Assessing the performance of Islamic insurance firms in Indonesia: Does life insurance differ from general insurance?

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Abstract

Purposes:

This paper contributes to the insurance literature that remains widely unexplored. Our contribution is twofold. First, we assess whether life insurance and general insurance firms in the Islamic (sharia) insurance market perform differently in terms of profitability and market share. In this regard, to our knowledge, this paper is the first to compare the performance of sharia life insurance and sharia general insurance. Second, we assess whether the link between sharia insurance and performance measures is also affected by firms-specific factors, such as capital ratio, leverage, overhead cost, solvency and size of total assets.

Design/methodology/approach:

From quarterly data from 65 insurance firms in Indonesia during the 2016-2021 period, we assess the aforementioned issues using the two-step generalized method of moments estimation as our econometric estimation method. Moreover, our research consists of two stages. First, we assess the link between a dummy variable reflecting sharia life insurance and firm performance measured by either profitability or market share indicator. Second, we incorporate interaction terms between a sharia life insurance dummy variable and firm-specific factors entered one by one. These include capital ratio, leverage, overhead cost, risk-based capital, and firm asset size.

Findings:

Sharia general insurance performs better than sharia life insurance. Such results hold although we use indicators related to profitability or market share as dependent variables. However, a closer investigation also documents that such findings is also conditional on firm-level characteristics. Specifically, we find that although the profitability and market share of sharia life insurance is generally lower than those of sharia general insurance, some firm-level factors matter in contributing to increase sharia life insurance profitability or market share. These include higher capital ratio, higher leverage, higher overhead cost, and higher solvency ratio, but lower asset size.

Originality:

Despite a large number of studies on the determinants of firm performance, to our knowledge, very little attention has been given to study the determinants of sharia insurance performance. This study is therefore the first to empirically assess the issues of sharia insurance firms' performance by differentiating between life and general sharia insurance firms.

JEL: G20, G22

Keywords: Sharia insurance, profitability, market share, Indonesia.

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1. Introduction

This paper contributes to the insurance literature that remains widely unexplored. Our contribution is twofold. First, we assess whether life insurance and general insurance firms in the Islamic (sharia) insurance market perform differently in terms of profitability and market share. In this regard, to our knowledge, this paper is the first to compare the performance of sharia life insurance and sharia general insurance. This consideration is made, because sharia life insurance dominates the market structure of sharia insurance in Indonesia in 2021 with the market share of 5.64% of the total assets of the Indonesian insurance industry, while general sharia insurance only reached 3.49% (OJK, 2021)[2]. Second, we assess whether the link between sharia insurance and performance measures is also affected by firms-specific factors, such as capital ratio, leverage, overhead cost, solvency and size of total assets. Hence, assessing factors that contribute to spur the performance of sharia insurance, particularly sharia life insurance, will be contextually relevant for the development of sharia insurance in Indonesia.

Our analysis is focused on Indonesia for several reasons. As a country with the highest moslem population (Statista, 2022), Indonesia is a promising market for the development of sharia insurance. This is further strengthened by the positive achievements of Indonesian Islamic finance in Islamic finance globally. From data released in the 2021 Indonesian Sharia Financial Development Report by the Financial Services Authority (OJK), the Indonesian sharia insurance sector ranks fourth in global Islamic finance based on total assets, where Indonesian sharia insurance assets reach 4 million US dollars[3].

However, the development of sharia insurance in Indonesia during the last five years (2017-2021) experienced a downward trend. Based on the OJK report, the declining trend in the number of sharia insurance firms in Indonesia started in 2018, which decreased by 1.59% annually in 2019. In 2020, the biggest decline in the number of sharia insurance firms occurred, reaching a decrease of 3.23% from 2019. A similar decline was also seen in the number of assets and the number of sharia insurance investments that occurred from 2020. Specifically, the total assets of sharia insurance firms decreased by 2.23% annually in 2020 due to a decrease in total investment by 6.29% annually.

[2] Here, we do not include re-insurance firms in our analysis, because the market segment of re-insurance firms is different than general and life insurance sharia firms.
[3] See here for detailed descriptions of the development of sharia financial industry in Indonesia: https://www.ojk.go.id/id/kanal/syariah/data-dan-statistik/laporan-perkembangan-keuangan-syariah-indonesia/Documents/Laporan%20Perkembangan%20Keuangan%20Syariah%20Indonesia%20%28LPKSI%29%202021.pdf

The starting point for the development of sharia insurance in Indonesia was marked by the establishment of PT. Asuransi *Takaful* Indonesia in 1994. Since the establishment of PT. *Takaful* Insurance Indonesia, sharia insurance continues to grow with many conventional insurance companies and reinsurance companies with sharia unit license (Rafi & Syaichu, 2019). In general, there are four types of sharia insurance, namely general *takaful or* loss insurance, family *takaful or* life insurance, combined *takaful* , and re- *takaful* or reinsurance (Echchabi et al., 2014).

According to non-bank financial institution indicators published by the Indonesia Financial Services Authority (or OJK), sharia insurance in Indonesia consists of sharia life insurance, sharia general insurance, and reinsurance. Sharia life insurance provides risk management based on sharia principles for risks related to life protection, while sharia general insurance is an insurance agreement that provides services with sharia principles in dealing with risks of loss, loss, benefits, and legal liability. In addition, sharia reinsurance provides services and reinsurance that also follows sharia principles.

Indeed, sharia insurance in Indonesia has experienced significant developments in recent years. However, some challenges faced by the *Takaful industry* in Indonesia remain. According to Nugraheni and Muhammad (2020), such challenges include ineffective market promotion and education, absence of innovative products and services, limited human resources with knowledge about *Takaful business,* and limited distribution channels compared to conventional insurance. Based on interviews conducted with Islamic insurance practitioners, Effendi (2018) identified four internal business problems: lack of promotion and socialization, human resources, utilization of information technology, and lack of product and service development. Unlike previous studies that use surveys or interviews, this paper is therefore a first attempt to empirically explore the determinants of sharia insurance firm performance by focusing on the comparison between sharia life and general insurance, and by testing whether firms-specific factors may influence the performance of sharia life insurance compared to sharia general insurance.

The rest of this paper is organized as follows. Section 2 reviews existing literature related to firm performance, including sharia insurance firms. Section 3 describes dataset, variables and empirical methodology. Section 4 discusses empirical findings, while Section 5 concludes.

2. Related literature review

Profitability is one of the most important indicators of company performance, because it represents firm ability to invest and expand (Zhao et al., 2021). There are at least five theories related to the determinants of firm profitability. These include market-based view (MBV), resource-based view (RBV), knowledge-based view (KBV), strategy-structure-performance (SSP), and structure-conduct- performance (SCP) .

According to the MBV theory, firm performance is determined by firm unique strategy in responding to market competition. This theory emphasizes that the role of competitive advantage in which firms with more competitive advantages tend to improve efficiency and profitability. Meanwhile, the RBV theory states that the competitiveness and excellence achieved by firms are the results of firm-specific capabilities such as human resources, machines, and technology (Pervan et al., 2019). These firm-specific capabilities must be valuable, non-imitable, rare, and irreplaceable. Moreover, the KBV theory is a modified version of the RBV theory focusing on the role of intellectual capital as an important element to maintain firm competitive advantage. The KBV theory is the foundation of creating human resource involvement in improving firm operations. With regards to the SSP theory, external factors matters to encourage the development of strategy in organizational processes, which in turn boost firm performance (Defee & Stank, 2005; Nakano, 2015; Wasserman, 2008). Finally, the SCP theory states that the market structure determines firm behavior which will determine the company's success in achieving excellence (Tan, 2016). Market structure can be measured by a number of factors, such as the number of competitors, product heterogeneity and barriers to market entry and exit. Market behavior refers to a number of specific actions taken by companies, which include pricing, product differentiation, compromise, and exploitation of market forces (Tan, 2016).

According to Shaik et al. (2009), there are two hypotheses related to the SCP theory, namely the structure performance hypothesis and the efficient structure hypothesis. The structure performance hypothesis states that the level of market concentration is inversely proportional to the level of competition. This is because market concentration encourages companies to compromise. The structure performance hypothesis asserts that there is a direct relationship between the level of market concentration and the level of competition between firms. This hypothesis is supported if there is a positive relationship between market concentration (measured by concentration ratio) and performance (measured by profitability). Meanwhile, the efficiency structure hypothesis states that firm performance is positively related to its efficiency. This is because market concentration arises from competition in which

firms with low costs increase profits by reducing prices and expanding market share. The positive relationship between firm profits and market structure is associated with gains achieved in market share by more efficient firms.

There are three proxies that are often used as indicators in analyzing firm financial performance. These include return on assets (ROA), return on equity (ROE), and return on sales (ROS). ROA shows profits earned from the managerial ability to utilize company resources (Cherchye & Verriest, 2016; Odusanya et al., 2018; Zainudin et al., 2018). ROE is used to measure how efficient a company uses shareholder funds to generate profits (Alsharari & Alhmoud, 2019; Zainudin et al., 2018). Meanwhile, ROS measures firm efficiency in converting sales into profit (Szymańska, 2017).

Prior studies also suggest some internal and external factors of firms that may affect profitability. For instance, Pantea et al. (2014) conduct a study of 55 firms in Romania in the 1999-2014 period. It is shown that asset size, capital intensity, and the quality of human resources positively influence firm performance. According to Pantea et al. (2014), larger firms are able to attract more investments and larger firms have better control over resources and other economic advantages that lead to profitability. Meanwhile, capital intensity is closely related to automation which allows companies to reduce costs, errors , and losses. Finally, superior human resources create strategic advantages for firms that positively influence firm performance.

Other studies focusing on the determinants of firm profitability in general are conducted by Odusanya et al. (2018), Lazar (2016), and Vu et al. (2019). Odusanya et al. (2018) investigate the determinants of profitability by applying the generalized method of moments (GMM) system to 114 non-financial companies in Nigeria from 1998-2012. This study reveals that firm profitability is negatively affected by with short-term leverage , inflation rate, interest rate, and financial risk. These findings are also in line with Lazar (2016) who study non - financial companies listed on the Bucharest Stock Exchange. Lazar (2016) find that leverage has a negative effect on firm financial performance, because higher leverage will increase higher default probability of fimrs. In addition, other factors also exhibit a negative impact on profitability, such as the intensity of tangible assets, size , and labor intensity. Meanwhile, e sales growth and value added exhibit a positive effect on firm performance. (Vu et al., 2019) document that capital intensity, worker wages, size , and firm age play important roles in affecting firm performance using a sample of 639 firms in Vietnam. They show that capital intensity, worker wages, and size negatively affect firm profitability. Meanwhile, firm age exhibits a positive effect on firm ability to generate profits.

Despite a large number of studies on the determinants of firm performance, to our knowledge, very little attention has been given to study the determinants of sharia insurance performance. The concept of sharia insurance or *Takaful* was first introduced in 1979 in Sudan by Faisal Islamic Bank to meet insurance needs for moslem society who must be in line with sharia law (Husin and Rahman (2016). *Takaful* comes from the Arabic word "kafala", which means guarantee or responsibility. According to this scheme, the members or participants in a group together agree to insure themselves against loss or damage (Sherif & Shaairi, 2013). In 1985, the Council of Islamic Scholars in Mecca approved *Takaful* as a Sharia-approved alternative to the conventional insurance system. This has led to the development of *Takaful* companies in various Muslim countries, including Dubai, Bahrain, and Muslim countries in Southeast Asia (Swartz & Coetzer, 2010).

According to Swartz and Coetzer (2010) sharia insurance or *Takaful* is an insurance concept based on the concept of shared responsibility, where the insured parties are also the insurers. Hence, participants will share profits or losses proportionally. Another definition of sharia insurance is described by Rahim and Amin (2012), namely financial transactions based on the principles of cooperation, where sharia insurance companies and participants or beneficiaries share profits made on appropriate contributions. In Indonesia, the definition of sharia insurance is described in the Fatwa of the National Sharia Council of the Indonesian Ulema Council (DSN-MUI) No. 21/DSN-MUI/X/2001 concerning General Guidelines for Sharia Insurance. This explains that sharia insurance needs to protect and help each other in the community through investment in the form of managed financial assets (*tabarru*) in which *tabarru* provides a pattern of returns with certain risks through contracts that are in accordance with sharia law.

According to the Indonesian Sharia Insurance Association (AASI), sharia insurance operates based on several sharia principles. These include the fulfillment of the principles of justice, trustworthiness, balance, benefit, and universality. The next principle is mutual sharing among participants in which participants' contributions will be kept in the *tabarru* fund. In this regard, the sharia insurance firms will act as the manager of *tabarru* funds. Finally, sharia insurance business activities or investments are not allowed to contain forbidden activities. Halal in operations includes halal products, halal ways to obtain them, and halal use. Therefore, *Takaful* businesses are not allowed to invest in products that are interest-based, debt-based, have minimum guarantees or returns on investment, or are based on illicit practices (Raza et al., 2020).

In addition to differences in alignment with sharia law, the basic difference between Islamic insurance and conventional insurance is in the principle of underwriting risks. Conventional insurance is a risk transfer mechanism in which the policyholder pays a premium to the insurer, so that the insurer will compensate the insured party in the event of losses. Premium funds are usually invested to earn investment returns until the projected losses under the contracts are met. In sharia insurance, the risk of one person/party is borne by all persons/parties who are also policyholders.

Other differences between sharia insurance and conventional insurance can be seen in the contracts, rights and obligations of participants, risk ownership, business activities, and status of prospective participants (Sherif & Shaairi, 2013). Conventional insurance implements a sale and purchase contract where the insured party buys a contract from the insurance company for compensation in times of losses. In terms of rights and obligations, conventional insurance companies must pay compensation when a disaster occurs and the insured party must pay premiums when due and must take precautions against unnecessary or intentional risks. On the contrary, to fulfill the basic concepts of cooperation and investment, the *Takaful* contract provides certainty of rights and obligations of the organizers and participants of sharia insurance in which sharia insurance firms act as the trustee and *mudharib* (or entrepreneurs) of the funds and participants pay contribution to take precautionary measures to protect themselves. In addition, according to Swartz and Coetzer (2010) Islamic insurance allows the imposition of fees and commissions that are transparent. This will help the Shariah Board to decide whether the *Takaful* scheme is actually operating in a fair and Shariah-compliant manner.

Although sharia insurance was initiated with the aim of providing alternative risk protection for moslem society, its use is not only limited to Muslims. According to Swartz and Coetzer (2010), business ethics inherent in Takaful serve as a branch of the principles of justice and burden sharing with each other. This is supported by research showing that Islamic insurance is found not only in countries with a majority moslem population, but also in non-moslem countries such as North America, Australia, and several European countries (Ahmad et al., 2019). According to Al-Amri et al. (2021), many insurance companies in western countries, such as the American International Group (AIG) have also realized the potential of *Takaful* and have set up its own *Takaful* operations.

Kantakji et al. (2020) specifically investigate the determinants of sharia insurance performance in Pakistan, Saudi Arabia, Malaysia, Uni Arab Emirates, and Qatar. They find that asset size, income per capita, equity returns, and interest rate positively affect firm

performance, while liquidity and retakaful dependence exhibit a negative impact on firm performance. Meanwhile, Hemrit (2020) finds that efficiency has a positive and significant influence on the financial performance of sharia insurance in Saudi Arabia, while small sharia insurance firms show higher efficiency than large sharia insurance firms.

Aside from many determinants of firm performance, several studies focus on the role of financial leverage. Dalci (2018) found an inverted U-shape relationship between financial leverage and firm performance in China. The positive impact of financial leverage on firm profitability can be attributed to tax protection, while its negative impact may be due to bankruptcy costs, financial difficulties, severe agency problems, and asymmetric information due to constraints related to country-level institutional characteristics. Research focusing on the link between financial leverage and firm performance was also conducted in the textile production industry in Bangladesh (Rahman et al. (2020). It is shown that firm profitability is negatively affected by firm reliance on external debt as a source of finance.

In addition, some literature also highlights the role of intellectual capital as one of internal factors that affects firm performance. A study on 93 manufacturing companies listed on the Indonesia Stock Exchange, Nuryaman (2015) documents that intellectual capital has a positive effect on firm value and firm profitability. In the insurance industry, Olarewaju and Msomi (2021) analyze a sample of 56 insurance firms in South Africa. They find that there is a positive and significant relationship between intellectual capital and the financial performance of insurance firms. Among others, they also analyze the impact of human capital, structural capital, leverage and underwriting risk as determinants of firm profitability.

3. Data, variables and empirical methodology

In this study, we retrive our data related to firm-level indicators from the Indonesian Financial Services Authority (OJK). Our panel dataset consists of quarterly financial indicators from 65 sharia insurance firms from 2016 to 2021, comprising 45 sharia business unit in conventional insurance firms. Meanwhile, there are 32 sharia life insurance firms and 33 general insurance firms in our sample.

Regarding dependent variables to reflect firm performance, we use two measures of performance. Specifically, we use the ratio of net income divided by total assets (ROA) to reflect profitability, while we also use a market share indicator calculated using the ratio of firm-level total assets to the sharia insurance industry's total assets (MSHARE). Higher ROA and MSHARE reflect that firms exhibit higher profitability and market competitiveness, respectively.

In order to compare the performance of sharia life insurance and general insurance, we use a dummy of life insurance (LIFE). LIFE equals to 1 (or 0) when a firm is sharia life insurance (or general insurance). Several firm-specific explanatory variables are also considered. First, we include the ratio of total capital to total assets (CAP) to reflect the role of internal funding. Firms with more internal funding tend to borne higher cost of capital and hence, higher CAP can be negatively associated with lower firm performance and market share. Following previous studies that include firm leverage as one of the determinants of firm performance (Dalci, 2018; Rahman et al., 2020), we also incorporate the ratio of total liabilities to total assets (LEV) as an independent variable. However, the impact of leverage on firm performance remains ambiguous, because it depends on whether bankrutpcy cost or signalling effects that matters in affecting firm behavior. We also incorporate efficiency ratio or overhead ratio as an independent variable calculated from the ratio of total expenses divided by total assets (OVER). Higher inefficiency may reduce insurance firm performance as in Hemrit (2020). Firm insolvency risk measured by risk-based capital ratio (RBC) is also included as an independent variable that may influence insurance firm performance following Olarewaju and Msomi (2021), although they consider underwriting risk instead of insolvency risk. Finally, we also incorporate firm asset size measured by the logarithm of total assets (SIZE), because several studies point out the importance of asset side in affecting the performance of firms, including insurance firms (Olarewaju and Msomi, 2021; Lazar, 2016; Vu et al., 2019).

With regards to empirical methodology, we proceed our analysis in two stages. In the first stage, we conduct regressions of profitability (ROA) and market share (MSHARE) on LIFE, CAP, LEV, OVER, RBC, and SIZE. Our purpose is to compare whether life insurance firms exhibit better profitability and market share than general insurance, as well as to analyze whether some firm-level factors affect firm profitability and market share in general. In the second stage, we repeat the first stage but we now add the interaction terms between LIFE and firm-level factors (CAP, LEV, OVER, RBC or SIZE). Each interaction term is included one by one in different equations. This stage is to highlight some firm-specific factors that may positively or negatively affect the performance of life insurance firms.

In terms of econometric estimation, we use the two-step system GMM procedure following Blundell and Bond (1998) and Arellano and Bond (1995) to avoid potential reverse causality between dependent and independent variables. We also take into account orthogonal deviations transformation of instruments to control for plaussible firm-level fixed effects. To deal with finite sample corrections, we also implement Windmeijer's (2005) approach to ensure that our standard errors are robust. Finally, the two-step system GMM models are valid when

the AR(2) test and the Hansen-J test are not statistically significant. When the AR(2) is not rejected, it means that there is no second order correlation. When the Hansen-J test is not rejected, the choice of instruments is correctly specified because the overidentification condition of instruments is valid.

4. Empirical results

Table 1 provides our descriptive statistics for all variables used in this study. All values in each seem economically plausible and hence, we do not conduct further winsorizing process. In Table 2, we also show that no strong correlation can be detected between independent varaiables. Hence, multicollinearity issues are less likely to occur.

Table 1. Descriptive statistics

Variables	Definition	Obs	Mean	Std. Dev.	Min	Max
ROA	Ratio of net income to total assets	1,382	3.956349	8.449872	-79.89383	48.47978
MSHARE	Share of firm-level total assets to the sharia insurance industry's total assets	1,427	4.55501	2.628658	0.0418068	33.94269
LIFE	Dummy of sharia life insurance firms	1,625	0.4923077	0.5000947	0	1
CAP	Ratio of total capital to total assets	1,406	82.24332	21.07538	9.629117	184.9676
LEV	Ratio of total liabilities to total assets	1,319	70.74076	70.99194	-0.6477591	441.006
OVER	Ratio of total operating expenses to total assets	1,382	13.83412	17.65239	-5.315472	220.9036
RBC	Risk-based capital ratio	1,423	10.00578	38.79875	-15.69896	995.4771
SIZE	Natural logarithm of total assets	1,427	11.53486	1.055825	8.517193	15.19804

Source: Authors' calculation.

Table 2. Correlation matrix

Variables	ROA	MSHARE	LIFE	CAP	LEV	OVER	RBC	SIZE
ROA	1							
MSHARE	-0.0641	1						
LIFE	0.0412	-0.0405	1					
CAP	0.1177	-0.1524	0.0318	1				
LEV	-0.1476	-0.0837	0.0188	-0.1586	1			
OVER	-0.0824	-0.0586	0.0796	-0.2734	0.1467	1		
RBC	0.0218	-0.0253	0.0902	0.067	-0.1238	-0.0687	1	
SIZE	0.3843	0.1439	0.2963	-0.3616	-0.06	0.1751	-0.0379	1

Source: Authors' calculation.

Table 3 reports the results of empirical estimation using the system-GMM estimator proposed by Arellano and Bover (1995) and Blundell and Bond (1998). There are no evidence the existence of second-order serial correlation in the specified models. The p-values of the Hansen test of 0.386 and 0.253, for ROA and MSHARE models respectively, shows that we cannot reject the null hypothesis that the instruments in the system GMM estimation is exogenous.

Table 3. Empirical results: Baseline regressions

	Dependent variables	
Expl. variables	ROA	MSHARE
Dep.var(-1)	0.29186***	0.75351***
	(0.008)	(0.009)
LIFE	-34.13227***	-0.33740**
	(3.949)	(0.349)
CAP	0.20367***	-0.00845***
	(0.008)	(0.002)
LEV	0.01559***	-0.00070***
	(0.003)	(0.000)
OVER	0.02105**	-0.00794***
	(0.009)	(0.001)
RBC	0.04516***	-0.00027
	(0.011)	(0.000)
SIZE	8.50597***	0.21907***
	(0.774)	(0.058)
Observations	1,208	1,234
Number of firms	64	64
AR(2) test: p-value	0.390	0.253
Hansen-J test: p-value	0.386	0.151

Source and notes: Authors' calculation. Regressions are estimated using the two-step system GMM approach, taking into account orthogonal deviation transformation of instruments, finite sample correction by Windmeijer (2005), and instruments collapsing by Roodman (2009). Standard errors are in parentheses. *** indicates significance at the 1% level, while ** and * indicate significance at the 5% and 10% levels, respectively. Constants are included but not reported.

The profitability (ROA) estimation result confirm the dynamic character of the model specification due to high levels of significance in the lagged dependent variables (see Table 3). The estimated parameter of LIFE indicates the profitability of sharia life insurance is significantly lower than the general insurance. Moreover, the ROA is also significantly affected positively by the ratio of total capital to total assets (CAP), the ratio of total liabilities to total assets (LEV), the ratio of total expenses on total assets (OVER), the risk-based capital ratio (RBC), and firm asset size (SIZE).

The market share (MSHARE) measures has a high level persistency as the lag of dependent variable is statistically significant at 1% (see Table 3). The estimated parameter of LIFE shows that, on average, the market share of sharia life insurance relatively low compare to the general insurance. There is a negative association of the market share to the ratio of total capital to total assets (CAP), the ratio of total liabilities to total assets (LEV), the ratio of total expenses on total assets (OVER). The estimated model shows there is no statistical evidence of risk-based capital ratio (RBC) in affecting the market share. Furthermore, firm asset size (SIZE) has a positive and significant effect on the market share.

Table 4. Empirical results: Firm-specific characteristics and life insurance performance comparison.

	Dependent variable				
Expl.variables	ROA				
ROA(-1)	0.27388***	0.32003***	0.33164***	0.29793***	0.34494***
	(0.006)	(0.006)	(0.067)	(0.065)	(0.061)
LIFE	-24.82231***	-17.00507***	-22.04989***	-20.15866*	192.98785*
	(1.144)	(1.776)	(6.508)	(10.282)	(104.318)
CAP	-0.06382***	0.09923***	0.13271***	0.13984***	0.13192**
	(0.008)	(0.006)	(0.047)	(0.051)	(0.064)
LEV	-0.00524***	-0.04085***	0.00513	0.01089	-0.00993
	(0.001)	(0.006)	(0.008)	(0.012)	(0.010)
OVER	-0.03469***	-0.00954	-0.20764**	0.00213	-0.01582
	(0.007)	(0.009)	(0.082)	(0.069)	(0.082)
RBC	0.00226**	0.02492***	0.01761	-0.01432	-0.00043
	(0.001)	(0.006)	(0.021)	(0.023)	(0.008)
SIZE	2.72502***	4.78073***	5.43398***	6.13690***	12.03605*
	(0.168)	(0.393)	(1.711)	(1.875)	(6.991)
CAP x LIFE	0.27819***				
	(0.013)				
LEV x LIFE		0.08399***			
		(0.008)			
OVER x LIFE			0.43315***		
			(0.149)		
RBC x LIFE				0.16302*	
				(0.094)	
SIZE x LIFE					-16.66803*
					(9.047)
Observations	1,208	1,208	1,208	1,208	1,208
Number of id	64	64	64	64	64
AR(2) test: p-value	0.962	0.481	0.679	0.542	0.568
Hansen-J test: p-value	0.271	0.300	0.438	0.354	0.284

Source and notes: Authors' calculation. Regressions are estimated using the two-step system GMM approach, taking into account orthogonal deviation transformation of instruments, finite sample correction by Windmeijer (2005), and instruments collapsing by Roodman (2009). Standard errors are in parentheses. *** indicates significance at the 1% level, while ** and * indicate significance at the 5% and 10% levels, respectively. Constants are included but not reported.

Table 4 depicts the variation of profitability (ROA) model estimation results on the interaction between sharia life insurance (LIFE) and insurance firm characteristics (CAP, LEV, OVER, RBC, SIZE). All of the models satisfied the assumption of the absence of second order autocorrrelation (AR2) and the validity of instruments (no rejection in the null hypothesis of the Hansen-J test.). Moreover, the positive and statistically significant result on the lagged dependent variables (ROA-1) for all specifications reveal the persistence of the dynamic characteristics.While the profitability sharia life insurance (LIFE) is significantly lower than the general insurance, the incremental margins of the CAP, LEV, OVER, and RBC in sharia life insurance provide is higher (see Table 4). Conversely, additional firm asset size (SIZE x LIFE) in sharia life insurance signficantly decreases the profitability if we compare with the general insurance.

Table 5. Empirical results: Firm-specific characteristics and life insurance market share comparison.

	Dependent variable				
Expl.variables	MSHARE				
MSHARE(-1)	0.77135***	0.76342***	0.75494***	0.73439***	0.75779***
	(0.011)	(0.008)	(0.010)	(0.018)	(0.008)
LIFE	-2.67913***	-0.06367	-0.53266***	-1.74282***	-4.05416**
	(0.367)	(0.145)	(0.087)	(0.342)	(1.779)
CAP	-0.01919***	-0.00966***	-0.00839***	-0.00326	-0.01000***
	(0.004)	(0.001)	(0.002)	(0.002)	(0.002)
LEV	-0.00093***	-0.00086*	-0.00062***	0.00025	-0.00063***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
OVER	-0.00699***	-0.00830***	-0.01173***	-0.00478***	-0.00837***
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
RBC	-0.00069***	-0.00069***	-0.00005	-0.00183***	-0.00038***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SIZE	0.20752***	0.16220***	0.23989***	0.49687***	-0.03660
	(0.037)	(0.021)	(0.025)	(0.078)	(0.113)
CAP x LIFE	0.02860***				
	(0.004)				
LEV x LIFE		-0.00018			
		(0.001)			
OVER x LIFE			0.00791***		
			(0.001)		
RBC x LIFE				0.01043***	
				(0.002)	
SIZE x LIFE					0.34127**
					(0.155)
Observations	1,234	1,234	1,234	1,234	1,234
Number of firms	64	64	64	64	64
AR(2) test: p-value	0.279	0.260	0.240	0.216	0.260
Hansen-J test: p-value	0.341	0.181	0.162	0.208	0.154

Source and notes: Authors' calculation. Regressions are estimated using the two-step system GMM approach, taking into account orthogonal deviation transformation of instruments, finite sample correction by Windmeijer (2005), and instruments collapsing by Roodman (2009). Standard errors are in parentheses. *** indicates significance at the 1% level, while ** and * indicate significance at the 5% and 10% levels, respectively. Constants are included but not reported.

The interaction effects between sharia life insurance (LIFE) and several insurance firm's characteristics (CAP, LEV, OVER, RBC, SIZE) on market share (MSHARE) are rendered in Table 5. The statistical test results mention that the assumption of no second order correlation (AR2) and the validity of instruments (Hansen-J test) are passed. The significant result on the coefficients of the lagged dependent variable for all model ensure the existence of high persistence of market share and also a consistency result with the baseline model (in Table 3).

Except the MSHARE model comprising the interaction between the sharia life insurance and liabillities on asset (LIFE x LEV), Table 5 shows the estimation result of market share of sharia life insurance (LIFE) is significantly lower than the general insurance firm. While the average market share of sharia life insurance is lower than the general insurance; the additional margin or incremental value in CAP, OVER, RBC, and SIZE would increase the market share of the sharia life larger than general insurance.

Some robustness checks are also conducted to ensure that our results are not altered when we modify econometric specifications. These robustness checks are not presented in this paper, but are available upon request from the authors. Specifically, we conduct two robustness checks. First, we include economic growth as a country-level control variable, measured by the growth rate of real gross domestic product (GDPG). We then repeat regressions conducted to producec Table 3 to Table 5 by including GDPG. Our results presented earlier are not altered. Second, we repeat again our regression estimation using the random effect model, but our findings presented in Table 3, Table 4 and Table 5 remains stable and significant with the same signs of the coefficients. Overall, our findings are indeed robust.

5. Conclusion

In this paper, we document that in general, sharia general insurance performs better than sharia life insurance. Such results hold although we use indicators related to profitability or market share as dependent variables. Our study is based on quarterly data of a sample of 65 sharia insurance firms in Indonesia from 2016 to 2021. However, a closer investigation also documents that such findings is also conditional on firm-level characteristics.

Specifically, we find that although the profitability and market share of sharia life insurance is generally lower than those of sharia general insurance, some firm-level factors matter in contributing to increase sharia life insurance profitability and market share. We find that sharia life insurance firms with higher capital ratio, higher leverage, higher overhead cost or higher solvency level are able to perform better, in terms of profitability and market share, than sharia life insurance firms with lower levels of such dimensions. On the contrary, we find that small sharia life insurance firms perform better than large sharia life insurance firms. Overall, our findings contribute to provide some insights on how to enhance the profitability and market share of sharia insurance firms, particularly life insurance firms that play a significant role in the structure of sharia insurance market in Indonesia.

References

Al-Amri, K., David Cummins, J., & Weiss, M. A. (2021). Economies of scope, organizational form, and insolvency risk: Evidence from the takaful industry. *Journal of International Financial Markets, Institutions and Money*, *70*, 101259. https://doi.org/https://doi.org/10.1016/j.intfin.2020.101259

Alsharari, N. M., & Alhmoud, T. R. (2019). The determinants of profitability in -compliant corporations: evidence from Jordan. *Journal of Islamic Accounting and Business Research*, *10*(4), 546-564. https://doi.org/10.1108/JIABR-05-2016-0055

Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics*, *68*(1), 29-51. https://doi.org/https://doi.org/10.1016/0304-4076(94)01642-D

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, *87*(1), 115-143. https://doi.org/https://doi.org/10.1016/S0304-4076(98)00009-8

Cherchye, L., & Verriest, A. (2016). The impact of home-country institutions and competition on firm profitability. *International Business Review*, *25*(4), 831-846. https://doi.org/https://doi.org/10.1016/j.ibusrev.2015.10.005

Dalci, I. (2018). Impact of financial leverage on profitability of listed manufacturing firms in China. *Pacific Accounting Review*, *30*(4), 410-432. https://doi.org/10.1108/PAR-01-2018-0008

Defee, C. C., & Stank, T. P. (2005). Applying the strategy-structure-performance paradigm to the supply chain environment. *The International Journal of Logistics Management*, *16*(1), 28-50. https://doi.org/10.1108/09574090510617349

Echchabi, A., Ayinde Olorogun, L., & Azouzi, D. (2014). Islamic insurance prospects in Tunisia in the wake of the Jasmine revolution. *Journal of Islamic Accounting and Business Research*, *5*(1), 15-28. https://doi.org/10.1108/JIABR-06-2012-0032

Effendi, J. (2018). Islamic Insurance: A Potential Niche Market of Indonesia. *Al-Iqtishad: Jurnal Ilmu Ekonomi Syariah*, *10*(1). https://doi.org/10.15408/aiq.v10i1.5330

Hemrit, W. (2020). Determinants driving Takaful and cooperative insurance financial performance in Saudi Arabia. *Journal of Accounting & Organizational Change*, *16*(1), 123-143. https://doi.org/10.1108/JAOC-03-2019-0039

Husin, M. M., & Rahman, A. A. (2016). Do Muslims intend to participate in Islamic insurance? *Journal of Islamic Accounting and Business Research*, *7*(1), 42-58. https://doi.org/10.1108/JIABR-03-2014-0012

Lazar, S. (2016). Determinants of Firm Performance: Evidence from Romanian Listed Companies. *Review of Economic and Business Studies*, *9*(1), 53-69.

Nakano, M. (2015). Exploratory analysis on the relationship between strategy and structure/processes in supply chains. *The International Journal of Logistics Management*, *26*(2), 381-400. https://doi.org/10.1108/IJLM-04-2014-0056

Nugraheni, P., & Muhammad, R. (2020). Innovation in the takaful industry: a strategy to expand the takaful market in Indonesia. *Journal of Islamic Marketing*, *11*(6), 1313-1326. https://doi.org/10.1108/JIMA-08-2018-0143

Odusanya, I. A., Yinusa, O. G., & Ilo, B. M. (2018). Determinants of Firm Profitability in Nigeria: Evidence from Dynamic Panel Models. *SPOUDAI Journal of Economics and Business*, *68*(1), 43-58.

Pantea, M., Gligor, D., & Anis, C. (2014). Economic Determinants of Romanian Firms' Financial Performance. *Procedia - Social and Behavioral Sciences*, *124*, 272-281. https://doi.org/https://doi.org/10.1016/j.sbspro.2014.02.486

Pervan, M., Pervan, I., & Ćurak, M. (2019). Determinants of firm profitability in the Croatian manufacturing industry: evidence from dynamic panel analysis. *Economic Research-*

Ekonomska Istraživanja, *32*(1), 968-981. https://doi.org/10.1080/1331677X.2019.1583587

Rafi, M., & Syaichu, M. (2019). ANALISIS FAKTOR-FAKTOR YANG MEMPENGARUHI PROFITABILITAS PERUSAHAAN ASURANSI SYARIAH TAHUN 2014-2017 [profitability; return on assets; firm size; volume of capital; asset tangibility; premium growth; liquidity]. *2019*, 14. https://ejournal3.undip.ac.id/index.php/djom/article/view/25958

Rahim, F. A., & Amin, H. (2012). Determinants Of Islamic Insurance Acceptance: An Empirical Analysis. *International Journal of Business and Society*, *12*(2), 37– 54.

Rahman, M. M., Saima, F. N., & Jahan, K. (2020). The Impact of Financial Leverage on Firm's Profitability: An Empirical Evidence from Listed Textile Firms of Bangladesh. *The Journal of Business Economics and Environmental Studies*, *10*(2), 23-31. https://doi.org/10.13106/JBEES.2020.VOL10.NO2.23

Raza, S. A., Ahmed, R., Ali, M., & Qureshi, M. A. (2020). Influential factors of Islamic insurance adoption: an extension of theory of planned behavior. *Journal of Islamic Marketing*, *11*(6), 1497-1515. https://doi.org/10.1108/JIMA-03-2019-0047

Shaik, S., Allen, A. J., Edwards, S., & Harris, J. (2009). Market Structure Conduct Performance Hypothesis Revisited Using Stochastic Frontier Efficiency Analysis. *The Transportation Research Forum*, *48*(3), 5-18.

Sherif, M., & Shaairi, N. A. (2013). Determinants of demand on family Takaful in Malaysia. *Journal of Islamic Accounting and Business Research*, *4*(1), 26-50. https://doi.org/10.1108/17590811311314276

Swartz, N. P., & Coetzer, P. (2010). Takaful: an Islamic Insurance Instrument. *Journal of Development and Agricultural Economics*, *2*(10), 333-339.

Szymańska, E. (2017). DETERMINANTS OF PROFITABILITY OF ENTERPRISES OF MEAT INDUSTRY IN POLAND. *Acta Scientiarum Polonorum. Oeconomia*, *16*(3), 83-91. https://doi.org/10.22630/ASPE.2017.16.3.36

Tan, Y. (2016). *Efficiency and Competition in Chinese Banking (Chandos Asian Studies Series)* (1st ed.). Chandos Publishing.

Vu, T.-H., Nguyen, V.-D., Ho, M.-T., & Vuong, Q.-H. (2019). Determinants of Vietnamese Listed Firm Performance: Competition, Wage, CEO, Firm Size, Age, and International Trade. *Journal of Risk and Financial Management*, *12*(2), 62. https://www.mdpi.com/1911-8074/12/2/62

Wasserman, N. (2008). Revisiting the Strategy, Structure, and Performance Paradigm: The Case of Venture Capital. *Organization Science*, *19*(2), 241-259. https://doi.org/10.1287/orsc.1070.0309

Zainudin, R., Ahmad Mahdzan, N. S., & Leong, E. S. (2018). Firm-specific internal determinants of profitability performance: an exploratory study of selected life insurance firms in Asia. *Journal of Asia Business Studies*, *12*(4), 533-550. https://doi.org/10.1108/JABS-09-2016-0129

Zhao, T., Pei, R., & Pan, J. (2021). The evolution and determinants of Chinese property insurance companies' profitability: A DEA-based perspective. *Journal of Management Science and Engineering*, *6*(4), 449-466. https://doi.org/https://doi.org/10.1016/j.jmse.2021.09.005