

“COVID-19 pandemic and firm performance in the insurance industry in developed and emerging markets”

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COVID-19 PANDEMIC AND FIRM PERFORMANCE IN THE INSURANCE INDUSTRY IN DEVELOPED AND EMERGING MARKETS

Abstract

This study aims to analyze the impact of the COVID-19 pandemic on insurance companies' performance. Data spanning 2018 to 2022 from the Wall Street Journal Database was employed, encompassing 1,931 companies across 65 countries. The research distinguishes between developed (808 insurers) and emerging markets (1,123 insurers) to identify more real consequences of the pandemic. The random effects model was utilized for regressions, which run in three stages. The dependent variables (Return on Assets and Return on Equity) and the independent variables (the COVID-19 pandemic and four firm-specific factors such as claim expenses, company size, leverage, and liquidity) were analyzed. In developed markets, the study confirms the significant negative consequences of the COVID-19 pandemic on insurance firms, resulting in a global decline in performance. Conversely, emerging markets reveal a different scenario where company size plays a substantial role in insurance company performance, particularly in return on assets, aligning with findings favoring larger insurance entities. However, when considering company size's interaction with COVID-19, larger insurers in emerging markets experienced performance declines during the pandemic. While leverage significantly affects insurance firm performance in both market types, its interaction with the pandemic shows no substantial impact. Liquidity, as represented by cash holding does not significantly enhance performance, particularly in developed markets, but higher cash reserves during the pandemic negatively affect performance, primarily in emerging markets. These findings provide insights for insurance company managers to develop adaptive strategies amid evolving market conditions and potential crises, including pandemics like COVID-19.

Keywords

crisis, financial institutions, company, business, region, industrial policy, services, international investment

JEL Classification

G22, G32, L25, G01

INTRODUCTION

In recent times, the global landscape has witnessed unprecedented challenges brought forth by the COVID-19 pandemic, which has significantly impacted various sectors, including the insurance industry. The outbreak of this pandemic has triggered a domino effect across economies and markets, leading to an array of disruptions in both developed and emerging markets. Within this context, exploring the intricate interplay between the pandemic and insurance company performance becomes imperative. The unique circumstances presented by the pandemic, including widespread economic volatility, changing consumer behavior, and evolving regulatory frameworks, have spurred a renewed interest in comprehending how insurance companies have responded and adapted to these challenges. As the insurance sector stands as a crucial pillar in providing risk management and financial security, delving into the effects of COVID-19 on insurance

company performance not only offers insights into the resilience of these institutions but also serves as a litmus test for the industry's ability to navigate the complexities of contemporary crises.

Amidst this backdrop, understanding the nuances of the relationship between the COVID-19 pandemic and insurance company performance holds significant ramifications for policymakers, industry practitioners, and researchers alike. The pandemic has exposed vulnerabilities and strengths within insurance companies operating across various markets, prompting a critical examination of their strategies, risk management practices, and market responsiveness. Investigating the multifaceted impact of the pandemic on metrics such as return on assets and return on equity can unravel valuable insights into the industry's adaptability to adverse conditions. Moreover, as the insurance sector intersects with global financial systems and plays a pivotal role in mitigating risks for individuals, businesses, and communities, an in-depth exploration of the pandemic's effects can illuminate potential areas for enhancing preparedness, responsiveness, and regulatory frameworks. By engaging in this inquiry, this study seeks to contribute not only to the academic discourse but also to the practical discourse, assisting stakeholders in shaping more robust strategies and policies to safeguard the stability and sustainability of the insurance industry amidst the evolving challenges posed by the ongoing pandemic.

1. LITERATURE REVIEW AND HYPOTHESES

Numerous research studies have delved into the multifaceted relationship between the COVID-19 pandemic and firm performance, shedding light on a variety of interconnected aspects. Kumar and Zbib (2022) centered their investigation on the role of managerial ability in firm performance during this crisis. Ren et al. (2021) presented fresh evidence, highlighting the challenges encountered by companies and the impact of COVID-19 on their performance. This impact was further corroborated by the cross-country analysis conducted by Hu and Zhang (2021), which underscored the tangible effects of the pandemic on firm performance. A specific angle was explored by Hsu and Liao (2022), who studied the interplay between corporate governance and stock performance during the COVID-19 crisis. Makni (2023) delved into the Saudi market, revealing the extent of the pandemic's impact on listed firms. Wellalage et al. (2022) directed their focus towards the relationship between environmental performance and firm financing, particularly in the context of SMEs during COVID-19 outbreaks. Liu et al. (2021) concentrated on operating flexibility and its implications for firm performance, especially in heavily affected Chinese provinces.

Amid a global upheaval caused by the COVID-19 pandemic, a multitude of research efforts have extensively explored its far-reaching impact on

various sectors, revealing vulnerabilities, challenges, and disparities across industries and countries. Delving into the magnitude of impact, several studies highlight the negative impact on Chinese listed companies (Zhang & Zheng, 2022), Indonesia (Yudaruddin, 2023b; Ahmad et al., 2021; Lestari et al., 2021; Surahman et al., 2023), the MENA countries (Toumi et al., 2022), USA (Song et al., 2021), Germany (Eckey & Memmel, 2022), and cross countries (Guérin & Suntheim, 2021; Zheng, 2022; Golubeva, 2021; Hsu & Yang, 2022; Atayah et al., 2022).

Further examining pandemic effects, Morikawa (2021) scrutinized Japanese firms' productivity during the initial stages. The cost of equity capital for U.S. firms, as revealed by Ke (2021), experienced a rise due to the crisis. Jin et al. (2021) accentuated the contrast between state-owned and private businesses concerning innovation in the context of COVID-19. Hu and Zhang (2021) revisited the firm performance landscape using cross-country data, unveiling a decline in financial performance. Market volatility and uncertainty were closely tied, as evidenced by Yang et al. (2021) through their study on Chinese equities. E-commerce's pivotal role during the pandemic was underlined by Riadi et al. (2022b), illustrating its positive impact on small enterprises' market access, sales, and resilience. The pandemic's effect on brand value and stock market resilience were expounded upon by Huang et al. (2021). Market efficiency played a role in stock market disruptions,

as uncovered by Neukirchen et al. (2021), affecting both efficient and inefficient firms. Guerin and Suntheim (2021) delved into the environmental ramifications of COVID-19 on businesses, unveiling a negative trend. Notable interconnectedness was noted by Huynh et al. (2021) among major European companies during the early pandemic phase. Financing challenges were underscored by Didier et al. (2021), emphasizing firms' adaptability.

Quantifying risk, Kanno (2021) employed a model to assess COVID-19 contagion risk in Japanese businesses. The liquidity impact on U.S. stocks was demonstrated by Chebbi et al. (2021). Examining Chinese enterprises in Q1 2020, Ren et al. (2021) detailed performance during the COVID-19 outbreak. Further insight into the operating flexibility-performance nexus in China was presented by Liu et al. (2021). Maria et al. (2022) dissected the pandemic's effect on bank stability, considering size and ownership. Investment decisions amid COVID-19 uncertainty were analyzed by Jin et al. (2021), while Yong and Laing (2021) explored its effect on the international exposure of U.S. firms. Krammer (2021) offered a theoretical viewpoint on businesses' adaptation strategies, considering implications within varying industries. Ahmad et al. (2021) deepened the discussion with a focus on ASEAN nations' economic integration.

Examination of the comprehensive impact of COVID-19 on various aspects of the financial sector has underscored the pressing need for robust policy responses and proactive measures to mitigate the pandemic's adverse effects. Looking at policy, Groenewegen et al. (2021) examined the influence of state aid in the Netherlands during the pandemic's initial phase. Bank concentration's role in stability was illuminated by Riadi et al. (2022a). Systemic financial risk's sharp rise due to COVID-19 was demonstrated by Rizwan et al. (2020). Optimal bank interest margins and efficiency, as addressed by Li et al. (2020), saw reductions due to the pandemic, potentially heightening bank risk-taking. Market conditions played a pivotal role, as discerned by Demirguc-Kunt et al. (2020), where varying COVID-19 conditions impacted stock returns differently. Wu and Olson (2020) showed short-term hits on state-owned and joint-stock banks, while credit risks escalat-

ed over time. The negative effect of COVID-19 on bank stability was a common thread in studies by Riadi et al. (2022a), Zainurossalamia et al. (2022), Lestari et al. (2022), Yudaruddin (2023a), Ozsoy et al. (2020), and Maria et al. (2022). Stock returns' reduction amid COVID-19 uncertainty was observed by Topcu and Gulal (2020), while Mazur et al. (2020) emphasized the pandemic's detrimental effect on various US stocks, including petroleum, real estate, entertainment, and hospitality.

The pandemic of COVID-19 had a significant impact on the global insurance industry. According to Global insurance market trends report (2021), traditional insurance distribution channels were disrupted by lockdown measures, resulting in varying premium trends across regions. In Luxembourg, life gross premiums decreased by 25.8%, whereas they increased by 1.1% in Latvia, primarily as a result of legislative changes permitting the transfer of pension savings to insurance companies. Due to mandatory pension savings annuitization, premiums in Uruguay increased by 2.3%. Meanwhile, in Russia, endowment life insurance drove a 0.2% increase in the life segment overall. Some market dynamics, such as the transfer of investment-related business in Australia and a merger in Estonia, have influenced premium figures.

In addition, there was a stark contrast between the life and non-life sectors in terms of claims payments. The average increase in life insurance claims payments across 53 reporting jurisdictions was 7.3%. In contrast, average non-life insurance claims decreased by 4.8% (excluding Honduras, where claims increased by over 200%). Despite stock market volatility in the first quarter of 2020, insurers in the majority of regions generated positive investment returns. At 9.8%, Latvia and Malaysia had the highest real investment returns. Life insurers in Australia (-3.5%), Brazil (-4.1%), Turkey (-0.2%), non-life insurers (-1.8%), and Uruguay (-1.5%) were the only ones to report investment losses. These diverse outcomes demonstrate the multifaceted impact of the pandemic on the global insurance landscape.

Several studies have been conducted to investigate the impact of crises on the insurance industry. Baluch et al. (2011) concentrated on insurance risk,

specifically insurance contract liabilities. They also examined the impact of the crisis on insurers in various markets and the level of systemic risk in the insurance industry. While systemic risk in insurance is lower than in banking, it is not negligible and has increased in recent years, according to their findings. This increase can be attributed in part to insurers' growing relationships with banks and their forays into non-traditional insurance activities such as structured finance. Morara and Sibindi (2021) conducted a study involving 37 general insurers and 16 life insurers from 2009 to 2018. Their research found a link between insurer financial performance and size, implying that larger insurance companies in terms of total assets are more profitable. According to Marović et al. (2010), the global financial crisis had a negative impact on all aspects of insurance company operations. They emphasized the importance of global and regional insurers refocusing on core business activities and improving holistic risk and capital management to navigate the challenges posed by the financial crisis.

Amidst evolving research on the impact of financial crises and the COVID-19 pandemic on the global insurance industry, key findings have surfaced, underscoring the need for proactive measures to strengthen the resilience of the global financial system. The study by Impavido and Tower (2009) reignited discussions on critical policy issues, including countercyclical funding and market-based valuation rules. Puławska's (2021) analysis of European insurance firms revealed pandemic-induced disruptions, while Tarsono et al. (2020) emphasized the significant influence of Risk-Based Capital on the financial performance of Indonesian life insurance companies, contrasting with the lesser impact of Net Premium Growth and Claim Ratio.

This study examines the impact of the COVID-19 pandemic on the performance of insurance companies worldwide. In this study, the following hypotheses are proposed:

- H1: COVID-19 has a negative effect on the performance of insurance companies.*
- H2: The interaction of COVID-19 and claim expenses has a positive effect on the performance of insurance companies.*

H3: The interaction of COVID-19 and firm size has a positive effect on the performance of insurance companies.

H4: The interaction of COVID-19 and leverage has a negative effect on the performance of insurance companies.

H5: The interaction of COVID-19 and liquidity has a positive effect on the performance of insurance companies.

2. DATA AND METHODOLOGY

2.1. Data

This study utilized financial data sourced from the Wall Street Journal Database (WSJ) spanning from 2018 to 2022. With a dataset comprising 1,931 companies from 65 countries, the study conducted an analysis of both dependent and independent variables. Table 1 presents the sample distribution.

The dependent variables in this study pertain to the performance of insurance companies, which are measured using Return on Assets (ROA) and Return on Equity (ROE). The combined use of ROA and ROE provides a more comprehensive overview of a company's performance. ROA gauges the operational efficiency of a company in generating profits, whereas ROE offers insights into how a company manages its equity capital and provides returns to its shareholders. Both metrics are valuable in evaluating various aspects of company performance and assist investors, analysts, and management in making informed decisions regarding investments and business strategies.

As for the independent variables, the primary variable of interest is the COVID-19 pandemic, which is measured using a dummy variable. This dummy variable takes on a value of 1 during the initial years of the COVID-19 pandemic (2020 and 2021), and 0 otherwise. Additionally, company characteristic variables are included in the analysis, such as claim expenses, company size, leverage, and liquidity. More detailed information regarding the measurement of these variables is presented in Table 2.

Table 1. Distribution of the sample companies by country

No.	Country	Number of Companies	%	No.	Country	Number of Companies	%	No.	Country	Number of Companies	%
1	Australia	30	1.55	23	Italy	16	0.83	45	Qatar	13	0.67
2	Austria	5	0.26	24	Japan	39	2.02	46	Saudi Arabia	110	5.7
3	Bahrain	15	0.78	25	Jordan	48	2.49	47	Saudia Arabia	5	0.26
4	Bangladesh	150	7.77	26	Kenya	18	0.93	48	Singapore	5	0.26
5	Botswana	5	0.26	27	Kuwait	15	0.78	49	South Africa	12	0.62
6	Canada	43	2.23	28	Macedonia	5	0.26	50	South Korea	42	2.18
7	China	10	0.52	29	Malawi	5	0.26	51	Spain	12	0.62
8	Croatia	10	0.52	30	Malaysia	33	1.71	52	Sri Lanka	28	1.45
9	Cyprus	6	0.31	31	Malta	5	0.26	53	Sweden	5	0.26
10	Denmark	5	0.26	32	Mauritius	4	0.21	54	Switzerland	23	1.19
11	Egypt	6	0.31	33	Mexico	12	0.62	55	Taiwan	45	2.33
12	Finland	4	0.21	34	Morocco	13	0.67	56	Thailand	42	2.18
13	France	14	0.73	35	Namibia	14	0.73	57	Israel	32	1.66
14	Germany	4	0.21	36	Netherlands	10	0.52	58	Tunisia	20	1.04
15	Ghana	10	0.52	37	New Zealand	5	0.26	59	Turkey	25	1.29
16	Hong Kong	45	2.33	38	Nigeria	70	3.63	60	Uganda	2	0.1
17	Hungary	4	0.21	39	Norway	4	0.21	61	UEA	18	0.93
18	Iceland	7	0.36	40	Oman	12	0.62	62	United Kingdom	93	4.82
19	India	26	1.35	41	Pakistan	51	2.65	63	United States	441	22.8
20	Indonesia	86	4.45	42	Philippines	5	0.26	64	Vietnam	35	1.81
21	Ireland	5	0.26	43	Peru	5	0.26	65	Zimbabwe	15	0.78
22	Trinidad & Tobago	5	0.26	44	West Bank & Gaza	24	1.24		Total	1931	100

Table 2. Dependent and independent variables

Variables	Definition	Expectation Sign
ROA	Net profit/ total asset (%)	
ROE	Net profit/ total equity (%)	
COVID19	This dummy variable, which has a value of 1 if the first year of the COVID-19 pandemic (2020 & 2021), or 0 otherwise	-
CLAIM	Claim expenses to total revenue (%)	-
SIZE	Ln total assets	-/+
LEV	Total debt to total equity (%)	-/+
CASH	Cash & cash equivalent to total assets (%)	-/+

2.2. Methodology

Regarding the econometric methodology, regressions run in three stages. In the first stage, the equation of COVID-19 measured by dummy variable and a set of dependent variables simultaneously as in Equations (1) and (2). In the second stage, the previous stage is repeated with the addition of interaction variables between COVID-19 and claim expenses, company size, leverage, and liquidity, as outlined in Equations (3) and (4). The previous stage is repeated in the three stages, though the sample is broken down between Developed markets and emerging markets. The following model is used to predict firm performance:

$$ROA_{i,t} = \beta_0 + \beta_1 COVID19_t + \beta_2 CLAIM_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 LEV_{i,t} + \beta_5 CASH_{i,t} + \varepsilon_{i,j}, \quad (1)$$

$$ROE_{i,t} = \beta_0 + \beta_1 COVID19_t + \beta_2 CLAIM_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 LEV_{i,t} + \beta_5 CASH_{i,t} + \varepsilon_{i,j}, \quad (2)$$

$$ROA_{i,t} = \beta_0 + \beta_1 COVID19_t + \beta_2 CLAIM_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 LEV_{i,t} + \beta_5 CASH_{i,t} + \beta_6 COVID19_t \cdot CLAIM_{i,t} + \beta_7 COVID19_t \cdot SIZE_{i,t} + \beta_8 COVID19_t \cdot LEV_{i,t} + \beta_9 COVID19_t \cdot CASH_{i,t} + \varepsilon_{i,j}, \quad (3)$$

$$\begin{aligned}
ROE_{i,t} = & \beta_0 + \beta_1 COVID19_t + \beta_2 CLAIM_{i,t} + \\
& + \beta_3 SIZE_{i,t} + \beta_4 LEV_{i,t} + \beta_5 CASH_{i,t} + \\
& + \beta_6 COVID19_t \cdot CLAIM_{i,t} + \\
& + \beta_7 COVID19_t \cdot SIZE_{i,t} + \\
& + \beta_8 COVID19_t \cdot LEV_{i,t} + \\
& + \beta_9 COVID19_t \cdot CASH_{i,t} + \varepsilon_{i,j},
\end{aligned} \tag{4}$$

where i refers to an individual firm, t refers to a year, and firm performance represents the dependent variable. The COVID-19 pandemic represents the independent variable. Similarly, CLAIM, SIZE, LEV, and CASH represent firm characteristic variables. Also, $\varepsilon_{i,t}$ is the error terms at the bank level. First, claim expenses relative to total revenue (CLAIM) exhibit a negative correlation with performance, diminishing both Return on Assets (ROA) and Return on Equity (ROE) (Tarsono et al., 2020). Second, the impact of company size (SIZE) on performance remains complex, with both advantages, like resource access and risk diversification, and challenges, such as management complexities and systemic risks (Yudaruddin, 2023c; Kumar & Zbib, 2022; Puławska, 2021). Third, the delicate balance of leverage (LEV) amplifies returns but escalates risks, necessitating prudent risk management and capital allocation. Fourth, liquidity (CASH) plays a critical role, ensuring prompt policyholder claim settlements while maintaining financial stability, highlighting the need for careful liquidity management tailored to market conditions (Yudaruddin, 2019; Kusumawardani et al., 2021; Hadjaat, 2021).

Following the methodologies employed by Amalia et al. (2022), Tarsono et al. (2020), Defung and Yudaruddin (2022), Ulfah et al. (2021), Musviyanti et al. (2022), and Yudaruddin (2017), this study adopts a panel-data regression approach. The data utilized in this study is unbalanced panel data, which combines cross-sectional and time-series data. Data is analyzed using panel data regression techniques, which are employed to mitigate various issues, including multicollinearity, heteroscedasticity, and estimation bias (Baltagi, 2008; Wooldridge, 2010). In the estimation of the regression model using panel data, three approaches can be employed: the Common Effect Model, the Fixed Effect Model,

and the Random Effect Model. Utilizing the Chow test and Hausman test, this study selects the random effects model (REM) as the preferred regression model.

3. RESULT

Table 3 presents the descriptive statistics for the analyzed variables across all countries, with a sample size of 1931, as well as the breakdown into developed markets (808 observations) and emerging markets (1,123 observations). The table provides insights into the central tendency and variability of key variables. On average, Return on Assets (ROA) across all countries is approximately 1.57, with a standard deviation of 3.52. Similarly, Return on Equity (ROE) exhibits an average of 7.68, accompanied by a standard deviation of 10.07. The prevalence of the COVID-19 factor is noticeable, with a mean of 0.43, reflecting the extent of its influence on the global insurance industry. Claim expenses (CLAIM) show an average of 52.56, with a standard deviation of 24.78, indicating the variation in the proportion of claim costs relative to total revenue. Company size (SIZE) demonstrates an average of 10.23, reflecting the scale of insurance companies under examination. Leverage (LEV) records an average of 4.44, with a standard deviation of 5.41, signifying the diversity in the debt-to-equity ratio among the firms. Lastly, liquidity (CASH) presents an average of 7.28, with a standard deviation of 7.19, showcasing the variability in the available liquid assets. The figures also provide insights into the variations between developed and emerging markets, aiding in the assessment of potential regional disparities in these metrics.

Table 4 presents a correlation matrix that explores the relationships between various variables: COVID19 (representing the impact of the COVID-19 pandemic), CLAIM (claim expenses to total revenue), SIZE (company size), LEV (leverage), and CASH (liquidity). In addition, the Variance Inflation Factor (VIF) is provided as an indicator of potential multicollinearity. The correlation coefficients displayed in the matrix reveal the extent of linear association between pairs of variables. For instance, the coefficient between COVID19 and CLAIM is -0.0222 , indicating a

Table 3. Descriptive statistics

Variables	All Countries (N = 1931)		Developed markets (N = 808)		Emerging markets (N = 1123)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
ROA	1.5721	3.5162	1.1029	3.4167	1.9098	3.5493
ROE	7.6806	10.0729	6.9973	10.323	8.1723	9.8643
COVID19	0.4303	0.4953	0.4406	0.4968	0.4230	0.4943
CLAIM	52.563	24.779	53.257	25.600	52.064	24.170
SIZE	10.226	3.3285	9.9175	3.2174	10.449	3.3902
LEV	4.4397	5.4116	5.0403	5.2757	4.0076	5.4690
CASH	7.2777	7.1919	6.6048	6.4547	7.7619	7.6450

Table 4. Correlation matrix

Variables	COVID19	CLAIM	SIZE	LEV	CASH	VIF (Variance Inflation Factor)
COVID19	1.0000	–	–	–	–	1.00
CLAIM	–0.0222	1.0000	–	–	–	1.10
SIZE	0.0189	0.1981	1.0000	–	–	1.06
LEV	0.0016	0.2542	0.1591	1.0000	–	1.13
CASH	0.0179	–0.0535	–0.1185	–0.2144	1.0000	1.00

very weak negative correlation. Similarly, the correlations between other pairs of variables are also generally low, with values ranging from approximately -0.22 to 0.26 . In summary, the correlation matrix and the associated VIF values collectively demonstrate that multicollinearity is not a major concern within this dataset. This implies that the chosen variables can be reasonably considered as distinct contributors to the analysis, allowing for valid interpretations and reliable results in the regression models.

Table 5 presents the regression results for COVID19 and firm characteristics. Regression results show that COVID19 has had a negative effect on the performance of insurance companies throughout the world. This result is in accordance with the expectations of Hypothesis 1 (*H1*). The variable claim expenses to total revenue (CLAIM) exerts a significant and negative influence on insurance company performance (Columns 1 & 3). This indicates that an increase in customer claims within insurance companies is associated with decreased performance. Moreover, when COVID-19 is interacted with “claim expenses to total revenue” (COVID19-CLAIM), a significant negative impact on insurance company performance is observed (Columns 2 & 4), and this supports Hypothesis 2 (*H2*). These findings suggest that an increase in CLAIM during the COVID-19 period has a detri-

mental effect on company performance, especially concerning return on equity (Column 4).

Regarding company size (SIZE), a positive and significant effect on company performance, particularly return on assets (ROA), is evident (Column 1). In other words, larger companies, as measured by total assets, tend to exhibit better insurance company performance. Hypothesis 3 (*H3*) is supported. However, when the company size variable is interacted with COVID-19, the results indicate a significant negative impact on performance (Column 2). This implies that larger insurance companies tend to have lower performance during the COVID-19 period.

Meanwhile, for the leverage variable, the analysis reveals a significant negative impact on insurance company performance, specifically on ROA (Column 1). This suggests that an increase in debt levels diminishes insurance company performance. However, during the COVID-19 period, the leverage variable does not significantly impact insurance company performance, thus Hypothesis 4 (*H4*) is rejected. This suggests that changes in debt levels relative to company capital do not drive performance shifts in insurance companies.

Lastly, liquidity, measured by cash holding (CASH), does not show a significant influence on compa-

Table 5. COVID-19 and firm performance

Explanatory Variables	Dependent variables			
	ROA		ROE	
	(1)	(2)	(3)	(4)
COVID19	-0.59135*** (-3.61)	0.48570 (1.01)	-1.77535*** (-3.53)	0.77912 (0.59)
CLAIM	-0.01683*** (-2.84)	-0.01446** (-2.33)	-0.04863*** (-3.14)	-0.03413** (-2.09)
SIZE	0.11825*** (3.01)	0.14736*** (3.51)	0.00994 (0.07)	0.02507 (0.18)
LEV	-0.13949*** (-5.15)	-0.15151*** (-5.09)	-0.05505 (-0.76)	-0.07088 (-0.90)
CASH	0.02811 (1.56)	0.04071** (2.04)	0.02198 (0.51)	0.05919 (1.18)
COVID19-CLAIM	-	-0.00441 (-0.86)	-	-0.03009* (-1.78)
COVID19-SIZE	-	-0.07418** (-2.00)	-	-0.04648 (-0.44)
COVID19-LEV	-	0.02671 (1.31)	-	0.02801 (0.33)
COVID19-CASH	-	-0.02753 (-1.43)	-	-0.08495 (-1.75)
Constant	1.87994*** (3.49)	1.41753** (2.47)	10.8485*** (6.85)	9.71689*** (5.94)
Dummy Year	Yes	Yes	Yes	Yes
Wald chi2	55.45	61.60	23.18	28.60
Prob. > chi2	0.0000	0.0000	0.0031	0.0000
R-Square	0.0579	0.0658	0.0323	0.0393
Obs.	1,931	1,931	1,931	1,931

Note: ***, **, and * indicate significance at 1%, 5%, and 10%, respectively. Robust z-statistics are reported in parentheses.

ny performance, even though the coefficient direction indicates a positive relationship, meaning that higher liquidity is associated with better company performance. These results do not align with expectations; thus Hypothesis 5 (*H5*) is not supported. Similar outcomes are observed when the CASH variable is interacted with COVID-19.

Furthermore, Tables 6 and 7 shed light on the impact of independent variables on insurance company performance in developed markets and emerging markets. The findings demonstrate a significant negative impact of the COVID-19 pandemic on insurance company performance in both developed and emerging markets. This indicates that the COVID-19 pandemic had a global effect on diminishing insurance company performance worldwide, as measured by both ROA and ROE. Meanwhile, the CLAIM variable exhibits a significant negative influence on insurance company performance. However, this significant impact is observed primarily on ROE in developed markets, whereas in emerging markets, it affects both ROA and ROE. When the CLAIM and COVID-19 variables are interacted, a significant negative impact on in-

surance company ROE is observed. This finding is more pronounced in emerging markets.

Regarding the SIZE variable, a significant positive influence on company performance, as measured by ROA, is evident. This effect is more pronounced in emerging markets. However, when the SIZE variable is interacted with COVID-19, negative and significant results on company performance (both ROA and ROE) are found, especially in emerging markets. This suggests that insurance companies, especially in emerging markets, with substantial assets, tend to experience a decline in performance during the COVID-19 period.

For the Leverage (LEV) variable, negative and significant effects on insurance company performance are found in both developed and emerging markets. This implies that an increase in the company's capital structure, characterized by higher debt levels, diminishes insurance company performance worldwide. However, when specifically examining the COVID-19 period through the interaction of the LEV variable with COVID-19 (LEV-COVID19), no significant impact on insurance company performance is observed.

Table 6. COVID-19 and firm performance – Developed markets

Explanatory Variables	Dependent variables			
	ROA		ROE	
	(1)	(2)	(3)	(4)
COVID19	-0.52841*** (-2.61)	-0.44627 (-0.76)	-2.60528*** (-3.43)	-3.48132* (-1.90)
CLAIM	-0.01142 (-1.56)	-0.01107 (-1.45)	-0.03965* (-1.73)	-0.03453 (-1.52)
SIZE	0.04759 (0.77)	0.05240 (0.86)	-0.21498 (-0.88)	-0.30509 (-1.24)
LEV	-0.12109*** (-3.28)	-0.12408*** (-3.26)	-0.17661* (-1.85)	-0.10721 (-1.03)
CASH	0.00579 (0.16)	0.00164 (0.04)	-0.04422 (-0.50)	-0.04591 (-0.43)
COVID19-CLAIM	-	-0.00067 (-0.11)	-	-0.01182 (-0.46)
COVID19-SIZE	-	-0.01266 (-0.29)	-	0.21711 (1.64)
COVID19-LEV	-	0.00466 (0.21)	-	-0.13727 (-1.18)
COVID19-CASH	-	0.00853 (2.45)	-	0.00167 (0.02)
Constant	2.11759** (2.42)	2.09265** (2.45)	13.5984*** (4.62)	13.8966*** (4.68)
Dummy Year	Yes	Yes	Yes	Yes
Wald chi2	38.73	44.10	33.99	36.63
Prob. > chi2	0.0000	0.0000	0.0000	0.0003
R-Square	0.0559	0.0563	0.0492	0.0523
Obs.	808	808	808	808

Note: ***, **, and * indicate significance at 1%, 5%, and 10%, respectively. Robust z-statistics are reported in parentheses.

Table 7. COVID-19 and firm performance – Emerging markets

Explanatory Variables	Dependent variables			
	ROA		ROE	
	(1)	(2)	(3)	(4)
COVID19	-0.63520** (-2.58)	1.04966 (1.48)	-1.14867* (-1.70)	4.07725** (2.37)
CLAIM	-0.02088** (-2.38)	-0.01722* (-1.85)	-0.05279** (-2.50)	-0.03117 (-1.31)
SIZE	0.15212*** (2.99)	0.19439*** (3.44)	0.12263 (0.81)	0.22065 (1.46)
LEV	-0.13842*** (-3.47)	-0.15701*** (-3.81)	0.03656 (0.35)	-0.04801 (-0.42)
CASH	0.03336 (1.64)	0.05290** (2.35)	0.04189 (5.57)	0.09576* (1.77)
COVID19-CLAIM	-	-0.00654 (-0.81)	-	-0.04187* (-1.91)
COVID19-SIZE	-	-0.11077** (-1.36)	-	-0.25825* (-1.74)
COVID19-LEV	-	0.04037 (1.36)	-	0.16697 (1.46)
COVID19-CASH	-	-0.04369* (-1.77)	-	-0.12536** (-2.17)
Constant	1.85142*** (2.73)	1.14363 (1.49)	9.40856*** (5.57)	7.15202*** (3.97)
Dummy Year	Yes	Yes	Yes	Yes
Wald chi2	35.00	42.09	13.22	27.34
Prob. > chi2	0.0000	0.0000	0.0144	0.0069
R-Square	0.0709	0.0849	0.0316	0.0522
Obs.	1123	1123	1123	1123

Note: ***, **, and * indicate significance at 1%, 5%, and 10%, respectively. Robust z-statistics are reported in parentheses.

Lastly, the liquidity variable (CASH) exhibits an insignificant influence on insurance company performance in both developed and emerging markets. However, when interplaying the CASH variable with COVID-19 to assess its impact on insurance company performance during the COVID-19 period, negative and significant results are found on ROA and ROE, particularly in emerging markets. This indicates that an increase in cash holdings reduces insurance company performance.

4. DISCUSSION

This study provides a more detailed understanding of insurance company performance in the context of developed and emerging markets and whether it aligns with previous research findings. In developed markets, the findings are consistent with Puławska's (2021) research, which showed a significant and negative impact of the COVID-19 pandemic on insurance company performance. This is evident in the current study, illustrating a global decline in insurance company performance in developed markets, especially in terms of ROA and ROE.

The segregation of analysis of the impact of independent variables on insurance company performance in developed and emerging markets is paramount due to notable disparities in their characteristics, market structures, and business dynamics. This division is warranted for several reasons. Firstly, developed markets typically boast mature economies, robust financial infrastructures, and stringent regulatory standards, while emerging markets often grapple with economic volatility, evolving financial infrastructures, and varying regulatory landscapes. Secondly, consumer behavior and insurance product preferences can significantly differ between these markets, with developed markets often favoring complex insurance products, while emerging markets may lean toward simpler and more affordable options. Thirdly, risk levels and claim payout frequencies may vary, influenced by factors like natural disasters or political instability, which in turn can impact insurance companies' claim expenses. Fourthly, regulatory frameworks can vary substantially, with developed markets generally having stricter regulations. Lastly, differences in investment conditions can affect investment income. It is essential to recognize these distinctions, keeping in mind

that within each market category, individual countries and regions may exhibit unique conditions and performance, underscoring the complexity of the global insurance industry landscape.

However, different dynamics emerge in emerging markets. In this case, the company size variable (SIZE) has a more pronounced impact on insurance company performance, particularly in terms of ROA. These results align with the findings of Marović et al. (2010) and Morara and Sibindi (2021), who found that insurance companies with larger assets tend to achieve better performance. However, the interaction between the SIZE and COVID-19 variables indicates that in emerging markets, larger insurance companies are more likely to experience a decline in performance during the COVID-19 pandemic.

Furthermore, the leverage variable (LEV) demonstrates a significant influence on insurance company performance in both types of markets, consistent with Tarsono et al.'s (2020) findings. However, when focusing on the impact of COVID-19, the interaction between LEV and the pandemic shows that LEV does not significantly affect insurance company performance in either developed or emerging markets. This suggests that changes in debt levels relative to company capital do not significantly impact insurance company performance during the pandemic.

Lastly, regarding liquidity measured by cash holding (CASH), the results indicate that increasing liquidity levels do not significantly enhance insurance company performance, especially in developed markets. However, when considering the interaction between the CASH and COVID-19 variables, the results show that increasing the amount of cash held by insurance companies during the COVID-19 pandemic can have a negative impact on performance, particularly in emerging markets. In conclusion, the research findings offer insights into how insurance company performance fluctuates based on different market conditions and provide a better understanding of the consistency or variation of findings in the context of previous research. This underscores the importance of considering differences in the characteristics and dynamics of the global insurance market when analyzing the impact of specific factors on insurance company performance during periods of crises and pandemics.

CONCLUSION

This study analyzes the repercussions of the COVID-19 pandemic on the global insurance industry's performance. Moreover, it stratifies the dataset into two distinct categories to investigate potential divergent impacts of the pandemic on insurance company performance in developed and emerging markets during 2018-2022 years. In developed markets, the findings corroborate the significant and adverse impact of the pandemic on insurance companies, resulting in a global performance decline, particularly in ROA and ROE. In contrast, emerging markets exhibit distinct dynamics, where company size significantly influences insurance company performance, particularly in ROA, consistent with findings favoring larger insurance firms. However, when considering the interaction between SIZE and COVID-19, larger insurance companies in emerging markets are prone to performance declines during the pandemic (-1.36). The leverage variable affects insurance company performance in both market types. Nevertheless, during the COVID-19, LEV's interaction with the pandemic indicates no substantial impact on insurance companies in either market type. Liquidity, represented by cash holding, does not significantly bolster insurance company performance, especially in developed markets. Yet, when considering CASH's interaction with COVID-19, higher cash reserves during the pandemic negatively affect performance, primarily in emerging markets (ROA = -1.77; ROE = -2.17). These findings highlight the importance of considering global insurance market characteristics when assessing specific factors' impact during crises and pandemics.

The findings of this study carry significant implications for insurance company managers operating in both developed and emerging markets. Firstly, managers should consider adopting more proactive strategies to mitigate risks and manage customer claims more efficiently during times of crisis. Secondly, insurance company managers must recognize that company size can substantially influence their performance in emerging markets, particularly regarding return on assets. However, managers should also exercise caution, as the results indicate that larger insurance companies may experience more significant performance declines during such periods. Thirdly, managers in insurance companies in both types of markets may find reassurance that the company's capital structure does not significantly impact company performance during crises. Lastly, insurance company managers should consider their liquidity policies carefully, especially in emerging markets. Therefore, managers must strike a delicate balance between maintaining sufficient liquidity and efficient investment management.

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