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ISLAMIC LABEL AND STOCK PRICE CRASH RISK

Bambang Sutrisno[1,2], Irwan Trinugroho[3], Taufiq Arifin[4] and Tastaftiyan Risfandy[5]

[1] Faculty of Economics and Business, Universitas Muhammadiyah Jakarta, Indonesia
[2] Faculty of Economics and Business, Universitas Sebelas Maret, Indonesia, bambang.sutrisno@student.uns.ac.id
[3] Faculty of Economics and Business, Universitas Sebelas Maret, Indonesia, irwan_t@staff.uns.ac.id
[4] Faculty of Economics and Business, Universitas Sebelas Maret, Indonesia, taufiqar@staff.uns.ac.id
[5] Faculty of Economics and Business, Universitas Sebelas Maret, Indonesia, tastaftiyan.risfandy@staff.uns.ac.id

ABSTRACT

This study explores how an Islamic label on firms influences stock price crash risk in Indonesia. We utilize a sample of 566 nonfinancial firms listed between 2016 and 2021, apply panel data method, and find that the Islamic label benefits the firms by lowering crash risk. Investors consider firms with the Islamic label as lower risk due to leverage constraints they must adhere to, which contributes to a decreased crash risk. Our primary results are robust to various sensitivity analyses. We also find that dividend policy and audit quality strengthen the Islamic label-crash risk nexus. The COVID-19 pandemic weakens the link between the Islamic label and crash risk. Furthermore, the Islamic label-crash risk nexus persists for up to two years.

Keywords: Islamic label, Stock price crash risk, Dividend policy, Audit quality, COVID-19 pandemic.
JEL classification: Z12; G32; G34.

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I. INTRODUCTION

Stock price crash risk (hereafter crash risk) refers to the likelihood of a quick and sharp collapse in a firm's share price, usually due to a rapid correction in the company's market valuation. According to Jin & Myers (2006), this often occurs when previously concealed negative information is disclosed. The propensity of managers to suppress negative news is a key driver of crash risk. Beyond a certain point, managers find it either impossible or too expensive to keep hiding such information. Once this tipping point is reached, all the hidden negative information is released immediately, lowering share prices (Kothari et al., 2009).

Crash risk severely threatens investors and can disrupt market stability. Understanding its underlying factors is crucial. Crash risk has garnered significant interest in accounting and financial research in the past decade. Prior research has explored the factors that contribute to crash risk. A comprehensive literature review has summarized these determinants. Habib et al. (2018) categorize them into five classifications: corporate governance, financial reporting, capital market activities, informal institutional mechanisms, and managerial incentives. However, religion is an underexplored area as a determinant. Callen & Fang (2015) find that religiosity negatively affects future crash risk. Haseeb et al. (2023) demonstrate that *Shariah* compliance exerts a negative impact on crash risk.

Previous research suggests that *Shariah* firms generally exhibit lower risk levels compared to non-*Shariah* firms. For example, Al-Awadhi & Dempsey (2017) reveal that *Shariah* firms face lower liquidity risk. In a similar vein, Khaw et al. (2019) and Cheong (2021) show that these firms have lower overall firm risk. Furthermore, Haseeb et al. (2023) provide evidence that these firms negatively impact crash risk.

Ranked third in the Global Islamic Economy Indicator, Indonesia holds significant potential to lead the global Islamic economy (Dinar Standard, 2023). The large Muslim population has driven the growth of *Shariah*-compliant sectors, such as halal tourism, Islamic banking, and Islamic stocks. *Shariah*-compliant investors focus on investments that are aligned with Islamic principles (Hayat & Hassan, 2017). Indonesia has established the Jakarta Islamic Index (JII) and the Indonesia Sharia Stock Index (ISSI) to serve as benchmarks for Islamic investors interested in such stocks. As of December 2023, the ISSI comprises 637 stocks with a market capitalization of 6.146 trillion rupiah (Indonesia Financial Services Authority, 2023). By November 2023, there were 136 thousand *Shariah* stock investors, accounting for 2.6% of the 5 million total stock market investors (CNBC Indonesia, 2024).

This paper investigates the link between the Islamic label and crash risk. We employ annual data from 566 non-financial firms listed in the IDX for the 2016-2021 period. Our baseline result documents that the Islamic label negatively affects crash risk. This finding supports Haseeb et al.'s (2023) result that the Islamic label benefits the company by decreasing crash risk. Furthermore, we find that dividend policy, audit quality, and the COVID-19 pandemic moderate the Islamic label-crash risk nexus.

The contributions of this present paper are twofold. First, the Indonesia Stock Exchange (IDX) implements an auto-rejection policy to ensure stock trading runs fairly. Referring to the Decree of the Board of Directors of the IDX with the number Kep-00113/BEI/12-2016, the IDX implements the auto rejection limits. The auto

rejection limits include: 1) Stock price of Rp 50 - 200, the limit of increase and decrease in a day is 35%; 2) Stock price of Rp 200 - 5000, the limit of increase and decrease in a day is 25%; and 3) Stock price above Rp 5000, the limit of increase and decrease in a day is only 20%. This auto rejection limit has changed according to the Board of Directors Decree Number Kep-00023/BEI/03-2020 (adjustment during the Covid-19 pandemic) with the following rule: 1) Stock price of Rp 50 - 200 can increase by 35 percent and decrease by only 10 percent; 2) Stock price of Rp 200 - 5000 can increase by 35 percent and decrease by only 10 percent; and 3) Stock price above Rp 5000 can increase by 20 percent and decrease by 10 only percent. By using a sample of 62.3% Islamic stocks in Indonesia between 2016 and 2021, this paper contributes to the literature by examining whether Islamic stocks are less or more susceptible to crash risk under the auto-rejection policy, as the implementation of auto-rejection may affect the Islamic label-crash risk nexus.

Second, limited studies examine the link between dividend policy and crash risk. Bouaddi et al. (2021) show that dividend policy lowers crash risk in France. Kim et al. (2024) report similar findings in the United States. Dividends limit the cash available to managers for projects that may be unprofitable or serve personal interests (Jensen, 1986). Managers are less susceptible to hiding unfavorable information by reducing agency conflicts and lowering crash risk. On this basis, the effect of the Islamic label in decreasing crash risk is moderated by dividend policy. Furthermore, audit quality is an essential factor in reducing crash risk. Robin & Zhang (2015), Khajavi & Zare (2016), and Lim et al. (2016) show that audit quality benefits the firms by lowering crash risk. The nexus between the Islamic label and crash risk is moderated by audit quality. Although our empirical work is close to Haseeb et al. (2023), this paper offers a newer research period by including COVID-19. We analyze the moderating role of the COVID-19 period on the link between an Islamic label and crash risk. This paper is the first study investigating the moderating role of dividend policy, audit quality, and the COVID-19 pandemic on the Islamic label-crash risk nexus.

The structure of this paper is as follows. Section two presents the literature review. Section three details the methodology. In section four, we present and discuss the empirical results, followed by the conclusion in the final section.

II. LITERATURE REVIEW

According to agency theory, managers withhold bad news due to numerous incentives. The hidden information can reach a certain critical point. When negative information is released to the public, the market reacts negatively by selling the stock, and the potential crash risk increases. Firms with the Islamic label have passed *Shariah* screening criteria, following *Shariah* principles. According to social norms theory, the environment determines people's behavior (Zaman et al., 2018). The Islamic label is associated with more transparent and ethical business practices, avoiding speculation and high-risk transactions. Therefore, managers in *Shariah*-compliant companies are less prone to conceal unfavorable information from stakeholders and have more ethical business practices (Wan Ismail et al., 2015), lowering crash risk.

Following the practices observed in other Islamic countries, the Indonesia Financial Services Authority (OJK) carefully evaluates *Shariah*-compliant firms' business operations and financial indicators, establishing a robust monitoring framework. This enhanced oversight can mitigate crash risk, a key concern for investors and policymakers. Managers in *Shariah*-compliant firms are highly aware of the ethical expectations associated with their Islamic identity and act cautiously to uphold their reputation and maintain trust. These firms generally have lower debt levels, a conservative financial approach that improves their resilience against stock price crashes. Lee (2016) and Habib et al. (2018) state that higher leverage increases the occurrence of future crash risk.

Gati et al. (2020) observe that Indonesia's *Shariah* firms outperform non-*Shariah* firms. *Shariah* firms experience better accounting performance (Rahardjoputri et al., 2024). In Malaysia, Haseeb et al. (2023) demonstrate that *Shariah*-compliant companies have lower crash risk. We contend that firms with the Islamic label in Indonesia emphasize ethical business practices in decision-making, which is positively perceived by investors, thereby mitigating crash risk.

Regarding the performance of Islamic stocks and non-Islamic stocks during the crisis, prior empirical works provide mixed findings. Ashraf & Mohammad (2014) and Shear & Ashraf (2022) show that Islamic stocks outperform non-Islamic stocks during the global financial crisis and the COVID-19 pandemic. However, Al-Khazali et al. (2014) and Paltrinieri et al. (2019) find that Islamic equity indices face similar market risk to conventional indices during the global financial crisis. Ben Rejeb & Arfaoui (2019) find that Islamic equity indices demonstrate higher volatility than conventional indices. Investors can negatively perceive the poor performance of Islamic stocks over the COVID-19 pandemic; therefore, the potential crash risk increases.

According to the discussion above, the direction of the Islamic label-crash risk nexus can be positive and negative. Hence, we propose the following hypothesis:
H_1: An Islamic label significantly affects crash risk.

III. METHODOLOGY

3.1. Sample Selection and Data

This study begins by selecting all the firms listed on the IDX during 2016-2021. We eliminate companies in the financial industry due to their heavy regulation by the government and distinct financial characteristics compared to other industries. Additional exclusions apply to firms that have less than 26 weeks of annual return data. Our final sample comprises 2,981 firm-year observations across 566 firms. We collect the secondary data from annual reports, Yahoo Finance, and the Indonesian Capital Market Directory (ICMD). We winsorize the continuous variables at the 1st and 99th percentiles.

3.2. Variable Definitions

The dependent variable in this paper is crash risk. This study employs three crash risk proxies: NCSKEW, DUVOL, and CRASH. The following is the calculation of each measure.

Our first step is to estimate firm-specific weekly returns ($W_{i,t}$). It is defined as the natural log of one plus the residual ($\varepsilon_{i,t}$) from the following equation:

$$r_{i,t} = \alpha_i + \beta_{1,i}\, r_{m,t-2} + \beta_{2,i}\, r_{m,t-1} + \beta_{3,i}\, r_{m,t} + \beta_{4,i}\, r_{m,t+1} + \beta_{5,i}\, r_{m,t+2} + \varepsilon_{i,t} \quad (1)$$

where $r_{i,t}$ represents the return for each firm in the week and $r_{m,t}$ represents the value-weighted return for market in the week. $W_{i,t}$=ln(1+$\varepsilon_{i,t}$) represents the firm-specific weekly returns.

The next step is to construct NCSKEW, DUVOL, and CRASH using $W_{i,t}$. These three proxies are computed separately as follows.

The construction of NCSKEW involves taking the negative of the third moment of firm-specific weekly returns for each firm year and dividing it by the standard deviation of the firm-specific weekly returns cubed. A higher crash probability is linked to an increase in NCSKEW. The formula is shown in Equation (2):

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

where n denotes the number of observations of $W_{i,t}$ each year.

The calculation of DUVOL is the natural log of the ratio between the standard deviation for up and down weeks. A company is more prone to crash risk when its DUVOL value is higher. Equation (3) illustrates the calculation.

$$DUVOL_{i,t} = ln\left\{\frac{(n_u-1)\sum_{DOWN} W_{i,t}^2}{(n_d-1)\sum_{UP} W_{i,t}^2}\right\} \quad (3)$$

where n_u(n_d) is the number of up (down) weeks, when the number of weeks above (below) the annual average of the specific weekly rate of returns.

We also use CRASH for a robustness test. It is coded one if at least one firm-specific weekly return fall 3.09 standard deviations below the annual average of the specific weekly rate of returns.

The Islamic label is a key independent variable. Following Wahyono (2022) and Rahardjoputri et al. (2024), we use the ISSI and JII as proxies for the Islamic label. Both ISSI and JII are dummy variables where a value of one indicates inclusion in the respective index. ISSI includes all listed firms that have passed the *Shariah* screening, while JII comprises the top 30 most liquid *Shariah*-compliant firms reviewed each semester.

We include several control variables, such as lagged negative skewness (NCSKEWLAG), detrended share turnover (DTURN), the mean firm-specific weekly return in a year (RET), the standard deviation of firm-specific weekly returns in a year (SIGMA), firm size (SIZE), leverage (LEV), return on assets (ROA), and market-to-book ratio (MTB). Lastly, we include a COVID dummy variable, coded one for observations in 2020-2021 and zero for those prior to 2020 (Chebbi, 2024). The explanation of these variables is summarized in Table 1.

Table 1.
Variable Definition

Variable	Definition	Reference(s)	Expected sign
NCSKEW	The negative of the third moment of firm-specific weekly returns and dividing it by the third power of the standard deviation of the firm-specific weekly returns	Chen et al. (2001); Hutton et al. (2009); Kim et al. (2011a, 2011b)	n/a
DUVOL	The natural logarithm of the ratio of the standard deviation of firm-specific weekly returns on weeks with returns below the annual mean, or down weeks, to the standard deviation on up weeks	Chen et al. (2001); Hutton et al. (2009); Kim et al. (2011a, 2011b)	n/a
CRASH	A dummy variable equals one if one or more firm-specific weekly returns fall 3.09 standard deviations below the mean firm-specific weekly returns over the fiscal year	Chen et al. (2001); Hutton et al. (2009); Kim et al. (2011a, 2011b)	n/a
ISSI	A dummy variable set to one if a company is successively included in the Indonesia Sharia Stock Index (ISSI)	Wahyono et al. (2022); Rahardjoputri et al. (2024)	Negative
JII	A dummy variable set to one if a company is successively included in the Jakarta Islamic Index (JII)	Wahyudi & Sani (2014); Rudiawarni et al. (2022); Rahardjoputri et al. (2024)	Negative
NCSKEWLAG	The negative conditional skewness of firm-specific weekly returns in year t-1	Chen et al. (2001); Hutton et al. (2009); Kim et al. (2011a, 2011b)	Positive
DTURN	Average monthly share turnover over the current fiscal year period minus the average monthly share turnover over the previous fiscal year period	Chen et al. (2001); Kim et al. (2011a, 2011b)	Positive
RET	Mean of firm-specific weekly returns over the fiscal year	Chen et al. (2001); Kim et al. (2011a, 2011b)	Positive
SIGMA	Standard deviation of firm-specific weekly returns over the fiscal year	Chen et al. (2001); Kim et al. (2011a, 2011b)	Positive
SIZE	The natural logarithm of total assets	Chen et al. (2001); Hutton et al. (2009); Kim et al. (2011a, 2011b)	Positive
LEV	Ratio of total liabilities over total assets	Hutton et al. (2009); Kim et al. (2011a, 2011b)	Positive
ROA	Ratio of net income over total assets	Kim et al. (2011a, 2011b)	Negative
MTB	Ratio of the market value of equity over the book value of equity	Hutton et al. (2009); Kim et al. (2011a, 2011b)	Negative
COVID	A dummy variable that takes the value of one for the observations in the year 2020 and 2021 and zero for the observations before 2020	Chebbi (2024); Rahardjoputri et al. (2024)	Positive

3.3. Econometrics Strategy

Our basic model is presented in Equation (4):

$$NCSKEW/DUVOL_{it} = \boldsymbol{\alpha_0} + \beta_1 ISSI_{it-1} + \beta_2 NCSKEW_{it-1} + \beta_3 DTURN_{it-1} + \beta_4 RET_{it-1} + \beta_5 SIGMA_{it-1} + \beta_6 SIZE_{it-1} + \beta_7 LEV_{it-1} + \beta_8 ROA_{it-1} + \beta_9 MTB_{it-1} + \beta_{10} COVID_t + \varepsilon_{it} \quad (4)$$

Equation (4) is estimated using a random-effects model since our primary independent variable is time-invariant. We apply robust standard errors to address heteroscedasticity and autocorrelation concerns. Additionally, we conduct robustness checks to verify the consistency of our main findings by varying the proxy for crash risk, the Islamic label, and the estimation method.

IV. RESULTS AND ANALYSIS

4.1. Descriptive Statistics

Table 2 presents the summary statistics for the study's variables. The average values of NCSKEW and DUVOL are 0.251 and 0.054, with a standard deviation of 1.399 and 0.657, respectively. The higher values of NCSKEW and DUVOL indicate increased crash risk. The average CRASH value is 0.417, indicating a 41.7% probability that a company will experience a crash event. The average values for ISSI and JII are 62.3% and 7.4%, respectively.

The correlation matrix in Table 3 shows strong positive correlations among the three crash risk proxies. These high correlations are similar to Kim et al. (2011b), Haseeb et al. (2023), and Ben-Nasr & Boubaker (2024) because they capture the same dimension. The two proxies for the Islamic label (ISSI and JII) exhibit negative correlations with the crash risk proxies. Additionally, Table 3 confirms that no multicollinearity exists among the independent variables.

Table 2.
Descriptive Statistics

Variable	Obs	Mean	Std. dev.	Min	Max
NCSKEW	2890	0.251	1.399	-3.078	4.17
DUVOL	2890	0.054	0.657	-1.286	1.637
CRASH	2890	0.417	0.493	0	1
ISSI	2981	0.623	0.493	0	1
JII	2981	0.074	0.285	0	1
NCSKEWLAG	2307	0.297	1.469	-3.301	4.301
DTURN	2981	0.003	0.181	-0.017	0.113
RET	2890	-0.018	0.057	-0.305	0.048
SIGMA	2890	0.031	0.021	0.003	0.098
SIZE	2981	28.448	1.712	24.451	32.316
LEV	2981	0.504	0.414	0.007	3.140
ROA	2981	0.020	0.116	-0.548	0.420
MTB	2981	2.508	5.294	-2.370	39.897
COVID	2981	0.396	0.489	0	1

Table 3.
Correlation Matrix

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1)	NCSKEW	1													
(2)	DUVOL	0.930	1												
(3)	CRASH	0.660	0.561	1											
(4)	ISSI	-0.053	-0.078	-0.025	1										
(5)	JII	-0.097	-0.093	-0.013	0.303	1									
(6)	NCSKEWLAG	0.212	0.147	0.284	0.009	0.094	1								
(7)	DTURN	-0.117	-0.112	-0.116	0.038	0.121	-0.053	1							
(8)	RET	0.129	0.103	0.222	0.075	0.113	0.239	0.002	1						
(9)	SIGMA	0.105	0.046	0.066	0.039	-0.056	0.029	0.013	-0.304	1					
(10)	SIZE	0.263	0.257	0.222	0.388	0.222	0.203	-0.102	0.291	0.045	1				
(11)	LEV	-0.011	-0.008	0.033	-0.086	-0.037	-0.015	-0.034	-0.098	0.031	0.113	1			
(12)	ROA	-0.201	-0.180	-0.105	0.160	0.253	-0.043	0.050	0.234	-0.232	0.201	-0.314	1		
(13)	MTB	-0.132	-0.083	-0.133	0.169	0.322	-0.142	0.078	0.035	-0.099	0.100	0.094	0.330	1	
(14)	COVID	0.128	0.093	0.298	-0.073	-0.051	0.258	-0.061	0.245	0.109	0.039	-0.009	-0.037	-0.135	1

4.2. Baseline Results

In our initial analysis, we regress NCSKEW/DUVOL on ISSI and all control variables as specified in equation (4). Table 4 shows a negative and significant coefficient of Islamic label, indicating that an Islamic label reduces future crash risk. Managers in *Shariah*-compliant firms are expected to avoid unethical practices due to the Islamic identity. Additionally, non-*Shariah* firms tend to have higher debt levels. Greater leverage increases pressure on the firm, raising the chances of abrupt price declines (Lee, 2016; Habib et al., 2018). In a developing country that implements the auto-rejection policy, our results confirm a negative relationship between the Islamic label and crash risk. Crash risk in Indonesia can be lower than in countries that do not implement the auto-rejection policy because there are already auto-rejection regulations. The Islamic label of companies in countries implementing the auto-rejection further creates a safer environment for investors, reducing the risks associated with unethical or speculative investment practices. Our results align with Haseeb et al. (2023) and supports our hypothesis.

The results of the control variables are summarized below. This study finds significant NCSKEWLAG, RET, SIGMA, SIZE, ROA, and COVID coefficients. NCSKEWLAG positively influences two crash risk proxies, meaning that the third moment of stock returns persists. RET is positively related to crash risk. SIGMA shows a positive impact on crash risk. SIZE positively affects crash risk. Big firms are susceptible to experience crash risk, suggesting that managers in large firms tend to hide unfavorable information to maintain their reputation. ROA negatively influences crash risk, meaning that the higher profitability of a firm will lower crash risk. COVID shows a positive effect on crash risk. The COVID-19 period increases the probability of crash risk.

Table 4.
Baseline Regression

	(1)	(2)
	$NCSKEW_{it}$	**$DUVOL_{it}$**
$ISSI_{it-1}$	-0.125***	-0.053**
	(-3.74)	(-2.18)
$NCSKEW_{it-1}$	0.085***	0.026***
	(4.40)	(2.99)
$DTURN_{it-1}$	0.141	0.073
	(1.03)	(1.16)
RET_{it-1}	2.363***	1.334***
	(5.09)	(5.14)
$SIGMA_{it-1}$	0.141***	0.102**
	(2.93)	(2.48)
$SIZE_{it-1}$	0.113***	0.046***
	(6.14)	(5.78)
LEV_{it-1}	0.110	0.045
	(1.60)	(1.36)
ROA_{it-1}	-0.485*	-0.306**
	(-1.88)	(-2.47)

Table 4.
Baseline Regression (Continued)

	(1)	(2)
	$NCSKEW_{it}$	**$DUVOL_{it}$**
MTB_{it-1}	-0.002	-0.000
	(-0.35)	(-0.12)
$COVID_t$	0.189***	0.048**
	(3.20)	(2.19)
Constant	-3.004***	-1.228***
	(-5.64)	(-5.33)
Observations	2,271	2,271
Number of firms	566	566
R-squared (overall)	0.048	0.044

Notes: ***, **, and * denote significance in 1%, 5%, and 10% levels, respectively.

4.3. Robustness Checks

We also assess whether our key findings from Table 4 hold when we conduct numerous robustness checks. The estimation results are presented in Table 5 and 6. In Table 5 column (1) shows that our baseline results are consistent when employing a crash dummy as an alternative measure for crash risk and applying a logit regression. Additionally, when the proxy for the Islamic label is modified, columns (2) and (3) present results that align with the baseline findings.

Table 6 provides additional robustness test results. When switching the estimation method to an ordinary least square (OLS), columns (1) and (2) confirm the earlier conclusions: the Islamic label reduce crash risk. Moreover, when we employ the two-step system GMM as an alternative estimation method, column (3) and (4) validates the baseline results. Second-order autocorrelation (AR(2)) is absent from the GMM diagnostic tests. The Sargan test results indicate that the null hypothesis cannot be rejected, validating the reliability and consistency of the GMM approach.

Table 5.
Robustness Checks

	(1)	(2)	(3)
	$CRASH_{it}$	**$NCSKEW_{it}$**	**$DUVOL_{it}$**
$ISSI_{it-1}$	-0.127**		
	(-2.15)		
JII_{it-1}		-0.032**	-0.011*
		(-2.09)	(-1.78)
$NCSKEW_{it-1}$	1.195***	0.085***	0.026***
	(5.62)	(4.39)	(2.98)
$DTURN_{it-1}$	1.043	0.148	0.076
	(0.30)	(1.16)	(1.03)
RET_{it-1}	1.256***	2.370***	1.336***
	(4.68)	(5.12)	(5.16)

Table 5.
Robustness Checks (Continued)

	(1)	(2)	(3)
	$CRASH_{it}$	$NCSKEW_{it}$	$DUVOL_{it}$
$SIGMA_{it-1}$	0.596**	0.148**	0.105**
	(2.20)	(1.97)	(2.34)
$SIZE_{it-1}$	1.131***	0.112***	0.047***
	(4.43)	(5.80)	(5.60)
LEV_{it-1}	1.111	0.066	0.026
	(0.84)	(1.03)	(0.86)
ROA_{it-1}	-0.544**	-0.454**	-0.289*
	(-2.41)	(-2.35)	(-1.77)
MTB_{it-1}	-0.099	-0.002	-0.000
	(-0.19)	(-0.37)	(-0.16)
$COVID_t$	2.675***	0.185***	0.046**
	(10.28)	(3.14)	(2.17)
Constant	-0.015***	-2.843***	-1.203***
	(-5.13)	(-5.22)	(-5.07)
Observations	2,271	2,271	2,271
Pseudo R^2	0.056		
R-squared (overall)		0.047	0.043

Notes: ***, **, and * denote significance in 1%, 5%, and 10% levels, respectively.

Table 6.
Further Robustness Checks

	OLS		GMM	
	$NCSKEW_{it}$	$DUVOL_{it}$	$NCSKEW_{it}$	$DUVOL_{it}$
	(1)	(2)	(3)	(4)
$ISSI_{it-1}$	-0.103***	-0.053**	-0.067***	-0.026***
	(-2.72)	(-2.16)	(-4.32)	(-3.93)
$NCSKEW_{it-1}$	0.085***	0.026***	0.036**	
	(4.48)	(2.96)	(2.21)	
$DTURN_{it-1}$	0.141	0.073	0.044	0.018
	(1.28)	(1.19)	(0.39)	(0.38)
RET_{it-1}	2.363***	1.334***	0.363***	0.505***
	(4.94)	(5.16)	(4.22)	(2.93)
$SIGMA_{it-1}$	0.141**	0.102*	0.166***	0.074***
	(2.15)	(1.90)	(7.86)	(6.14)
$SIZE_{it-1}$	0.113***	0.046***	1.722***	0.573***
	(6.26)	(5.72)	(6.65)	(6.15)
LEV_{it-1}	0.109	0.045	0.727**	0.243**
	(1.14)	(1.23)	(2.49)	(2.03)
ROA_{it-1}	-0.485**	-0.306*	-0.403**	-0.144*
	(-2.37)	(-1.77)	(-2.14)	(-1.79)
MTB_{it-1}	-0.002	-0.000	-0.031	-0.019
	(-0.36)	(-0.11)	(-1.15)	(-1.12)

Table 6.
Further Robustness Checks (Continued)

	OLS		GMM	
	$NCSKEW_{it}$	$DUVOL_{it}$	$NCSKEW_{it}$	$DUVOL_{it}$
	(1)	(2)	(3)	(4)
$COVID_t$	0.189***	0.047**	0.361***	0.146***
	(3.07)	(2.15)	(4.78)	(4.43)
$DUVOL_{it-1}$				0.029***
				(3.24)
Constant	-3.004***	-1.228***	-4.925***	-1.641***
	(-5.74)	(-5.24)	(-6.63)	(-6.14)
Observations	2,271	2,271	2,271	2,271
R-squared	0.048	0.042		
Diagnostic tests				
AR(2): p-value			0.416	0.257
Sargan: p-value			0.331	0.298

Notes: ***, **, and * denote significance in 1%, 5%, and 10% levels, respectively.

4.4. Islamic Label, Dividend Policy, and Crash Risk

According to agency theory, a high dividend policy can help mitigate agency conflicts. Dividends limit the cash available to managers for projects that may be unprofitable or serve personal interests (Jensen, 1986). By reducing agency conflicts, managers are less inclined to hide unfavorable information, lowering the likelihood of a significant share price decline.

Bouaddi et al. (2021) and Kim et al. (2024) find that dividend payments negatively affect crash risk in France and the United States, respectively. Kim et al. (2024) suggest that dividend payments reduce the hoarding of bad news, such as overinvestment, which can contribute to future crash risk. These results align with previous research indicating that dividend policy improves the quality of information disclosure. For example, Caskey & Hanlon (2013) find that dividend payments enhance the financial reporting quality. Farooq et al. (2018) show that dividend policy positively impacts earnings quality.

Dividend policy mitigates crash risk and thus potentially moderates the impact of the Islamic label on crash risk. Dividend payments can enhance investor confidence because the company can generate and distribute profits. For companies with the Islamic label, dividend payments can strengthen the perception of stability and responsibility to shareholders, thereby minimizing investor concerns about extreme price fluctuations. We analyze the moderating role of dividend policy on the nexus between the Islamic label and crash risk by using the following model.

$$NCSKEW/DUVOL_{it} = \boldsymbol{\alpha_0} + \beta_1 ISSI_{it-1} + \beta_2 DIV_{it-1} + \beta_3 ISSI * DIV_{it-1} + \beta_4 NCSKEW_{it-1} + \beta_5 DTURN_{it-1} + \beta_6 RET_{it-1} + \beta_7 SIGMA_{it-1} + \beta_8 SIZE_{it-1} + \beta_9 LEV_{it-1} + \beta_{10} ROA_{it-1} + \beta_{11} MTB_{it-1} + \beta_{12} COVID_t + \varepsilon_{it} \quad (5)$$

DIV is dividend policy, measured by cash dividend scaled by total assets (Francis et al., 2011; Risfandy et al., 2021; Bouaddi et al., 2021). Our focus is in the interaction coefficient β_3 whether dividend policy weakens or strengthens the Islamic label-crash risk nexus.

The estimation results of model (5) are summarized in Table 7. The coefficients of ISSI and DIV are both negative and statistically significant. The interaction coefficient of ISSI*DIV is negative and significant at the 5% for NCSKEW and 10% for DUVOL. This suggests that dividend policy empirically strengthens the influence of the Islamic label on crash risk.

Table 7.
Islamic Label, Dividend, and Stock Price Crash Risk

	(1)	(2)
	$NCSKEW_{it}$	**$DUVOL_{it}$**
$ISSI_{it-1}$	-0.124***	-0.056**
	(-2.72)	(-2.35)
DIV_{it-1}	-0.155**	-0.138**
	(-2.11)	(-2.04)
$ISSI*DIV_{it-1}$	-0.179**	-0.061*
	(-2.45)	(-1.80)
$NCSKEW_{it-1}$	0.097***	0.029***
	(5.22)	(3.48)
$DTURN_{it-1}$	0.149	0.076
	(1.16)	(1.28)
RET_{it-1}	2.492***	1.369***
	(5.46)	(5.35)
$SIGMA_{it-1}$	0.053**	0.026*
	(2.14)	(1.92)
$SIZE_{it-1}$	0.108***	0.044***
	(5.90)	(5.55)
LEV_{it-1}	0.098	0.044
	(1.24)	(1.31)
ROA_{it-1}	-0.653**	-0.381**
	(-2.36)	(-2.13)
MTB_{it-1}	-0.003	-0.000
	(-0.51)	(-0.13)
$COVID_t$	0.536***	0.257**
	(3.73)	(2.10)
Constant	-2.812***	-1.173***
	(-5.35)	(-5.11)
Observations	2,271	2,271
Number of firms	566	566
R-squared (overall)	0.058	0.051

Notes: ***, **, and * denote significance in 1%, 5%, and 10% levels, respectively.

4.5. Islamic Label, Audit Quality, and Crash Risk

Coffie et al. (2018) state that external audits are crucial for lowering information asymmetry and bolstering users' trust in financial statements. Habib et al. (2018) state that audit quality is an instrument used to confirm the veracity and accuracy of financial reports. Prior studies such as Robin & Zhang (2015) document that external auditors' industry expertise negatively impacts crash risk in the USA. Khajavi & Zare (2016) find similar findings to Robin & Zhang (2015). Lim et al. (2016) find that companies audited by Big-4 accounting firms exhibit lower crash risk.

Prior research confirms that high audit quality decreases future crash risk. This is achieved through information asymmetry reduction and improved transparency in financial reports. We are interested in examining the moderating role of audit quality on the Islamic label-crash risk relationship. We estimate the following econometric model.

$$NCSKEW/DUVOL_{it} = \boldsymbol{\alpha_0} + \beta_1 ISSI_{it-1} + \beta_2 AUD_{it-1} + \beta_3 ISSI * AUD_{it-1} + \beta_4 NCSKEW_{it-1} + \beta_5 DTURN_{it-1} + \beta_6 RET_{it-1} + \beta_7 SIGMA_{it-1} + \beta_8 SIZE_{it-1} + \beta_9 LEV_{it-1} + \beta_{10} ROA_{it-1} + \beta_{11} MTB_{it-1} + \beta_{12} COVID_t + \varepsilon_{it} \quad (6)$$

AUD is audit quality, measured by a dummy variable that takes the value of one if Big-4 accounting firms audit the company and zero otherwise (Lim et al., 2016; Bakhiet, 2024). The interaction coefficient β3 indicates that audit quality weakens or strengthens the Islamic label-crash risk nexus.

Table 8 shows that the variables ISSI and AUD with coefficients -0.069 and -0.355 are significant at the 5% level. This result confirms a negative and significant impact of the Islamic label and audit quality on crash risk proxied by NCSKEW and DUVOL. The interaction coefficient of ISSI*AUD is negative and significant at the 5% level. This finding highlights that audit quality strengthens the influence of the Islamic label on crash risk.

Table 8.
Islamic Label, Audit Quality, and Stock Price Crash Risk

	(1)	(2)
	$NCSKEW_{it}$	$DUVOL_{it}$
$ISSI_{it-1}$	-0.069**	-0.036**
	(-2.31)	(-2.03)
AUD_{it-1}	-0.355**	-0.164**
	(-2.11)	(-2.33)
$ISSI*AUD_{it-1}$	-0.083**	-0.052**
	(-2.28)	(-2.16)
$NCSKEW_{it-1}$	0.095***	0.028***
	(5.09)	(3.32)
$DTURN_{it-1}$	0.143	0.071
	(1.54)	(1.27)
RET_{it-1}	2.468***	1.356***
	(5.36)	(5.22)

Table 8.
Islamic Label, Audit Quality, and Stock Price Crash Risk (Continued)

	(1)	(2)
	$NCSKEW_{it}$	$DUVOL_{it}$
$SIGMA_{it-1}$	0.139**	0.115**
	(2.10)	(2.03)
$SIZE_{it-1}$	0.131***	0.057***
	(6.46)	(6.41)
LEV_{it-1}	0.086	0.038
	(1.26)	(1.15)
ROA_{it-1}	-0.509**	-0.297*
	(-2.38)	(-1.93)
MTB_{it-1}	-0.001	-0.001
	(-0.19)	(-0.32)
$COVID_t$	0.281**	0.243**
	(2.27)	(2.06)
Constant	-3.351***	-1.479***
	(-5.83)	(-5.69)
Observations	2,271	2,271
Number of firms	566	566
R-squared (overall)	0.064	0.053

Notes: ***, **, and * denote significance in 1%, 5%, and 10% levels, respectively.

4.6. Islamic Label, COVID-19, and Crash Risk

The COVID-19 pandemic has impacted businesses and financial markets worldwide. The COVID-19 pandemic increases crash risk because it creates economic uncertainty. Mazur et al. (2021) and Huang & Liu (2021) show that the COVID-19 period increases future crash risk in the USA and China, respectively.

The COVID-19 pandemic potentially influences the Islamic label-crash risk nexus. Equation (7) tests whether the COVID-19 pandemic moderates the nexus between the Islamic label and crash risk.

$$NCSKEW/DUVOL_{it} = \boldsymbol{\alpha_0} + \beta_1 ISSI_{it-1} + \beta_2 COVID_t + \beta_3 ISSI * COVID_{it-1} + \beta_4 NCSKEW_{it-1} + \beta_5 DTURN_{it-1} + \beta_6 RET_{it-1} + \beta_7 SIGMA_{it-1} + \beta_8 SIZE_{it-1} + \beta_9 LEV_{it-1} + \beta_{10} ROA_{it-1} + \beta_{11} MTB_{it-1} + \varepsilon_{it} \quad (7)$$

Table 9 demonstrates that the coefficient of COVID is positive and statistically significant at the 1% level. This finding indicates that the COVID-19 pandemic is perceived negatively by investors because of increased uncertainty in capital markets during a pandemic. We find a positive interaction coefficient of ISSI*COVID, indicating that the COVID-19 pandemic weakens the beneficial impact of the Islamic label on crash risk.

Table 9.
Islamic Label, COVID-19, and Stock Price Crash Risk

	(1)	(2)
	$NCSKEW_{it}$	**$DUVOL_{it}$**
$ISSI_{it-1}$	-0.328***	-0.152**
	(-4.35)	(-2.25)
$COVID_t$	0.449***	0.175***
	(6.98)	(5.99)
$ISSI*COVID_{it-1}$	0.082***	0.041**
	(4.38)	(2.16)
$NCSKEW_{it-1}$	0.105***	0.036***
	(5.60)	(4.28)
$DTURN_{it-1}$	0.146	0.075
	(1.05)	(1.01)
RET_{it-1}	3.033***	1.662***
	(6.54)	(6.41)
$SIGMA_{it-1}$	2.049**	0.671**
	(2.35)	(1.97)
$SIZE_{it-1}$	0.107***	0.043***
	(5.96)	(5.54)
LEV_{it-1}	0.103	0.042
	(1.19)	(1.15)
ROA_{it-1}	-0.542**	-0.334**
	(-2.10)	(-2.04)
MTB_{it-1}	-0.002	-0.001
	(-0.25)	(-0.23)
Constant	-3.053***	-1.252***
	(-5.90)	(-5.57)
Observations	2,271	2,271
Number of firms	566	566
R-squared (overall)	0.079	0.075

4.7. Long-term Effects

Following He & Ren (2023), this study explores the long-term effects of the Islamic label on crash risk. Table 10 demonstrates that the coefficient for the Islamic label (ISSI) is negative and significant. The Islamic label is predictive of crash risk for both the first and second years ahead. This indicates that an Islamic label has strong predictive power for future crash risk, even with a two-year lead time.

Table 10.
Long-term Effects

	(1)	(2)	(3)	(4)
	$NCSKEW_{it+1}$	$DUVOL_{it+1}$	$NCSKEW_{it+2}$	$DUVOL_{it+2}$
$ISSI_{it-1}$	-0.042***	-0.023**	-0.046**	-0.007**
	(-3.45)	(-2.30)	(-2.25)	(-2.18)
$NCSKEW_{it-1}$	0.066***	0.023**	0.016***	0.010*
	(2.97)	(2.51)	(2.73)	(1.76)
$DTURN_{it-1}$	0.047	0.027	0.019	0.013
	(0.40)	(0.54)	(1.18)	(1.07)
RET_{it-1}	3.956***	1.749***	2.350***	1.382***
	(5.98)	(5.33)	(3.18)	(3.67)
$SIGMA_{it-1}$	5.843**	2.507**	2.004**	1.070**
	(2.44)	(2.15)	(2.27)	(2.06)
$SIZE_{it-1}$	0.129***	0.052***	0.130***	0.049***
	(5.84)	(5.80)	(6.25)	(4.99)
LEV_{it-1}	0.027	0.028	0.057	0.013
	(0.30)	(0.68)	(0.70)	(0.31)
ROA_{it-1}	-0.292**	-0.092*	-0.026**	-0.143*
	(-2.19)	(-1.69)	(-2.16)	(-1.85)
MTB_{it-1}	-0.000	-0.002	-0.009	-0.008
	(-0.08)	(-0.82)	(-1.13)	(-1.09)
$COVID_t$	0.562***	0.293***	0.341***	0.198***
	(8.51)	(2.82)	(5.13)	(4.27)
Constant	-3.123***	-1.295***	-3.237***	-1.203***
	(-4.76)	(-4.82)	(-5.18)	(-4.02)
Observations	1,710	1,710	1,211	1,211
R-squared (overall)	0.071	0.068	0.057	0.054

Notes: ***, **, and * denote significance in 1%, 5%, and 10% levels, respectively.

V. CONCLUSION

The primary purpose of this paper is to examine the impact of the Islamic label on crash risk within the Indonesian market. Our findings indicate that the Islamic label is pivotal in lowering crash risk. Our results remain robust after performing various sensitivity tests. Dividend policy and audit quality strengthen the relationship between the Islamic label and crash risk. The COVID-19 pandemic weakens the Islamic label-crash risk nexus. We also find that the effect of the Islamic label can be observed up to two years into the future.

These findings have several practical implications. Risk-averse investors should consider the Islamic label as a critical factor in their investment strategies to minimize risk. Regulators should highlight the importance of the Islamic label in reducing crash risk in Indonesia.

This study does have some limitations. It focuses solely on Indonesian firms, and the results may not be generalizable to other developing countries. Future studies could expand this study by analyzing data from other developing nations to determine whether these findings apply in a broader international context.

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