



The Effect of Managerial Overconfidence on Stock Price Crash Risk: The Moderating Role of Institutional Ownership – Evidence from Firms Listed on the Tehran Stock Exchange

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Abstract: *This study empirically investigates the impact of managerial overconfidence on stock price crash risk and examines the moderating role of institutional ownership within the Tehran Stock Exchange. Utilizing a panel dataset of non-financial firms continuously listed from 2019 to 2024, the research employs firm-fixed effects regression models to rigorously control for unobserved heterogeneity. Rooted in agency theory and the bad news hoarding hypothesis, the findings reveal a statistically significant positive relationship between managerial overconfidence and future crash risk. Overconfident executives systematically withhold adverse financial information to protect their compensation and reputation, precipitating sudden market corrections when the accumulated bad news is eventually disclosed. Crucially, the analysis demonstrates that strong institutional ownership effectively mitigates this detrimental phenomenon. As sophisticated monitors, institutional investors constrain the opportunistic hoarding of bad news and enforce timely, transparent disclosures. These results highlight the vital necessity of robust external monitoring mechanisms to safeguard emerging market stability against executive cognitive biases.*

Keywords: *Managerial Overconfidence, Stock Price Crash Risk, Institutional Ownership, Behavioral Finance, Information Asymmetry, Tehran Stock Exchange, Panel Data Analysis.*

I. Introduction

The traditional paradigm of neoclassical finance is fundamentally predicated on the assumption of market efficiency and the strict rationality of economic agents. However, the emergence and subsequent maturation of behavioral corporate finance have systematically challenged these foundational axioms, demonstrating that executive decision-making is frequently influenced by deep-seated psychological heuristics and cognitive biases. Among

these deviations from strict rationality, managerial overconfidence has been identified as one of the most pervasive and economically consequential behavioral traits within the corporate upper echelon. Overconfident executives systematically overestimate their problem-solving abilities and the future cash flows generated by their investment projects, while concurrently underestimating the inherent volatility and downside risks associated with the macroeconomic environment (Malmendier & Tate, 2005). This psychological disposition fundamentally distorts corporate policies, leading to aggressive capital structures, value-destroying mergers and acquisitions, and highly inefficient resource allocations. While the direct impact of managerial overconfidence on corporate investment and financing decisions has been extensively documented in the academic literature, its complex, indirect consequences on the informational efficiency of capital markets and fundamental reporting quality remain a critical frontier of contemporary financial research. Specifically, the mechanisms through which executive cognitive biases influence the temporal distribution of information flow to external stakeholders, thereby altering the underlying risk profile of the firm's equity, necessitate rigorous empirical investigation.

The most severe manifestation of distorted information flow in capital markets is the phenomenon of stock price crash risk, which is characterized by a sudden, precipitous, and asymmetric decline in a firm's equity valuation. The dominant theoretical framework explaining crash risk is deeply rooted in agency theory and the concept of information asymmetry, specifically articulated through the "bad news hoarding" hypothesis (Jin & Myers, 2006). According to this framework, self-serving managers have strong incentives to temporarily withhold adverse financial or operational information from the market to protect their personal compensation, safeguard their reputational capital, and avoid termination. Managerial overconfidence exponentially amplifies this detrimental hoarding behavior through a unique psychological mechanism. Unlike purely rational, opportunistic managers who knowingly conceal poor performance, overconfident executives may genuinely, albeit mistakenly, believe that negative economic outcomes are merely temporary setbacks caused by exogenous shocks rather than flawed strategic decisions (Kim et al., 2016). Consequently, they delay the recognition of economic losses and actively suppress the dissemination of bad news, deeply convinced that future superior performance will eventually offset current deficits. However, the capacity to warehouse adverse information is not infinite. As the firm's fundamental economic reality continues to deteriorate, the accumulated reservoir of bad news eventually reaches an unsustainable threshold or is forcibly exposed by external auditors and

regulatory constraints. The sudden, compulsory release of this massive volume of suppressed negative information completely overwhelms the market's absorptive capacity, triggering an immediate and catastrophic downward recalibration of the firm's stock price, thereby materializing as a market crash.

Given the severe wealth destruction associated with stock price crashes, identifying robust governance mechanisms capable of constraining executive cognitive biases and enforcing informational transparency is of paramount importance to market participants. Within the contemporary corporate governance mosaic, institutional ownership has emerged as the primary external monitoring force capable of mitigating severe agency conflicts. Institutional investors, including pension funds, mutual funds, and large state-owned holding companies, possess substantial equity stakes, granting them both the financial incentive and the authoritative leverage to actively monitor executive behavior (Shleifer & Vishny, 1986). Furthermore, these entities are endowed with sophisticated analytical resources, superior information processing capabilities, and extensive industry expertise, allowing them to penetrate the informational opacity frequently cultivated by entrenched management. In the context of executive overconfidence, strong, dedicated institutional investors serve as a critical moderating force. They are uniquely positioned to identify the subtle operational deviations, aggressive accounting accruals, and overly optimistic managerial forecasts that characterize the early stages of bad news hoarding. By actively demanding enhanced reporting transparency, implementing stringent debt covenants, and utilizing their voting power to discipline underperforming executives, institutional monitors effectively compel the timely disclosure of adverse economic information. Consequently, a high concentration of institutional ownership is theoretically hypothesized to dismantle the bad news hoarding mechanism, thereby attenuating the positive structural association between managerial overconfidence and future stock price crash risk.

To rigorously investigate these complex behavioral and governance dynamics, this study situates its empirical analysis within the institutional environment of the Tehran Stock Exchange (TSE). The Iranian capital market provides an exceptionally compelling and unique laboratory for examining behavioral corporate finance theories. Over the 2019 to 2024 timeframe, the Iranian macroeconomic landscape has been characterized by acute volatility, severe structural inflation, and pervasive geopolitical uncertainties. In such highly ambiguous environments, the psychological reliance on cognitive heuristics is substantially magnified, meaning that the detrimental impacts of managerial overconfidence are likely to be far more

pronounced than in stable, developed economies. Concurrently, the ownership structure of the TSE is undergoing a significant transition. While retail investors traditionally dominated trading volume, large institutional blocks—often linked to state or quasi-state entities—wield immense influence over corporate governance and dividend policies. The extent to which these specific types of institutional owners actively fulfill their monitoring mandate to prevent the catastrophic accumulation of bad news remains a highly contested empirical question. By analyzing a comprehensive panel dataset of listed Iranian firms, this research aims to provide robust, pioneering evidence on how executive psychology interacts with external ownership structures to dictate extreme market outcomes, offering vital insights for regulatory authorities seeking to enhance market stability in high-volatility emerging economies.

II. Literature Review

The theoretical foundation of this study is situated at the complex intersection of behavioral corporate finance, agency theory, and the informational efficiency of capital markets. Traditional neoclassical finance paradigms have historically operated under the strict assumption that corporate executives are perfectly rational agents who objectively maximize shareholder wealth. However, the systematic integration of psychological literature into financial economics has robustly demonstrated that executives are profoundly susceptible to cognitive heuristics, the most prominent and economically impactful being managerial overconfidence. Coined and extensively formalized in the seminal works of Malmendier and Tate (2005), managerial overconfidence manifests as a persistent cognitive bias wherein executives systematically overestimate their problem-solving capabilities, the precision of their private information, and the future cash flows of their strategic investment projects, while concurrently underestimating the likelihood of negative exogenous shocks. This psychological disposition leads to a fundamentally distorted perception of corporate reality. Overconfident managers are more likely to engage in value-destroying mergers and acquisitions, aggressively utilize debt financing due to a perceived undervaluation of their firm's equity, and persistently misallocate critical corporate resources. Expanding upon these direct corporate policy distortions, contemporary academic inquiry has increasingly focused on the indirect, informational consequences of executive overconfidence, specifically examining how this entrenched psychological bias alters the temporal flow of critical financial information to the capital markets and subsequently shapes the firm's underlying equity risk profile.

The most catastrophic manifestation of distorted informational flow is the phenomenon of stock price crash risk, defined as a profound, sudden, and asymmetric downward

recalibration of a firm's equity valuation. The dominant theoretical framework elucidating the mechanics of crash risk is the "bad news hoarding" hypothesis, rooted deeply in the agency conflicts between corporate insiders and external shareholders (Jin & Myers, 2006). According to this framework, the inherent information asymmetry in capital markets provides self-serving executives with both the opportunity and the incentive to strategically withhold adverse financial or operational information from the public domain. Managers may intentionally obscure deteriorating profit margins, failing operational projects, or looming liquidity crises to protect their short-term compensation structures, maintain their reputational capital within the executive labor market, and avoid the immediate threat of board-initiated termination. However, the firm's capacity to warehouse this adverse information is strictly finite. As the underlying economic reality continues to deteriorate, the accumulated reservoir of suppressed bad news eventually reaches an unsustainable threshold. At this critical juncture, either through mandatory audit requirements, regulatory intervention, or the sheer magnitude of the operational failure, the accumulated negative information is suddenly and forcibly released to the market. This abrupt disclosure completely overwhelms the market's absorptive capacity, triggering an immediate panic and a precipitous decline in the stock price.

Integrating managerial overconfidence into the bad news hoarding framework reveals a profoundly dangerous psychological synergy (Kim et al., 2016). While rational, opportunistic managers consciously hide bad news to extract private benefits, overconfident executives hoard bad news driven by a genuine, albeit deeply flawed, conviction that negative economic outcomes are merely temporary anomalies caused by uncontrollable external factors rather than structural flaws in their strategic vision. Because they systematically overestimate future cash flows, overconfident managers firmly believe that superior future performance will inevitably reverse current deficits. Consequently, they aggressively delay the recognition of economic losses and actively suppress the dissemination of adverse information, sincerely believing that they are protecting the firm from irrational market overreactions. This profound cognitive dissonance prevents them from taking timely corrective actions. As a result, the volume of bad news accumulated by an overconfident manager is theoretically much larger than that accumulated by a rationally opportunistic manager before it reaches the tipping point. When the inevitable realization occurs and the market forces the disclosure of this massive, suppressed reservoir of negative information, the resulting stock price crash is significantly more severe. Therefore, a robust, positive structural association is theoretically expected

between the degree of executive overconfidence and the firm's subsequent vulnerability to catastrophic stock price crashes.

Mitigating this severe behavioral agency conflict requires robust external monitoring mechanisms capable of penetrating the informational opacity cultivated by overconfident executives. Within the corporate governance literature, institutional ownership is widely recognized as the most potent external force capable of enforcing financial transparency and disciplining entrenched management (Shleifer & Vishny, 1986). Unlike dispersed retail investors who suffer from profound collective action problems and lack the resources to effectively monitor complex corporate behavior, dedicated institutional investors—such as pension funds, mutual funds, and large holding companies—possess substantial equity stakes that provide both the financial incentive and the authoritative leverage to actively oversee executive decision-making. These entities are equipped with sophisticated analytical models, superior information processing capabilities, and extensive industry expertise. In the specific context of executive overconfidence, institutional monitors serve as a critical counterbalancing force. They are uniquely positioned to scrutinize overly optimistic managerial forecasts, challenge aggressive accounting accruals designed to mask deteriorating performance, and demand rigorous, timely disclosures of material risks. By actively utilizing their voting power, threatening to divest substantial block holdings (the "Wall Street Walk"), and implementing stringent debt covenants, institutional investors effectively dismantle the bad news hoarding mechanism. Consequently, a high concentration of institutional ownership is theoretically hypothesized to constrain the overconfident manager's ability to suppress adverse information, thereby forcing timely disclosures and significantly attenuating the positive relationship between executive cognitive biases and future stock price crash risk. Examining these intricate dynamics within the Tehran Stock Exchange provides a critical empirical test, as the Iranian market is characterized by severe macroeconomic volatility that amplifies behavioral biases, coupled with a dominant presence of quasi-state institutional blockholders whose actual monitoring efficacy remains a subject of intense academic debate.

Research Hypotheses

Based on the theoretical integration of behavioral finance, agency theory, and the bad news hoarding hypothesis delineated in the preceding literature, this study formulates the following primary research hypotheses to systematically investigate the complex dynamics between executive psychology, corporate governance, and market stability:

- H1: There is a statistically significant positive relationship between managerial overconfidence and future stock price crash risk.
- H2: Institutional ownership significantly moderates the relationship between managerial overconfidence and stock price crash risk, such that higher levels of institutional ownership weaken the positive association.

III. Methodology

The empirical research design of this study is meticulously formulated to rigorously test the hypothesized behavioral agency dynamics concerning managerial overconfidence, institutional monitoring, and the manifestation of extreme equity downside risk. To achieve a high degree of internal and external validity, this research adopts a quantitative, ex-post facto methodology anchored in a longitudinal panel data framework. The target population comprises all public joint-stock companies officially listed on the Tehran Stock Exchange (TSE). The temporal scope spans a continuous six-year observation window from 2019 to 2024, a period characterized by pronounced macroeconomic volatility and rapid shifts in institutional ownership configurations within Iran, providing a robust empirical laboratory for behavioral finance research. To construct a highly reliable, homogenous, and balanced panel dataset, a stringent multi-stage exclusionary filtering process is systematically applied. Initially, all financial institutions, encompassing commercial banks, insurance companies, leasing firms, and investment trusts, are rigorously excluded from the baseline population. This exclusion is mandated by their fundamentally divergent regulatory constraints, specialized capital structures, and unique financial reporting frameworks, which render standard measurements of capital expenditure and crash risk structurally inapplicable. Furthermore, to eliminate survivorship bias and ensure longitudinal data continuity, firms that were delisted, experienced prolonged trading suspensions exceeding six months, or underwent significant structural reorganizations during the 2019–2024 timeframe are entirely omitted. Companies whose fiscal year-ends do not correspond with the standard Iranian calendar year (culminating in late March) are also excluded to guarantee the temporal synchronization of market returns and accounting metrics across the sample. Finally, a strict data availability filter is enforced, eliminating any firm-year observations lacking the requisite high-frequency weekly stock return data necessary to compute crash risk proxies, or missing the fundamental financial and ownership data required for the independent and control variables. The systematic execution of these criteria yields a highly refined, balanced panel dataset perfectly suited for advanced econometric estimations.

Table 1: Sample Selection Procedure

Criteria Description	Number of Firms
Total baseline firms listed on the Tehran Stock Exchange (TSE) at the beginning of 2019	504
Less: Financial institutions, banks, insurance, and investment holding companies	(72)
Less: Firms delisted or experiencing severe trading halts (exceeding 6 months) during 2019-2024	(58)
Less: Firms with non-standard fiscal year-ends (deviating from the uniform March/Esfand reporting cycle)	(47)
Less: Firms with systematically missing weekly trading data, financial metrics, or ownership structures	(103)
Final sample of non-financial firms (Balanced Panel: 224 firms $\times$ 6 years = 1,344 observations)	224

The measurement of the dependent variable, future stock price crash risk, requires a highly sophisticated methodological approach to isolate extreme, firm-specific downside volatility from broader market movements. Following the seminal frameworks established by Chen et al. (2001) and Jin and Myers (2006), the computation begins with the extraction of firm-specific weekly returns. To neutralize the confounding effects of synchronous market-wide shocks and industry-specific momentum, weekly stock returns are regressed against both current and lagged market and industry index returns. The expanded market model is formalized as follows:

$$R_{i,\tau} = \alpha_i + \beta_{1,i}R_{m,\tau-2} + \beta_{2,i}R_{m,\tau-1} + \beta_{3,i}R_{m,\tau} + \beta_{4,i}R_{m,\tau+1} + \beta_{5,i}R_{m,\tau+2} + \epsilon_{i,\tau}$$

In this equation, $R_{i,\tau}$ denotes the return of firm i in week τ , and $R_{m,\tau}$ represents the value-weighted market return in the corresponding week. The inclusion of lead and lag terms systematically corrects for non-synchronous trading friction, a phenomenon highly prevalent in emerging markets like the TSE. The firm-specific weekly return, denoted as $W_{i,\tau}$, is mathematically defined as the natural logarithm of one plus the residual extracted from the aforementioned regression: $W_{i,\tau} = \ln(1 + \epsilon_{i,\tau})$. Utilizing this isolated firm-specific return, two distinct, yet complementary, quantitative proxies for crash risk are constructed. The primary

proxy is the Negative Conditional Return Skewness (NCSKEW). NCSKEW is calculated by taking the negative of the third moment of firm-specific weekly returns and scaling it by the standard deviation of firm-specific weekly returns raised to the third power. The formulation ensures that a higher NCSKEW value strictly corresponds to a higher probability of a stock price crash, capturing the asymmetric nature of the return distribution:

$$NCSKEW_{i,t} = -\frac{n(n-1)^{\frac{3}{2}} \sum W_{i,\tau}^3}{(n-1)(n-2)(\sum W_{i,\tau}^2)^{\frac{3}{2}}}$$

Where n represents the total number of weekly trading observations for firm i during fiscal year t . To ensure empirical robustness, a second, complementary measure is employed: Down-to-Up Volatility (DUVOL). For each firm-year, weeks are categorized into "down" weeks (where $W_{i,\tau}$ is below the annual mean) and "up" weeks (where $W_{i,\tau}$ is above the annual mean). DUVOL is calculated as the natural logarithm of the ratio of the standard deviation of down weeks to the standard deviation of up weeks. Similar to NCSKEW, higher DUVOL values indicate a significantly thicker left tail in the return distribution, signaling elevated crash risk:

$$DUVOL_{i,t} = \ln \left(\frac{(n_u - 1) \sum_{down} W_{i,\tau}^2}{(n_d - 1) \sum_{up} W_{i,\tau}^2} \right)$$

The primary independent variable, managerial overconfidence (OVERCONF), presents a unique measurement challenge. In developed markets, executives' systematic failure to exercise deep-in-the-money stock options serves as the gold standard proxy. However, given the absence of a mature, liquid executive stock option market within the TSE, this study adopts an established, sophisticated investment-based proxy widely validated in international accounting literature (Malmendier & Tate, 2005; Kim et al., 2016). Overconfident managers inherently overestimate the returns of their investment projects; consequently, they systematically overinvest relative to their rational peers. Therefore, OVERCONF is operationalized as a dichotomous indicator variable. It is assigned a value of 1 if a firm's capital expenditure, strictly scaled by total assets, systematically exceeds the median capital expenditure of its specific industry sector for two consecutive fiscal years, and 0 otherwise. This rigorous multi-year requirement ensures the metric captures a persistent, deeply entrenched cognitive bias rather than a temporary, rational strategic expansion.

The moderating variable, institutional ownership (INST), is systematically measured as the cumulative percentage of outstanding ordinary shares held by institutional investors at the

fiscal year-end. Within the Iranian context, this categorization strictly encompasses public and private pension funds, social security organizations, domestic investment companies, state-owned holding enterprises, and commercial banks. These entities possess the financial magnitude and analytical infrastructure theoretically required to effectively monitor and discipline entrenched, overconfident management.

To rigorously isolate the specific behavioral and governance dynamics of interest, the empirical models incorporate a robust, comprehensive vector of control variables known to systematically influence crash risk. These include firm size, calculated as the natural logarithm of total assets; financial leverage, measured as the ratio of total liabilities to total assets; fundamental profitability, represented by return on assets; and growth opportunities, captured by the market-to-book ratio. Critically, to control for the baseline capacity to hide bad news, the models include a proxy for financial reporting opacity (OPAQUE), operationalized through the absolute value of performance-matched discretionary accruals. Furthermore, baseline return volatility (SIGMA) and the firm's historical crash risk (lagged NCSKEW) are incorporated to control for inherent stock riskiness and serial correlation. The foundational empirical tests are executed utilizing advanced multivariate panel data regression techniques, strictly deploying firm and year fixed-effects models to control for unobserved, time-invariant corporate characteristics and sweeping macroeconomic shocks. To mitigate heteroscedasticity and potential autocorrelation, all t-statistics are computed utilizing robust standard errors firmly clustered at the firm level. The complex interactions are tested using the following comprehensive econometric specification, deployed separately for both NCSKEW and DUVOL one period forward (t+1):

$$\begin{aligned} CrashRisk_{i,t+1} &= \beta_0 + \beta_1 OVERCONF_{i,t} + \beta_2 INST_{i,t} + \beta_3 (OVERCONF_{i,t} \times INST_{i,t}) \\ &+ \sum_{k=1}^n \gamma_k Controls_{i,t,k} + \mu_i + \lambda_t + \epsilon_{i,t} \end{aligned}$$

Within this structural framework, a statistically significant and positive β_1 will definitively confirm Hypothesis 1, demonstrating that overconfidence actively precipitates crash risk. Crucially, a statistically significant and negative β_3 on the interaction term will provide the requisite empirical validation for Hypothesis 2, proving that a concentrated institutional ownership structure successfully dismantles the bad news hoarding mechanism and forcefully neutralizes the destructive potential of executive cognitive biases.

IV. Empirical Results

The empirical analysis commences with a rigorous evaluation of the descriptive statistics, providing a foundational understanding of the central tendencies and distributional characteristics of the primary variables across the comprehensive panel dataset of 1,344 firm-year observations from the Tehran Stock Exchange spanning the 2019–2024 timeframe. The two quantitative proxies for stock price crash risk, Negative Conditional Return Skewness (NCSKEW) and Down-to-Up Volatility (DUVOL), exhibit mean values of -0.154 and -0.082, respectively. While the slightly negative means indicate that, on average, the return distributions are not overwhelmingly skewed to the left, the substantial standard deviations (0.815 for NCSKEW and 0.420 for DUVOL) coupled with significant maximum values (2.105 and 1.150) empirically confirm the periodic occurrence of severe, asymmetric downside equity adjustments within the sample. The primary independent variable, managerial overconfidence (OVERCONF), is operationalized as a binary indicator. The descriptive statistics reveal a mean of 0.365, indicating that approximately 36.5 percent of the sampled firm-years are characterized by executives exhibiting persistent, systematic overinvestment relative to their industry peers. This high prevalence underscores the profound impact of cognitive biases within the highly uncertain Iranian macroeconomic environment. The moderating variable, institutional ownership (INST), demonstrates a substantial mean of 0.612 (61.2 percent), reflecting the unique ownership architecture of the TSE, which is heavily dominated by quasi-state holding companies, pension funds, and institutional blockholders. The control variables accurately depict the fundamental economic realities of the sampled firms; average financial leverage is high at 0.625, indicating significant reliance on debt financing, while the mean reporting opacity (OPAQUE), measured via discretionary accruals, stands at 0.085, highlighting the baseline flexibility utilized by managers in financial reporting.

Table 2: Descriptive Statistics (2019-2024 Panel Data, N=1,344)

Variables	Mean	Median	Std. Dev.	Minimum	Maximum
Negative Skewness (NCSKEW)	-0.154	-0.110	0.815	-2.450	2.105
Down-to-Up Volatility (DUVOL)	-0.082	-0.055	0.420	-1.320	1.150

Variables	Mean	Median	Std. Dev.	Minimum	Maximum
Managerial Overconfidence (OVERCONF)	0.365	0.000	0.481	0.000	1.000
Institutional Ownership (INST)	0.612	0.640	0.245	0.050	0.950
Firm Size (SIZE)	14.150	14.050	1.520	10.850	18.950
Financial Leverage (LEV)	0.625	0.640	0.190	0.115	0.970
Return on Assets (ROA)	0.088	0.075	0.115	-0.210	0.450
Reporting Opacity (OPAQUE)	0.085	0.065	0.070	0.002	0.380
Return Volatility (SIGMA)	0.045	0.040	0.025	0.010	0.180

Transitioning from the univariate analysis, a comprehensive suite of diagnostic tests was executed to ensure the econometric stability and validity of the multivariate models. Variance inflation factor (VIF) analyses were conducted to screen for potential multicollinearity among the explanatory variables. The maximum VIF observed across all specifications was 2.34, a value well below the critical threshold of 10.0, confirming that multicollinearity does not distort the regression estimates. To ascertain the most appropriate panel data architecture, the Hausman specification test was deployed. The test yielded highly significant chi-square statistics for both the NCSKEW model ($p < 0.001$) and the DUVOL model ($p < 0.001$), decisively rejecting the random-effects hypothesis. Consequently, all subsequent multivariate estimations utilize firm and year fixed-effects regressions to rigorously control for unobserved, time-invariant corporate characteristics and macroeconomic shocks. Additionally, robust standard errors clustered at the firm level are utilized to mitigate inferential biases associated with heteroscedasticity and serial autocorrelation.

Table 3: Fixed-Effects Panel Regression Results

Independent Variables	Model 1 (NCSKEW Direct)	Model 2 (NCSKEW Moderated)	Model 3 (DUVOL Direct)	Model 4 (DUVOL Moderated)
Managerial Overconfidence (OVERCONF)	0.142*** (3.85)	0.285*** (4.12)	0.085*** (3.65)	0.175*** (3.92)

Independent Variables	Model 1 (NCSKEW Direct)	Model 2 (NCSKEW Moderated)	Model 3 (DUVOL Direct)	Model 4 (DUVOL Moderated)
Institutional Ownership (INST)	-0.105** (-2.45)	-0.035 (-0.75)	-0.062** (-2.30)	-0.015 (-0.48)
OVERCONF × INST		-0.245*** (-3.55)		-0.152*** (-3.38)
Firm Size (SIZE)	0.045** (2.15)	0.042** (2.05)	0.025** (2.08)	0.022** (1.98)
Financial Leverage (LEV)	0.185*** (3.42)	0.178*** (3.35)	0.095*** (3.15)	0.090*** (3.05)
Reporting Opacity (OPAQUE)	0.850*** (4.55)	0.810*** (4.42)	0.450*** (4.25)	0.420*** (4.12)
Return Volatility (SIGMA)	3.150*** (5.12)	3.080*** (4.95)	1.850*** (4.85)	1.780*** (4.72)
Lagged Crash Risk	0.115*** (3.05)	0.110*** (2.95)	0.085*** (2.85)	0.082*** (2.75)
Firm & Year Fixed Effects	Included	Included	Included	Included
Adjusted R-squared	0.185	0.212	0.165	0.190
F-Statistic (p-value)	12.45 (0.000)	14.82 (0.000)	10.25 (0.000)	12.18 (0.000)

Dependent Variables: NCSKEW and DUVOL

The core empirical findings presented in Table 3 rigorously address the formulated hypotheses. Model 1 and Model 3 isolate the direct impact of managerial overconfidence on the two proxies of future stock price crash risk. The estimated coefficients for OVERCONF are emphatically positive and statistically significant at the 1 percent level for both NCSKEW (0.142, $t = 3.85$) and DUVOL (0.085, $t = 3.65$). This robust econometric outcome provides definitive confirmation for Hypothesis 1. It empirically substantiates the behavioral agency proposition that overconfident executives, driven by a deeply flawed optimism regarding future cash flows and an unwarranted belief in their strategic infallibility, systematically delay the recognition of economic losses. By aggressively hoarding adverse financial information, these

managers cultivate an artificial valuation bubble that, upon reaching an unsustainable tipping point, violently bursts, precipitating a catastrophic downward recalibration of the firm's equity value. The control variables perform as theoretically expected; specifically, baseline reporting opacity (OPAQUE) and return volatility (SIGMA) heavily exacerbate the probability of a market crash, further validating the underlying mechanics of information asymmetry.

Models 2 and 4 evaluate the critical moderating efficacy of institutional ownership by introducing the interaction term ($OVERCONF \times INST$). The regression outputs yield highly significant, negative coefficients for the interaction term across both the NCSKEW model (-0.245 , $t = -3.55$) and the DUVOL model (-0.152 , $t = -3.38$). This profound empirical result solidly confirms Hypothesis 2, unequivocally demonstrating that the severe wealth destruction precipitated by executive cognitive biases is not an unmanageable inevitability, but is heavily contingent upon the firm's overarching governance architecture. High concentrations of institutional ownership effectively neutralize the bad news hoarding mechanism. Endowed with substantial analytical resources, vast industry expertise, and powerful voting leverage, dedicated institutional monitors successfully penetrate the informational opacity constructed by overconfident managers. By preemptively demanding stringent financial disclosures, actively scrutinizing aggressive capital expenditure programs, and forcing the timely recognition of economic impairments, institutional investors structurally prevent the massive accumulation of adverse information, thereby significantly attenuating the probability of a catastrophic stock price crash.

V. Discussion

The empirical findings of this research provide profound, robust insights into the intricate nexus of executive psychology, corporate governance, and extreme market downside risk, specifically within the highly volatile institutional architecture of the Tehran Stock Exchange. The definitive confirmation of the primary hypothesis, which established a statistically significant and positive relationship between managerial overconfidence and future stock price crash risk, fundamentally validates the integration of behavioral finance into traditional agency theory frameworks. Unlike conventional agency conflicts where rational managers consciously obscure adverse information for calculated personal gain, this finding highlights a far more insidious mechanism: cognitive dissonance. Overconfident executives, constrained by an entrenched psychological bias, systematically overestimate the precision of their strategic foresight and the future cash-generating capacity of their capital expenditures. When faced with deteriorating economic reality—such as declining project yields or macroeconomic shocks—

these executives genuinely perceive such setbacks as temporary anomalies rather than structural failures. Consequently, they aggressively hoard bad news, not necessarily out of malicious intent, but driven by a deeply flawed conviction that superior future performance will inevitably reverse current deficits. By persistently delaying the recognition of economic losses and actively suppressing adverse financial disclosures, these managers inadvertently construct a massive, artificial reservoir of unacknowledged risk. The empirical results definitively demonstrate that this behavioral hoarding cannot be sustained indefinitely. When the sheer magnitude of the operational failure eventually forces the mandatory disclosure of this accumulated bad news, it completely overwhelms the market's absorptive capacity, triggering a violent, asymmetric downward recalibration of the firm's equity valuation. This dynamic is particularly exacerbated within the Iranian macroeconomic environment, where severe systemic uncertainty and inflation naturally incubate an over-reliance on executive cognitive heuristics, thereby magnifying the destructive potential of managerial overconfidence.

However, the most critical theoretical contribution and practical implication of this study stem from the validation of the second hypothesis, which emphatically demonstrates that the catastrophic wealth destruction precipitated by executive cognitive biases is structurally mitigated by the presence of dedicated institutional ownership. The empirical analyses unequivocally show that a high concentration of institutional blockholders effectively neutralizes the "bad news hoarding" mechanism, severely attenuating the positive association between managerial overconfidence and stock price crash risk. This finding provides vital empirical support for the monitoring hypothesis within corporate governance literature. Unlike dispersed retail investors, who suffer from profound collective action problems, severe informational disadvantages, and an inability to challenge entrenched management, institutional investors—such as pension funds and large holding companies—possess the necessary financial magnitude, sophisticated analytical frameworks, and authoritative leverage to aggressively discipline corporate executives. These sophisticated monitors are uniquely equipped to penetrate the informational opacity cultivated by overconfident managers. By rigorously scrutinizing aggressive, debt-fueled capital expenditure programs, challenging overly optimistic earnings forecasts, and utilizing their substantial voting power, institutional owners effectively function as an external reality check on the executive suite.

The profound negative interaction coefficient mathematically illustrates that institutional monitoring serves as a critical pressure release valve. By preemptively demanding stringent financial transparency and forcing the timely, incremental recognition of economic impairments, institutional investors structurally prevent the massive, unsustainable accumulation of adverse information. They force the overconfident manager to confront economic reality before the hidden losses reach a catastrophic threshold. Consequently, the market absorbs negative information continuously and incrementally, which drastically reduces the probability of a sudden, panic-induced market crash. This dynamic underscores a fundamental reality of behavioral corporate governance: while psychological biases within the executive echelon are perhaps unavoidable, their destructive manifestation in the capital markets can be systematically constrained through the robust application of external monitoring. For regulatory authorities navigating the complexities of emerging markets, these findings empirically validate the strategic necessity of cultivating a diverse, highly active institutional investor base. By empowering institutional blockholders and facilitating their active participation in corporate governance, regulators can establish a robust structural defense against the destabilizing effects of executive overconfidence, thereby enhancing the overarching informational efficiency and fundamental stability of the capital market.

VI. Conclusion

The intersection of behavioral psychology and traditional corporate finance presents a complex frontier for understanding the mechanisms that dictate informational efficiency and market stability. This comprehensive empirical study sought to systematically investigate the profound consequences of executive cognitive biases on extreme equity downside risk, specifically focusing on the relationship between managerial overconfidence and future stock price crashes within the highly volatile institutional environment of the Tehran Stock Exchange. By analyzing a rigorous panel dataset comprising 1,344 firm-year observations from 2019 to 2024 and deploying advanced firm and year fixed-effects econometric models to control for unobserved heterogeneity, this research addressed a critical gap in the emerging market literature. The empirical findings fundamentally support the integration of behavioral heuristics into the agency theory of bad news hoarding. The primary analysis demonstrated a robust, statistically significant positive association between managerial overconfidence—measured through a sophisticated investment-based proxy—and subsequent crash risk. Overconfident executives, deeply influenced by a psychological conviction in their own strategic infallibility and an unwarranted optimism regarding future cash flows, systematically

misinterpret negative economic signals as temporary anomalies. Consequently, they aggressively delay the recognition of economic losses and actively suppress adverse financial disclosures. This behavioral hoarding artificially inflates the firm's equity valuation until the accumulated reservoir of bad news reaches an unsustainable threshold, eventually forcing a massive, sudden disclosure that overwhelms the market and precipitates a catastrophic price crash.

Beyond confirming the destructive potential of executive cognitive biases, this study profoundly advances the existing literature by establishing that this behavioral agency conflict is heavily contingent upon the firm's overarching governance architecture. The empirical results definitively confirm that a high concentration of institutional ownership effectively moderates and neutralizes the detrimental impact of managerial overconfidence on crash risk. Dedicated institutional investors, endowed with substantial equity stakes, sophisticated analytical resources, and significant voting leverage, act as a formidable external monitoring mechanism. By rigorously challenging aggressive capital expenditure programs, scrutinizing overly optimistic managerial forecasts, and utilizing their authority to demand stringent financial transparency, institutional blockholders successfully penetrate the informational opacity cultivated by entrenched management. They force the timely, incremental recognition of economic impairments, thereby structurally preventing the massive, unsustainable accumulation of adverse information that precedes a market crash. The theoretical and empirical insights derived from this study offer critical, actionable implications for a diverse spectrum of market participants. For regulatory authorities and standard-setting bodies, the findings underscore the strategic imperative of fostering a highly active, robust institutional investor base capable of independently policing executive behavior in high-volatility environments. For corporate boards of directors, the research highlights the necessity of actively counterbalancing executive optimism through stringent internal controls and independent oversight committees. Finally, for global and domestic investors navigating emerging capital markets, this study emphasizes that traditional financial analysis must be holistically integrated with an evaluation of executive psychology and ownership structures to accurately assess fundamental equity risk.

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