

“Financial distress and stock price crash risk in Egyptian firms”

AUTHORS	Asmaa Samir   Medhat AbdElRasheed Nofal Ahmed Rashed  Manal Khalil  
ARTICLE INFO	Asmaa Samir, Medhat AbdElRasheed Nofal, Ahmed Rashed and Manal Khalil (2023). Financial distress and stock price crash risk in Egyptian firms. <i>Investment Management and Financial Innovations</i> , 20(3), 311-320. doi: 10.21511/imfi.20(3).2023.26
DOI	http://dx.doi.org/10.21511/imfi.20(3).2023.26
RELEASED ON	Tuesday, 19 September 2023
RECEIVED ON	Monday, 12 September 2022
ACCEPTED ON	Monday, 24 July 2023
LICENSE	 This work is licensed under a Creative Commons Attribution 4.0 International License
JOURNAL	"Investment Management and Financial Innovations"
ISSN PRINT	1810-4967
ISSN ONLINE	1812-9358
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”



NUMBER OF REFERENCES

47



NUMBER OF FIGURES

0



NUMBER OF TABLES

7

© The author(s) 2023. This publication is an open access article.



BUSINESS PERSPECTIVES



LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine
www.businessperspectives.org

Received on: 12th of September, 2022

Accepted on: 24th of July, 2023

Published on: 19th of September, 2023

© Asmaa Samir, Medhat AbdElRasheed Nofal, Ahmed Rashed, Manal Khalil, 2023

Asmaa Samir, Assistant Lecturer, Ph.D., Faculty of Commerce, Finance Department, Cairo University, Egypt.

Medhat AbdElRasheed Nofal, Professor of Financial Accounting, Cairo University, Egypt.

Ahmed Rashed, Ph.D., Lecturer, Faculty of Commerce, Finance Department, Cairo University, Egypt. (Corresponding author)

Manal Khalil, Ph.D., Lecturer, Faculty of Commerce, Finance Department, Cairo University, Egypt.



This is an Open Access article, distributed under the terms of the [Creative Commons Attribution 4.0 International license](https://creativecommons.org/licenses/by/4.0/), which permits unrestricted re-use, distribution, and reproduction in any medium, provided the original work is properly cited.

Conflict of interest statement:

Author(s) reported no conflict of interest

Asmaa Samir (Egypt), Medhat AbdElRasheed Nofal (Egypt),
Ahmed Rashed (Egypt), Manal Khalil (Egypt)

FINANCIAL DISTRESS AND STOCK PRICE CRASH RISK IN EGYPTIAN FIRMS

Abstract

Economic policy uncertainty intensified as a result of the global financial crisis. To overcome these obstacles, firms handle issues with financial distress and crash risk more proactively. This paper offers new insights into the relationship between financial distress and crash risk on the Egyptian stock market during the period of 2014–2021 and presents how managers strengthen the bad news hoarding mechanism to their advantage. Data were collected via financial statements and reports obtained from the Thomson Reuters database using 824 annual observations of 103 Egyptian firms via the generalized method of moments and ordinary least squares. Results show a strong positive impact of financial distress on crash risk using OLS and GMM. Results support the role of managerial opportunism to cover up bad news that undermines a firm's economic fundamentals. The findings support an agency theory of how financial distress affects crash risk. The findings support conducting robust tests for alternative financial distress and crash risk measures.

Keywords

crash risk, managerial opportunism, risk taking, stock market, OLS, GMM, agency theory

JEL Classification

M41, G39, G50

INTRODUCTION

The stock price crash risk (SPCR) has attracted a great deal of attention from investors, practitioners, regulators, and academics, especially since the global financial crisis in 2008 (Su & Zhou, 2022). The agency problem is a major contributor to the potential exposure to this risk (Chen et al., 2001; Jin & Myers, 2006).

Opportunistic management behaviors are the main reason for the stock price crash, as managers' tendency to hoard bad news increases the problem of information asymmetry, which is reflected in the fact that the stock price does not reflect the true value. Over time, when this news is revealed, investors sell a firm's stocks, and this makes the stock price more likely to crash (Dai et al., 2019). Moreover, managers hide bad news from stakeholders due to their concerns about compensation, bonuses, short-term promotion, and longevity, which affect the transparency of financial reports (Dai et al., 2019). Sometimes, a firm may not be able to meet its financial obligations, and this is considered one of the professional concerns of managers, which makes managers more conservative about this bad news, which is known as financial distress (FD) (Andreou et al., 2021).

In recent decades, notably after the financial crisis, stakeholders have become more interested in determining the creditworthiness of the firm and the rate of default before dealing with it (Sfakianakis, 2012). Additionally, firms' exposure to bankruptcy affects not only their stakeholders but also the industry to which they belong (Nguyen et al., 2019).

Several studies have pointed out that whenever a firm faces high levels of financial distress, the more it tries to avoid exposure to potential actual bankruptcy by hiding bad news related to financial difficulties for as long as possible. Accordingly, upon disclosure of this news, the possibility of a crash in stock prices increases. There is a lack of recent evidence in light of the association between financial distress and crash risk in Egypt.

1. LITERATURE REVIEW

SPCR phenomenon is closely related to managers constantly hoarding bad news to achieve managerial incentives within the framework of the agency theory (Habib et al., 2018; Murata & Hamori, 2021; Andreou et al., 2021).

Jin and Myers (2006) developed the bad news hoarding theory, which contends that corporate insiders have an information asymmetry and external stakeholders allow bad news to be hidden for as long as possible. Once the accumulated amount of bad news reaches a certain threshold, it becomes extremely expensive or impossible to continue to block it. When this accumulated information is subsequently revealed, all negative information is revealed simultaneously, leading to a sudden crash in stock prices (Jin & Myers, 2006; Hutton et al., 2009; Kim et al., 2011).

Empirical studies provide support for the bad news hoarding theory, as these studies indicate that financial reporting opacity, tax avoidance, stock incentives, and income smoothing lead to increased stock price crashes (Jin & Myers, 2006; Kim et al., 2011; Chen et al., 2017).

In this context, information about financial difficulties is considered a kind of bad news that has a strong impact on stakeholders, so the financially distressed firms hide their real financial position, and when this news is announced, the stock prices of these firms are vulnerable to crash risk.

Numerous studies show that firm managers who face rising distress risk take advantage of opportunities to conceal poor operating performance, such as influencing contractual outcomes or deceiving stakeholders about the financial foundation of their business (Charitou et al., 2007; Andreou et al., 2021). Also, managers can deceive investors by carefully concealing negative information about the true status

of their firms' economic fundamentals for up to three years or more (Jin & Myers, 2006; Kothari et al., 2009).

These techniques allow managers to cover up undesirable information for an extended time, preventing the general public from seeing how it affects the firm's economic value.

Previous studies indicated that one of the factors contributing to managers' reluctance to share negative news is the connection between distress risk and their fears about their careers (Kothari et al., 2009). Additionally, the unfavorable externalities brought on by escalating financial troubles motivate management to hide unfavorable news from investors. Firms are more susceptible to future crash risk as a result of this strategy.

Some of the literature uses yearly intervals, which is the normal methodology in studies of corporate finance and accounting, and indicates no statistically significant link between financial distress and collapse risk (Zhu, 2016; Andreou et al., 2017b). Financial distress is assessed using accounting and market-based models as just one of many control variables in their firm-year panel regression models.

Accounting-based leverage is a poor predictor of a firm's distress risk as evaluated by the market because financial statements attempt to evaluate previous performance and may not be very instructive about the future condition of an organization. Market-based evaluations of distress risk include estimates of the likelihood of impending events. When leverage is used as a measure of a firm's distress as perceived by the market, the literature has not produced statistical evidence to support the relationship between distress and collapse risk (Hutton et al., 2009; Deng et al., 2020). Contrary to the anticipated association, many other studies show considerable negative coefficients for financial leverage (An et al., 2020).

The relevance between financial distress and stock price crash risk has not been sufficiently examined in prior literature. Based on evidence from the US, Andreou et al. (2021) relied on a sample consisting of 4,855 unique firms over the period 1990–2018 and asserted that the likelihood of future crash risk is strongly positively correlated with short-term fluctuations in financial distress, which means that the stock price has an 8.33 percent chance of crashing compared to its mean value in any given month.

In the same vein, He and Ren (2022) used a sample of 6,533 firms for the period 1995–2016 and showed that the crash risk is significantly influenced by financial restrictions, indicating that financially constrained firms are more vulnerable to stock price volatility than unconstrained firms. As a result, firms with limited financial resources are more likely to have a higher chance of default risk, thus contributing to the rising crash risk.

This study aims to explore the association between financial distress and stock price crash risk using OLS and GMM models and conducting robust tests for alternative financial distress and crash risk measures of Egyptian firms by addressing the potential endogeneity.

2. DATA & METHODOLOGY

2.1. Data

The sample comprises 103 Egyptian companies that were listed on the Egyptian stock exchange between 2014 and 2021, with a total of 824 observations. The financial sector was excluded from the sample due to its unique nature in comparison to other sectors. This paper employs OLS and GMM panel data analysis through financial statements and reports.

The Egyptian revolution caused major declines in stock returns as well as instability on the Egyptian Stock Exchange between 2011 and 2013 (Rashed et al., 2018; Mohamed & Rashed, 2021; Shehata & Rashed, 2021; Rashed & Ghoniem, 2022). The optimum time frame for stock returns on the Egyptian market, where trading activity is stable on the stock price within the period 2014–2021.

Table 1 summarizes all sectors listed on the Egyptian stock exchange after excluding the financial sector, which indicates that the majority of the sample operates in the real estate sector (19.42%), then the food and beverages sector approximately (18.45%) than construction and building material with a percentage of (17.48%) than industrial goods and services approximately (9.71%), while the minority of sample operates in healthcare and pharmaceutical, oil and gas and retail sectors approximately (0.97%, 1.94%, 1.94%), respectively.

Table 1. Distribution of the relevant sectors

Sectors	Freq.	Percent
Chemical	56	6.80
Construction and building materials	144	17.48
Food and Beverage	152	18.45
Healthcare and Pharmaceuticals	8	0.97
Industrial goods and services	80	9.71
Oil and Gas	16	1.94
Personal and Household products	56	6.80
Real Estate	160	19.42
Basic Resources	48	5.83
Retail	16	1.94
Travel and Leisure	48	5.83
Media and Telecommunication	40	4.85
Total	824	100.00

2.2. Methodology

The paper aims to contribute to the effect of financial distress on crash risk in the Egyptian stock exchange using OLS & GMM. The prospecting model to examine the effect of financial distress on crash risk is as follows:

$$SPCR_{i,t} = \beta_0 + \beta_1 FD_{i,t} + \sum_k^{\beta} controls_{i,t} + \varepsilon_{i,t}, \quad (1)$$

$$SPCR_{i,t} = \beta_0 + \beta_1 FD_{i,t} + \beta_2 FS_{i,t} + \beta_3 LEV_{i,t} + \beta_4 BS_{i,t} + \beta_5 BIG4_{i,t} + \varepsilon_{i,t}. \quad (2)$$

All measurements of the variables used in this investigation are listed in Table 2.

$SPCR_{i,t}$ refers to the stock price crash risk of a firm (i) in a period (t) measured by two measures: the negative coefficient of skewness (NSCKEW) and the volatility of weekly returns from bottom

Table 2. Measurements of variables

Variables	Measure	Predict Sig	References
Crash risk (SPCR)	The negative coefficient of skewness (NSKEW)		Andreou (2015); Kim et al. (2020); Fu et al. (2021)
	The volatility of weekly returns from bottom to top (DUVOL)		Cui & Zhang (2020); Fu et al. (2021)
Financial distress (FD)	Based on the Altman (2005) z-score for the Egyptian market.	+/-	Altman (1968), Lugovskaya (2010); Udin et al. (2017).
	The distance to default (DD) model	+/-	Merton (1974); Hillegeist et al., (2004); Vassalou and Xing (2004); Bharath & Shumway (2008); Charitou et al. (2013).
Firm Size (FS)	The natural logarithm of total assets	+/-	Rashed, et al. (2018); Shehata and Rashed (2021); Rashed and Ghoniem (2022); Abdel-Wanis & Rashed (2023); Khalil and Rashed (2023); Fu et al. (2021)
Leverage (LEV)	The ratio of total debts to total assets	+/-	Rashed and Ghoniem (2022) ; Fu et al. (2021); Abdel-Wanis & Rashed (2023)
Board Size (BS)	The natural logarithm of board members	+/-	Hou & Liu (2023); Abdel-Wanis & Rashed (2023)
Big4	Dummy variable take one if the company is one of the top four international audit firms and otherwise take zero.	+/-	Wang & Liu (2022)

to top (DUVOL). $FD_{i,t}$ represents the financial distress risk measured by the z-score model and the distance to default (DD) model. $Controls_{i,t}$ are firm size (FS), financial leverage (LEV), board size (BS), and big4 ($BIG4$) are the four different control variables. LEV is determined by the ratio of total debts to total assets, and FS is determined by the natural logarithm of total assets. BS is measured by the natural logarithm of board members, and $big4$ is measured by a dummy variable, take (1) if a firm is one of the top four international audit firms, and take (0) otherwise.

3. EMPIRICAL RESULTS

Descriptive statistics contribute to exploring all variables' relevance in the regression model during the period 2014–2021. The descriptive statistics for each variable included in the regression are shown in Table 3. The mean values of crash risk measures (NSKEW & DUVOL) are negative (–0.278 and –0.203), which indicates that Egyptian firms are crash prone. The mean values of the financial distress measures (Z-score & DD) are positive (1.3 and 0.459). Firms are characterized by the instability of both financial distress and crash risk within the period 2014–2021 due to a higher standard deviation. The average for FS, LEV, BS, and BIG4 are 13.615, 0.464, 0.874, and 0.368, respectively. Firm size, financial leverage, and board

size are consistent and identical in the Egyptian market, indicating that companies would remain stable between 2014 and 2021. In contrast, Big4 is different and unstable during the research period.

Table 3. Descriptive statistics

VAR	N	Mean	STD	p1	p99	Skew.	Kurt.
NSKEW	824	–.278	.321	–.818	.143	–.403	1.829
DUVOL	824	–.203	.156	–.43	.04	.059	1.916
Z-score	824	1.3	.808	.421	2.751	.7	2.136
DD	782	.459	.657	–.31	1.75	.717	2.345
FS	824	13.615	1.778	10	18	.188	2.451
LEV	824	.464	.197	.17	.77	.065	1.762
BS	824	.874	.146	.48	1.2	–.051	2.93
BIG4	824	.368	.482	0	1	.549	1.301

The correlation matrix for each study variable is shown in Table 4. The results show a positive correlation between financial distress (Z-score & DD) and crash risk (NSKEW & DUVOL). Furthermore, there is a positive correlation between board size and crash risk while there is a negative correlation between firm size, financial leverage, and crash risk (DUVOL). Contrarily, there is no correlation between firm size and crash risk (NSKEW), however, there is a positive correlation between financial leverage, board size, and crash risk (NSKEW). According to the variance inflation factors (VIF), all values are smaller than 10, which indicates that there is no multicollinearity issue.

Table 4. Correlation table

VAR	(1)	(2)	(3)	(4)	(5)	(6)	(7)	VIF
(1) NSKEW	1.000							
(2) DUVOL	0.813* (0.000)	1.000						
(3) Z-score	0.101* (0.004)	0.082* (0.018)	1.000					1.00
(4) DD	0.096* (0.007)	0.074* (0.038)	0.467* (0.000)	1.000				1.01
(5) FS	-0.037 (0.283)	-0.110* (0.002)	-0.012 (0.739)	-0.058 (0.103)	1.000			1.42
(6) LEV	0.069* (0.047)	-0.017 (0.626)	0.039 (0.262)	0.000 (0.999)	0.340* (0.000)	1.000		1.19
(7) BS	0.124* (0.000)	0.084* (0.016)	-0.013 (0.704)	-0.079* (0.027)	0.416* (0.000)	-0.047 (0.173)	1.000	1.26

Note: * $p < 0.05$.

Table 5 demonstrates that there is a stationary time series because the unit root test for NSKEW is (-81.029) and the probability value is less than 0.05. Also, the probability value of Chi2 is more than 0.05 and Chi2 for NSKEW is 0.106, there is homoscedasticity. According to the f-value for the NSKEW model, which is 0.15, there are no missing variables, and the probability value is higher than 0.05.

Table 5. Diagnostics tests

Diagnostics Tests		Coef.
Unit root		
ADF	Unadjusted t	-82.8026
	Adjusted t	-81.0295
	Prob	0.0000
Heteroskedasticity		
chi2(1)		2.61
Prob > chi2		0.106
RESET		
F (3, 796)		0.15
Prob > F		0.927

Table 6 presents the findings of OLS and GMM estimations. OLS concludes that the p-value of the f-test is significant, since ($p > F$) is significant at the 1% level. In Egyptian companies registered on the stock exchange, financial distress explains more than 13% of the crash risk ($\text{Adj } R^2 = 0.13$). The instruments utilized are trustworthy, and AR (2) is above the 5% level, leading to the GEMM conclusion that the converted residuals do not exhibit serial correlation. The empirical model has been appropriately described because the p-values for the Hansen and Sargan tests are both greater than 0.1.

The over-identifying restrictions are legitimate, and the GMM specification is accurate. These results point to a good fit for the dynamic panel model of crash risk (NSKEW & DUVOL). Financial distress has a positive effect on the crash risk, and the coefficient values for the OLS and GMM models are positive at 5% and 1% levels, respectively.

The results demonstrate that firm size (FS) negatively affects crash risk (NSKEW & DUVOL) at the 1% significance level in both the OLS and GMM models. The findings show that financial leverage (LEV) has an effect on crash risk (NSKEW) at the 5% level, but there is no effect of LEV on crash risk (DUVOL) because the p-values in both the OLS and GMM models are more than 10%. Additionally, Big4 and board size (BS) have a favorable impact on the crash risk (NSKEW & DUVOL), as seen by the p-values in the 5% and 1% levels of the OLS and GMM models, respectively.

Table 7 demonstrates how the financial distress effect can be evaluated by using the distance to default (DD) as an alternate measure of the Z-score measure (Merton, 1974; Vassalou & Xing, 2004; Andreou, 2015; Andreou et al., 2021). Results demonstrate a strong positive effect of financial distress on stock price crash risk (NSKEW & DUVOL) for both OLS and GMM ($p < 10\% \& 1\%$), respectively, supporting the findings in Table 5.

Control variables show that there is a negative relationship between firm size and crash risk at the 1% level in both OLS and GMM (NSKEW &

Table 6. The effect of financial distress on the crash risk

Variable	OLS		GMM	
	NSKEW	DUVOL	NSKEW	DUVOL
Z-score	.0389**	.0218**	.1850***	.0701***
FS	-.0308***	-.0192***	-.0537***	-.0267***
LEV	.2454**	.0810**	.1883	.0985
BS	.4415***	.1705***	1.2013***	.4988***
BIG4	.0596**	.0207**	.2061**	.1056**
Year & Industry FE	Yes	Yes	Yes	Yes
_cons	.0552	.1004	-.9966***	-.4619***
N	824	824	824	824
R2	.132	.134		
Adj-R2	.106	.108		
F (24, 799)	5.07	5.23		
p > F	0.000	0.000		
AIC	397.21	-793.13		
BIC	515.06	-675.27		
RMSE	.303	.147		
Chi2			41.60	30.87
Pro-AR (1)			0.000	0.000
Pro-AR (2)			0.480	0.529
Pro-Sargan			0.112	0.133
Pro-Hansen			0.231	0.331

DUVOL). Additionally, due to p-values of 10%, financial leverage (LEV) does not affect crash risk (DUVOL) but has a positive effect on stock price crash risk (NSKEW) at the 1% level. Also, board size (BS) and BIG4 have a positive effect on crash risk (NSKEW & DUVOL) at 5% in both OLS and GMM models.

4. DISCUSSION

Regarding the major goals, this study investigates the effect of financial distress on crash risk in Egyptian firms within the period 2014–2021. The results indicate a positive effect of financial distress on crash risk.

Table 7. Robustness test

Variable	OLS		GMM	
	NSKEW	DUVOL	NSKEW	DUVOL
DD	.0367*	.0193*	.2694***	.0344**
FS	-.0303***	-.0192***	-.0311***	-.0295***
LEV	.2496**	.0841**	-.1421	.1159
BS	.5261**	.21279**	1.300**	.2197**
BIG4	.0599**	.0207**	.2442**	.1259**
Year & Industry FE	Yes	Yes	Yes	Yes
_cons	.01172	.072	-1.075***	-.270***
N	824	824	824	824
R2	.128	.130		
Adj-R2	.102	.104		
F (24, 799)	4.93	5.00		
p > F	0.000	0.000		
AIC	400.5	-789.3		
BIC	518.4	-671.5		
RMSE	.304	.147		
Chi2			45.13	35.31
Pro-AR (1)			0.044	0.000
Pro-AR (2)			0.841	0.771
Pro-Sargan			0.112	0.212
Pro-Hansen			0.441	0.341

The results are supported by agency-related theoretical foundations, which contend that managers' tendencies to withhold bad news over extended periods are primarily responsible for stock price crash risk. In support of this argument, the paper provides strong proof that the positive correlation between financial distress and crash risk is caused by withholding bad news (Andreou et al., 2021). The results demonstrate empirically that financial distress transmits important information about a firm's financial fundamentals relevant to difficulties with impending crash risk.

Regarding the control variables, Table 6 shows that firm size (FS) hurts crash risk in both OLS and GMM models, while financial leverage (LEV) has a positive effect on crash risk (NSKEW), while there is no impact of financial leverage on crash risk (DUVOL). Additionally, in both OLS and GMM models, board size (BS) and BIG4 have a positive effect on crash risk (NSKEW & DUVOL).

Regarding the robustness test, Table 7 investigates the similar effect of financial distress on crash risk by substituting a different financial distress indicator (default to distance). The same regression using both OLS and GMM is confirmed by the robustness check. The results support the positive effect of financial distress on crash risk. This outcome is consistent with the findings in Table 6.

Results indicate that managers may purposefully suppress negative information to preserve their wealth and human resources. This could raise investors' expectations above reasonable levels and enhance the firm's stock price over its intrinsic value at the expense of shareholders (Jin & Myers, 2006; Bleck & Liu, 2007; Benmelech et al., 2010).

Investors' misconception of a firm's actual economic reality resulted from this opportunistic action (Kothari et al., 2009; Andreou et al., 2017b; Andreou et al., 2021). Long-term deception is inherently unsustainable, and when managers are overwhelmed by

the amount of negative information, they frequently give up. At this time, the market is abruptly flooded with the collected bad news, leading to a stock price drop for a given firm.

The findings demonstrate that managers can conceal unfavorable information for a long time, shielding the public from the impact it has on a firm's economic value. If previously hidden unfavorable information comes to light and enables investors to understand the firm's (real) status of its economic fundamentals, investor expectations will immediately decrease. As a result, the level of distress risk for all firms will quickly increase.

This paper claims that when managers uncover such knowledge, it usually happens right before they give up trying to keep the public in the dark. In this regard, when the assessment occurs far earlier than the point at which managers give up and publicly disclose accumulated bad news that causes a stock price collapse, investors are unable to accurately determine a company's financial distress risk situation and the implications for potential future crash risk. The results highlight the role of the information structure process, which is characterized by managers' propensity to disseminate damaging firm-specific information piecemeal (Hong & Stein, 2003).

Institutional investors with active managers can improve a company's performance in the event of unexpected short- and long-term increases in financial distress by managing their stock portfolios, producing high-quality information, and spotting bad news hoarding activities by firms that sell those stocks ahead of crash risk.

Stock price crash is a comprehensive market-based indicator of management efforts to cover up subpar performance by withholding negative information for a lengthy period (Andreou et al., 2017b; Andreou et al., 2021).

CONCLUSION

This paper aims to examine the effect of financial distress on crash risk using a sample of 103 Egyptian companies listed on the Egyptian stock exchange from 2014 to 2021 via OLS and GMM. The results of this study explored the effect of financial distress on crash risk. This study used control variables as proactive tools to obtain strong results. The results show a positive associa-

tion between financial distress and crash risk in Egyptian firms. High financial distress leads to increased crash risk. The empirical findings support the assumptions of the agency theory-based behavioral explanation of management opportunism, which fuels the process of bad news hoarding and causes firm-specific stock price crash risk. As a result, it also causes financial distress to crash risk. Therefore, this study creates a framework to show how financial distress effects crash risk in Egyptian firms. The results of this study assist policymakers and regulators in developing strong corporate governance policies that could assist firms in reducing crash risk and paying close attention to keeping an adequate cushion of capital to decrease financial distress. This study recommends investors look for important information from different sources to explore and examine suppressed damaging information that undermines a firm's actual condition of economic fundamentals. The results concluded that investors should evaluate a firm's annual financial distress risk to forecast future stock price crash risk, and managers have a variety of tools at their disposal to conceal negative news related to a firm's performance such as: manipulating accruals, off-balance sheet items, making ambiguous business announcements, etc.

RESEARCH LIMITATIONS AND FUTURE RESEARCH

Unfortunately, there are still significant gaps in this study. First, the study examined how financial distress affected the crash risk of Egyptian listed companies using panel data estimates. For stronger results, future studies may combine panel data with vector autoregression (VAR) approaches. Additionally, this study mainly focused on non-financial Egyptian listed companies, however, financial firms might be included to get the overall results of the Egyptian market. The study's dataset was limited to the years 2014–2021. However, datasets before 2014 may be employed to investigate the impact of the Egyptian revolution since 2011 and after. There are numerous opportunities for future research. First, this study only considered non-financial Egyptian listed firms, the same investigation could be conducted by examining the moderation role of managerial entrenchment on the association between financial distress and crash risk. Second, the moderating gender diversity role in the relationship between financial distress and crash risk needs to be explored.

AUTHOR CONTRIBUTIONS

Conceptualization: Asmaa Samir, Medhat AbdElRasheed Nofal, Manal Khalil.

Data curation: Asmaa Samir.

Formal analysis: Ahmed Rashed.

Funding acquisition: Ahmed Rashed.

Investigation: Asmaa Samir, Ahmed Rashed.

Methodology: Asmaa Samir, Medhat AbdElRasheed Nofal, Ahmed Rashed, Manal Khalil.

Project administration: Asmaa Samir, Medhat AbdElRasheed Nofal, Manal Khalil.

Resources: Asmaa Samir, Medhat AbdElRasheed Nofal, Manal Khalil.

Software: Asmaa Samir, Medhat AbdElRasheed Nofal, Ahmed Rashed, Manal Khalil.

Supervision: Asmaa Samir, Medhat AbdElRasheed Nofal, Ahmed Rashed, Manal Khalil.

Validation: Medhat AbdElRasheed Nofal.

Visualization: Medhat AbdElRasheed Nofal.

Writing – original draft: Asmaa Samir, Ahmed Rashed.

Writing – review & editing: Asmaa Samir, Ahmed Rashed.

REFERENCES

1. Abdel-Wanis, E., & Rashed, A. (2023). The Impact of Information Asymmetry on the Relationship between Board Characteristics and Capital Structure. *Journal of Applied Business & Economics*, 25(1). <https://doi.org/10.33423/jabe.v25i1.5985>
2. An, Z., Chen, C., Naiker, V., & Wang, J. (2020). Does media coverage deter firms from withholding bad news? Evidence from stock price crash risk. *Journal of Corporate Finance*, 64, 101664. <https://doi.org/10.1016/j.jcorpfin.2020.101664>
3. Andreou, C. K., Andreou, P. C., & Lambertides, N. (2021). Financial distress risk and stock price crashes. *Journal of Corporate Finance*, 67, 101870. <https://doi.org/10.1016/j.jcorpfin.2020.101870>
4. Andreou, P. C. (2015). Effects of market default risk on index option risk-neutral moments. *Quantitative Finance*, 15(12), 2021-2040. <https://doi.org/10.1080/14697688.2014.1000367>
5. Andreou, P. C., Antoniou, C., Horton, J., & Louca, C. (2016). Corporate governance and firm-specific stock price crashes. *European Financial Management*, 22(5), 916-956. <https://doi.org/10.1111/eufm.12084>
6. Andreou, P. C., Cooper, I., Louca, C., & Philip, D. (2017a). Bank loan loss accounting treatments, credit cycles and crash risk. *The British Accounting Review*, 49(5), 474-492. <https://doi.org/10.1016/j.bar.2017.03.002>
7. Andreou, P. C., Louca, C., & Petrou, A. P. (2017b). CEO age and stock price crash risk. *Review of Finance*, 21(3), 1287-1325. <https://doi.org/10.1093/rof/rfw056>
8. Benmelech, E., Kandel, E., & Veronesi, P. (2010). Stock-based compensation and CEO (dis)incentives. *The Quarterly Journal of Economics*, 125(4), 1769-1820. <https://doi.org/10.1162/qjec.2010.125.4.1769>
9. Bharath, S. T., & Shumway, T. (2008). Forecasting default with the Merton distance to default model. *The Review of Financial Studies*, 21(3), 1339-1369. <https://doi.org/10.1093/rfs/hhn044>
10. Bleck, A., & Liu, X. (2007). Market transparency and the accounting regime. *Journal of Accounting Research*, 45(2), 229-256. <https://doi.org/10.1111/j.1475-679X.2007.00231.x>
11. Callen, J. L., & Fang, X. (2013). Institutional investor stability and crash risk: Monitoring versus short-termism? *Journal of Banking & Finance*, 37(8), 3047-3063. <https://doi.org/10.1016/j.jbankfin.2013.02.018>
12. Campbell, J. Y., Hilscher, J., & Szilagyi, J. (2008). In search of distress risk. *The Journal of Finance*, 63(6), 2899-2939. <https://doi.org/10.1111/j.1540-6261.2008.01416.x>
13. Chang, X., Chen, Y., & Zolotoy, L. (2017). Stock liquidity and stock price crash risk. *Journal of Financial and Quantitative Analysis*, 52(4), 1605-1637. <https://doi.org/10.1017/S0022109017000473>
14. Charitou, A., Dionysiou, D., Lambertides, N., & Trigeorgis, L. (2013). Alternative bankruptcy prediction models using option-pricing theory. *Journal of Banking & Finance*, 37(7), 2329-2341. <https://doi.org/10.1016/j.jbankfin.2013.01.020>
15. Charitou, A., Lambertides, N., & Trigeorgis, L. (2007). Earnings behaviour of financially distressed firms: The role of institutional ownership. *Abacus*, 43(3), 271-296. <https://doi.org/10.1111/j.1467-6281.2007.00230.x>
16. Chen, C., Kim, J.-B., & Yao, L. (2017). Earnings smoothing: does it exacerbate or constrain stock price crash risk? *Journal of Corporate Finance*, 42, 36-54. <https://doi.org/10.1016/j.jcorpfin.2016.11.004>
17. Chen, J., Hong, H., & Stein, J. C. (2001). Forecasting crashes: Trading volume, past returns, and conditional skewness in stock prices. *Journal of Financial Economics*, 61(3), 345-381. [https://doi.org/10.1016/S0304-405X\(01\)00066-6](https://doi.org/10.1016/S0304-405X(01)00066-6)
18. Cui, H., & Zhang, Y. (2020). Does investor sentiment affect stock price crash risk? *Applied Economics Letters*, 27(7), 564-568. <https://doi.org/10.1080/13504851.2019.1643448>
19. Dai, J., Lu, C., & Qi, J. (2019). Corporate social responsibility disclosure and stock price crash risk: Evidence from China. *Sustainability*, 11(2), 448. <https://doi.org/10.3390/su11020448>
20. Deng, X., Gao, L., & Kim, J. B. (2020). Short-sale constraints and stock price crash risk: Causal evidence from a natural experiment. *Journal of Corporate Finance*, 60, 101498. <https://doi.org/10.1016/j.jcorpfin.2019.101498>
21. Fu, J., Wu, X., Liu, Y., & Chen, R. (2021). Firm-specific investor sentiment and stock price crash risk. *Finance Research Letters*, 38, 101442. <https://doi.org/10.1016/j.frl.2020.101442>
22. Habib, A., Hasan, M. M., & Jiang, H. (2018). Stock price crash risk: review of the empirical literature. *Accounting & Finance*, 58, 211-251. <https://doi.org/10.1111/acfi.12278>
23. He, G., & Ren, H. M. (2022). Are financially constrained firms susceptible to a stock price crash? *The European Journal of Finance*, 1-26. <https://doi.org/10.1080/1351847X.2022.2075280>
24. Hillegeist, S. A., Keating, E. K., Cram, D. P., & Lundstedt, K. G. (2004). Assessing the probability of bankruptcy. *Review of Accounting Studies*, 9(1), 5-34. <https://doi.org/10.1023/B:RAST.0000013627.90884.b7>
25. Hong, H., & Stein, J. C. (2003). Differences of opinion, short-sales constraints, and market crashes. *The Review of Financial Studies*, 16(2), 487-525. <https://doi.org/10.1093/rfs/hhg006>

26. Hou, C., & Liu, H. (2023). Institutional cross-ownership and stock price crash risk. *Research in International Business and Finance*, 101906. <https://doi.org/10.1016/j.ribaf.2023.101906>
27. Hutton, A. P., Marcus, A. J., & Tehranian, H. (2009). Opaque financial reports, R2, and crash risk. *Journal of Financial Economics*, 94(1), 67-86. <https://doi.org/10.1016/j.jfineco.2008.10.003>
28. Jin, L., & Myers, S. C. (2006). R² around the world: New theory and new tests. *Journal of Financial Economics*, 79(2), 257-292. <https://doi.org/10.1016/j.jfineco.2004.11.003>
29. Khalil, M., & Rashed, A. (2023). The Impact of Female Directors on the Relationship between Corporate Social Responsibility and Capital Structure: Evidence from Egypt. *The Journal of Applied Business and Economics*, 25(2), 171-184. <https://doi.org/10.33423/jabe.v25i2.6106>
30. Kim, J. B., & Zhang, L. (2016). Accounting conservatism and stock price crash risk: Firm-level evidence. *Contemporary Accounting Research*, 33(1), 412-441. <https://doi.org/10.1111/1911-3846.12112>
31. Kim, J. B., Li, X., Luo, Y., & Wang, K. (2020). Foreign investors, external monitoring, and stock price crash risk. *Journal of Accounting, Auditing & Finance*, 35(4), 829-853. <https://doi.org/10.1177/0148558X19843358>
32. Kim, J. B., Li, Y., & Zhang, L. (2011b). Corporate tax avoidance and stock price crash risk: Firm-level analysis. *Journal of Financial Economics*, 100(3), 639-662. <https://doi.org/10.1016/j.jfineco.2010.07.007>
33. Kim, J.-B., Li, Y., & Zhang, L. (2011a). CFOs versus CEOs: Equity incentives and crashes. *Journal of Financial Economics*, 101(3), 713-730. <https://doi.org/10.1016/j.jfineco.2011.03.013>
34. Kothari, S. P., Shu, S., & Wysocki, P. D. (2009). Do managers withhold bad news? *Journal of Accounting Research*, 47(1), 241-276. <https://doi.org/10.1111/j.1475-679X.2008.00318.x>
35. Lugovskaya, L. (2010). Predicting default of Russian SMEs on the basis of financial and non-financial variables. *Journal of Financial Services Marketing*, 14(4), 301-313. <https://doi.org/10.1057/fsm.2009.28>
36. Merton, R. C. (1974). On the pricing of corporate debt: The risk structure of interest rates. *The Journal of Finance*, 29(2), 449-470. <https://doi.org/10.2307/2978814>
37. Mohamed, N., & Rashed, A. (2021). An investigation of the relationship between corporate social responsibility and corporate financial performance in Egypt: The mediating role of information asymmetry. *Journal of Accounting, Business and Management (JABM)*, 28(1), 73-86. <https://doi.org/10.31966/jabminternational.v28i1.827>
38. Murata, R., & Hamori, S. (2021). ESG disclosures and stock price crash risk. *Journal of Risk and Financial Management*, 14(2), 70. <https://doi.org/10.3390/jrfm14020070>
39. Nguyen, V. C., Nguyen, T. N., Le, T. T. O., & Nguyen, T. T. (2019). Determining the impact of financial performance factors on bankruptcy risk: an empirical study of listed real estate companies in Vietnam. *Investment Management & Financial Innovations*, 16(3), 307-318. [http://dx.doi.org/10.21511/imfi.16\(3\).2019.27](http://dx.doi.org/10.21511/imfi.16(3).2019.27)
40. Rashed, A., & Ghoniem, W. (2022). The impact of cash holding on stock returns in small and medium enterprises on the Egyptian Nile Stock Exchange. *Investment Management and Financial Innovations*, 19(3), 83-92. [http://dx.doi.org/10.21511/imfi.19\(3\).2022.08](http://dx.doi.org/10.21511/imfi.19(3).2022.08)
41. Rashed, A., Abd El-Rahman, E., Isamil, E., & Abd El-Samea, D. (2018). Ownership structure and investment efficiency: Evidence from Egypt. *International Journal of Accounting and Financial Reporting*, 8(4), 1-22. <https://doi.org/10.5296/ijafr.v8i4.13630>
42. Shehata, W., & Rashed, A. (2021). Accounting Conservatism, Information Asymmetry and Cash Holdings. *Journal of Accounting, Business and Management (JABM)*, 28(1), 63-72. <https://doi.org/10.31966/jabminternational.v28i1.826>
43. Su, K., & Zhou, Z. (2022). Do corporate social responsibility reduce crash risk of stock price: evidence from China. *Chinese Management Studies*, 17(2), 251-273. <https://doi.org/10.1108/CMS-07-2021-0309>
44. Udin, S., Khan, M. A., & Javid, A. Y. (2017). The effects of ownership structure on likelihood of financial distress: an empirical evidence. *Corporate Governance: The International Journal of Business in Society*, 17(4), 589-612. <https://doi.org/10.1108/CG-03-2016-0067>
45. Vassalou, M., & Xing, Y. (2004). Default risk in equity returns. *The Journal of Finance*, 59(2), 831-868. <https://doi.org/10.1111/j.1540-6261.2004.00650.x>
46. Wang, X., & Liu, H. (2022). The impact of rollover restriction on stock price crash risk. *Pacific-Basin Finance Journal*, 74, 101796. <https://doi.org/10.1016/j.pacfin.2022.101796>
47. Zhu, W. (2016). Accruals and price crashes. *Review of Accounting Studies*, 21(2), 349-399. <https://doi.org/10.1007/s11142-016-9355-1>