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Early-Life Disaster Exposure and the Investment Response to Monetary Policy

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Abstract

We place CEOs' formative experiences at the center of analyzing how firms respond to monetary policy. Specifically, we examine how early-life exposure to natural disasters shapes CEOs' investment behavior following monetary shocks. CEOs with exposure to moderate natural disasters in their formative years exhibit stronger risk-taking tendencies: they invest more aggressively after expansionary shocks and cut back less during contractionary periods. These effects weaken when the exposure is to extreme disasters, leading to more conservative behavior. The patterns are especially pronounced in financially constrained firms and during periods of elevated monetary uncertainty. We also show that these behavioral predispositions have real consequences: the risk-taking CEOs shaped by moderate exposure to natural disasters face a greater likelihood of forced turnover, suggesting that shareholders may perceive their decisions as excessively risky. This behavioral heterogeneity diminishes when monetary shocks are accompanied by FOMC press conferences, highlighting the role of clear communication in reducing uncertainty and standardizing firm responses.

Keywords: Monetary Policy; Risk-Taking; Natural Disasters; Transformative Experience; Chief Executive Officers; Corporate Investments.
JEL: E5, G02, G30, G31.

1. Introduction

Over the past three decades, monetary policy has grown in scope and complexity, evolving beyond conventional rate-setting tools to include forward guidance and large-scale asset purchases designed to stabilize output and financial conditions during economic downturns (Ferrante, 2019; Kuttner, 2018; Maggio and Kacperczyk, 2017). These actions are consequential: monetary shocks have been found to drive up to half of the variation in total output (Barakchian and Crowe, 2013). However, while the macroeconomic effects of monetary policy are well documented, an important question remains: why do firms respond differently to the same monetary stimulus, even when controlling for financial constraints and observable firm characteristics?

Existing literature has increasingly highlighted the role of firm-level financial features—such as size, payout policy, and leverage—in shaping the magnitude and timing of corporate investment responses to monetary shocks (Cloyne et al., 2023; Durante et al., 2022; Ottonello and Winberry, 2020). While these characteristics matter, firm responses also depend on how top executives interpret and translate monetary signals into strategic action, a process that can be shaped by prior experiences and attitudes toward risk.[1] Building on this insight, we argue that the transmission of monetary policy to the real economy is not only a function of financial frictions, but is also filtered through the behavioral channels embedded in individual decision-makers. Our paper places this behavioral heterogeneity at the core of monetary policy analysis, asking: how do early-life experiences of CEOs affect the firm's reaction to monetary policy shocks?

Among the range of formative influences, early-life exposure to natural disasters provides a particularly sharp, empirically measurable, and verifiable source of variation in experience. These events are sudden, high-stress shocks whose occurrence and relative severity can be quantified, making them especially suitable for studying how formative experiences shape individuals' perceptions of risk and subsequent decision-making

[1] Bertrand and Schoar (2003) find that managerial fixed effects account for a substantial share of the heterogeneity observed in firms' investment, financing, and organizational decisions. They demonstrate consistent patterns in managerial decision-making that reflect distinct management "styles," highlighting the persistent influence of individual managers on corporate outcomes. Along similar lines, Custódio and Metzger (2013) show that CEO characteristics significantly influence acquirer performance in diversifying takeovers. Specifically, acquirers led by CEOs with prior experience in the target industry achieve announcement returns 1.2 to 2.0 percentage points higher than those led by non-expert CEOs, primarily because industry-expert CEOs negotiate better deals and pay lower premiums.

behavior. Recent literature shows that CEOs exposed to such shocks during formative years exhibit distinct managerial styles and firm policies (Ballesteros, 2024; Bernile et al., 2017; Ren et al., 2021). In their seminal work, Bernile et al. (2017) draw on a substantial body of psychological research suggesting that moderate exposure to vivid, high-stress events enhances performance up to a certain threshold, beyond which extreme exposure begins to diminish this effect (Kleim and Ehlers, 2009; Yerkes and Dodson, 1908). They apply these insights to CEOs' formative exposure to intense natural disasters, finding that those with moderate exposure tend to become strong risk-takers, whereas those with extreme exposure exhibit more conservative behavior.

Our paper provides strong evidence that this non-monotonic pattern extends to firms' investment responses to monetary policy. CEOs exposed to moderate natural disasters during their formative years are more inclined to (a) expand investment more aggressively in response to expansionary shocks and (b) resist reducing investment following contractionary shocks. Over an eight-quarter horizon, firms led by CEOs who were exposed to moderate disasters during their formative years invest an amount equivalent to roughly 4% of their pre-shock capital stock, nearly double the investment level of firms led by CEOs with no disaster exposure. Moreover, during contractionary periods, these firms tend to maintain, and in some cases slightly increase, investment relative to firms with non-disaster-exposed CEOs rather than scaling back. These tendencies are weakened for CEOs with extreme exposure—those in the highest decile of disaster experience—reflecting their heightened risk aversion. These patterns are especially pronounced among financially constrained firms, in the presence of less independent boards, and during periods of elevated macroeconomic uncertainty, reinforcing the idea that firm-level frictions and psychological traits jointly shape the transmission of monetary policy.

While our core findings establish that CEOs' formative experiences with natural disasters significantly influence how firms adjust investment in response to monetary policy shocks, a natural next question is whether these behavioral patterns carry meaningful consequences. Do firms led by CEOs with distinct early-life experiences exhibit investment behavior that shareholders perceive as excessively risky or misaligned with firm objectives? And if so, are these CEOs held accountable for such decisions? We turn to these critical questions by focusing on a key outcome: the CEO's job security. We find that risk-taking tendencies come with professional consequences: CEOs with exposure to moderate natural disasters are more likely to be forced out of office following periods of heightened monetary policy activity, suggesting that boards or shareholders may ultimately view their behavioral responses as excessive or misaligned with the risk preferences of the firm's stakeholders.

Finally, we explore whether central bank communication can moderate these behavioral effects. We show that the heterogeneous investment responses documented in the main analysis are significantly dampened when monetary policy shocks are accompanied by FOMC press conferences. In these instances, the differential impact of moderate versus extreme disaster exposure on capital investment is notably weaker. This suggests that effective communication mitigates the extent to which subjective psychological traits drive divergent corporate reactions to the same macroeconomic shock.

Our paper contributes to several strands of literature at the intersection of behavioral corporate finance, macroeconomics, and corporate governance. First, we add to the growing body of work connecting executives' formative experiences to corporate outcomes (Bernile et al., 2017; Malmendier and Nagel, 2011; O'Sullivan et al., 2021). While prior studies primarily examine managerial behavior in static or firm-specific contexts, we situate CEO behavior in a dynamic macroeconomic environment—monetary policy shocks—where ambiguity is high and the stakes of decision-making are amplified. Our findings contribute new evidence that early-life exposure to natural disasters shapes investment behavior in response to such shocks, with broader implications for firm-level outcomes and leadership stability.

Second, we contribute to the literature on monetary policy transmission (Bonfim and Soares, 2018; Grosse-Rueschkamp et al., 2019) by introducing behavioral heterogeneity as a mechanism shaping how firms respond to policy changes. Whereas traditional models emphasize financial frictions or sector-level characteristics, our results highlight how personal traits of decision-makers can influence the speed and magnitude of the firms' investment responses, thereby adding nuance to the understanding of cross-firm heterogeneity in monetary policy effects.

Third, we contribute to research on the determinants of executive turnover (Eisfeldt and Kuhnen, 2013; Jenter and Kanaan, 2015) by establishing a behavioral channel through which early-life experiences influence the likelihood of forced CEO departure. Our results show that psychologically rooted risk-taking behaviors can have governance consequences, linking formative experience to managerial job security through a macro-finance transmission path.

Our evidence that the personal-experience-driven heterogeneity in firm responses diminishes when monetary shocks are accompanied by FOMC press conferences contributes to the literature on central bank communication (Binder, 2017; Boguth et al., 2019). It shows that clear, structured guidance can partially neutralize the influence of unobservable executive traits—promoting more uniform firm responses and improving the precision of monetary transmission. Our work offers a concrete policy takeaway: communication by central banks is not only a vehicle for expectation management, but also a tool for reducing behavioral distortions in how monetary policy is received at the firm level. This suggests that the effectiveness of policy hinges not only on the content of rate decisions or asset purchases, but also on the clarity with which those decisions are conveyed—especially in an economy led by psychologically diverse decision-makers. Importantly, our results indicate that these behavioral frictions are not immutable.

The structure of the paper is as follows: Section 2 reviews the literature on early-life experiences and proposes hypotheses linking disaster exposure to monetary policy responses. Section 3 describes the data and methodology. Section 4 presents our empirical results and explores the moderating role of FOMC communication. Section 5 concludes with implications for both corporate governance and monetary policy.

2. Background and Hypotheses

Monetary policy plays a foundational role in shaping firms' investment opportunities by influencing the cost of capital and the availability of external finance. Expansionary monetary shocks relax financing constraints and stimulate aggregate demand, encouraging firms to increase investment. In contrast, contractionary shocks raise financing costs and reduce demand, often prompting firms to retrench (Barakchian and Crowe, 2013; Ottonello and Winberry, 2020). Yet, despite comparable fundamentals, firms exhibit widely varying investment responses to identical monetary shocks (Durante et al., 2022). This heterogeneity suggests that monetary transmission is not purely a function of balance sheet constraints but also depends on managerial interpretation. Especially in environments marked by macroeconomic uncertainty or incomplete information, CEO discretion and perception can be more consequential in shaping the firm's behavior.

Recent research in behavioral corporate finance suggests that formative life experiences can have lasting effects on CEOs' financial decision-making, particularly under uncertainty (Li et al., 2023; Malmendier and Nagel, 2011; Schoar and Zuo, 2017). Focusing on formative professional experiences, Dittmar and Duchin (2016) show that CEOs who have experienced financial distress lead firms with lower leverage, higher cash holdings, and lower investment, particularly in firms with weaker governance. The influence of such experiences is stronger when they are more recent or occur during critical stages of a manager's career, and similar patterns hold for CFOs. Blank and Hadley (2021) find that CEOs who have managed firms through recessions develop valuable risk-shifting expertise that enhances firm performance during future downturns. These "Recession CEOs" adopt conservative financial policies in expansions, accumulating capacity and liquidity that allow them to invest more aggressively and raise capital during recessions, thereby reducing bankruptcy risk and supporting asset growth.

Formative childhood, rather than purely professional, experiences have also received increasing attention for their potential to shape long-term attitudes toward risk and uncertainty. Early-life environments can leave durable psychological and behavioral imprints that influence how individuals make financial and strategic decisions later in life. We focus on natural disasters as a particularly vivid and psychologically impactful category of early-life experience that is trackable and quantifiable. Compared to other economic events, natural disasters are acute, emotionally intense, and often profoundly disorienting. These qualities make them potent "transformative experiences" (Paul, 2014, p. 1) that can shape an individual's lifelong perception of risk, control, and resilience. Recent evidence by Ru et al. (2025) suggests that CEOs who experienced severe disease outbreaks early in life led firms that reacted more cautiously to the COVID-19 pandemic, slowing capital expenditure growth and adopting a more negative tone in disclosures and forecasts. These effects were strongest in industries most affected by the pandemic, highlighting how early-life crises leave lasting imprints on managerial decision-making during similar events.

Our main conjecture is that the non-monotonic relationship between early-life exposure to natural disasters and CEO risk-taking, documented by Bernile et al. (2017) and discussed in Section 1, extends to how firms respond to monetary policy shocks. In particular, we expect this relationship to be manifested in the form of overcommitment by CEOs who experienced moderate natural disasters to preserving and expanding their firms' investments under both favorable and unfavorable monetary conditions. Their firms tend to expand investment more aggressively following expansionary shocks, seeing them as narrow windows for long-term positioning. At the same time, these CEOs are less likely to pull back during contractionary shocks, interpreting them as survivable downturns rather than existential threats. This combination produces an investment pattern that deviates from what would be expected under traditional models of financial optimization and instead reflects a behavioral inclination toward bold action in uncertain environments.

Importantly, we expect these behavioral tendencies to weaken among CEOs with exposure to extreme natural disasters. Rather than reinforcing or reversing the pattern, higher levels of exposure to the vivid destructive forces of nature may temper the psychological mechanisms that drive strong directional action, such as perceived urgency, resilience, or a bias for decisive response. In these cases, the CEO's formative experiences may lead to a diminished sense of control under uncertainty. As a result, the investment responses to both expansionary and contractionary monetary shocks become less pronounced—not due to strategic caution, but because the motivational and cognitive imprints of extreme disaster experiences dilute the executive's conviction in navigating macroeconomic shifts. In this sense, our predictions emphasize attenuation, not reversal: the same experiential traits that heighten reactivity at non-extreme exposure levels lose their salience when the underlying exposure becomes overwhelming. We formalize these expectations as follows:

H1: CEOs exposed to moderate natural disasters in their formative years lead firms to invest more after expansionary shocks and cut investment less after contractionary shocks.

H2: Relative to CEOs exposed to moderate natural disasters, CEOs exposed to extreme natural disasters in their formative years make firms more hesitant to invest during expansionary shocks and more likely to cut investment after contractionary shocks.

While H1 points to stronger investment responsiveness among moderately exposed CEOs, this alone does not confirm a greater propensity to take risk. An alternative interpretation is that such CEOs are simply more agile—better able to seize low-risk opportunities without materially altering the firm's risk profile. To distinguish between these two mechanisms—true risk-taking vs. strategic responsiveness—we examine an additional outcome central to the corporate finance literature: forced CEO turnover.

If the stronger investment responses we observe are not merely a sign of strategic agility but instead reflect a deeper disposition toward risk, they may carry important governance implications. Firms operate under a variety of stakeholder expectations, and boards are charged with ensuring that managerial actions align with the firm's strategic objectives and risk appetite. When CEOs pursue investment strategies that amplify stock return volatility or diverge from peer benchmarks, these choices can be interpreted as excessive or imprudent, even if undertaken with the intention of capturing long-term gains. The potential costs of such perceived overreach are amplified in the wake of monetary shocks, when market conditions are already unsettled and scrutiny of corporate decisions is heightened. In these contexts, boards may become more sensitive to signs that managerial behavior reflects personal predispositions rather than balanced corporate strategy. Prior research indicates that boards monitor not only financial results but also the nature and intensity of risks undertaken by management, and they may act when these are perceived as misaligned with the firm's long-term interests (Eisfeldt and Kuhnen, 2013; Jenter and Kanaan, 2015; Laux, 2008). This leads to the following hypothesis:

H3: CEOs exposed to moderate natural disasters face a greater likelihood of forced turnover following monetary shocks.

Finally, we turn to the question of whether institutional mechanisms—specifically, central bank communication—can moderate the behavioral imprint of CEOs' early-life experiences on firm responses to monetary policy. Building on our core findings that disaster-exposed CEOs respond differently to monetary shocks depending on the severity of their formative experiences, we now examine whether the clarity of the policy signal itself influences how strongly these personal traits affect corporate behavior.

Our theoretical motivation rests on the notion that uncertainty amplifies the influence of individual-level heuristics in decision-making (Kahneman et al., 1982). When policy signals are ambiguous, CEOs must rely more heavily on their own priors and intuitions—many of which are shaped by past experiences. In our setting, this means that early-life exposure to natural disasters becomes a more potent driver of investment behavior in periods when the macroeconomic environment is unclear or difficult to interpret. Conversely, when central banks provide more explicit, forward-looking guidance, these idiosyncratic interpretations may recede, leading to more standardized responses across firms.

Central bank communication has evolved significantly over the past two decades to address precisely this issue. Traditionally, monetary policy relied on rate changes and brief statements, leaving markets to infer the Fed's outlook and intentions. However, research has shown that without additional context, such signals can be prone to misinterpretation, which can induce market volatility and limit the effectiveness of policy (Blinder et al., 2008; Gürkaynak et al., 2019; Nakamura and Steinsson, 2018).

To reduce this ambiguity, the Federal Reserve introduced regular post-FOMC press conferences in 2011, initially held quarterly and, since January 2019, following every policy meeting. These conferences allow the Chair to explain the rationale behind decisions, outline the Committee's economic outlook, and clarify the expected path of future policy actions. The literature underscores the importance of these developments. Coibion et al. (2018) argue that effective communication helps correct public misperceptions about the economy and policy stance. More recent work by Granziera et al. (2025) suggests that credible communication can directly reduce uncertainty and stabilize private-sector expectations, even when traditional tools are constrained.

In this context, we posit that the introduction of FOMC press conferences serves not only to clarify policy but also to constrain the behavioral dispersion arising from CEOs' heterogeneous experiences. When communication is explicit and forward-looking, it may anchor interpretation more uniformly across decision-makers, reducing the room for idiosyncratic cognitive filtering and increasing the consistency of firm-level responses to monetary shocks.

H4: The non-monotonic effect of disaster exposure on firm investment response is weaker following monetary shocks accompanied by FOMC press conferences.

This set of hypotheses offers a framework for understanding how deeply personal experiences shape firm-level outcomes in response to macroeconomic forces, and how institutional design, especially central bank transparency, can limit behavioral distortions in monetary transmission.

3. Data

3.1. Firm-specific investment and control variables

Our proxy for the quarterly level of firm-level investment is the level of capital expenditures (CAPX), as in prior studies such as Gulen and Ion (2016), Ottonello and Winberry (2020), and Cloyne et al. (2023). We follow Cloyne et al. (2023) by scaling CAPX by the level of physical capital in the quarter preceding the monetary shock (net property, plant, and equipment). However, it is worth noting that our key insights do not change if CAPX is scaled by the pre-monetary-shock asset level. Additionally, we include various firm-specific metrics, including size, return on assets, and debt ratios. We also evaluate the proportion of the firm's intangibles relative to total assets. Following Peters and Taylor (2017) and Döttling and Ratnovski (2023), we define intangible investment as the sum of research and development (R&D) expenses and 30% of selling, general, and administrative (SG&A) expenses.

Our analysis also covers factors such as the CEO's age and compensation structure, as well as the firm's board size and independence (Eisenberg et al., 1998; Ferreira et al., 2011), in addition to vulnerability to takeovers (Cain et al., 2017). Therefore, the robustness of our findings after controlling for these elements further strengthens the case for the independent and significant impact of exposure to natural disasters—and the severity of that exposure—on the managerial response to monetary shocks.

For executive compensation, we prioritize two key metrics: Delta and Vega. Delta measures the total change in the CEO's compensation (in thousands of dollars) in response to a 1% increase in the firm's stock price. Vega, on the other hand, captures the change in compensation (in thousands of dollars) resulting from a 0.01 unit increase in stock volatility. The estimation of these sensitivities is based on the method outlined by

Guay (1999) and further discussed by Coles et al. (2013, 2006). The data for these parameters was obtained from Professor Lalitha Naveen's webpage.

Regarding board characteristics, we extend our analysis by incorporating a dummy variable that indicates whether the firm's board of directors is larger than the median board size in the BoardEx database. Additionally, we include another dummy variable to indicate whether the proportion of independent directors on the board exceeds the median level in BoardEx. To capture a firm's vulnerability to takeovers, we include a continuous measure of the firm-level takeover index developed by Cain et al. (2017). This index reflects the legal environment governing the firm, specifically laws that promote or facilitate takeovers. Given that the compensation- and governance-related variables are estimated on a yearly basis, we follow the approach of Edmans et al. (2017) by assigning to each observation in a given quarter the corresponding value at the end of the previous calendar year.

Our analysis also controls for macroeconomic conditions by focusing on two key variables: unemployment and price level. Both factors are closely monitored by the Fed, especially given its dual mandate of achieving high employment and ensuring price stability (Adra, 2022; Bernanke and Blinder, 1992). In turn, the price level is represented by the natural logarithm of the Consumer Price Index (CPI). Appendix 1 presents a detailed description and the source of each of our empirical variables.

3.2. CEO early-life experience data

We construct our sample from several different sources. With regard to CEOs' early-life disaster experience, we first collect the names, gender, and company information of CEOs of US listed firms for 1994–2019 from the Compustat Execucomp database. Following Bernile et al. (2017) and Chen et al. (2021), we retrieve CEOs' biographical data, including birth year and the place where they grew up (or were born), from the following sources: Marquis Who's Who Biographies through LexisNexis, NNDB, Wikipedia, obituary websites, university websites, Wallmine, official company websites, or Google searches as a last resort. Second, we create a database of US county-level natural disaster events, which comprises data on earthquakes, floods, landslides, volcanic eruptions, tsunamis, hurricanes, tornadoes, severe storms, and wildfires during the period 1900–2019.

Consistent with Bernile et al. (2017) and Chen et al. (2021), we begin by collecting all available county-level natural hazard records from SHELDUS™. SHELDUS™ contains records of the date, county location, injuries, and fatalities for each disaster event from 1960 to 2019. However, most of the CEOs in our sample were born before 1960. Therefore, we create a further set of disaster events equivalent to those in SHELDUS™ that covers the period 1900–1959. Table 1 shows the details of the data sources of U.S. county-level disaster events prior to 1960. In line with common practice, we exclude firms in the financial (SIC codes: 6000–6999) and utilities (SIC codes: 4900–4999) industries. We also exclude observations with insufficient information for measuring the CEO's early-life disaster experience or with missing financial data.

We measure CEOs' early-life disaster experience based on whether they experienced natural disaster events during their formative years. Consistent with Bernile et al. (2017) and Chen et al. (2021), we define the formative period as being between the ages of five and fifteen, since medical studies (e.g., Nelson (1993)) have reported that lasting childhood memories typically start forming at about age five, and that 'early childhood' memories come to an end around the age of fifteen.

Since different types of disasters are documented in distinct data sources, the primary sources also vary across event types. For instance, in the case of wildfires, we follow the approach of Bernile et al. (2017) and rely on two main sources: Wikipedia and GenDisasters.com. We first collect information from Wikipedia, followed by GenDisasters.com; therefore, we label these sources as (1) and (2), respectively. Both sources are considered equally important and are used in a complementary manner. If relevant details for a recorded event are unavailable from either source, we conduct a targeted web search (via Google) using the following parameters: "fire + state location + event year." Appendix 2 provides detailed documentation of the data sources for natural disasters, illustrated with links and examples.

Table 1: Data sources for US county-level disaster events prior to 1960

Disaster Event	Data Sources
Earthquakes, Floods, and Landslides	(1) United States Geological Survey (USGS) (2) National Geophysical Data Center (NGDC) (3) GenDisasters.com (4) Google searches: in the last instance
Volcanic Eruptions	(1) United States Geological Survey (USGS) (2) National Geophysical Data Center (NGDC) (3) Science Daily database (4) Google searches: in the last instance
Tsunamis	(1) National Geophysical Data Center (NGDC) (2) Tsunamis.findthedata.org (3) Google searches: in the last instance
Hurricanes, Tornadoes and Severe Storms	(1) National Climatic Data Center (NCDC) (2) National Weather Service (NWS) of the National Oceanic and Atmospheric Administration (3) GenDisasters.com (4) Google searches: in the last instance
Wildfires	(1) Wikipedia (2) GenDisasters.com (3) Google searches: in the last instance

To investigate whether the difference in sample periods (1994–2019 in our study versus 1992–2012 in Bernile et al., 2017) explains the disparity in disaster exposure rates (42% in our sample versus 66% in Bernile et al.), we truncate our sample to match Bernile et al.'s end year (2012) and observe that the proportion of CEOs with disaster exposure increases modestly from 42% to 52%. This indicates that temporal differences account for a small portion of the discrepancy. When we adopt the approach of Bernile et al. (2017) using birth counties rather than upbringing counties, the exposure rate rises to 64.5% — closely aligning with their reported 66%. This reveals that the primary source of variation stems from our methodological choice to focus on upbringing counties, which we argue more accurately captures formative experiences. This approach better reflects actual childhood environments, particularly for internationally mobile executives like AMD's Lisa Su (born in Taiwan, raised in the U.S. from age three).

We follow the methodology of Bernile et al. (2017) and Chen et al. (2021) to construct a measure of the severity of CEOs' early-life exposure to natural disasters. For each county-year, we compute the disaster fatality rate as the total number of fatalities from natural disasters divided by the county's population in that year. *DisasterSeverity* is then defined as the average fatality rate, per 10,000 inhabitants, in a CEO's county of birth during his or her formative years.

Based on *DisasterSeverity*, we present the severity of the disaster exposure using two variables. *Exposure* is a binary indicator equal to one if a CEO experiences an early-life disaster, and zero otherwise. Similarly, *Extreme Exposure* is a binary indicator equal to one if a CEO's early-life disaster severity falls within the top decile of the disaster-exposed CEOs (i.e., extreme exposure), and zero otherwise. Our panel regression analysis, discussed in detail in the following section, examines how these variables help us test our hypotheses in different specifications.

Imposing the restriction that all the required variables are available, we end up with a sample covering 447 firms and 13,807 firm-quarter observations. Overall, 36% of the firm-quarter observations are associated with the presence of a CEO who experienced a natural disaster in their formative years. Table 2 displays the descriptive statistics for the empirical variables across the full sample, as well as for the subsamples based on whether the CEO experienced a natural disaster during their formative years. The main takeaway from this table is that, overall, there are no strongly pronounced differences between firms led by CEOs with such experiences and those without.

Table 2: Descriptive statistics

This table presents descriptive statistics for the variables used in the paper. For each variable, we report the number of observations, mean, standard deviation, and the 10th, 25th, 50th, 75th, and 90th percentiles. Panel A includes these statistics for all observations. Panel B provides the statistics for observations with Disaster CEOs, and Panel C shows the statistics for observations without Disaster CEOs.

Variable	*N*	Mean	10th Pct	25th Pct	Median	75th Pct	90th Pct	SD
Panel A: All the sample								
CAPX	13,807	184.86	4.62	9.49	32.81	123.00	165.50	574.24
DisasterSeverity	13,807	0.10	0.00	0.00	0.00	0.02	0.07	1.05
Exposure	13,807	0.36	0.00	0.00	0.00	1.00	1.00	0.49
Extreme Exposure	13,807	0.04	0.00	0.00	0.00	0.00	0.00	0.16
PPENTQ	13,807	4311.39	78.35	226.20	835.44	2831.78	10150	14378.53
Assets	13,807	12877.54	215.71	1153.34	3630.00	11786.00	11845.00	30022.10
Shock	13,807	-0.01	-0.09	-0.05	-0.01	0.04	0.09	0.07
RoA	13,807	0.99	-0.62	0.87	2.04	3.74	3.78	4.31
Debt	13,807	56.11	27.86	42.39	56.78	69.01	81.24	25.95
IntangiblesRatio	13,807	0.09	0.02	0.04	0.08	0.13	0.18	0.08
Age	13,807	33.98	9.00	18.00	32.00	51.00	52.00	17.63
CEODelta	13,807	63.79	11.21	11.39	30.88	75.11	71.66	109.65
CEOVega	13,807	34.56	3.27	4.21	16.44	41.94	49.44	53.51
CEOWealth	13,807	4641.65	676.13	853.52	2213.40	5213.95	6378.96	9249.21
CEOAge	13,807	57.45	49.00	53.00	57.00	62.00	66.00	7.11
BoardIndependence	13,807	0.59	0.00	0.00	1.00	1.00	1.00	0.49
BigBoard	13,807	0.61	0.00	0.00	1.00	1.00	1.00	0.49
TakeoverIndex	13,807	0.20	0.08	0.12	0.18	0.28	0.29	0.10
Unemployment	13,807	6.26	4.43	5.00	5.70	7.50	9.24	1.74
CPI	13,807	204.75	177.82	185.10	205.29	220.47	236.01	20.66
Panel B: Subsample with Disaster CEOs								
CAPX	5,840	196.42	2.86	8.96	33.00	142.00	425.00	655.34
DisasterSeverity	5,840	0.24	0.01	0.01	0.03	0.07	0.18	1.60
Extreme Exposure	5,840	0.10	0.00	0.00	0.00	0.00	1.00	0.25
PPENTQ	5,840	4752.84	62.55	222.30	875.00	3140.60	10227.74	17739.86
Assets	5,840	13886.23	459.56	1225.64	4153.28	12545.50	39342	32972.26
Shock	5,840	-0.01	-0.09	-0.05	-0.01	0.04	0.09	0.06
RoA	5,840	1.04	-0.69	1.10	2.34	3.02	3.75	4.77
Debt	5,840	55.23	27.19	42.65	55.96	68.00	81.76	21.34
IntangiblesRatio	5,840	0.10	0.02	0.04	0.08	0.14	0.18	0.08
Age	5,840	33.91	16.00	18.00	31.00	52.00	59.00	17.62
CEODelta	5,840	72.12	3.32	13.21	32.91	86.36	200.21	104.60
CEOVega	5,840	41.36	0.59	5.88	20.10	48.18	111.51	63.37
CEOWealth	5,840	5170.90	240.11	953.74	2348.54	6079.86	14154.52	7963.40
CEOAge	5,840	58.35	50.00	54.00	58.00	63.00	66.00	6.67
BoardIndependence	5,840	0.57	0.00	0.00	1.00	1.00	1.00	0.50
BigBoard	5,840	0.65	0.00	0.00	1.00	1.00	1.00	0.48
TakeoverIndex	5,840	0.21	0.11	0.13	0.19	0.28	0.35	0.10
Unemployment	5,840	6.17	4.40	5.00	5.70	7.30	9.30	1.72
CPI	5,840	202.24	177.40	183.70	201.80	217.46	231.22	20.18
Panel C: Subsample without Disaster CEOs								
CAPX	7,967	176.38	3.43	9.92	32.60	112.00	405.00	506.46
PPENTQ	7,967	3987.69	86.08	230.38	806.06	2635.18	10071.23	11285.49
Assets	7,967	12138.14	520.33	1102.79	3354.20	10982.00	30739.00	27639.20
Shock	7,967	-0.01	-0.11	-0.05	-0.01	0.04	0.09	0.07
RoA	7,967	1.02	-0.57	1.00	1.11	3.06	3.69	3.61
Debt	7,967	57.21	28.30	42.47	57.65	70.41	80.66	27.25
IntangiblesRatio	7,967	0.09	0.01	0.03	0.08	0.13	0.18	0.08
Age	7,967	34.03	16.00	18.00	33.00	51.00	59.00	17.65
CEODelta	7,967	57.68	2.19	10.41	28.98	68.65	140.67	112.82
CEOVega	7,967	29.57	0.00	3.23	14.46	38.05	81.12	44.28
CEOWealth	7,967	4253.69	164.89	759.60	2102.55	4842.10	9789.63	10071.03
CEOAge	7,967	56.80	48.00	52.00	57.00	61.00	65.00	7.35
BoardIndependence	7,967	0.61	0.00	0.00	1.00	1.00	1.00	0.49
BigBoard	7,967	0.58	0.00	0.00	1.00	1.00	1.00	0.49
TakeoverIndex	7,967	0.20	0.10	0.12	0.18	0.28	0.35	0.10
Unemployment	7,967	6.33	4.50	5.00	5.70	7.80	9.30	1.76
CPI	7,967	206.59	177.70	186.30	208.55	225.75	23.17	20.81

3.3. Monetary Policy Shocks

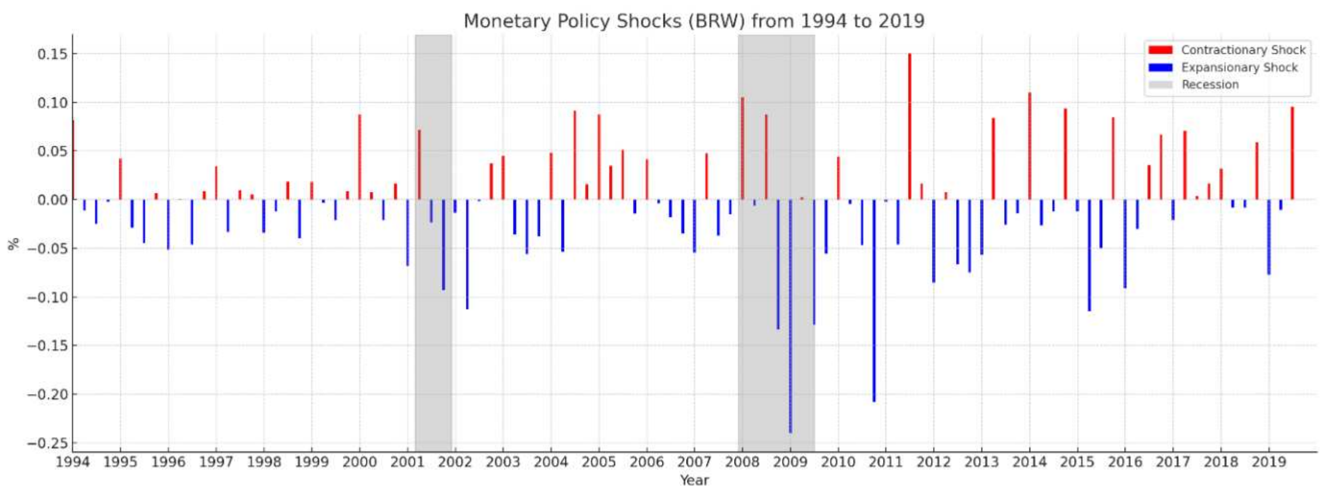
We utilize the monetary shock series estimated by Bu et al. (2021)—henceforth BRW—to measure the stance of U.S. monetary policy. The BRW methodology leverages changes across the full maturity spectrum of Treasury yields on FOMC announcement days and assigns greater weight to yields that are more responsive to policy shocks. This design allows for a cleaner isolation of monetary surprises by minimizing contamination from information effects or endogenous macroeconomic news.

The series is constructed using a two-step procedure inspired by Fama and MacBeth (1973). First, the authors estimate the responsiveness of zero-coupon yields to changes in the two-year yield, which is treated as fully policy-sensitive. In the second step, they regress observed changes in bond yields on the estimated sensitivities to extract a measure of unanticipated monetary policy changes. This approach produces a unified measure that spans both conventional and unconventional monetary regimes—including surprises related to rate changes, forward guidance, and asset purchase programs. The BRW series is particularly well suited for our analysis. It does not rely on internal Fed documents or macroeconomic forecasts (as in Romer and Romer (2004)), nor does it depend on high-frequency identification techniques (e.g., Gertler and Karadi (2015)).

Figure 1 displays the quarterly aggregated BRW shocks from 1994 to 2019. Bars above the zero line (in red) denote contractionary monetary policy surprises, while those below the line (in blue) represent expansionary shocks. Shaded areas mark NBER-designated recession periods. The figure aligns closely with conventional narratives of U.S. monetary history. The mid-1990s featured measured tightening aimed at maintaining price stability amid a growing economy. In the early 2000s, the Fed shifted to an accommodative stance following the bursting of the dot-com bubble and the September 11 attacks, attempting to cushion the economy. This was followed by a tightening cycle from 2004 to 2006 as the Fed sought to moderate overheating in the housing market. The global financial crisis of 2007–2009 brought a dramatic policy shift. The Fed cut rates to near zero and implemented large-scale asset purchases, marking the beginning of the era of unconventional monetary policy. Through much of the 2010s, the Fed maintained an accommodative stance to support a sluggish recovery. A notable episode occurred in 2013—commonly referred to as the "taper tantrum"—when then-Chairman Ben Bernanke signaled a potential reduction in asset purchases. This triggered a sharp market reaction, which the BRW series captures as a contractionary surprise despite no immediate rate hike. These episodes illustrate the breadth of monetary innovations and the role of communication in shaping expectations.

Our empirical analysis explicitly distinguishes between standardized expansionary and contractionary shocks. The variable *Expansion* refers to the standardized value of negative shocks, calculated as the absolute value of the negative shock series (blue bars in Figure 1) divided by the standard deviation of all shocks in the sample. In turn, the variable *Contraction* refers to the positive shocks (red bars in Figure 1), standardized in the same way.

Figure 1: The quarterly levels of monetary shocks



Note: This graph presents the quarterly aggregated monetary shock series of Bu et al. (2021).

4. Results and Discussion

4.1. Baseline results

We assess the impact of monetary shocks on firm investments by using the local projection approach of Jordà et al. (2020), as used in other studies such as Ottonello and Winberry (2020). In Table 3, we estimate the specification:

$$\left(\frac{CAPX_{t+h}}{PPENTQ_{t-1}}\right) \times 100 = \beta_1^h.Expansion_t + \beta_2^h.Expansion_t \times Exposure_{i,t} + \beta_3^h.Expansion_t \times ExtremeExposure_{i,t} + \beta_4^h.Contraction_t + \beta_5^h.Contraction_t \times Exposure_{i,t} + \beta_6^h.Contraction_t \times ExtremeExposure_{i,t} + f(Control\ Factors_{t,i}) + \gamma_i^h + \epsilon_{i,t+h} \quad (1)$$

where we track the growth in the quarterly capital investment (CAPX) for firm *i,* scaled by the firm's assets at the quarter prior to the monetary shock, over an eight-quarter horizon ($h = 1, 2, \ldots, 8$). $Expansion_t$ and $Contraction_t$ are our standardized expansionary and contractionary shocks, respectively.

In this specification, β_1^h measures the investment effect of a one–standard–deviation expansionary monetary shock in quarter h after the shock. β_2^h captures the additional effect when the CEO has been exposed to a natural disaster, while β_3^h measures the further incremental effect when that exposure was to an extreme disaster. Accordingly, $\beta_1^h + \beta_2^h$ represents the total investment effect of an expansionary shock under a CEO with moderate disaster exposure, and $\beta_1^h + \beta_2^h + \beta_3^h$ represents the effect when the CEO's disaster exposure is extreme.

Similarly, β_4^h measures the investment effect of a one–standard–deviation contractionary monetary shock in quarter h. β_5^h captures the additional effect when the CEO has been exposed to a natural disaster, while β_6^h measures the further incremental effect when that exposure was to an extreme disaster. Thus, $\beta_4^h + \beta_5^h$ represents the total effect of a contractionary shock under a CEO with moderate disaster exposure, and $\beta_4^h + \beta_5^h + \beta_6^h$ represents the effect when the exposure is extreme.

If our H1 and H2 hold, we would expect β_2^h and β_5^h to be positive and statistically significant, indicating that CEOs with disaster exposure have a propensity to commit to maintaining investments in response to both expansionary and contractionary shocks. To emphasize that these effects are driven by moderate rather than extreme exposure (as posited by H1 and H2), we would expect β_3^h and β_6^h to be negative and significant, showing that the propensity to commit to investment is, at least partly, offset when the exposure to natural disasters is extreme.

The specification controls for the firm- and economy-specific factors discussed earlier, including firm size, return on assets, intangible assets, capital stock, firm age, executive compensation variables, takeover index, board size and independence, as well as macroeconomic conditions such as the unemployment rate and the price index. It also controls for firm fixed effects γ_i^h. $\epsilon_{i,t+h}$ is a white-noise error term. In our estimations, we cluster standard errors at the firm level. However, in alternative estimations we follow two approaches: (a) clustering at the sector level, and (b) using a joint clustering approach as in Gulen and Ion (2016) and Ottonello and Winberry (2020) by clustering by sector (two-digit SIC codes) and quarter. Our key empirical insights do not change under these alternative approaches.

The evidence in Table 3 strongly supports H1 and H2. Consider first the case of expansionary monetary shocks. Starting from the second quarter after the shock, firms led by CEOs with exposure to moderate natural disasters increase investment significantly more than firms led by CEOs with no such exposure. This additional effect is offset when the CEO's exposure is extreme. For example, in the second quarter, a firm whose CEO has no disaster exposure responds to a one–standard–deviation shock by increasing capital investment by the equivalent of 0.21% of pre-shock capital assets (coefficient of *Expansion*). When the CEO has moderate disaster exposure, this effect more than triples, with the total increase given by 0.68% (=0.21% + 0.47%, the coefficient of *Expansion* plus the coefficient of $Expansion \times Exposure$ from moderate exposure). However, consistent with H2, extreme disaster exposure cancels this amplification: the coefficient of $Expansion \times Extreme\ Exposure$ is nearly equal in magnitude but opposite in sign to that of $Exposure$. A Wald test confirms that the null hypothesis of equal and opposite effects cannot be rejected ($p = 0.82$).

Equivalent patterns emerge for contractionary monetary shocks. For instance, in the second quarter after such a shock, firms led by CEOs without disaster exposure reduce capital investment by approximately 0.52%. In contrast, when the CEO has moderate exposure to natural disasters, this reduction is more than offset. This offsetting effect, in turn, fades when the exposure to natural disasters is extreme where the reduction in investment increases by 0.67%.

To capture the aggregate effect, the final column of Table 3 reports results using the sum of all CAPX over the eight quarters following the shock, scaled by pre-shock assets. After a one–standard–deviation expansionary shock, firms with no disaster exposure spend the equivalent of about 2% of pre-shock assets on capital investments. When the CEO's exposure is moderate, this effect roughly doubles, consistent with H1. In contrast, under extreme exposure, the investment response is statistically indistinguishable from that of firms with no disaster exposure—indicating that the heightened responsiveness is concentrated among CEOs with moderate exposure. For contractionary shocks, firms where the CEO had no disaster exposure reduce investments by about 2.6%. This decline is largely offset when the CEO has moderate disaster exposure. As predicted, these additional effects disappear when the CEO's exposure is extreme. Appendix 3 supports the robustness of our conclusions by using the 80th percentile cut-off within the observations covering CEOs who experienced natural disasters in their formative years.

In Appendix 4, we estimate the effects of monetary shocks on firm-level investment separately for three groups of firm-quarter observations: (1) firms led by CEOs with no disaster exposure, (2) firms led by CEOs with moderate disaster exposure, and (3) firms led by CEOs with extreme disaster exposure. The results from these three estimations confirm the non-monotonic pattern observed in the main analysis—where moderate disaster exposure is associated with greater investment increases following expansionary shocks and smaller investment reductions in response to contractionary shocks.

While the investment response to monetary shocks is highly consequential for firm outcomes, the financing and capital structure implications are also important to examine. In Appendix 5, we analyze how CEO disaster exposure influences firms' capital structure. CEOs with moderate disaster exposure are more likely to shift towards a more debt-based capital structure in response to both expansionary and contractionary monetary shocks. These tendencies weaken under extreme exposure. The increased relative reliance on debt financing is a double-edged sword: it signals confidence in achieving shareholder gains without diluting ownership but also raises concerns about financial fragility. Combined with our investment-based results, these findings suggest that moderately exposed CEOs display a higher overall risk appetite than peers who either lack or have extreme disaster experience.

Table 3: Initial Local Projection Estimations

This table presents the results of our initial local projection estimates based on Equation (1) for horizons (h) ranging from 1 to 8. The dependent variables in the first eight columns represent the quarterly level of capital expenditures, as a percentage of the firm's capital assets value in the quarter prior to the monetary shock. In the last column, the dependent variable is the sum of all CAPX over the eight-quarter horizon, as a percentage of the pre-shock firm-level capital assets. Our models examine the effects of monetary shocks, as identified by the Bu et al. (2021) series. These models analyze how the non-monotonic relationship between the exposure to natural disasters and risk-taking shapes the investment response to monetary shocks. All the variables used in the estimations are presented in Appendix 1. Standard errors are clustered at the firm level; however, clustering at the sector or sector-quarter level does not alter the main inferences. Significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively.

Variable\Horizon	$h = 1$	$h = 2$	$h = 3$	$h = 4$	$h = 5$	$h = 6$	$h = 7$	$h = 8$	*Sum*
Expansion	0.007	0.210***	0.512***	0.264***	0.221***	0.294***	0.545***	0.105	2.136***
	(0.067)	(0.065)	(0.107)	(0.076)	(0.072)	(0.057)	(0.066)	(0.085)	(0.269)
$Expansion \times Exposure$	-0.005	0.471***	0.332***	0.252**	0.453***	0.346***	0.486***	0.183	2.268***
	(0.140)	(0.102)	(0.153)	(0.128)	(0.146)	(0.114)	(0.129)	(0.208)	(0.751)
$Expansion \times$ *Extreme Exposure*	-0.223	-0.469**	-0.524***	-0.316***	-0.547***	-0.619***	-0.559***	-0.497*	-2.957***
	(0.212)	(0.257)	(0.194)	(0.139)	(0.208)	(0.235)	(0.213)	(0.266)	(1.226)
Contraction	0.059	-0.523***	-0.626***	-0.304***	-0.730***	-0.252***	0.125	-0.550***	-2.616***
	(0.070)	(0.064)	(0.095)	(0.076)	(0.079)	(0.079)	(0.090)	(0.065)	(0.401)
$Contraction \times Exposure$	0.197	0.524***	0.716***	0.225	0.594***	0.290	0.438***	0.453	2.005***
	(0.218)	(0.119)	(0.136)	(0.159)	(0.139)	(0.188)	(0.167)	(0.300)	(0.706)
$Contraction \times$ *Extreme Exposure*	0.003	-0.670***	-0.914***	-0.627**	-0.606**	-0.155	0.101	-0.743	-2.442***
	(0.318)	(0.259)	(0.238)	(0.286)	(0.305)	(0.303)	(0.305)	(0.459)	(0.736)
Exposure	-0.169	-0.017	-0.152	0.053	0.056	0.024	0.107	0.234	0.213
	(0.331)	(0.335)	(0.361)	(0.339)	(0.389)	(0.394)	(0.427)	(0.479)	(2.715)
Extreme Exposure	1.979**	2.173**	2.237*	2.753**	2.362*	2.453*	2.193	2.629**	18.737*
	(0.916)	(1.020)	(1.345)	(1.374)	(1.380)	(1.442)	(1.427)	(1.358)	(10.012)
$\ln(Assets)$	3.341***	3.796***	4.272***	4.180***	3.614***	3.336***	3.038***	3.134***	29.098***
	(0.653)	(0.670)	(0.755)	(0.816)	(0.801)	(0.823)	(0.874)	(0.982)	(5.999)
Debt	-0.001	-0.011	-0.015	-0.017	-0.025**	-0.032***	-0.035***	-0.032**	-0.171*
	(0.014)	(0.012)	(0.013)	(0.012)	(0.012)	(0.012)	(0.014)	(0.014)	(0.095)
IntangiblesRatio	-5.439	-5.153	4.331	3.389	3.895	0.893	-1.647	-2.596	0.204
	(5.187)	(5.172)	(4.631)	(4.580)	(4.981)	(5.571)	(4.770)	(5.649)	(32.690)
RoA	0.136***	0.008	0.107***	0.125***	0.113***	0.074**	0.115***	0.080***	0.761***
	(0.029)	(0.114)	(0.033)	(0.028)	(0.029)	(0.031)	(0.034)	(0.031)	(0.238)
$ln(Age)$	-2.840**	-1.733	-2.194	-3.662**	-1.746	0.398	0.473	-1.779	-14.053
	(1.407)	(1.579)	(1.794)	(1.851)	(1.720)	(1.631)	(1.773)	(1.931)	(12.470)
$ln(PPENTQ)$	-4.741***	-5.591***	-6.008***	-6.473***	-6.567***	-6.813***	-6.895***	-7.312***	-50.291***
	(0.593)	(0.697)	(0.790)	(0.820)	(0.846)	(0.879)	(0.879)	(0.894)	(6.145)
$ln(CPI)$	4.690***	2.764	1.192	4.755**	1.879	-1.068	-1.228	2.811	16.377
	(1.903)	(2.128)	(2.376)	(2.383)	(2.316)	(2.350)	(2.431)	(2.699)	(17.359)
Unemployment	-0.271***	-0.216***	-0.113**	-0.047	0.055	0.125**	0.173***	0.183***	-0.110
	(0.042)	(0.045)	(0.049)	(0.049)	(0.050)	(0.053)	(0.051)	(0.051)	(0.340)
CEOAge	-0.017	-0.010	-0.006	-0.003	0.008	0.016	0.019	0.027	0.043
	(0.019)	(0.021)	(0.020)	(0.020)	(0.019)	(0.020)	(0.021)	(0.021)	(0.153)
$ln(CEODelta)$	0.603	0.539	0.392	0.382	0.368	0.159	-0.194	-0.355	2.057
	(0.426)	(0.454)	(0.433)	(0.439)	(0.479)	(0.516)	(0.519)	(0.510)	(3.386)
$ln(CEOVega)$	-0.108	-0.145	-0.128	-0.197*	-0.163	-0.111	-0.015	0.002	-0.822
	(0.100)	(0.117)	(0.115)	(0.109)	(0.114)	(0.124)	(0.130)	(0.122)	(0.895)
$ln(CEOWealth)$	-0.226	-0.147	-0.026	0.017	0.031	0.190	0.402	0.545	0.624
	(0.367)	(0.400)	(0.376)	(0.379)	(0.409)	(0.430)	(0.433)	(0.438)	(2.923)
TakeoverIndex	-3.746	-2.404	0.072	-0.835	1.130	2.134	2.445	0.689	-0.394
	(2.429)	(2.405)	(2.037)	(1.870)	(1.648)	(1.690)	(1.703)	(1.835)	(12.167)
LargeBoard	-0.076	-0.051	-0.062	-0.007	-0.051	-0.057	-0.070	-0.032	-0.481
	(0.212)	(0.225)	(0.227)	(0.216)	(0.228)	(0.226)	(0.231)	(0.244)	(1.696)
BoardIndependence	-0.055	-0.037	-0.158	-0.214	-0.156	-0.071	-0.247	-0.276	-1.197
	(0.174)	(0.198)	(0.209)	(0.240)	(0.252)	(0.256)	(0.263)	(0.301)	(1.626)
Firm Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	11741	11669	11598	11529	11451	11371	11291	11213	11158
R^2	0.11	0.11	0.11	0.12	0.12	0.12	0.13	0.14	0.29

4.2. The effects of financial constraints, board independence, and MPU on investment heterogeneity

Table 4 examines how CEOs' disaster exposure shapes firm investment responses to monetary policy shocks, focusing on three moderating factors: financial constraints, board independence, and monetary policy uncertainty. The table tests whether the non-monotonic effects of disaster exposure—stronger reactions with exposure to moderate disasters and heightened caution at extreme exposure—are most evident under conditions that make the firm more vulnerable to monetary policy (in the case of financially constrained firms) and amplify managerial influence over investment decisions.

The evidence is consistent with three main patterns. First, the non-monotonic effects of disaster exposure are more pronounced for financially constrained firms, whose investment activity depends most heavily on external financing conditions (Durante et al., 2022; Ottonello and Winberry, 2020). We follow Cloyne et al. (2023) by considering firms that are both non-dividends-paying and relatively young to be the most financially constrained, and hence the most vulnerable to monetary policy. In these firms, the reaction to monetary shocks is considerably larger than our baseline estimate. Constrained firms led by moderately exposed CEOs expand investment substantially more than their unconstrained counterparts (7% (coefficient of $Expansion$ added to the coefficient of $Expansion \times Exposure$) vs. 2.56%). As in the case of our baseline estimates, we find these additional effects to be offset when the CEO was exposed to extreme natural disasters. In the case of monetary contractions, the propensity for non-exposed CEOs to cut investments by 3.4% is largely offset in the presence of CEOs with moderate exposure. Also, during monetary contractions, constrained firms led by CEOs with extreme disaster exposure cut investment more sharply (-6.4%), suggesting that these leaders prioritize stability over risk-taking when financing conditions tighten.

Second, strong board independence appears to weaken these behavioral effects. In firms with highly independent boards, the investment amplification associated with moderate disaster exposure is smaller, and the excessive caution linked to extreme exposure is also reduced. This pattern fits with the idea that independent boards constrain extreme managerial tendencies and ensure that investment decisions align with broader strategic objectives rather than reflect the CEO's personal risk perceptions

(Laux, 2008; Masulis and Zhang, 2019). Emphasizing the role of governance structure, the results further show that the influence of disaster exposure is especially prominent and consistent in firms with relatively less independent boards. Such lack of independence provides CEOs with more autonomy and fewer checks, enabling bolder capital adjustments in response to external shocks. By contrast, independent boards impose stronger oversight, limiting the extent to which personal experiences, such as disaster exposure, shape firm-level financial decisions.

Third, the results align with the view that high monetary uncertainty, using the newspaper-based Baker et al. (2016) monetary policy uncertainty index, amplifies both the aggressive investment behavior of moderately exposed CEOs and the restrained approach of those with extreme exposure. Under conditions of low monetary policy uncertainty, moderately exposed CEOs act more decisively following both expansionary and contractionary shocks, consistent with interpreting these environments as strategic windows that require rapid commitment. In contrast, highly exposed CEOs respond with greater caution, consistent with the real options view that heightened uncertainty increases the value of delaying investment (Dixit and Pindyck, 1994).

Table 4: Local Projection Estimations Across Multiple Characteristics

This table reports six models examining how total CAPX expenditures, expressed as a percentage of pre-shock capital stock, respond to monetary policy shocks. Column (1) focuses on financially constrained firms, defined as those that paid no dividends in the past two years and fell in the bottom half of the sample in terms of firm age at the time of the shock. Column (2) presents results for firms that do not meet both conditions. Column (3) restricts the sample to firms with above-median board independence, measured by the percentage of independent directors in BoardEx, while Column (4) covers firms with relatively less independent boards. Column (5) reports results for periods of high monetary policy uncertainty, defined as observations in the top quartile of the Monetary Policy Uncertainty (MPU) index at the time of the shock, whereas Column (6) covers all remaining observations. The models cover the same control variables as in Table 3. All the variables used in the estimations are presented in Appendix 1. Standard errors are clustered at the firm level; however, clustering at the sector or sector-quarter level does not alter the main inferences. Significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively.

Column	(1)	(2)	(3)	(4)	(5)	(6)
Group	Financially Constrained	Non-Financially Constrained	Board Independence	No Board Independence	High MPU	Low MPU
Independent Variable\Dependent Variable	*Sum*	*Sum*	*Sum*	*Sum*	*Sum*	*Sum*
Expansion	2.559***	1.030***	-0.761***	2.704***	2.279**	-0.831***
	(0.668)	(0.331)	(0.274)	(0.410)	(1.154)	(0.257)
Expansion × *Exposure*	4.520***	0.078	0.722	4.504***	5.415***	0.982
	(1.529)	(0.737)	(0.581)	(1.056)	(1.578)	(0.665)
Expansion × *Extreme Exposure*	-4.236***	-1.913	-2.041	-4.426***	-5.591***	-3.178*
	(1.062)	(1.474)	(1.283)	(1.216)	(3.061)	(1.679)
Contraction	-3.400***	-0.716**	0.250	-1.907***	-3.755***	0.745
	(1.100)	(0.353)	(0.325)	(0.738)	(0.665)	(0.595)
Contraction × *Exposure*	3.102***	1.111*	1.220	3.363***	3.903***	2.013
	(1.071)	(0.681)	(0.763)	(1.035)	(1.671)	(1.244)
Contraction × *Extreme Exposure*	-3.013***	-0.648	-1.993	-3.465***	-3.416***	-1.589
	(0.695)	(1.067)	(1.939)	(1.490)	(0.668)	(1.764)
Control Factors	Yes	Yes	Yes	Yes	Yes	Yes
Firm Effects	Yes	Yes	Yes	Yes	Yes	Yes
N	3526	7632	6583	4575	2790	8368
R^2	0.41	0.25	0.32	0.30	0.30	0.31

4.3. The effects on forced CEO turnover

The results in H1 and H2 suggest that CEOs who were exposed to moderate natural disasters respond to monetary policy shocks with unusually strong investment commitments—both when policy is expansionary and when it is contractionary. While such behavior could reflect either heightened agility in seizing opportunities or a greater propensity to take risk, the distinction is critical for interpreting the mechanism behind our findings. To disentangle these possibilities, H3 examines whether the increased investment response reflects a broader willingness to accept higher firm-level risk, and whether this risk-taking carries consequences for the CEO's own career.

H3 examines whether the risks are perceived to be large enough to influence the CEO's career, by positing that the excess risk-taking of moderately exposed CEOs increases their likelihood of being dismissed. We use the forced CEO turnover dataset publicly available from Professor Florian Peters. For the part of our sample that was matched the Peters data, we find that 3.5% of the CEOs experienced forced dismissal. In Table 5, the dependent variable in the logit model, *Forced Turnover*, equals 1 if the CEO is forced out within two years of the monetary policy shock and 0 otherwise.

The results support H3. CEOs exposed to moderate natural disasters face a significantly higher probability of forced turnover following monetary shocks, indicating that shareholders and boards perceive their aggressive investment responses as crossing acceptable risk thresholds. To gauge the economic magnitude of this effect, we re-estimate the specification using a linear probability model to retrieve the marginal effects. For CEOs exposed to moderate natural disasters, on average, a one-standard-deviation expansionary (or contractionary) shock increases the probability of forced turnover by about 3%, an effect that is offset when the exposure is to extreme natural disasters.[2]

[2] We refrain from characterizing the behavior of CEOs who respond more aggressively to monetary policy shocks as either "good" or "bad," or from making any claims about the optimality of such decisions. While higher investment following expansionary monetary shocks may expose firms to increased short-term risk, it could also, under certain circumstances, reflect forward-looking or opportunity-seizing strategies. Our focus is therefore on documenting the observable consequences of these behaviors—particularly the higher likelihood of forced turnover—rather than evaluating their normative or economic desirability. The evidence suggests that such behavior, at least on average, extends beyond the risk appetite of the board, and we stop short of making a normative or optimality-based judgment of these dynamics.

Table 5: Monetary Shocks and Forced CEO Turnover

This table examines whether the increased investment response reflects a broader willingness to accept higher firm-level risk, and whether this risk-taking carries consequences for the CEO's career. Column (1) employs the logit model while Column (2) uses the linear probability model. The models cover the same control variables as those in Table 3. All the variables used in the estimations are presented in Appendix 1. Standard errors are clustered at the firm level; however, clustering at the sector or sector-quarter level does not alter the main inferences. Significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively.

Column	(1)	(2)
Independent Variable\Dependent Variable	$Forced\ CEO = 1$ $Otherwise = 0$	$Forced\ CEO = 1$ $Otherwise = 0$
$Expansion$	-0.159***	-0.201***
	(0.054)	(0.063)
$Expansion \times Exposure$	0.381***	0.374***
	(0.071)	(0.082)
$Expansion \times\ Extreme\ Exposure$	-0.858**	-0.614*
	(0.378)	(0.360)
$Contraction$	-0.040	-0.063
	(0.064)	(0.071)
$Contraction \times Exposure$	0.321***	0.315***
	(0.099)	(0.114)
$Contraction \times\ Extreme\ Exposure$	-0.242***	-0.269***
	(0.086)	(0.091)
Control Factors	Yes	Yes
N	9744	9744
R^2	0.07	0.11

4.4. The effects of Fed communication on investment heterogeneity

Building on our prior findings regarding how CEOs' early-life exposure to natural disasters shapes their firms' investment responses to monetary policy shocks, we now examine the role of central bank communication in moderating this behavioral heterogeneity. Our theoretical motivation rests on the observation that individual traits have greater influence under conditions of uncertainty. When the macroeconomic environment is ambiguous, CEOs rely more heavily on personal heuristics and formative experiences to interpret policy signals and make decisions. In our setting, this means that early-life exposure to disasters becomes a more potent influence on firm behavior precisely when policy signals are less clear.

Effective central bank communication—by clarifying intentions, reducing ambiguity, and anchoring expectations—can mitigate this effect. Over the past decade, the Federal Reserve has increasingly embraced transparency and forward guidance as essential tools of monetary policy (Blinder et al., 2008; Campbell et al., 2017, 2012). The introduction of post-FOMC press conferences in 2011, held quarterly at first and after every meeting since 2019, marks a significant institutional shift aimed at enhancing clarity and predictability. These press conferences provide detailed rationales for decisions and offer guidance about the future path of policy, reducing room for divergent interpretations.

The results in Table 6 provide strong support for the view that enhanced communication by the Federal Reserve helps standardize firms' investment responses to monetary shocks. The non-monotonic pattern documented in our earlier results appears only in the subsample of monetary shocks that were not associated with a press conference (Panel A). In this setting, the evidence shows that CEOs with moderate disaster exposure drive a pronounced investment response: following monetary expansions, total investment rises by up to 7% relative to pre-shock capital stock, while during contractionary periods these same CEOs substantially limit the tendency to cut investment, in some cases even sustaining or modestly increasing capital spending.

By contrast, Panel B, which captures shocks announced during quarters with FOMC press conferences, shows no comparable heterogeneity. The investment responses in this subsample do not vary systematically with CEOs' disaster exposure, indicating that clear and transparent communication by the central bank reduces the influence of personal traits on firm-level reactions. Taken together, these results highlight the important role of Fed communication in dampening behavioral differences across firms and promoting more uniform responses to monetary policy.

Table 6: The effects of Fed communication on standardizing the investment response

This table reports the results of our baseline local projection estimates from Equation (1) for quarters one to eight after the shock. Panel A presents firm-quarter observations where the monetary shock was not associated with a press conference, while Panel B presents cases where the shock occurred in a quarter that included a press conference. The dependent variables in columns (1)–(8) measure quarterly growth in capital expenditures relative to the capital stock at the time of the shock. The final column reports the cumulative sum of capital expenditures over the eight quarters following the shock, scaled by pre-shock capital stock. Our models examine the effects of monetary shocks, as identified by the Bu et al. (2021) series. The reported models analyze how the non-monotonic relationship between exposure to natural disasters and risk-taking shapes the investment response to monetary shocks. All the variables used in the estimations are presented in Appendix 1. Standard errors are clustered at the firm level; however, clustering at the sector or sector-quarter level does not alter the main inferences. Significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively.

Panel A: Fed shocks without press conferences									
Variable\Horizon	$h = 1$	$h = 2$	$h = 3$	$h = 4$	$h = 5$	$h = 6$	$h = 7$	$h = 8$	*Sum*
Expansion	0.011	0.571***	0.827***	0.904***	0.442***	0.298***	0.574***	-0.038	3.535***
	(0.066)	(0.060)	(0.117)	(0.085)	(0.080)	(0.063)	(0.077)	(0.091)	(0.284)
Expansion × Exposure	0.042	0.855***	0.931***	0.833***	0.548***	0.734***	0.403***	0.149	3.782***
	(0.119)	(0.101)	(0.156)	(0.132)	(0.151)	(0.114)	(0.138)	(0.217)	(0.764)
Expansion × Extreme Exposure	-0.279	-0.850***	-0.778***	-1.276***	-0.423	-0.571***	-0.664***	-0.501*	-3.813***
	(0.186)	(0.239)	(0.186)	(0.211)	(0.231)	(0.204)	(0.213)	(0.278)	(1.250)
Contraction	0.095	-0.095	0.312**	-0.484***	0.063	-0.209**	0.314**	-0.369***	-3.948***
	(0.102)	(0.113)	(0.130)	(0.124)	(0.121)	(0.108)	(0.132)	(0.107)	(0.593)
Contraction × Exposure	0.083	-0.118	0.095	0.420**	0.446***	0.233	0.441**	0.355*	3.908***
	(0.177)	(0.165)	(0.180)	(0.211)	(0.180)	(0.190)	(0.215)	(0.192)	(0.868)
Contraction × Extreme Exposure	0.077	-0.367	0.217	-0.720**	0.009	-0.154	0.197	-0.573	-3.521***
	(0.358)	(0.289)	(0.311)	(0.340)	(0.416)	(0.330)	(0.332)	(0.485)	(1.435)
Control Factors	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	8260	8211	8162	8111	8052	7995	7938	7881	7849
R^2	0.10	0.09	0.11	0.11	0.11	0.11	0.12	0.12	0.27
Panel B: Fed shocks with press conferences									
Variable\Horizon	$h = 1$	$h = 2$	$h = 3$	$h = 4$	$h = 5$	$h = 6$	$h = 7$	$h = 8$	*Sum*
Expansion	-0.051	0.283*	0.267**	-0.086	-0.085	0.801**	0.281*	0.078	1.492***
	(0.121)	(0.148)	(0.115)	(0.132)	(0.140)	(0.205)	(0.147)	(0.147)	(0.346)
Expansion × Exposure	-1.349	0.562	0.695	0.513	-1.160	1.076	0.349	1.167	1.864
	(0.906)	(0.512)	(1.045)	(0.760)	(1.560)	(1.369)	(0.442)	(1.152)	(2.555)
Expansion × Extreme Exposure	1.457	-1.398**	-0.534	0.289	1.790	-1.264	0.750	0.410	1.964
	(0.942)	(0.606)	(1.462)	(0.905)	(1.625)	(1.552)	(0.589)	(1.141)	(3.302)
Contraction	-0.024	-0.641***	-0.626***	0.100	0.080	-0.734***	0.063	0.118*	-1.806***
	(0.078)	(0.080)	(0.063)	(0.070)	(0.084)	(0.118)	(0.087)	(0.069)	(0.212)
Contraction × Exposure	-0.232	-0.262	0.360	-0.245	-0.916	0.378	0.120	0.963	0.069
	(0.635)	(0.248)	(0.258)	(0.197)	(0.768)	(0.446)	(0.306)	(1.170)	(1.749)
Contraction × Extreme Exposure	0.476	0.280	-0.022	0.018	1.452	-0.119	0.186	-0.714	1.556
	(0.663)	(0.272)	(0.382)	(0.201)	(0.911)	(0.575)	(0.427)	(1.234)	(2.312)
Control Factors	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	3481	3458	3436	3418	3399	3376	3353	3332	3309
R^2	0.10	0.12	0.12	0.14	0.15	0.16	0.17	0.16	0.51

4.5. Exogenous CEO turnover

To mitigate potential endogeneity concerns, we test the robustness of our findings using a subsample of firms where CEO transitions are driven by clearly identified exogenous factors. These transitions involve either a shift from a non-local to a local CEO or vice versa. We manually gather information on CEO departure reasons from multiple sources, including The Complete Marquis Who's Who, insider filings with the U.S. Securities and Exchange Commission, and newspaper articles found through Google searches. Following established research (Fee et al., 2013), we classify CEO departures as exogenous when they result from death, health issues, or natural retirement.

We identify 119 cases of exogenous CEO turnover where the incoming and outgoing CEOs differ in their exposure to early-life natural disasters. In 54 cases, a CEO without disaster exposure is replaced by one with such exposure, while in 65 cases the reverse occurs. Our sample covers a window of three years before and three years after the turnover, and we re-estimate our baseline local projection specification on this subsample. Restricting the analysis to this narrow window helps isolate the causal impact of leadership changes by limiting the influence of external, time-varying factors. This targeted design reduces potential confounding variables that could jointly affect both CEO turnover and firm outcomes. Given the relatively small sample size, we classify disaster exposure as extreme or moderate using the median level of disaster casualties within this subsample as the cutoff.

The evidence reported in Table 7 indicates that our original insights regarding the role of exposure to natural disasters in shaping the firm's investment response to monetary shocks are generally immune to endogeneity concerns. CEOs who experienced moderate natural disasters in their early lives tend to take more risks: they invest more aggressively following expansionary shocks and are less likely to cut back after contractionary shocks. However, consistent with the non-linear effects of disaster exposure on risk-taking, intense disaster experiences lead these CEOs to adopt a more conservative investment approach.

Table 7: Exogenous CEO Turnover and Local Projection Estimations

This table reports the results of our baseline local projection estimates from Equation (1) for quarters one to eight after the shock, as well as the cumulative effects shown in the final column. The analysis is conducted on the subsample of firms experiencing CEO turnover due to exogenous reasons. To ensure comparability, we restrict the sample to a maximum of three years before and three years after the turnover year. The dependent variables measure quarterly growth in capital expenditures relative to the value of capital assets prior to the monetary shock. Our models examine the effects of monetary shocks, as identified by the Bu et al. (2021) series. The reported models analyze how the non-monotonic relationship between exposure to natural disasters and risk-taking shapes the investment response to monetary shocks. All the variables used in the estimations are presented in Appendix 1. Standard errors are clustered at the firm level; however, clustering at the sector or sector-quarter level does not alter the main inferences. Significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively.

Variable\Horizon	$h=1$	$h=2$	$h=3$	$h=4$	$h=5$	$h=6$	$h=7$	$h=8$	Sum
$Expansion$	0.272	0.679***	0.543***	0.253	0.518***	0.006	0.304	0.012	1.529***
	(0.221)	(0.231)	(0.217)	(0.214)	(0.174)	(0.132)	(0.271)	(0.248)	(0.632)
$Expansion \times Exposure$	0.208	0.701**	0.940***	0.557*	0.518**	0.320	0.065	0.834	2.190**
	(0.463)	(0.352)	(0.343)	(0.335)	(0.244)	(0.323)	(0.335)	(0.752)	(1.084)
$Expansion \times\ Extreme\ Exposure2$	-0.242	-0.570	-0.279	-1.404***	-0.150	-1.190*	-0.542	-1.589*	-4.912***
	(0.437)	(0.555)	(0.486)	(0.470)	(0.552)	(0.703)	(0.462)	(0.842)	(2.069)
$Contraction$	-0.226	-0.167	-0.626**	-0.758***	0.446	0.223	0.469	-0.140	-1.466***
	(0.319)	(0.439)	(0.309)	(0.223)	(0.399)	(0.207)	(0.316)	(0.261)	(0.591)
$Contraction \times Exposure$	-0.771	-0.596	0.884***	1.466***	-0.717	-0.123	-0.384	-0.036	2.731**
	(0.546)	(0.576)	(0.380)	(0.487)	(0.620)	(0.505)	(0.581)	(0.426)	(1.300)
$Contraction \times\ Extreme\ Exposure2$	0.378	0.186	-1.840***	-1.185**	-1.268	-0.851	0.769	-1.256	-2.216***
	(0.552)	(0.744)	(0.374)	(0.601)	(0.923)	(0.928)	(0.887)	(0.864)	(0.664)
Control Factors	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1293	1289	1285	1282	1279	1276	1273	1270	1270
R^2	0.11	0.15	0.16	0.16	0.16	0.16	0.15	0.15	0.39

5. Conclusion

This paper highlights the importance of psychological heterogeneity in shaping how monetary policy is transmitted to the real economy in the form of corporate investments. By focusing on CEOs' early-life exposure to natural disasters, we reveal how formative experiences that are deeply personal and unobservable can produce systematic differences in firm behavior. These differences not only affect investment decisions, but also ripple into market volatility and governance outcomes.

The broader insight is that even well-designed macroeconomic policies interact with the subjective lenses of decision-makers. In this light, monetary policy is not simply a technical lever—it is a signal interpreted differently across firms depending on the personal histories of their leaders. This presents a challenge for policy predictability, but also an opportunity: the heterogeneity we identify is not impervious to institutional design. Our findings suggest that transparent, forward-looking central bank communication can act as a behavioral stabilizer, mitigating disparate responses rooted in psychological variation.

We also contribute to a growing recognition that managerial characteristics are central to understanding not just micro-level decisions but macroeconomic propagation. The link we draw between formative experiences and CEO turnover opens new ground for exploring how macro-financial contexts influence career outcomes—an area ripe for further research. More broadly, our findings call for economic models that accommodate the cognitive architecture of key actors. Recognizing that firm responses are filtered through interpretive minds shifts the analytic frame: from policy as impulse to policy as narrative—shaped, interpreted, and acted upon by people with histories.

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Appendix 1: Variables' descriptions and sources

Variable	Description	Source
CAPX	The quarterly level of capital expenditures.	COMPUSTAT
DisasterSeverity	The mean of the disaster fatality levels over the relevant 11-year formative period for each CEO in their county of upbringing. This level covers the number of fatalities per 10,000 inhabitants.	Authors' Data
Exposure	Dummy = 1 if *DisasterSeverity* is positive, and 0 otherwise.	Authors' Data
Extreme Exposure	Dummy = 1 if *DisasterSeverity* exceeds its 90th percentile in the subsample where the CEO was exposed to natural disasters, and 0 otherwise.	Authors' Data
Extreme Exposure$_2$	Dummy = 1 if *DisasterSeverity* exceeds the median on the subsample with exogenous CEO turnover, and 0 otherwise.	Authors' Data
DisasterCEO	Dummy = 1 if the CEO witnessed a natural disaster in her/his formative years between the ages of 5 and 15, and 0 otherwise.	Authors' Data
MonShock	The exogenous monetary shock series developed by Bu et al. (2021), aggregated at the quarterly level.	Bu et al. (2021)
Expansion	The absolute value of *MonShock* when it is negative, and 0 otherwise.	Bu et al. (2021)
Contraction	The value of *MonShock* when it is positive, and 0 otherwise.	Bu et al. (2021)
PPENTQ	The natural logarithm of the annual value of capital expenditures for each firm, in millions of dollars.	COMPUSTAT
Assets	The natural logarithm of the annual value of recorded assets for each firm, in millions of dollars.	COMPUSTAT
RoA	The firm's quarterly returns on assets.	COMPUSTAT
Debt	The total debt as a percentage of the total assets.	COMPUSTAT
Div	Dummy = 1 if the firm paid dividends over the last year, and 0 otherwise.	COMPUSTAT
IntangiblesRatio	The quarterly level of intangibles (total R&D + 0.3×Selling, General, and Administrative Expenses) divided by the firm's total assets.	COMPUSTAT
Age	The number of years between the calendar year of the observation and the year during which the firm's IPO took place.	COMPUSTAT
CEODelta	The total change in the CEO's compensations (in thousands of dollars) in response to a 1% increase in the stock price.	Professor Lalitha Naveen's Website
CEOVega	The total change in the CEO's compensations (in thousands of dollars) in response to a 0.01 unit increase in the firm's stock volatility.	Professor Lalitha Naveen's Website
CEOWealth	The total level of disclosed CEO wealth.	Professor Lalitha Naveen's Website
CEOAge	The age of the CEO at the time of the observation.	BoardEx
Unemployment	The level of the U.S. unemployment rate at the quarter.	U.S. Bureau of Labor Statistics, Unemployment Rate [UNRATE], retrieved from FRED, Federal Reserve Bank of St. Louis.
CPI	The Consumer Price Index at the end of the quarter.	U.S. Bureau of Labor Statistics, Consumer Price Index for All Urban Consumers: All Items in U.S. City Average [CPIAUCSL], retrieved from FRED, Federal Reserve Bank of St. Louis

MPU	The value of the Baker et al. (2016) monetary policy uncertainty index at the end of each quarter.	https://policyuncertainty.com/
LargeBoard	Dummy=1 if the number of individuals in the board is above the median in the BoardEx database, and 0 otherwise.	BoardEx
BoardIndependence	Dummy=1 if the share of independent board members is above the median in the BoardEx database, and 0 otherwise.	BoardEx
TakeoverIndex	The takeover index of Cain et al. (2017).	Professor Stephen McKeon's Website

Notes: This table presents the name, description, and source of each variable in our empirical analysis.

Appendix 2: Data sources for natural disaster events prior to 1960

Earthquakes, Floods, and Landslides: The primary data sources are the United States Geological Survey (USGS), which maintains a comprehensive record of disaster events dating back to 1900, and the (former) National Geophysical Data Center (NGDC), now part of the National Centers for Environmental Information (NCEI), whose Global Significant Earthquake Database and tsunami catalog span historical records from antiquity to the present. [3] For each identified event, we collect all available information, including the date, geographic location (state and county), affected facilities, and other relevant details. To complement the USGS and NGDC datasets, we also incorporate data from GenDisaster.com. [4] In cases where these three sources do not provide complete information for a specific event—such as missing county-level details or casualty figures—we conduct a targeted web search using Google. The search queries follow the format: "earthquake or flood or landslide + state name + event year," allowing us to retrieve relevant news articles or historical records to fill in the data gaps. For instance, based on data from the USGS and NGDC, we identified an earthquake that occurred in Kern County, California, on July 21, 1952. However, the official records did not provide information regarding injuries or property damage. To supplement this missing information, we conducted an online (Google) search using the keywords "earthquake + California: Kern County + July 1952." The top result was a Wikipedia entry, which reported that the earthquake resulted in 12 fatalities, hundreds of injuries, and an estimated $60 million in property damage.

Volcanic Eruptions: Similarly, the primary data sources for volcanic events are the USGS and the NGDC, which we supplement with the Science Daily database on volcanic activity (https://www.sciencedaily.com/). In cases where these sources do not yield a complete account of a given event, we conduct a targeted Google search using the keywords "volcano + state location + event year" to locate relevant news reports or historical documentation.

Tsunamis: We collect data on the location, date, and other relevant characteristics of tsunami events from two primary sources: the NGDC website [5] and Tsunamis.findthedata.org[6]. In cases where information for a recorded event is incomplete or unavailable, we supplement our dataset through targeted web searches using the

[3] See https://www.usgs.gov/data/comprehensive-global-database-earthquake-induced-landslide-events-and-their-impacts?utm_source=chatgpt.com
https://www.usgs.gov/mission-areas/water-resources/science/usgs-flood-information
https://www.usgs.gov/programs/landslide-hazards/data?page=2&utm_source=chatgpt.com

[4] GenDisasters.com (http://www.gendisasters.com/) was a digital archive that offered transcriptions of historical disaster records across North America. The platform enabled users to search entries by disaster type, year, geographic location, and individuals involved. Following the approach of Bernile et al. (2017), we utilized this resource to retrieve historical records containing relevant information for the majority of disaster types included in our dataset.

[5] See http://www.ngdc.noaa.gov/hazard/tsu_db.shtml

[6] *Tsunamis.findthedata.org* was a data aggregation platform that compiled structured information on a variety of topics, including natural disasters such as tsunamis. Following the approach of Bernile et al. (2017), we identified several tsunami events using this platform. However, the website is no longer active.

following query format: “tsunami + state location + event year,” in order to retrieve relevant news articles or historical records.

Hurricanes, Tornadoes and Severe Storms: We compile the data from multiple authoritative sources. First, we rely on the National Climatic Data Center (NCDC), historically recognized as the world’s largest active archive of weather and climate data. Second, we draw on information from the National Weather Service (NWS), a division of the National Oceanic and Atmospheric Administration (NOAA), which provides official weather, water, and climate forecasts and warnings for the United States. For each recorded event, we identify the affected counties and extract relevant information from these primary sources. To enhance data completeness and coverage, we supplement these datasets with information from GenDisaster.com. In instances where key details for a specific event are unavailable, we conduct Google searches using the following keywords: “hurricane or tornado or severe storm + state location + event year”, in order to locate relevant news reports or historical documentation.

Wildfires: The primary data sources for identifying fire events are publicly available archival lists from Wikipedia (e.g., http://en.wikipedia.org/wiki/List_of_fires and http://en.wikipedia.org/wiki/List_of_wildfires) and the GenDisasters historical database (http://www.gendisasters.com/fires/index.htm). When essential event-specific details are not retrievable from these sources, we supplement our search by conducting targeted web queries using the following search string: “fire + state location + event year.” Information obtained through this method is retained only when the search yields verifiable news articles or historical records.

Appendix 3: Alternative cut-off levels between moderate and extreme disasters

This table re-estimates the aggregate investment effects of monetary shocks using the 80th percentile of the disaster severity level as the cut-off between moderate and extreme natural disasters. The dependent variable is the sum of all CAPX over the eight-quarter horizon, as a percentage of the pre-shock firm-level capital assets. Our models examine the effects of monetary shocks, as identified by the Bu et al. (2021) series. These models analyze how the non-monotonic relationship between the exposure to natural disasters and risk-taking shapes the investment response to monetary shocks. All the variables used in the estimations are presented in Appendix 1. Standard errors are clustered at the firm level; however, clustering at the sector or sector-quarter level does not alter the main inferences. Significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively.

Variable\Horizon	Sum
$Expansion$	1.116***
	(0.270)
$Expansion \times Exposure$	2.198***
	(1.400)
$Expansion \times\ Extreme\ Exposure_{80th\ Percentile}$	-2.540***
	(1.055)
$Contraction$	-1.611***
	(0.401)
$Contraction \times Exposure$	1.978**
	(1.018)
$Contraction \times\ Extreme\ Exposure_{80th\ Percentile}$	-2.105**
	(1.029)
Control Factors	Yes
Firm Effects	Yes
N	11158
R^2	0.29

Appendix 4: The investment effects of monetary shocks in three separate subsamples

This table evaluates the effects of monetary expansion and contraction on firm-level investment across three subsamples: (1) firms led by CEOs with no disaster exposure, (2) firms led by CEOs with moderate disaster exposure, and (3) firms led by CEOs with extreme disaster exposure. The observed patterns support a non-monotonic interpretation, indicating that, relative to CEOs with no or extreme disaster exposure, CEOs with moderate exposure exhibit a stronger positive investment response to monetary expansion and a weaker tendency to cut investment in response to monetary contraction. Standard errors are clustered at the firm level; however, clustering at the sector or sector-quarter level does not alter the main inferences. Significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively.

Panel A: Firm-quarter observations where the CEO did not experience natural disasters									
Variable\Horizon	$h=1$	$h=2$	$h=3$	$h=4$	$h=5$	$h=6$	$h=7$	$h=8$	*Sum*
Expansion	0.007	0.250***	0.312***	0.444***	0.501***	0.132***	0.189***	0.160*	2.014***
	(0.005)	(0.055)	(0.110)	(0.076)	(0.062)	(0.037)	(0.048)	(0.095)	(0.233)
Contraction	0.011	-0.223***	-0.526***	-0.404***	-0.530***	-0.752***	0.100	-0.750***	-2.997***
	(0.010)	(0.044)	(0.046)	(0.066)	(0.065)	(0.054)	(0.091)	(0.056)	(0.579)
Control Factors	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	6792	6788	6634	6604	6598	6579	6513	6493	6484
R^2	0.10	0.11	0.13	0.14	0.15	0.15	0.15	0.14	0.26
Panel B: Firm-quarter observations where the CEO experienced moderate natural disasters									
Variable\Horizon	$h=1$	$h=2$	$h=3$	$h=4$	$h=5$	$h=6$	$h=7$	$h=8$	*Sum*
Expansion	-0.000	0.786***	0.679***	0.792***	1.059***	0.346***	0.786***	0.183	4.591***
	(0.010)	(0.141)	(0.137)	(0.147)	(0.226)	(0.114)	(0.129)	(0.208)	(0.848)
Contraction	0.007	0.147	-0.291	0.012	0.132	0.290	-0.471	0.133	0.984
	(0.018)	(0.131)	(0.236)	(0.247)	(0.254)	(0.288)	(0.291)	(0.374)	(0.821)
Control Factors	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	4454	4393	4468	4433	4368	4313	4300	4248	4207
R^2	0.21	0.21	0.21	0.22	0.23	0.23	0.23	0.24	0.41
Panel C: Firm-quarter observations where the CEO experienced extreme natural disasters									
Variable\Horizon	$h=1$	$h=2$	$h=3$	$h=4$	$h=5$	$h=6$	$h=7$	$h=8$	*Sum*
Expansion	0.031	0.060	0.461***	0.232*	0.301***	0.632***	0.174**	-0.178*	1.514**
	(0.079)	(0.085)	(0.107)	(0.120)	(0.121)	(0.171)	(0.078)	(0.111)	(0.731)
Contraction	-0.041	0.064	-0.226***	-0.281***	-0.035	-0.805***	0.000	0.001	-1.436**
	(0.059)	(0.063)	(0.067)	(0.069)	(0.074)	(0.141)	(0.122)	(0.137)	(0.639)
Control Factors	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	495	488	496	493	485	479	478	472	467
R^2	0.51	0.52	0.54	0.54	0.56	0.56	0.55	0.58	0.71

Appendix 5: The effect of monetary shocks on the firm's capital structure

This table presents the results of estimations tracking the effect of monetary shocks on the firm's capital structure. At each quarter, our dependent variable is the firm's debt ratio, measured as the value of the firm's total liabilities as a percentage of the firm's total assets. The key insight is that CEOs with moderate exposure to natural disasters in their formative years have stronger relative dependence on debt financing response to both expansionary and contractionary shocks relative to CEOs who did not experience natural disasters. The reported evidence also supports the view that these tendencies are weakened under extreme exposure to natural disasters. Standard errors are clustered at the firm level; however, clustering at the sector or sector-quarter level does not alter the main inferences. Significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively.

Variable\Horizon	$h = 1$	$h = 2$	$h = 3$	$h = 4$	$h = 5$	$h = 6$	$h = 7$	$h = 8$
$Expansion$	0.109*	0.183***	0.175**	-0.079	0.220**	0.270***	0.194*	-0.022
	(0.059)	(0.062)	(0.079)	(0.090)	(0.096)	(0.102)	(0.105)	(0.107)
$Expansion \times Exposure$	0.053	-0.022	0.945**	1.123***	0.974**	0.944**	0.904**	1.248*
	(0.143)	(0.268)	(0.371)	(0.333)	(0.432)	(0.401)	(0.399)	(0.708)
$Expansion \times\ Extreme\ Exposure$	-0.099	0.115	-0.959**	-1.323***	-0.970**	-0.997**	-0.903***	-1.132**
	(0.176)	(0.285)	(0.385)	(0.342)	(0.438)	(0.465)	(0.300)	(0.522)
$Contraction$	0.058	-0.268***	-0.160	-0.218*	-0.379***	-0.291**	-0.344***	-0.108
	(0.084)	(0.085)	(0.117)	(0.131)	(0.130)	(0.129)	(0.135)	(0.122)
$Contraction \times Exposure$	0.115	0.567	0.862***	0.599*	0.252	1.245***	0.963***	-0.840
	(0.292)	(0.475)	(0.310)	(0.324)	(0.437)	(0.405)	(0.373)	(0.916)
$Contraction \times\ Extreme\ Exposure$	-0.103	-0.550	-0.795**	-0.681*	-0.215	-1.042**	-0.796*	0.674
	(0.324)	(0.487)	(0.334)	(0.363)	(0.500)	(0.469)	(0.445)	(0.942)
Control Factors	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	11741	11669	11598	11529	11451	11371	11291	11213
R^2	0.82	0.68	0.56	0.47	0.39	0.32	0.28	0.25