Thus, for the modal or median firm, this difference amounts to being rated as investment versus below-investment grade and can have a large impact of the firm cost of debt capital.

In Columns 3 and 4, we focus on extreme credit risk and examine how the likelihood of "Junk" rating (i.e., BBB and below) varies with CEO disaster experience. Controlling for firm fixed effects and average birth county risk (Column 3), we find that firms with *Medium Fatality* CEOs are 7.1% more likely than *No Fatality* CEOs to have below-investment grade ratings, while firms with *Extreme Fatality* CEOs are 8.8% less likely. Although some of these differences are absorbed by firm-level characteristics and other fixed effects (Column 4), the

inverse-U shaped relation between the likelihood of "Junk" rating and CEO disaster experience persists even in the more restrictive specification.

A potential concern is that the firm's choice to obtain a rating might depend on its CEO type and the resulting self-selection may hamper our inferences, given the large fraction of firm-years with missing credit ratings. To assess this possibility, we test whether CEOs' disaster experience explains credit rating availability. Column 5 presents the estimates of a linear probability model where the dependent variable is an indicator variable equal to 1 if the firm is *not* rated, and 0 otherwise. We find no association between CEO disaster experience and the availability of a credit rating. This suggests that selection effects are unlikely to be driven by the CEO type and should have a limited impact on the interpretation of the results in Columns 1-4.

The evidence in Columns 1-4 shows that market participants' assessment of firm credit risk varies non-monotonically with CEOs' disaster experience in childhood. To complement this analysis, we examine whether market participants' expectations in fact line up with ex post realizations of bankruptcy. We obtain Chapter 7 and Chapter 11 filings from the *UCLA-LoPucki Bankruptcy Research Database* and define a firm-year indicator variable *Bankrupt Next Year* (*Bankrupt Next 2 Years*) that is equal to 1 if the firm files for bankruptcy in the following year (next two years), and 0 otherwise. In line with the credit rating results, the evidence in Columns 6 and 7 shows that firms with *Medium* (*Extreme*) *Fatality* CEOs are significantly more (less) likely to file for bankruptcy than *No Fatality* CEOs and the estimated effects are economically large. The difference between the incremental likelihood of bankruptcy for firms with *Medium*

and *Extreme Fatality* CEOs is approximately twice as large as the unconditional probability for the mean firm-year in our sample, 1%.

Next, in Table VII, we investigate whether the firm's cost of debt capital reflects the effect of the CEO's attitude toward risk as proxied by early-life disaster experience. All models reported in the table explicitly control for firm leverage. Hence, the estimated effect of CEO disaster experience on the cost of debt capital is incremental relative to the effect of firm leverage. This is important given that our earlier results show that there is a strong relation between financial leverage and CEO type.

We begin by measuring cost of debt as reported interest expenses scaled by the amount of long-term debt. While this measure is desirable due to its wide availability for most firm-years in our sample (as opposed to the cost of newly issued debt), there are shortcomings. First, a missing or zero value for interest expenses does not imply that the cost of raising debt capital is actually zero. Therefore, we drop these observations from our sample. Second, given their backward looking nature, it is not obvious that reported annual interest expenses reflect the effect of the current CEO's attitude toward risk. For this reason, in subsequent tests, we examine the cost of newly issued debt.

[Insert **TABLE VII** here]

The results in Column 1 of Table VII indicate that firms with *Medium Fatality* CEOs, on average, report 1.6% higher annual interest expenses per dollar of outstanding long-term debt than *No Fatality* CEOs. Conversely, firms with *Extreme Fatality* CEOs have 1.5% lower interest

rate expense, yielding a difference of 3.1% between *Medium* and *Extreme Fatality* CEOs. Thus, the inverse-U shaped relation that manifests in the firm capital structure and credit risk also holds when we examine the ex post cost of debt and its effect is economically significant.

Given the shortcomings of the reported interest expenses used in Column 1, we conduct supplemental tests that examine the relation between CEO disaster experience and the cost of debt at the issue-level at the time of the issue. The main advantage of this approach is the direct link between the cost of debt and the CEO leading the firm at the time of the issue. Columns 2-4 and 5-7 in Table VII report the results of this analysis for bank loans and bond issues, respectively. We obtain the bank loan-level data from *Deal Scan* for the period between 1992 and 2012, and use the "all in spread" as the cost of debt at the time of loan initiation. We obtain the bond issue-level data from *Mergent Fixed Income Securities Database* (*FISD*) for the period between 1992 and 2012, and use the spread between newly issued bonds' yield-to-maturity and the yield on U.S. treasury of equivalent maturity. Following Ivashina (2009), we control for a wide array of factors that may affect the cost of new debt, in addition to controls for the birth county average fatality rate and its square, fixed effects for year, birth year, birth state, firm, and (in the bank loan models) lead lender.

Column 2 of Table VII reports estimates of the model including only year and lead lender fixed effects as controls. Conditional on receiving a bank loan, firms with *Medium Fatality* CEOs pay 18.9 basis points higher spread and firms with *Extreme Fatality* CEOs pay 20.6 basis points lower spread than firms with *No Fatality* CEOs. Including fixed effects for CEO birth year and birth state in column 3 yield similar results and economic magnitudes. The specification in

Column 4 includes all other deal-level characteristics that likely depend on the lender's assessment of borrowers' credit risk (e.g., collateral, covenants) and firm fixed effects. Although controlling for these characteristics absorbs some of the CEO-type effects, there continues to be an inverse-U shaped relation between the cost of new bank loans and CEO disaster experience. Specifically, loans contracted by *Medium Fatality* CEOs are charged significantly higher spreads than those by *No Fatality* and *Extreme Fatality* CEOs.

The remaining columns of Table VII report the results of similar models for the spread over Treasury of newly issued bonds. Although in the full model (Column 7) the sign of the estimated coefficient on *Medium Fatality* CEOs is consistent with a higher cost of debt, the effect is not statically significant in any of the specifications. In contrast, the effect of CEO exposure to extreme disaster fatalities in childhood is negative and economically large across all specifications, in line with the bank loan results. The lack of robust results for the *Medium Fatality* CEOs may be due to the arm-length nature of bond issues, which can make their pricing less sensitive to CEOs' personal characteristics. Alternatively, the lack of significant effects on the pricing of public debt for *Medium Fatality* CEOs may be due to endogenous selection in credit markets. In other words, given the higher credit risk of firms led by *Medium Fatality* CEOs, it is plausible that riskier firms would be precluded access to the public debt market and be forced to resort to bank financing, in line with our earlier results. Overall, however, the combined evidence in Table VII is largely consistent with the notion that the effect of CEO disaster experience on the aggressiveness of financial policies ultimately affects the firm cost of debt capital.

B. CEO Disaster Experience and Corporate Acquisition Activity

Existing studies suggest that CEOs exert significant decision-making power in the context of mergers and acquisitions and, whether due to empire building or managerial hubris, CEOs may engage in acquisitions at the expense of the firm shareholders (Jensen (1986), Roll (1986)). Indeed, corporate acquisitions are inherently riskier compared to organic internal growth due to the typically large commitment of time and resources required. Therefore, in our next set of tests, we examine whether CEO fatal disaster experience explains corporate acquisition activity. To conduct these tests, we obtain merger announcements that involve public targets between 1992 and 2012 available in the *Securities Data Corporation*'s (*SDC*) *U.S. Mergers and Acquisitions* database. After excluding buybacks, share repurchases, self-tenders, and spinoffs, there are 2,883 merger announcements in our sample. Then, we estimate a series of linear probability models to assess whether CEO attitude toward risk, as measured by childhood experiences of fatal disasters, has a material impact on firm acquisitiveness. The structure of these tests is similar to those reported in Table IV for the corporate financial policies models and their results are reported in Table VIII.

[Insert **TABLE VIII** here]

The evidence in Table VIII is line with the results of our earlier tests. Across all specifications, the effect of CEO's childhood experience with fatal disasters on firm acquisitiveness is statistically significant at conventional levels and crucially depends on the severity of the disaster consequences witnessed by the CEO. Specifically, the evidence supports

the existence of an inverse U-shaped relation between CEO fatal disaster experience and corporate acquisitiveness. The estimates imply that firms led by *Extreme Fatality* CEOs are 8.1% less likely to attempt an acquisition in a given year than firms with *No Fatality* CEOs. In stark contrast, firms led by *Medium Fatality* CEOs are 6.1% more likely to engage in at least one acquisition of another public company than firms with *No Fatality* CEOs. This in turn implies a 14.2% difference in the probability of an acquisition by *Extreme Fatality* versus *Medium Fatality* CEOs. The effect is economically sizeable, given that the average probability of announcing an acquisition is 30% with a standard deviation of 45.7%. Although the baseline estimates are based on linear probability models for tractability and the presence of a large number of fixed effects, the results are robust when we estimate logit models without fixed effects.

B.1. CEO Early-Life Disaster Experience and Mergers Characteristics and Outcomes

Next, we examine in greater depth whether CEO disaster experience affects economic decisions and outcomes associated with corporate acquisition activity. In particular, for each announcement in our sample, we calculate four deal-specific variables that are germane to our main conjecture: the proposed method of payment, the acquirer announcement returns, whether the target is in the same industry as the acquirer, and the pre-merger correlation between the acquirer and target stock returns.

We define an *All Stock Acquisition* variable as an indicator equal to 1 if the merger offer includes acquirer stock only, and 0 otherwise. Paying for the acquisition with acquirer stock reduces the risk resulting from unforeseen issues with the target valuation. Thus, all else equal,

an all-stock acquisition is less risky than paying for the acquisition with cash. The *Announcement CAR* is the acquirer cumulative abnormal return during trading days [-2, +2] around the merger announcement based on the market model. We define an *Unrelated Acquisition* variable as an indicator equal to 1 if the target is not in the same Fama-French 17 industry as the acquirer, and 0 otherwise. Lastly, we calculate the stock return correlation between acquirer and target daily returns over trading days [-250,-22]. All models include acquirer industry-by-year, CEO birth year, and CEO birth state fixed effects. Similar to prior tests, standard errors are clustered at the acquiring firm level. In addition, we include a host of control variables identified in the prior literature as relevant factors affecting our merger outcomes (e.g., Eckbo (2015)). Table IX reports the results of OLS regressions where the dependent variable is one of the deal-specific variables described.

[Insert **TABLE IX** here]

Column 1 reports estimates of a linear probability model where the dependent variable is the *All Stock* indicator. Firms with *Medium Fatality* CEOs are 7.4% less likely to make an all-stock acquisition than *No Fatality* CEOs. In our sample, roughly 25% of announcements are all-stock, making this a sizeable effect. *Extreme Fatality* CEOs, on the other hand, are equally likely to make an all-stock acquisition as *No Fatality* CEOs. Thus, *Medium Fatality* CEOs are less likely to make all-stock acquisitions than both *No Fatality* and *Extreme Fatality* CEOs, consistent with a non-monotonic relation between disaster experience and risk attitudes.

The evidence in Column 2 indicates that merger announcements by acquiring firms with *Medium Fatality* CEOs earn 0.57% lower abnormal returns during the five trading days around the announcement. In contrast, acquiring firms with *Extreme Fatality* CEOs earn 1.25% higher abnormal returns than those in the *No Fatality* group. It appears therefore that capital markets penalize mergers offers by *Medium Fatality* CEOs and reward those by *Extreme Fatality* CEOs. This supports the notion that investors view merger offers by *Medium Fatality* CEOs as excessively risky relative to those by other CEO types.

The lower returns associated with *Medium Fatality* CEOs may be due to a higher propensity to venture into unrelated acquisitions, where the acquiring firm lacks target-specific expertise and finds it harder to attain synergistic gains due to complementarities or cost savings. Indeed, the evidence in Column 3 shows that *Medium Fatality* CEOs are 7.9% more likely to announce unrelated acquisitions, while *Extreme Fatality* CEOs are not significantly different from the *No Fatality* CEOs along this dimension. Therefore, again in line with our earlier inference, there is a markedly non-monotonic relation between risk-taking in mergers and CEOs' fatal disaster experience in childhood.

Although unrelated acquisitions are likely associated with a greater difficulty of realizing synergies and may require CEOs to extend beyond their area of expertise, these deals may also reduce risk via a diversification effect. We examine this possibility by analyzing the stock return correlation between bidder and target stock returns, conditional on the type of merger – that is, diversifying vs. focused deals. If Medium Fatality CEOs aim to reduce the firm's overall risk through diversifying acquisitions, then these acquisitions would involve targets whose pre-

merger returns are less correlated with bidder returns. However, we find that this is not the case, as seen in Columns 4 and 5. Within the sample of diversifying mergers (Column 4), *Medium Fatality* CEOs are not associated with acquisitions involving either a higher or lower correlation with the target, and the same is true within the sample of focused mergers (Column 5).

C. CEO Disaster Experience and Stock Return Volatility

The results in Tables IV and VIII pertain to corporate policies that theory suggests affect the risk borne by investors that hold the firm's equity. Hence, in a sense, those tests provide an ex ante perspective on firm riskiness. A natural implication of the earlier evidence is that ex post realized volatility of equity returns should also depend on CEOs' attitude toward risk, as captured by early-life natural disaster experiences. We examine this conjecture next.

Table X reports estimates from pooled OLS regressions where the dependent variables are various measures of annualized volatility of daily stock returns over the fiscal year. In particular, Columns 1-3 report estimates for various specifications of the model where total volatility is the dependent variable, whereas Columns 2-6 report similar estimates for the idiosyncratic component of total volatility, calculated using a CAPM market model.[13] Across the various columns of Table X, the model specifications are similar to those reported in Tables IV and VIII.

[Insert **TABLE X** here]

In line with the results for corporate policies, the evidence in Table X shows that there is a marked and robust inverse-U shaped relation between CEO early life experience with fatal disasters and realized volatility of stock returns. The estimates in Column 1 indicate that firms

whose CEOs are in the *Medium Fatality* group are associated with a 3.73% *higher* annualized stock volatility than firms whose CEOs are in the no fatal disaster group. In contrast, firms whose CEOs are in the *Extreme Fatality* group are associated with a 3.61% *lower* annualized stock volatility than firms whose CEOs are in the no fatal disaster group. Hence, all else equal, the average difference in annualized stock return volatility between firms with *Medium* and *Extreme Fatality* CEOs is more than 7%. Once again, the economic magnitude of this spread is large, at one fifth of the mean (35.05%) and almost one third of the standard deviation (22.72%) of the sample annualized stock return volatility.

In Column 4 of Table X, we repeat the analysis in Column 1 after decomposing total stock return volatility into its systematic and idiosyncratic components, and focusing on the latter. The patterns documented in Column 4 are consistent with the results obtained for total stock return volatility. Specifically, CEOs in the *Medium Fatality* group are associated with significantly *higher* and CEOs in the *Extreme Fatality* group are associated significantly *lower* idiosyncratic stock volatility than CEOs in the no fatal disaster group. Moreover, compared to untabulated results for the systematic component of return volatility, the idiosyncratic volatility spreads across CEO disaster groups are notably larger, approximately three times, than the spreads observed for systematic volatility. In the augmented models that account for the nonlinear effects of the control variables, in Columns 2-3 and 5-6, the estimated coefficients on CEOs' disaster experiences are very similar to those in the more parsimonious models in Columns 1 and 4.

Overall, the evidence in Table X supports the notion that the relation between the riskiness of corporate policies and CEOs' early life experiences with natural disasters has a first order impact on the risk borne by the firm equity investors.

IV. Robustness Tests

In this section, we discuss the results of a series of tests that aim to assess the robustness of our baseline results and main inferences.

A. Alternative measures of CEO early-life disaster experience

A potential concern with our identification of the effects of CEOs' disaster experience stems from the ad hoc nature of our measure and the threshold that we use to separate *Medium* and *Extreme Fatality* CEOs. In Table IA.V of the Internet Appendix, we examine the robustness of our baseline results when: 1) we use different thresholds to categorize CEOs' experiences (Panel A and B); 2) we model the effect of CEO experience using a more general quadratic specification (Panel C); 3) we categorize CEO experience based on disaster-related economic damages rather than fatalities (Panel D); and 4) we categorize CEOs based on their "abnormal" experiences with disaster-related fatalities relative to the birth county's long run mean (Panel E).

In Panels A and B of Table IA.V, we classify as *Extreme Fatality* CEOs those whose fatal disaster experience falls above the sample 15^{th} and 5^{th} percentiles, respectively. The evidence in these panels is largely consistent with our baseline results across the various corporate policies

and measures of return volatility that we examine. Thus, our inferences seem robust with respect to the threshold chosen to classify CEOs into more and less risk-averse individuals.

In Panel C, we use an alternative specification based on the underlying continuous measure of CEO fatal disaster experience. Across the various models, the results are consistent with our baseline evidence. While the linear term is statistically significant and in the direction of more risk-taking behavior (positive for leverage, volatility, acquisitiveness, and negative for cash holdings), the squared term is also significant but holds the opposite sign. Most important, the implied in-sample maxima (minimum in the case of cash holdings) are very close to the cutoff levels we use to identify extreme fatality experience. Across the various models, the implied maximum (minimum in the case of cash holdings) hovers around a fatalities rate of about 0.05%, similar to the 10^{th} percentile value of disaster experience used in our baseline classification.

In Panel D, we categorize CEO experience based on economic damages from disasters rather than fatalities. The results based on this classification are again in line with our fatality-based tests. This is perhaps not surprising given that the sample correlation between the fatality- and the damages-based measures of CEO experience is very high (i.e., Pearson correlation=0.831). Indeed, while it would be interesting to disentangle the effect of witnessing disaster-related economic damages versus fatalities on a CEO's subsequent risk-taking propensity, the high correlation between the two measures makes it practically unfeasible. We ultimately favor the fatalities-based measure in our tests because it is likely measured with lower error, especially in the earlier portion of the county-disaster dataset.

In Panel E, we modify our classification approach and use the "abnormal" fatality rate in the CEO's birth county during the relevant ten-year window. Specifically, first, we define the abnormal fatality rate as the difference between the actual fatality rate and the corresponding mean in the CEO's birth county during the period from 1900 to 2010. Then, we proceed to classify CEOs into three groups using the following scheme: CEOs in the bottom three deciles of the abnormal fatality distribution are classified as "Low", those in the 4^{th} to 9^{th} deciles inclusive are classified as *Medium Fatality*, while those in the highest decile are classified as *Extreme Fatality*. We choose these decile cutoffs to closely mimic the distribution of the baseline measure of CEO disaster experience (approximately 30% *No Fatality*, 60% *Medium Fatality*, and 10% *Extreme Fatality*). The results from this alternative approach are in line with our earlier evidence.

Overall, the supplemental evidence presented in Table AI.V shows that our inferences about the relation between corporate risk taking and CEO risk attitude continue to hold when we rely on alternative empirical approaches to characterize CEO's childhood disaster experience.

Another potential concern is that we do not in fact know whether a CEO lived in the county of birth between the age of 5 and 15. While it may be the case that we measure with error the CEO's location of residence during the relevant time period, this should only add noise, but no bias, in our analysis. Nevertheless, we attempt to address such concern in three ways. First, we repeat our earlier tests while using a shorter window, [t+5, t+10], which should reduce the measurement error related to CEOs' location of residence. By and large, as shown in Table IA.VI of the Internet Appendix, our results (and to a certain extent even the magnitudes of our coefficients) continue to hold. Second, in Table IA.VII of the Internet Appendix, we restrict our

sample to CEOs for whom we can verify that they resided in their birth-state when they obtained their social security number (SSN), typically around the age of 15 (Yonker (2012)).[14] The CEO's birth-state and SSN-state coincide in about 75% of the cases. In this subsample, our empirical approach should result in lower measurement error. Across the board, our empirical results become stronger both statistically and economically when we restrict the sample to CEOs whose early-life experiences are measured with lower measurement error.

[Insert **TABLE XI** here]

Third, we conduct a placebo test where we randomly assign (with replacement) a birth county to each CEO based on the sample distribution of CEO birth counties. We measure the disaster experience at this randomly generated county, re-run the analysis in Tables IV, VIII, and X, and repeat the exercise 500 times. Table XI reports the average coefficient for the main independent variables over the 500 repetitions and the percentage of coefficients that are significant at the 5% level. Consistent with our expectations, approximately 5% of the coefficients are significant at the 5% level, and those cases are roughly equally split between positive and negative. Moreover, attesting to the significance of our main results, the estimated coefficients are statically significant and in the "right direction" at most between 0.4% and 1.6% of the replications. This evidence strongly suggests that our measure of early-life disaster experiences very likely reflects an economically meaningful characterization of CEOs' risk attitudes, as opposed to random noise.

B. Omitted Variables

Another concern is the potential systematic link between certain U.S. regions and our measure of CEOs' risk preferences, given that certain regions of the country are more exposed to natural disasters (hurricanes in Florida or earthquakes in California, for example). This could result in spurious effects of CEOs' disaster experience, if the latter is systematically correlated with non-disaster related characteristics of the place of birth such as economic conditions, crime rate, or quality of education. A related concern is that, although the decision to live in a disaster-prone area is not taken by the child, it may reflect the parents' risk preferences and the latter rather than the disaster experience would affect the CEO's preferences.

In our tests, we address these concerns in three ways. First, we note that our earlier tests control for the average disaster fatality risk of the CEO's county of birth from 1900-2010 and its square. The addition of this control ensures that the results are not merely due to CEOs with fatal disaster experience hailing from high risk counties. Even if CEOs cluster by region on any number of characteristics, after controlling for the average time-series disaster risk of the county of birth, the existence of fatal disasters during a particular ten year period that a CEO resides there should be effectively random.[15] Second, all models include fixed effects for the CEO's state of birth, which absorb time-invariant factors at the state-level – for example, consistently better public education or economic conditions in a state. Lastly, in an attempt to further absorb time or geographic effects, we conduct supplemental tests to isolate the effect of major disasters by focusing only on the difference between affected versus neighboring counties. Specifically, we define a "Treatment" group as the set of CEOs who experienced a major fatal disaster (as

defined in footnote 9 of Section II.C) in their county of birth over the period [*t*+5, *t*+15] years. We define the "Control" group as the set of CEOs who did not experience a major disaster in their birth county, but were within the age of 5 to 15 years old in *unaffected* counties located within 100 miles from the major disaster. The evidence reported in Table XII shows that our main findings are unchanged, and in some instances become stronger, when analyzing the difference in our outcome variables between the CEOs in the "Treatment" and "Control" groups. The CEOs who experienced a major disaster in their birth counties are associated with lower leverage, stock volatility, acquisitiveness, and higher cash holdings relative to CEOs who resided in unaffected counties located within 100 miles of the disaster zone.

[Insert **TABLE XII** here]

C. CEO and Firm Matching

Although our models control for firm fixed effects, the latter only absorb time-invariant firm-level factors and the timing of CEO turnover is not typically exogenous. Hence, dynamic matching of CEOs to firms is a potential concern, to the extent that firm style changes significantly over time and the resulting CEO turnover depends on the executives' risk preferences as captured by our measures.

In order to better identify the causal effect of CEOs' attitude toward risk, we examine exogenous CEO turnover events as classified in Eisfeldt and Kuhnen (2013).[16] Of 678 CEO turnover events in our sample, 85 are classified as having exogenous timing and have non-missing observations over a 4-year window around the event. Among these, there are 41 cases

where the CEO's risk attitude type changes. We calculate the changes in firms' industry-adjusted book leverage, cash-to-asset ratio, acquisitiveness, and stock volatility from two years prior to two years after the CEO turnover events. We then test whether the changes in the outcome variables around CEO turnover are consistent with higher (lower) risk-taking when the incoming CEO is more (less) risk-tolerant than the outgoing CEO.

[Insert **TABLE XIII** here]

Despite the small sample size, the evidence in Table XIII is consistent with a causal effect of CEOs' risk tolerance as shaped by early-life disaster experience on firm risk-taking. For instance, the mean difference of changes in industry-adjusted book leverage around *More Risk-Tolerant* versus *Less Risk-Tolerant* CEO turnover events is positive (1.98%, with a *t*-statistic of 1.81). Similarly, the mean difference of changes in industry-adjusted stock volatility, total and idiosyncratic, and firm acquisition propensity is positive and statistically significant. The results for the changes in cash holdings are qualitatively similar (i.e., increase in cash holdings for *Less Risk-Tolerant* versus *More Risk-Tolerant* CEO turnover events), but not statistically significant. It is worth noting that because the variables of interest are adjusted by industry-year means, the results cannot be explained by industry or time trends that may be correlated with CEO turnover.

Although Table XIII provides plausible evidence that CEOs' risk preferences have a causal effect on the risk taking of the firms that they lead, this interpretation warrants a caveat. Indeed, while the timing of the old CEO's exit is plausibly exogenous, the board's choice of the successor is not. Hence, matching dynamics could still be at work, whereby the board appoints

the CEO candidate whose risk preferences would foster the prompt implementation of a desired change of direction with respect to the firm's risk taking. While it is unfeasible to design a natural experiment that definitively rules out this explanation, at the very least, the evidence in Table XIII indicates that CEO risk preferences play a major role at the hiring stage, if the board of directors aims to attain significant changes in corporate policies and risk-taking.

V. Conclusions

A growing body of literature on managerial fixed effects attributes at least part of these effects to prior life experiences. These studies typically posit a monotonic relation between a CEO's life experience and corporate policies, showing that exposure to specific macroeconomic, personal, or professional events have a single unidirectional effect on a CEO's decision-making.

In contrast, we conjecture that the intensity of life experiences can result in non-linear effects on subsequent risk taking. We find that there is a non-monotonic relation between CEOs' early-life exposure to fatal disasters and several corporate policies including leverage, cash holdings, stock volatility, and acquisitiveness. Our results support the hypothesis that experiencing fatal disasters without extremely negative consequences desensitizes CEOs to the negative consequences of risk. In contrast, CEOs who witnessed the extreme downside potential of disasters appear to be more cautious in approaching risk when at the helm of a firm. Ultimately, the link between CEOs' disaster experience and corporate policies has real economic consequences on firm riskiness and cost of capital.

Our results are robust to including firm fixed effects and controls for non-disaster related factors at the county or state of birth level. For instance, we find significant differences between CEOs who experienced major disasters and those who grew up in geographically contiguous areas during the same time, but did not experience major disasters. Moreover, the results from difference-in-difference tests that we conduct on a set of exogenously timed turnover events show that changes in CEO risk tolerance are shortly followed by changes in firm risk taking in the same direction. Therefore, although it is plausible that CEOs' risk preferences as shaped by early-life natural disasters determine the matching between firm and CEO styles to some extent, the evidence is consistent with a direct link between CEOs' risk attitude and corporate policies.

Our results also have important implications for the growing literature on investor experiences and portfolio allocation, which makes similar binary assumptions regarding the effect of risk exposure on investment behavior. Examining nonlinearities between investors' life experiences and risk taking may be an equally promising endeavor for future research.

References

Bamber, Linda, John Jiang, and Isabel Wang, 2010, What's my style? The influence of top managers on voluntary corporate financial disclosure, *The Accounting Review* 85, 1131-1162.

Ben-David, Itzhak, John Graham, and Campbell Harvey, 2007, Managerial overconfidence and corporate policies, unpublished working paper, NBER.

Benmelech, Efraim, and Carola Frydman, 2014, Military CEOs, unpublished working paper, NBER.

Bertrand, Marianne, and Antoinette Schoar, 2003, Managing with style: The effect of managers on firm policies, *Quarterly Journal of Economic s* 118, 1169-1208.

Bucciol, Alessandro, and Luca Zarri, 2013, Financial risk aversion and personal life history, unpublished working paper, Netspar.

Cain, Matthew, and Stephen McKeon, 2014, Cleared for takeoff? CEO personal risk-taking and corporate policies, *Journal of Financial and Quantitative Analysis*, forthcoming.

Cameron, Lisa, and Manisha Shah, 2013, Risk-Taking Behavior in the Wake of Natural Disasters, unpublished working paper, NBER.

Cassar, Alessandra, Andrew Healy, and Carl von Kessler, 2011, Trust, risk, and time preferences after a natural disaster: Experimental evidence from Thailand, unpublished working paper, University of San Francisco.

Castillo, Marco, and Michael Carter, 2011, Behavioral Responses to Natural Disasters, unpublished working paper, George Mason University.

Colville, Gillian, and Penelope Cream, 2009, Post-traumatic growth in parents after a child's admission to intensive care: maybe Nietzsche was right?, *Intensive Care Medicine*, 35, 919-923.

Cronqvist, Henrik, Alessandro Previtero, Stephan Siegel, and Roderick E. Whitey, 2014, The fetal origins hypothesis in finance: Prenatal environment and financial risk taking, unpublished working paper, University of Western Ontario.

Dessaint, Olivier, and Adrien Matray, 2014, Do managers overreact to salient risks? Evidence from hurricane strikes, unpublished working paper, HEC Paris.

Dittmar, Amy, and Ran Duchin, 2015, Looking in the rearview mirror: The effect of managers' professional experience on corporate financial policy, *Review of Financial Studies*, forthcoming.

Eckbo, Espen, 2015, Corporate takeovers and economic efficiency, *Annual Review of Financial Economics*, forthcoming.

Eisfeldt, Andrea, and Camelia Kuhnen, 2013, CEO turnover in a competitive assignment framework, *Journal of Financial Economics* 109, 351-372.

Elder, Glen H., Jr., 1999, Children of the Great Depression: Social change in life experience, Westview Press, Boulder, CO.

Elsner, James B., and Brian H. Bossak, 2001, Bayesian analysis of U.S. hurricane climate, *Journal of Climate* 14, 4341–4350.

Engdahl, Eric R., and Antonio Villaseñor, 2002, Global seismicity: 1900–1999, *International Geophysics* 81(A), 665–690.

Frank, Murray, and Vidhan Goyal, 2003, Testing the pecking order theory of capital structure, *Journal of Financial Economics* 67, 217-248.

Graham, John, and Krishna Narasimhan, 2005, Corporate survival and managerial experiences during the Great Depression, unpublished working paper, Duke University.

Graham, John, Si Li, and Jiaping Qiu, 2012, Managerial attributes and executive compensation, *Review of Financial Studies* 25, 144-186. Shyam-Sunder and Myers (1999)

Graham, John, Campbell Harvey, and Manju Puri, 2012, Capital allocation and delegation of decision-making authority within firms, unpublished working paper, NBER

Graham, John, Campbell Harvey, and Manju Puri, 2013, Managerial attitudes and corporate actions, *Journal of Financial Economics* 109, 103–121.

Guiso, Luigi, Paola Sapienza, and Luigi Zingales, 2013, Time varying risk aversion, unpublished working paper, NBER.

Hambrick, Donald C., and Phyllis A. Mason, 1984, Upper echelons: The organization as a reflection of its top managers, *Academy of Management Review* 9, 193–206.

Hammarberg, Melvyn, and Steven M. Silver, 1994, Outcome of treatment for post-traumatic stress disorder in a primary care unit serving Vietnam veterans, *Journal of Traumatic Stress* 7, 195-216.

Holman, E. Alison, and Roxane Cohen Silver, 1998, Getting "stuck" in the past: Temporal orientation and coping with trauma, *Journal of Personality and Social Psychology* 74, 1146-1163.

Hutton, Irena, Danling Jiang, and Alok Kumar, 2014, Corporate policies of Republican managers, *Journal of Financial and Quantitative Analysis*, forthcoming.

Ivashina, Victoria, 2009, Asymmetric information effects on loan spreads, *Journal of Financial Economics* 92, 300-319.

Kelly, Daniel, 2013, *Yuck! The nature and moral significance of disgust* (Life and Mind: Philosophical Issues in Biology and Psychology), Bradford Book, 2013.

Kim, Young-Il, and Jungmin Lee, 2014, The long-run impact of traumatic experience on risk aversion, unpublished working paper, London Business School.

Kleim, Brigit, and Anke Ehlers, 2009, Evidence for a curvilinear relationship between posttraumatic growth and posttrauma depression and PTSD in assault survivors, *Journal of Traumatic Stress* 22, 45-52.

Knüpfer, Samuli, Elias Rantapuska, and Matti Sarvimäki, 2014, Labor market experiences and portfolio choice: Evidence from the Finnish Great Depression, unpublished working paper, London Business School.

Jensen, Michael C., 1986, Agency cost of free cash flow, corporate finance, and takeovers, *American Economic Review* 76,323-329.

Labonté, Benoit, Matt Suderman, Gilles Maussion, Luis Navaro, Volodymyr Yerko, Ian Mahar, Alexandre Bureau, Naguib Mechawar, Moshe Szyf, Michael J. Meaney, Gustavo Turecki, 2012, Genome-wide epigenetic regulation by early-life trauma, *Arch Gen Psychiatry*, 69, 722-731.

Lin, Chen, Yue Ma, Micah S. Officer, and Hong Zou, 2014, CEOs' military experience, agency costs and acquisition decisions, unpublished working paper, University of Hong Kong.

Lyoo, In Kyoon, Jieun E. Kim, Sujung J. Yoon, Jaeuk Hwang, Sujin Bae, and Dajung J. Kim, 2011, The neurobiological role of the dorsolateral prefrontal cortex in recovery from trauma, *Arch Gen Psychiatry* 68, 701-713.

Malmendier, Ulrike, and Geoffrey Tate, 2005, CEO overconfidence and corporate investment, *Journal of Finance* 60, 2661-2700.

Malmendier, Ulrike, and Stefan Nagel, 2011, Depression babies: Do macroeconomic experiences affect risk taking?, *Quarterly Journal of Economics* 126, 373-416.

Malmendier, Ulrike, Geoffrey Tate, and Jon Yan, 2011, Overconfidence and early-life experiences: The effect of managerial traits on corporate financial policies, *Journal of Finance* 66, 1687-1733.

Mehta, Divya, Torsten Klengel, Karen N. Conneely, Alicia K. Smith, André Altmann, Thaddeus W. Pace, Monika Rex-Haffner, Anne Loeschner, Mariya Gonik, Kristina B. Mercer, Bekh Bradley, Bertram Müller-Myhsok, Kerry J. Ressler, and Elisabeth B. Binder, 2013, Childhood maltreatment is associated with distinct genomic and epigenetic profiles in posttraumatic stress disorder, *Proceedings of the National Academy of Sciences of the United States of America*, 110, 8302–8307.

Nelson, Katherine, 1993, The psychological and social origins of autobiographical memory, *Psychological Science* 4, 7-14.

Pielke, Roger, Jr., Tom Wigley, and Christopher Green, 2008, Commentary: Dangerous assumptions, *Nature* 452, 531-532.

Pool, Veronika K., Noah Stoffman, and Scott E. Yonker, 2012, No place like home: Familiarity in mutual fund manager portfolio choice, *Review of Financial Studies* 25, 2563-2599.

Ramirez, Andres, and Nezih Altay, 2011, Risk and the multinational corporation revisited: The case of natural disasters and corporate cash holdings, unpublished working paper, Bryant University.

Roll, Richard, 1986, The hubris hypothesis of corporate takeovers, *The Journal of Business* 59, 197-216.

Roussanov, Nikolai, and Pavel Savor, 2013, Marriage and managers' attitudes to risk, unpublished working paper, NBER.

Schoar, Antoinette, and Luo Zuo, 2011, Shaped by booms and busts: How the economy impacts CEO careers and managerial styles, unpublished working paper, NBER.

Shyam-Sunder, Lakshmi, and Stewart C. Myers, 1999, Testing static tradeoff against pecking order models of capital structure, *Journal of Financial Economics* 51, 219-244.

Yerkes, Robert M. and John Dillingham Dodson, 1908, The relation of strength of stimulus to rapidity of habit-formation, *Journal of Comparative Neurology and Psychology* 18, 459–482.

Yonker, Scott E., 2012, Geography and the market for CEOs, unpublished working paper, Indiana University.

Appendix – Data sources for natural disasters

Earthquakes, *floods*, and *landslides*: Our main data sources are the *United States Geological Survey* (USGS), which provides a list of events going back to 1900, and the *National Geophysical Data Center* (NGDC).[17] For each earthquake in the USGS database, we collect all available information. If USGS or NGDC do not provide a complete record of a specific event (i.e., missing details on county location, or damages, or injuries/fatalities), we perform a web-search with the following parameters to retrieve related news articles or historical records: "earthquake or flood or landslide + state location + event year". The USGS and NGDC are also our main source of information for *volcanic eruptions*,[18] which we supplement with *Science Daily*'s database on volcanic events. If none of these sources provide a complete record of the event, we perform a web-search with the following parameters to retrieve related news articles or historical records: "volcano + state location + event year".

Tsunamis: We obtain data on the location and date of the event, as well as all other relevant information from two main sources: *Tsunamis.findthedata.org* and the NGDC website.[19] If we cannot retrieve all relevant information for a recorded tsunami event, we perform a web-search with the following parameters to retrieve related news articles or historical records: "tsunami + state location + event year".

Hurricanes, *tornadoes*, and *severe* storm events: Our main data sources are the data archive of the *National Climatic Data Center* (NCDC) and *National Weather Service* (NWS) of the *National Oceanic and Atmospheric Administration*.[20] For each recorded event, we track the affected counties and retrieve the relevant information available from these sources. If we cannot

obtain all relevant information for a recorded event, we perform a web-search with the following parameters to retrieve related news article or historical records: “hurricane or tornado or severe storm + state location + event year”.

Wild fires: Our main sources are the lists of events available through *Wikipedia* (*http://en.wikipedia.org/wiki/List_of_fires* and *http://en.wikipedia.org/wiki/List_of_wildfires*) and *GenDisasters* (at *http://www.gendisasters.com/fires/index.htm*).[21] If we cannot obtain the relevant information for a recorded event from these sources, we perform a web-search with the following parameters to retrieve related news article or historical records: “fire + state location + event year”. In all the cases above, we record all relevant information only if the web search is successful. Otherwise we discard the event from the database.

Table I – County-level Natural Disaster Characteristics

Panel A reports summary statistics for our sample of natural disasters in the United States during the period 1900-2010. Panel B summarizes time-invariant characteristics related to CEO early-life disaster experience. *Extreme Fatality Experience* is an indicator variable equal to 1 for CEOs who are in top decile for the number of disaster-related fatalities per capita experienced in their birth county, and 0 otherwise. *Medium Fatality Experience* is an indicator variable equal to 1 for CEOs who experienced some disaster-related fatalities in their birth-county but are not in the *Extreme Fatality Experience* group, and 0 otherwise. *No Fatality Experience* is an indicator variable equal to 1 for CEOs who experienced no disaster-related fatalities in their birth-county, and 0 otherwise. All dollar values are inflation-adjusted to 2009. In all cases, the time window for measuring disaster-related experiences is between 5 and 15 years after the CEO birth, inclusive. *Average County Fatal Disaster Risk* is equal to the average annual fatalities from natural disasters scaled by county population over 1900-2010 for the CEO's birth county. Following Malmendier et. al. (2011), *Depression Baby* is an indicator variable equal to 1 for CEOs born between 1920 and 1929, inclusive, and 0 otherwise. Panel C reports the top 10 birth states over all the CEOs and their distribution into the three disaster experience categories. For example, 251 CEOs are born in New York. 11.16% of the 251 CEOs born in New York did not experience any fatal disasters during the ages of 5-15 and are categorized in the *No Fatality* group. Panel D reports the top 10 birth states for CEOs in the *No Fatality*, *Medium Fatality*, or *Extreme Fatality* groups, and the number of CEOs from that state that belong to that disaster experience group. For example, New York is the modal birth state for CEOs in the *No Fatality* group. 69 CEOs in the *No Fatality* group were born in New York.

Panel A: Descriptive Statistics for U.S. Natural Disasters 1900-2010

Disaster Type	N	Mean No. of Fatalities	Mean Fatalities per capita	Mean Economic Damage (2009$, Mil.)
Earthquake	806	4.7455	0.0605	87.677
Hurricane	9,665	2.4280	0.0482	17.376
Severe Weather	237,930	0.0581	0.0004	0.400
Urban Fire	2,466	6.0815	0.0164	10.295
Volcano	9	0.5556	0.1370	17.742
Weather	404,837	0.0490	0.0003	0.505
Wild Fire	2,206	0.0633	0.0002	7.949
All	657,919	0. 115	0.001	0.884

Panel B: Time invariant disaster-related CEO characteristics

CEO-specific Variables	N	Mean	Std. Dev.
No Fatality Experience	1,508	0.332	0.471
Medium Fatality Experience	1,508	0.558	0.497
Extreme Fatality Experience	1,508	0.110	0.314
No. of Disasters Experienced	1,508	25.867	41.86
No. of Fatal Disasters Experienced	1,508	3.906	5.408
Total Fatalities Experienced	1,508	15.708	38.515
Fatalities per Capita (%)	1,508	0.027	0.037
Economic Damage Experienced ($M)	1,508	0.216	1.881
Economic Damage Per Square Mile ($M)	1,508	0.012	0.591
Average Fatality Risk of County 1900-2010	1,508	0.032	0.211
Average Econ. Damage Risk of County 1900-2010	1,508	0.301	1.229

Panel C: Top 10 CEO Birth States and Disaster Experience

Top 10 Birth States for all CEOs	No. of CEOs	% in *No Fatality*	% in *Medium Fatality*	% in *Extreme Fatality*
New York	251	27.49%	61.35%	11.16%
Illinois	116	33.62%	55.17%	11.21%
Pennsylvania	110	20.91%	59.09%	20.00%
Ohio	84	26.19%	65.48%	8.33%
California	71	25.35%	64.79%	9.86%
Massachusetts	69	30.43%	57.97%	11.59%
New Jersey	64	37.50%	53.13%	9.38%
Texas	60	38.33%	55.00%	6.67%
Missouri	43	30.23%	48.84%	20.93%
Iowa	41	17.07%	68.29%	14.63%

Panel D: Top 10 CEO Birth States by Disaster Experience Categories

Top 10 Birth States for *No Fatality* CEOs	No. of CEOs	Top 10 Birth States for *Medium Fatality* CEOs	No. of CEOs	Top 10 Birth States for *Extreme Fatality* CEOs	No. of CEOs
New York	69	New York	154	New York	28
Illinois	39	Pennsylvania	65	Pennsylvania	22
New Jersey	24	Illinois	64	Illinois	13
Pennsylvania	23	Ohio	55	Missouri	9
Texas	23	California	46	Massachusetts	8
Ohio	22	Massachusetts	40	California	7
Massachusetts	21	New Jersey	34	Ohio	7
California	18	Texas	33	Kentucky	7
Missouri	13	Iowa	28	Washington	6
Mississippi	12	Indiana	28	New Jersey	6

Table II – Comparison of CEO and U.S. Population Disaster Experience

This table compares the disaster experience of CEOs in our sample with the population probabilities. The annual population of each county is used to calculate the fraction of U.S. residents that experienced each type of disaster in a given year. Column 1 reports the fraction of U.S. residents that experienced each type of disaster in a typical year, where each year is weighted by the total U.S. population. Column 2 reports the cumulative probability of disaster experience for the typical member of the U.S. population over a ten-year period. Column 3 reports the incidence of disasters during the relevant ten years of our sample CEOs' early-life. Column 4 reports the results of a two-sided *z*-test for differences in proportions reported in Columns 2 and 3. For example, across the U.S. over 1900-2010, in a given year, 21.09% of the population experienced at least one disaster in our database (Column 1). Over a typical ten year period, the probability of not experiencing any disaster is 9.3% $((1-21.09\%)^{10})$ which implies that the probability of experiencing a disaster over the ten year period is 90.63% (Column 2). 80.20% of CEOs in our sample experienced at least one disaster over years [t+5,t+15] after birth (Column 3). A disaster with "major fatalities" is one with at least 5 fatalities and fatalities scaled by county population greater than 0.05%. A disaster with "major economic damage" is one with at least $1 million of property and crop damage (inflation-adjusted).

Disaster Type	(1) Population Annual Probability of Experiencing at least one Disaster	(2) Population 10-Year Probability of Experiencing at least one Disaster	(3) CEO 10-Year Realized Incidence of Experiencing at least one Disaster	(4) *z*-test of Difference (3)-(2)
Any Disaster	21.09%	90.63%	80.20%	-14.80***
With Fatalities	10.73%	67.86%	66.80%	-0.94
With Major Fatalities	1.24%	11.73%	10.22%	-0.61
With Major Econ Damages	1.11%	10.56%	10.87%	0.14

*** p≤0.01, ** p≤0.05, * p≤0.1

Table III – Time-Varying Firm Characteristics

This table reports summary statistics for various firm-year characteristics. The first two columns include all firm-years in the sample, while in the remaining columns the sample is restricted to firm-years with CEOs in the groups with *No Fatality*, *Medium Fatality*, or *Extreme Fatality* disaster experience, respectively. *Market-to-Book ratio* is defined as the market value of equity divided by the book value of equity at fiscal year-end. *Book Leverage* is the sum of long-term debt and current liabilities divided by book assets. *Cash-to-Assets* is the ratio of cash and marketable securities divided by the book assets. *I(Dividend Paying)* is an indicator variable equal to one if the firm pays dividend during the year, and zero otherwise. *ROA* is defined as net income divided by book equity. *Stock volatility* is the annualized volatility (%) calculated from the standard deviation of daily stock returns during the fiscal year, and *Idiosyncratic Volatility* and *Systematic Volatility* are calculated using a CAPM market model. *CEO Age* is the age of the firm's CEO as of the fiscal year end. *Announced Acquisition* is an indicator variable equal to one if the firm announced a merger or acquisition in the current fiscal year. *Bankrupt Next Year* is an indicator equal to 1 if the firm files for Chapter 7 or Chapter 11 bankruptcy in the next year (obtained from the UCLA-LoPucki Bankruptcy Research Database), and zero otherwise.

Sample:	All observations (N=8,533)		No Fatality (N=2,836)		Medium Fatality (N=4,864)		Extreme Fatality (N=833)	
	Mean	*Std. Dev.*	*Mean*	*Std. Dev.*	*Mean*	*Std. Dev.*	*Mean*	*Std. Dev.*
Book Assets ($M)	30,863	119,903	18,148	57,533	36,787	141,925	39,562	132,615
Market-to-Book ratio	1.84	1.41	1.81	1.24	1.86	1.52	1.88	1.30
Book Leverage	0.25	0.18	0.26	0.18	0.26	0.19	0.24	0.18
Cash-to-Assets	0.11	0.14	0.11	0.14	0.11	0.14	0.13	0.17
I(Dividend Paying)	0.73	0.45	0.73	0.44	0.72	0.45	0.76	0.43
ROA	0.05	0.13	0.05	0.11	0.05	0.13	0.06	0.19
Stock Volatility (%)	38.60	22.09	38.44	20.83	39.01	23.15	36.81	19.67
Idiosyncratic Volatility (%)	34.47	20.72	34.67	19.96	34.76	21.52	32.11	18.26
CEO Age	56.85	7.01	56.96	6.91	56.83	7.15	56.59	6.49
I(Announced Acquisition)	0.42	0.49	0.42	0.49	0.43	0.50	0.33	0.47
I(Bankrupt Next Year)	0.01	0.07	0.01	0.06	0.01	0.08	<0.01	0.03
Interest Expense/Debt	0.08	0.07	0.08	0.06	0.08	0.07	0.07	0.06

Table IV – CEO Early-Life Disaster Experience and Corporate Financial Policies

This table reports OLS regression estimates for the relation between CEO disaster experience and corporate financial policies (dependent variables given in Column titles). The dependent variable in columns 1 through 3 is the book leverage. The dependent variable in columns 4 through 6 is the ratio of cash to assets. All models include fixed effects for the firm, year, CEO's birth year, and state of CEO's birth. Columns 2 and 5 include third order polynomials for all continuous control variables in the model (not shown). Columns 3 and 6 include decile step functions for all continuous control variables in the model (not shown). All variables are as defined in Tables III. The standard set of controls include: natural log of book assets, market-to-book ratio, asset tangibility (fixed assets/book assets), dividend paying indicator, ROA, sales growth, CEO age and age squared, and CEO female indicator. Standard errors are clustered at the firm level and reported in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable:	Book Leverage			Cash-to-Asset		
Medium Fatality Experience	0.033***	0.030***	0.030***	-0.012**	-0.010**	-0.010**
	(0.009)	(0.009)	(0.008)	(0.005)	(0.005)	(0.005)
Extreme Fatality Experience	-0.035***	-0.032***	-0.035***	0.022***	0.022***	0.020***
	(0.011)	(0.011)	(0.011)	(0.007)	(0.007)	(0.007)
Average Fatality Risk of County	0.003			-0.005		
	(0.007)			(0.004)		
(Average Fatality Risk of County)^2	-0.000			0.001		
	(0.001)			(0.001)		
Ln(Book Assets)	-0.010			-0.030***		
	(0.009)			(0.006)		
Market-to-Book	-0.011***			0.005*		
	(0.002)			(0.002)		
Fixed Assets/Book Assets	0.040			-0.294***		
	(0.061)			(0.034)		
Dividend Paying	-0.023**			-0.001		
	(0.012)			(0.006)		
ROA	-0.116***			0.032		
	(0.026)			(0.022)		
Sales Growth	0.001			-0.005**		
	(0.003)			(0.002)		
CEO Age	-0.000			-0.006		
	(0.007)			(0.005)		
CEO Age^2	0.000			0.000*		
	(0.000)			(0.000)		
CEO is Female	0.021			0.008		
	(0.019)			(0.012)		
Observations	8,533	8,533	8,533	8,533	8,533	8,533
Adjusted R^2	0.828	0.799	0.810	0.842	0.822	0.837
3rd Order Polynomial Controls	No	Yes	No	No	Yes	No
Decile Step Function Controls	No	No	Yes	No	No	Yes
Firm, Year, Birth Year, and State of Birth FE	Yes	Yes	Yes	Yes	Yes	Yes

*** p≤0.01, ** p≤0.05, * p≤0.1

Table V – Sensitivity of Debt Issues, Equity Issues, and Retained Earnings to Financing Deficits by CEO Early-Life Disaster Experience

This table reports OLS regression estimates for the sensitivity of net debt issues, net external equity issues, and changes in accumulated internal equity with respect to the firm net financing deficits, conditional on CEO disaster experience. The dependent variable in columns 1 and 2 is net debt issues divided by lagged assets. The dependent variable in columns 3 and 4 is net equity issues divided by lagged assets. The dependent variable in columns 5 and 6 is the change in retained earnings from the prior year divided by lagged assets. Net Debt Issues is defined as long-term debt issues minus long-term debt reduction and Net Equity Issues is defined as sale of common and preferred stock net of repurchases. Net Financing Deficit is defined as cash dividends plus net investment plus change in working capital minus cash flow after interest and taxes, normalized by beginning-of-the-year assets. The FD Control Variables are identical to those in Frank and Goyal (2003): changes in profitability (operating income before depreciation normalized by beginning of the year assets), in tangibility (property, plants, and equipment, normalized by beginning of the year assets), in the logarithm of sales and in Q (market value of assets over the book value of assets, where market value of assets is the book value of total assets plus market equity minus book equity). Standard errors are clustered at the firm level and reported in parentheses.

Dependent Variable:	(1)	(2)	(3)	(4)	(5)	(6)
	Net Debt Issues / Lagged Assets		Net Equity Issues / Lagged Assets		-1×ΔRetained Earnings / Lagged Assets	
Net Financing Deficit (FD)	0.691***		0.332***		0.140***	
	(0.066)		(0.005)		(0.008)	
Medium Fatality Experience		-0.0018		-0.0019		-0.0064
		(0.0022)		(0.0023)		(0.0057)
Extreme Fatality Experience		0.0032		0.0042		-0.0169**
		(0.0029)		(0.0028)		(0.0075)
Medium Fatality Experience × FD		0.0495*		0.0055		-0.0307
		(0.0266)		(0.0592)		(0.1081)
Extreme Fatality Experience × FD		-0.1558**		-0.0735		0.0448**
		(0.0729)		(0.0691)		(0.0228)
Observations	8,533	8,533	8,533	8,533	8,533	8,533
Adjusted R^2	0.500	0.8814	0.442	0.779	0.311	0.790
Firm Fixed Effects	No	Yes	No	Yes	No	Yes
Firm Fixed Effects × FD	No	Yes	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes	No	Yes
County Risk Controls, Birth Year and Birth State Fixed Effects	No	Yes	No	Yes	No	Yes
Frank and Goyal (2003) Control Variables	No	Yes	No	Yes	No	Yes
Frank and Goyal (2003) Control Variables × FD	No	Yes	No	Yes	No	Yes

*** p≤0.01, ** p≤0.05, * p≤0.1

Table VI – CEO Early-Life Disaster Experience and Credit Risk

This table reports regression estimates for the relation between CEO disaster experience and interest expenses, credit ratings, or bankruptcy incidence (dependent variables given in Column titles). The sample is restricted to those firms with credit ratings in Columns 1 through 4. There are 27 unique credit level ratings in the sample, with the lowest being a 'D', and the highest being a 'AAA'. Credit ratings are given a numerical score increasing by 1 for each increase in credit rating, with a 0 corresponding to a rating of 'D' and 26 corresponding to a rating of 'AAA'. The dependent variable in Columns 1 and 2 is the numerical credit rating score, where Column 1 reports ordered probit estimates and Column 2 reports OLS estimates. "Junk" rating is an indicator equal to 1 if the firm has a credit rating lower than BBB-, and 0 otherwise. "Not Rated" is an indicator equal to 1 if the firm does not have a credit rating, and 0 otherwise. Standard errors, clustered at the firm level, are reported in parentheses. Bankrupt Next Year is an indicator equal to 1 if the firm files for Chapter 7 or Chapter 11 bankruptcy in the next years (obtained from the UCLA-LoPucki Bankruptcy Research Database), and 0 otherwise. An analogous definition is employed for "Bankrupt Next 2 Years". Standard errors are clustered at the firm level and reported in parentheses.

Dependent Variable:	(1) Credit Rating: Ordered Probit	(2) Credit Rating: OLS	(3) "Junk" Rating	(4) "Junk" Rating	(5) Not Rated	(6) Bankrupt Next Year	(7) Bankrupt Next 2 Years
Medium Fatality Experience	-0.365*	-0.460**	0.071**	0.053*	-0.021	0.009**	0.017**
	(0.214)	(0.204)	(0.033)	(0.031)	(0.033)	(0.004)	(0.008)
Extreme Fatality Experience	0.774***	0.586**	-0.088*	-0.051	-0.026	-0.015**	-0.027**
	(0.267)	(0.254)	(0.048)	(0.042)	(0.041)	(0.006)	(0.011)
Observations	4,114	4,114	4,114	4,114	8,553	8,553	8,553
Adjusted R^2	0.560	0.898	0.765	0.805	0.746	0.393	0.513
Non-linear County Risk Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
All Controls from Table IV	Yes	Yes	No	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year, Birth Year, and Birth State Fixed Effects	Yes	Yes	No	Yes	Yes	Yes	Yes

*** p≤0.01, ** p≤0.05, * p≤0.1

Table VII – CEO Early-Life Disaster Experience and Cost of Debt

This table reports OLS regression estimates for the relation between CEO disaster experience and the cost of debt (dependent variables given in Column titles). The dependent variable in column 1 is the reported annual interest expense divided by total debt. The dependent variable in the columns 2-4 is the all in spread inclusive of all fees, in basis points, for bank loans, where each observation corresponds to a different loan deal. Loan controls, taken from Ivashina (2009), are the borrowing firm's credit rating, whether the borrowing firm has a prior lending relationship with the lead bank, log-sales, log-assets, book leverage, ROA, log of the loan amount, loan maturity, collateral requirement, the presence of financial covenants and/or performance pricing, and the prime base rate. The dependent variable columns 5-7 is the spread over treasury yields for the firm's newly issued bonds (bond yield-to-maturity less the yield on U.S. treasury of equivalent maturity) , where each observation corresponds to a unique bond issue. Standard errors are clustered at the firm level and reported in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent Variable:	$\frac{\text{Int. Exp.}}{\text{Debt}}$	Bank Loan All-in Spread			Bond Issue Spread over Treasury		
Medium Fatality Experience	0.016***	18.974***	21.108***	16.852***	-6.292	-1.637	10.962
	(0.006)	(6.729)	(6.832)	(5.830)	(8.134)	(7.811)	(6.735)
Extreme Fatality Experience	-0.015*	-20.602**	-25.753***	-13.752	-29.851**	-28.435**	-13.981*
	(0.009)	(7.404)	(9.777)	(8.730)	(11.595)	(12.334)	(8.222)
Observations	7,206	2,435	2,435	2,264	2,107	2,107	2,107
Adjusted R^2	0.517	0.290	0.481	0.596	0.291	0.482	0.792
Non-linear County Risk Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
All Controls from Table IV	Yes	N/A	N/A	N/A	N/A	N/A	N/A
Ivashina (2009) Controls	N/A	No	No	Yes	No	No	Yes
Firm Fixed Effects	Yes	No	No	Yes	No	No	Yes
Year, Birth Year, and Birth State Fixed Effects	Yes	No	Yes	Yes	No	Yes	Yes
Lead Lender Fixed Effects	N/A	Yes	Yes	Yes	N/A	N/A	N/A

*** p≤0.01, ** p≤0.05, * p≤0.1

Table VIII – CEO Early-Life Disaster Experience and Firm Acquisitiveness

This table reports linear probability model regression estimates for the relation between CEO disaster experience and propensity to make acquisitions. The dependent variable is an indicator equal to one if the firm announced an acquisition in the current year. All models include fixed effects for the firm, year, CEO's birth year, and state of CEO's birth. Columns 2 and 5 include third order polynomials for all continuous control variables in the model (not shown). Columns 3 and 6 include decile step functions for all continuous control variables in the model (not shown). All variables are as defined in Tables III. Standard errors are clustered at the firm level and reported in parentheses.

	(1)	(2)	(3)
Dependent Variable:	Announced Acquisition		
Medium Fatality Experience	0.061**	0.065**	0.068**
	(0.028)	(0.028)	(0.029)
Extreme Fatality Experience	-0.081**	-0.079**	-0.077**
	(0.038)	(0.038)	(0.038)
Average Fatality Risk of County	0.023		
	(0.027)		
(Average Fatality Risk of County)^2	-0.003		
	(0.003)		
Ln(Book Assets)	0.050***		
	(0.016)		
Market-to-Book	-0.003		
	(0.005)		
Book Leverage	-0.098		
	(0.071)		
Fixed Assets/Book Assets	-0.345***		
	(0.118)		
I(Net Income < 0)	-0.057***		
	(0.021)		
Dividend Paying	0.006		
	(0.029)		
ROA	0.025		
	(0.045)		
Sales Growth	0.006		
	(0.012)		
CEO Age	0.009		
	(0.018)		
CEO Age^2	-0.000		
	(0.000)		
CEO is Female	-0.084		
	(0.075)		
Observations	8,533	8,533	8,533
Adjusted R^2	0.394	0.397	0.404
3rd Order Polynomial Controls	No	Yes	No
Decile Step Function Controls	No	No	Yes
Firm, Year, Birth Year, and State of Birth FE	Yes	Yes	Yes

*** p≤0.01, ** p≤0.05, * p≤0.1

Table IX – CEO Early-Life Disaster Experience and Acquisition Characteristics

This table reports OLS regression estimates for the relation between CEO disaster experience and acquisition characteristics (dependent variables given in Column titles). *Announcement CAR* is calculated for the acquirer using a CAPM market model. *All Stock Acquisition* is an indicator equal to 1 for stock acquisitions, and 0 otherwise. *Unrelated Acquisition* is defined using the Fama-French 17 industry definitions. Columns 4 and 5 restrict the sample to diversifying and non-diversifying mergers, respectively. All models include fixed effects for (acquirer's industry × year), CEO's birth year and birth state. Controls for target public status, acquirer toehold ownership, friendly merger, and diversifying merger are also included but not shown for brevity. Standard errors are clustered at the firm level and reported in parentheses.

Dependent Variable:	(1) All Stock Acquisition	(2) Announcement CAR [-2,+2]	(3) Unrelated Acquisition	(4) Bidder-Target Correlation	(5)
Sample:	All Merger Announcements			Diversifying Mergers	Focused Mergers
Medium Fatality Experience	-0.074**	-0.574*	0.079**	0.008	0.015
	(0.033)	(0.332)	(0.040)	(0.032)	(0.025)
Extreme Fatality Experience	0.039	1.250**	-0.039	0.057	0.050
	(0.067)	(0.612)	(0.073)	(0.093)	(0.041)
Average Fatality Risk of County	-0.002	0.001	-0.000	0.001	0.003
	(0.001)	(0.013)	(0.002)	(0.004)	(0.002)
(Average Fatality Risk of County)^2	0.000**	0.000**	0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
All Stock Acquisition		-0.758**		0.028	0.067***
		(0.311)		(0.035)	(0.017)
Relative Size of Target	0.366***	-0.960	-0.084	0.169**	0.200***
	(0.056)	(0.690)	(0.053)	(0.069)	(0.030)
Acq. Ln(Book Assets)	0.024**	-0.083	0.026*	0.044***	0.058***
	(0.011)	(0.118)	(0.014)	(0.012)	(0.008)
Acq. M/B	0.036***	0.292**	-0.008	0.002	0.021***
	(0.009)	(0.116)	(0.010)	(0.012)	(0.006)
Acq. Book Leverage	-0.376***	2.507**	-0.204*	-0.107	0.022
	(0.089)	(0.985)	(0.105)	(0.116)	(0.064)
Acq. Cash/Assets	-0.288**	1.158	-0.135	0.047	0.015
	(0.113)	(1.307)	(0.126)	(0.191)	(0.074)
Acq. Stock Price Run-up [-250,-30]	0.001***	-0.007	0.000	0.000	0.000
	(0.000)	(0.005)	(0.000)	(0.001)	(0.000)
Acq. Stock Volatility [-250,-30]	0.004***	0.013	-0.000	0.004**	0.002*
	(0.001)	(0.019)	(0.001)	(0.002)	(0.001)
CEO is Female	0.163	-2.883**	0.115	0.212	0.107*
	(0.107)	(1.251)	(0.125)	(0.130)	(0.062)
CEO Age	-0.045	-0.460	-0.012	-0.017	-0.012
	(0.035)	(0.364)	(0.034)	(0.068)	(0.018)
CEO Age^2	0.001	0.004	-0.001	0.001	0.001
	(0.001)	(0.003)	(0.001)	(0.001)	(0.001)
Observations	2,883	2,882	2,882	651	1,123
Adjusted R^2	0.400	0.221	0.200	0.842	0.762
(Acquirer Industry × Year), Birth Year, and State of Birth Fixed Effects	Yes	Yes	Yes	Yes	Yes

Table X – CEO Early-Life Disaster Experience and Firm Equity Risk

This table reports OLS regression estimates for the relation between CEO disaster experience and firm risk (dependent variables given in Column titles). All models include fixed effects for the firm, year, CEO's birth year, and state of CEO's birth. Columns 2 and 5 include third order polynomials for all continuous control variables in the model (not shown). Columns 3 and 6 include decile step functions for all continuous control variables in the model (not shown). All variables are as defined in Tables III. Standard errors are clustered at the firm level and reported in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable:	Stock Volatility			Idiosyncratic Volatility		
Medium Fatality Experience	3.734***	3.258***	3.472***	3.354***	2.861***	3.039***
	(0.927)	(0.912)	(0.892)	(0.847)	(0.824)	(0.809)
Extreme Fatality Experience	-3.613**	-4.121***	-3.552***	-3.295**	-3.836***	-3.306***
	(1.437)	(1.406)	(1.361)	(1.340)	(1.296)	(1.259)
Average Fatality Risk of County	-1.046			-1.047		
	(0.799)			(0.751)		
(Average Fatality Risk of County)^2	0.036			0.037		
	(0.090)			(0.085)		
Ln(Book Assets)	-2.600***			-3.342***		
	(0.719)			(0.676)		
Market-to-Book	0.558**			0.051		
	(0.240)			(0.230)		
Book Leverage	8.787**			10.507**		
	(4.112)			(4.097)		
Fixed Assets/Book Assets	12.416***			10.393**		
	(4.387)			(4.347)		
Cash/Assets	12.653***			9.872***		
	(4.018)			(3.623)		
Dividend Paying	-3.568**			-3.527***		
	(1.400)			(1.343)		
ROA	-16.775***			-16.153***		
	(3.306)			(3.089)		
Sales Growth	0.396			0.476		
	(0.563)			(0.627)		
CEO Age	-0.050			0.019		
	(0.776)			(0.700)		
CEO Age^2	0.000			-0.001		
	(0.007)			(0.006)		
CEO is Female	1.612			1.436		
	(3.728)			(3.490)		
Observations	8,533	8,533	8,533	8,533	8,533	8,533
Adjusted R^2	0.737	0.771	0.752	0.718	0.766	0.735
3rd Order Polynomial Controls	No	Yes	No	No	Yes	No
Decile Step Function Controls	No	No	Yes	No	No	Yes
Firm, Year, Birth Year, and State of Birth FE	Yes	Yes	Yes	Yes	Yes	Yes

*** p≤0.01, ** p≤0.05, * p≤0.1

Table XI – Placebo Test: Random Assignment of Disaster Experience across CEOs

This table reports summary statistics of the regression estimates for the baseline models in Tables IV, VIII, and X (dependent variables given in Column titles), when we randomly assign a birth county to each CEO based on the observed distribution of CEO birth counties (with replacement). For each replication, we record the estimated coefficient and associated *p*-value. We repeat the procedure 500 times. We report the mean coefficient estimate for the main independent variables across the 500 replications. In brackets, we report the percentage of coefficient estimates that are positive and significant at the 5% level (*% $\beta>0$ & $\alpha<5\%$*) or negative and significant at the 5% level (*% $\beta>0$ & $\alpha<5\%$*). In parentheses, we report the percentage of coefficient estimates that have larger absolute value than and same sign as our baseline estimates from Tables IV, VIII, and X, and are significant at the 5% level (*% $|\beta|>|\beta^{*}|$ & $\beta\times\beta^{*}>0$ & $\alpha<5\%$*). The dependent variable is indicated in the Column titles. All standard controls from Tables IV, VIII, and X, fixed effects for firm, year, CEO birth year, and birth state are included but not shown for brevity.

Dependent Variable:	(1) Book Leverage	(2) Cash Holdings	(3) Announced Acquisition	(4) Stock Volatility	(5) Idiosyncratic Volatility
Mean β for Medium Fatality CEOs	-0.006	0.004	-0.022	-0.774	-0.615
[% $\beta>0$ & $\alpha\leq5\%$; % $\beta<0$ & $\alpha\leq5\%$]	[2.0%; 2.2%]	[3.0%; 2.2%]	[2.6%; 3.0%]	[1.4%; 3.4%]	[1.4%; 2.6%]
(% $\|\beta\|>\|\beta^{*}\|$ & $\beta\times\beta^{*}>0$ & $\alpha\leq5\%$)	(1.0%)	(0.6%)	(1.4%)	(0.8%)	(0.6%)
Mean β for Extreme Fatality CEOs	-0.005	0.003	0.011	-0.334	-0.222
[% $\beta>0$ & $\alpha\leq5\%$; % $\beta<0$ & $\alpha\leq5\%$]	[2.0%; 2.4%]	[3.0%; 2.4%]	[2.2%; 1.8%]	[2.2%; 3.8%]	[2.0%; 3.8%]
(% $\|\beta\|>\|\beta^{*}\|$ & $\beta\times\beta^{*}>0$ & $\alpha\leq5\%$)	(1.2%)	(1.4%)	(0.4%)	(1.6%)	(1.0%)

Table XII – Isolating the Effect of a Major Disaster between "Treated" and "Control" Birth Counties

This table reports OLS regression estimates where the dependent variable is indicated in the Column title. The main dependent variable is an indicator equal to 1 for the CEOs whose county of birth experienced a major disaster over the time period [t+5, t+15] years after the CEO's birth ("Treatment" group), and equal to 0 for those CEOs who were also within the age of 5 to 15 years old in unaffected counties within 100 miles from the major disaster county ("Control" group). All standard controls from Tables IV, VIII, and IX, fixed effects for firm, year, CEO birth year, and birth state are included but not shown for brevity. Standard errors are clustered at the firm level and reported in parentheses.

	(1)	(2)	(3)	(4)	(5)
Dependent Variable:	Book Leverage	Cash Holdings	Announced Acquisition	Stock Volatility	Idiosyncratic Volatility
Major Disaster Experience	-0.054***	0.027***	-0.107***	-6.204***	-5.842***
	(0.009)	(0.006)	(0.030)	(1.251)	(1.216)
Observations	6,350	6,350	6,350	6,350	6,350
Adjusted R^2	0.830	0.854	0.417	0.736	0.716
All Controls from Table IV	Yes	Yes	Yes	Yes	Yes
Firm, Year, Birth Year, and State of Birth FE	Yes	Yes	Yes	Yes	Yes

*** p≤0.01, ** p≤0.05, * p≤0.1

Table XIII – Changes in Corporate Policies around Exogenous CEO Turnover Events

This table reports mean changes in industry-adjusted book leverage, cash-to-asset ratio, probability of announcing an acquisition, and stock volatility of firms that experience exogenous CEO turnover events. The sample of exogenous CEO turnovers is from Eisfeldt and Kuhnen (2013). For each turnover event occurring in year *t*, the change in the firm's industry-adjusted variable is calculated by subtracting the average industry-adjusted value of the variable over years [*t*-2,*t*] from the average industry-adjusted value over years [*t*+1,*t*+2]. The first Column reports the mean changes around exogenous CEO turnover events where the incoming CEO is *more* risk-tolerant than the old CEO, as measured by their respective early-life disaster experiences. These include turnovers where the CEOs change from *No Fatality* to *Medium Fatality*, *Extreme Fatality* to *Medium Fatality*, or *Extreme Fatality* to *No Fatality*. The second Column reports the mean changes around exogenous CEO turnover events where the incoming CEO is *less* risk-tolerant than the old CEO. Column 3 reports the difference in mean changes of corporate policies between the two samples of exogenous CEO turnover events and Column 4 reports the corresponding *t*-statistic for the null hypothesis of no difference in means.

	(1)	(2)	(3)	(4)
	New CEO Risk Tolerance Relative to Old CEO			
	More Risk-Tolerant *(N=20)*	Less Risk-Tolerant *(N=21)*	(1) *minus* (2)	*t*-stat.
ΔIndustry-adjusted Book Leverage	0.010	-0.011	0.021*	1.81
ΔIndustry-adjusted Cash/Assets	-0.015	0.001	-0.016	-1.04
ΔIndustry-adjusted Acquisition Probability	0 .129*	-0.091	0.220*	1.81
ΔIndustry-adjusted Volatility (%)	1.432	-3.081***	4.512**	2.15
ΔIndustry-adjusted Idiosyncratic Volatility (%)	1.738	- 3.118***	4.855**	2.70

[1] Apple Inc. CEOs, Tim Cook and Steve Jobs, are examples of CEOs with widely differing childhood disaster experiences when growing up. Tim Cook, born in Mobile, Alabama in 1960, witnessed "only" 1.15 deaths across 57 natural disaster events between the age 5-15. Steve Jobs, born in San Francisco, California in 1955, witnessed 31.6 deaths across 39 natural disasters during the relevant early years of his life.

[2] This is consistent with recounts from survivors of recent tornado strikes – see Ganucheau and Fernandez, "Where Tornadoes Are a Known Danger, the One That Hits Home Still Stuns", *New York Times*, April 30 2014, page A1.

[3] We thank Scott Yonker for graciously providing us with this data, which indicates that 75% of CEOs in our sample received their SSN in the same state as their birth county.

[4] In a related but different vein, other studies indicate that a CEO's attitude toward risk affects decisions consistently, whether in a corporate setting or not. For example, Hutton, Jiang, and Kumar (2014) find that a conservative political affiliation is associated with a more conservative attitude in corporate decision-making. Cain and McKeon (2013) find that CEOs who are licensed small aircraft pilots have larger appetite for risk in the form of higher financial leverage, stock volatility, and propensity to engage in risky acquisitions. Roussanov and Savor (2013) find that unmarried CEOs also display larger propensities to take on risk.

[5] For example, Kelly (2013) suggests that emotions of disgust evolved to keep people from exposing themselves to germs (in rotting meat, for example) and were later co-opted to judge moral behavior.

[6] Cronqvist et al. (2014) find that even *prenatal* environmental factors such as testosterone exposure explain heterogeneity in risk taking later in life.

[7] Hazards & Vulnerability Research Institute (2013). *The Spatial Hazard Events and Losses Database for the United States*, Version 12.0. Columbia, SC: University of South Carolina. Available from *http://www.sheldus.org*

[8] The collection of disaster data for the pre-1960 period may suffer from an inherent coverage bias toward the most consequential events. To assess the extent of this bias, in Table IA.2 of the Internet Appendix, we report summary statistics of the county-disaster events for the pre- and post-1960 subsamples. While the number of all events and fatal events is lower in the pre-1960 than in the post-1960 period, the mean number of fatalities is considerably larger in the earlier period, supporting the idea that our pre-1960 data coverage is biased towards larger events. In Tables IA.3 and IA.4 of the Internet Appendix, we therefore repeat our main empirical tests to assess the robustness of our results to this potential bias in coverage across sub-periods. Overall, our main inferences are largely unaffected by the potential coverage bias.

[9] We define a disaster with "major fatalities" as one with at least 5 fatalities and fatalities scaled by county population greater than 0.05%, and a disaster with "major economic damage" as one with at least $1 million of property and crop damage (inflation-adjusted). Alternative choices of cutoffs do not significantly alter our results.

[10] Table IA.I in the Internet Appendix reports the results of this comparison.

[11] This assumption rests on the stationarity of disaster risk within the year of the CEO's birth. The stationarity assumption is supported by findings in the meteorology literature (see, e.g., Elsner and Bossak (2001), Pielke, Wigley, and Green (2008)).

[12] The coefficient for the same test in Shyam-Sunder and Myers (1999) is 0.75 (Table 2, Column 2). When Frank and Goyal (2003) restrict the sample to the top quartile of firms (which have a similar size to the firms in our sample), they obtain a coefficient of 0.753 for the 1971-1989 time period and 0.675 for 1990-1998 (Table 6, Columns 7 and 11).

[13] We obtain qualitatively similar results when we use monthly returns to calculate volatility, or examine systematic volatility instead.

[14] We are indebted to Scott Yonker for sharing the SSN-based data that allowed us to perform these robustness tests (see Yonker (2012) and Pool, Stoffman, and Yonker (2012) for details regarding this database).

[15] As noted earlier, this assumption rests on the stationarity of disaster risk.

[16] We thank Camelia Kuhnen for providing the data on her website at *http://public.kenan-flagler.unc.edu/faculty/kuhnenc/research/research.html*.

[17] See also Lynn M. Highland and Robert L. Schuster, "Significant Landslide Events in the United States", USGS graphic presentation by Margo L. Johnson (at *http://landslides.usgs.gov/docs/faq/significantls_508.pdf*), Engdahl and Villaseñor (2002) and C.A. Perry, "Significant Floods in the United States During the 20th Century - USGS Measures a Century of Floods", USGS.

[18] See also Harpel, C. J., and J. W. Ewert, "Bibliography of literature from 1900-1997 pertaining to Holocene and fumarolic Pleistocene volcanoes of Alaska, Canada, and conterminous United States", USGS.

[19] At *http://www.ngdc.noaa.gov/hazard/tsu_db.shtml*.

[20] At *http://www.ncdc.noaa.gov/oa/reports/weather-events.html#hist* and *http://www.nhc.noaa.gov/data/*. In addition, we used the *2011 NOAA Technical Memorandum* by Eric S. Blake, Christopher W. Landsea, and Ethan J. Gibney. See also *http://bangladeshtornadoes.org/UScases.html*.

[21] In general, we were able to find historical records with relevant information for most disaster types in our dataset from *GenDisasters* at *http://www3.gendisasters.com*.