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Sharia-based Stocks: Do Muslim Investors Prefer Metaphysical or Materialistic Returns?

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Abstract

Faith-based investment instruments, such as *sharia*-based stocks, have developed rapidly in recent years. When investing in these instruments, investors tend to emphasize materialistic returns as measured with monetary returns and metaphysical returns, such as blessings from God (*Allah*) because of their observance of Islamic teachings. In this respect, it is important to investigate the role of individuals' religiosity in investment decision making in *Sharia*-based financial products. An equally crucial research question is whether individuals' religiosity levels affect expected material returns as measured by the tolerable negative returns of *sharia*-based stocks. This study relies on a survey method that involves university students in Java island who actively invest through the Investment Gallery of their faculties/ universities as the sample. Data is then analysed with the multinomial regression analysis technique. The results show that individuals who are more observant of their religious teachings are more likely to fully invest their funds in *Sharia*-based stocks and exhibit greater tolerance towards the negative returns of *Sharia*-based stocks. The findings indicate that Muslim investors who are more observant of Islamic teachings emphasize metaphysical returns from their investment decisions.

Keywords: Sharia-Based Stocks, Metaphysical Returns, Materialistic Returns, Religiosity, Investments

JEL Classification Code: G 40, G41, N25, Z12, Z10

1. Introduction

The last several years have witnessed the rapid growth of the *sharia*-based capital market in Indonesia, as indicated by the data of the Indonesian Stock Exchange (IDX) that records an increase of *sharia*-based investors. In particular, during the last five years, the number of *Sharia*-based investors has increased from 2,705 investors in late 2014 to 62,480 investors per October 2019, with a level of activity of 32 percent. The data suggest that *Sharia*-based stocks have been a major investment instrument for Indonesians.

Increases in *Sharia*-based stock investments in recent years show that investors do not solely search for the return factor in making investment decisions but also consider the investment products' social values. This view is in line with Akerlof (1980), Romer (1984) and Arfah et al. (2020). They proposed that individuals are motivated by social norms and motives when making decisions because they are unwilling to lose reputations in their social environments. This perspective is also consistent with Kubler (2001) who argues that social norms generally affect an individual's behaviour, while Kim and Venkatachaman and Rajgopal (2011) and Baker and Nofsinger (2012) reveal the impact of social norms on individuals' preferences and investment decisions. Hence, investors' preferences in making investment decisions align with their norms and ethical values obtained from their social environments or religious teachings. Consequently, investors tend to abandon investments in stocks that are considered as not consistent with their perspectives. In this

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respect, Muslim societies manage to clearly identify stocks that violate their norms derived from Islamic religious teachings as non-Islamic (conventional) stocks and stocks that adhere to Islamic religious norms as Islamic (*Sharia*-based) stocks. Besides, Muslim retail investors will follow Islamic trade rules because of their high religiosity levels (Awadhi and Dempsey, 2017) and trust for Islamic product (Islamic bank) Usman (2015).

Sharia-based stocks are stocks with specific segments because they are based on Islamic religious teachings. Merton (1987) proposes a market segmentation theory that argues that stocks neglected in segmented markets will outperform other stocks. However, the findings still leave several unanswered questions, including 1) to what extent do religion-based segmented markets increase or inhibit overall market behavior, and 2) to what extent does religious faith interact with stock investments, stock returns, stock trade, and liquidity decisions? These issues motivate further studies in investments. The classical investment theories, such as portfolio theory (Markowitz, 1954), suggest that investors consider expected risks and returns in making investment decisions but overlook non-economic factors such as beliefs derived from social norms or religious teachings. In this regard, it is crucial to analyze non-economic factors in investment decisions because classical finance theories emphasize risk and return factors that maximize individuals' utilities but overlook other factors related to non-economic returns (Higgins, 1998). Non-economic returns result from individuals' evaluation process on their social, cultural, and religious values (Kutschera, 1977). These values arguably satisfy individuals' personal values and not only maximize monetary values. Individuals' personal values refer to non-monetary/metaphysical returns, such as having spiritual satisfaction or obtaining blessings because of their observance of religious teachings. On the other hand, these individuals also search for monetary/materialistic factors, such as returns from their investments.

Several follow-up studies have considered non-economic factors that affect individuals' decision-making processes including psychological factors. This paradigm involves the belief factors derived from Islamic religious teachings that potentially affect individuals' financial decisions. In particular, scholars argue that religious beliefs lead to a self-categorization process that forms individuals' identities (Benjamin et al., 2016). Barro and McCleary (2003) established that religions offer moral and ethical teachings for their adherents and encourage them to act according to certain ways. Religiosity forms individuals' norms and values and affects their tendency to take risks. Consequently, it also affects their personal finance-related behaviors, including investment decisions (León & Pfeifer, 2013; Mahdzan et al., 2016).

The above discussion indicates that beliefs from religious teachings is likely to affect *sharia*-based stock investments (León & Pfeifer, 2013; Hess, 2012; Mahdzan et al., 2016). However, it is crucial to observe whether highly religious investors are also highly loyal to *sharia*-based financial products, i.e., whether they still buy or hold their *sharia*-based investment products although the returns of these products decline sharply because these products are considered consistent with their religious teachings. In other words, it is important to analyze the alignment of religious norms-motivated and economic-driven needs fulfillment.

It is interesting to evaluate the above discussion because prior studies find that more religious individuals are less willing to take risks (Leon & Pfeifer, 2013; Mahdzan et al., 2017). When investors align their economic (materialistic) with non-economic (metaphysical) factors, religiosity will motivate them to prefer *sharia*-based stocks to conventional ones. After selecting *Sharia*-based stocks, individuals will evaluate the returns of *sharia*-based stocks and sell the stocks when the returns decline sharply. Hence, it is interesting to investigate whether highly religious Muslim investors exhibit greater loyalty towards *sharia*-based stocks, i.e., they will continue to buy or hold *sharia*-based stocks, although the returns of these stocks decline sharply. It is also crucial to analyze whether religiosity levels affect Muslim investors' adjustment decisions when determining the thresholds of return decreases to reduce losses. This is important because Indonesian Sharia capital market has volatility risk (Rahmi et al., 2016)

Thus, this study examines whether individuals' religiosity levels affect sharia-based stock investments and whether religiosity affects investors' decisions to set the thresholds for tolerable return declines of *sharia*-based stocks to balance their economic needs. Accordingly, this study administers a survey to students of economics and business faculties in Jogjakarta Special Region, Central Java, and Jakarta, who actively make investment activities through the investment galleries of their faculties/ universities.

The contribution of this study to the faith-based investment literature is twofold. First, we investigate the role of religiosity in Sharia-based stock investment decisions and the determination of the thresholds of tolerable return decreases of *Sharia*-based stocks. The analysis is important in observing whether the metaphysical or materialistic returns are more dominant in investment decisions. Thus, this paper analyzes whether Muslim investors align their metaphysical and materialistic needs in their investment decisions. Second, this study employs the psychometric approach in measuring religiosity to analyze differences in individuals' responses from the psychological perspective.

This article is organized into several sections. The first section contains the introduction, followed by the second section that discusses the theoretical analysis and hypothesis development. Next, the third section presents the research

methods, while the fourth section discusses the results. Lastly, the fifth section presents the conclusion.

2. Hypothesis Development

2.1. Rationality in Islam

Theories of decision making in highly uncertain environments are largely based on utility theory. Several classical finance theories (the 1950-1980 period), such as portfolio theory (Markowitz, 1952) and Capital Asset Pricing Model (CAPM) by Sharpe (1964) and Lintner (1965), employ Expected Utility Theory (EUT) as the underlying theory. EUT proposes that individuals think rationally in making investment decisions by considering the expected risks and returns of each investment choice to maximize investors' utilities subject to their risk preferences.

The development of faith-based investment products motivates individuals to consider their religious teachings when buying these investment products. According to the explanation of Islamic rationality, Islamic economics has its own view in explaining consumers' behavior. Unlike conventional economics, Hossain (2014) illustrates a concept commonly known as Islamic Economic Rationalism (IER). In a similar vein, Ramli and Mirza (2007) classify Islamic rationality into two components, namely worldview and personal interests. In the personal interest component, individuals will fulfill their interests by adhering to *sharia* principles. Similarly, IER also establishes religion as the main determinant, while *sharia* is based on religion.

Based on the above discussion, individuals will form unique utilities according to the preferences of their religions. Individuals have different utilities depending on their beliefs, creating subjective preferences toward *Sharia*-based financial products. This phase is accomplished through all activities, including consumption that adheres to *sharia*-based ethical and religious values (Ghassan, 2015). Further, Ghassan explains that materialistic and metaphysical satisfaction represent the benefits of satisfaction. Consumption-based Islamic teachings such as using *halal* goods/ services will deliver utilities or benefits (Ramli & Mirza, 2007) that enable *Falah* maximization (individuals do not solely search for returns but also worldly and afterlife triumph).

However, on the other hand, rational Muslim investors also maximize their worldly success. As suggested by Ghassan (2015), Muslim investors channel their satisfaction benefits both materialistically and metaphysically. Hence, in making investment decisions, Muslim investors do not solely consider subjective rationality based on Islamic teachings, but they also consider objective rationality as represented by risks and returns to obtain worldly returns.

The above explanations suggest that understanding investors' behavior when buying *sharia*-based products involves both financial and non-financial perspectives. Particularly, the financial perspective focuses on worldly (monetary/ materialistic) needs, while the non-financial perspective emphasizes heavenly interests based on Islamic teachings (non-monetary/ metaphysical needs).

2.2. Religiosity and Investment Portfolio

Muslims adhere to the practices of virtue and ethics when making investments that likely affect their financial behaviour. In Arabic terms, these practices are labelled as *akhlaq*. Some investors do not solely seek returns and wealth accumulation from their investments but also the fulfilment of moral obligations (Shakeel, 2015; Anas & Mounira, 2009). Scientific literature also demonstrates that religiosity affects ones' risk-taking and portfolio allocation behaviours. As a cultural dimension embedded into individuals' identities, religion plays a major role in individuals' economic and financial behaviors (Arora & Marwaha 2014; Benjamin et al., 2016; Yusuff & Mansor, 2016). Empirical studies support the idea and have documented evidence that religion and religiosity affect individuals' financial and investment behaviours.

The literature generally demonstrates the positive relationship between religiosity and decision making. For example, Tabellini (2010) reveal that values, culture, and norms directly affect attitudes and preferences and, eventually, decision making. Hence, religion-derived values will result in preferences in the decision-making process, particularly when individuals choose financial products that comply with Islamic religious teachings. Canepa and Ibnrubbian (2014) study in Saudi Arabia observes that religious teachings affect individuals' portfolio formation.

Prior studies have found that religion and religiosity play a major role in decision-making behaviour which indicates that the religiosity factor likely affects the allocation of financial assets in portfolio formation. Thus, this study predicts that higher Islamic religiosity levels will positively affect asset allocation into *sharia*-based stocks.

H_1: *Religiosity positively affects investments in sharia-based financial products*.

2.3. Religiosity and Declines in *Sharia*-based Stocks' Returns

Empirical studies reveal that religion and religiosity affect individuals' financial and investment decisions and risk-taking behaviour. The literature generally shows a positive association between religiosity and risk-averse behaviour where more religious individuals are more risk-averse (Renneboog & Spaenjers, 2012; Lu & Chan, 2012; León & Pfeifer, 2013; Jiang et al., 2015; Chen et al., 2016; Mahdzan

et al., 2017). Because they are more risk-averse, religious people do not tend to participate in risky investments (Tahir & Brimble, 2011; Davutyan & Öztürkkal, 2016; Yusuf & Mansor, 2016).

Based on these studies, besides considering metaphysical factors, highly religious individuals also account for materialistic factors when making investment decisions, as indicated by their reluctance to invest in risky assets. Hence, after choosing *sharia*-based financial products that adhering to Islamic religious teachings, individuals will evaluate their tolerable risks and returns. Highly religious Muslim investors are arguably less willing to take the risks of declines of their *sharia*-based investments, as indicated by their tolerable percentage of return declines.

H_2: *Religiosity negatively affects the willingness to take the risks of the declines of sharia-based stocks' returns.*

3. Methods

This study relies on a survey method to generate data by distributing questionnaires to Muslim students who actively invest through the Investment Gallery of economics and business faculties in Java Island, Indonesia. We use students as the sample to analyse the investment behaviour of retail investors, especially young ones. Using students as the sample is important because younger investors tend to make investment decisions to maximize monetary returns. Additionally, whether they also seek religion-derived permanent returns from their investments is relatively understudied. Hence, it is crucial to determine whether young investors are still attracted to *Sharia*-based financial products when they are offered both conventional and *Sharia*-based financial products as alternative investment instruments. The sample is generated with non-probability convenience sampling. Before the pilot test, three Islamic scholars who also actively participated in Islamic financial organizations have validated the questionnaire's content to analyse whether each question item conforms to Islamic religious teachings. After the question items are validated, we distribute the questionnaires to 90 respondents in the pilot test and subsequently run the Exploratory Factor Analysis to classify the question items into several dimensions.

The Exploratory Factor Analysis (EFA) test results are revalidated by three Islamic scholars to examine whether the dimension formation of the EFA analysis can explain Islamic religious teachings comprehensively. Based on the revised and validated questionnaire, we distribute 250 questionnaires to the targeted respondents, resulting in 184 usable responses or a response rate of 73.6 percent, a considerably high rate for statistical validity. The questionnaire is presented in Indonesian language and consists of three parts. The first part focuses on respondents' demographic profile. The second part measures Islamic religiosity based on the psychometric approach, as developed by Masri and Priester (2007) and Olufadi (2016). Lastly, the third part involves portfolio selection choices based on Tung et al., (2014), Van Rooij et al., (2011), and Mahdzan et al., (2017).

3.1. Dependent Variables: Investment Portfolio

The dependent variable of this paper is portfolio allocation. A simple quantitative measurement is developed to indicate the tendency to allocate risky assets into portfolios. We ask the following question to the respondents, "Which financial asset combination below that best represents your investment?" This study enables respondents to provide a simple estimation of fund allocation in their portfolios. In particular, they have five possible answers to choose: (1) 100 percent in *Sharia*-based stocks, (2) 75 percent in *Sharia*-based stocks and 25 percent in conventional stocks, (3) 50 percent in *Sharia*-based stocks and 50 percent in conventional stocks, (4) 75 percent in conventional stocks and 25 percent in *Sharia*-based stocks, and (5) 100 percent in conventional stocks. This categorization follows prior studies (Bertaut & Starr-McCluer, 2002; Duasa & Yusof, 2013; Mahdzan et al., 2017).

Next, the questionnaire also asked respondents' tolerable declines in *Sharia*-based stocks' returns with the following question: What is your tolerable percentage of decline in *Sharia*-based stocks' returns that you decide still to buy or hold the stocks? The alternative answers are (1) < 25%, (2) 25%-50%, (3) 50%-75%, and (4) I will continue to hold *Sharia*-based stocks regardless of the declines of *Sharia*-based stocks' returns. The responses reflect the ordinal measure of the tendency to invest in *Sharia*-based stocks relative to conventional stocks to obtain metaphysical returns that adhere to Islamic religious teachings. Next, investors will justify the percentage of the return declines of *Sharia*-based stocks selected before to achieve materialistic returns.

3.2. Independent Variable

Islamic Religiosity

Religiosity is a comprehensive sociological term that refers to individuals' involvement, interests, or participation in various aspects of dedication, belief, and religious activities (Delener, 1990b; Azari et al., 2005 and can be classified into two dimensions: extrinsic and intrinsic religiosity (Allport & Ross, 1967; Vitell et al., 2006). We adapt the measurement scale of Masri and Priester (2007) and Olufadi (2016) to capture various religiosity domains, including Muslims' faith, beliefs, and practices, by using 29 question items. Next, this study employs the Exploratory Factor Analysis (EFA) to test the internal consistency and

form the latent constructs that underlie religiosity. In this case, as suggested by Hair et al. (2014), we use the threshold of 0.6 to develop factors from EFA. Consequently, we have to leave out ten items because of low factor loadings. EFA for the remaining 19 items produces the five solution factors. Further, this study runs the reliability test by using Cronbach's alpha with Cronbach's alpha values between 0.668 and 0.805. The following Table 1 below displays the results of EFA and Cronbach's Alpha.

Islamic Religiosity as Measured with Two Methods

In the first method, following Wan Ahmad et al. (2008) and Mahdzan et al., (2017), respondents are separated into three groups that reflect the relative strength of their religiosity levels: relaxed, moderate, and observant. The categorization process starts with calculating the average and standard deviation values of 19 items that contain the above factors for all respondents. Table III displays the descriptive statistics of religiosity levels.

Religiosity Dimensions

The second method is to measure how religiosity involves the five dimensions of Islamic religiosity produced by the factor analysis procedure in Section 3.1.3. Table I shows that factor analysis produces five reliable dimensions. Based on the discussions with Islamic scholars, the grouping process of the factor analysis produces five dimensions, namely (1) belief in *Allah*, (2) *belief* in Islamic *Sharia* teachings, (3) interaction with fellow human beings (*hablum minannash*), (4) morals (*Akhlaq*), and (5) worshiping behaviour.

Table 1: Factor Loading and Cronbach's Alpha of Religiosity Measurement

Dimension	Questions Item	Factor Loading	Mean	Cronbach's Alpha
Belief in Islamic *Sharia* rules	I believe that Islam allows men to have at most four wives with specific terms and conditions.	0.833	4.27	0.805
	I believe in the unseen (*ghaib*)	0.731		
	I believe that men are not allowed to shake hands with non-*mahram* women (women who are not men's relatives or in-laws)	0.71		
	I wear a *hijab* (for women). My wife/ fiancé wears a *hijab* (for men).	0.625		
	When I attend social meetings, I only sit next to other attendants of the same sex (or my mahram, such as husband, brother/ sister, parents).	0.616		
Belief in *Allah*	How frequently did you drink or sell alcoholic beverages in the last week?	-0.832	4.87	0.791
	I believe that Islam is the complete and perfect teaching for me.	0.758		
	I believe that *Al-Quran* is a final way of life.	0.758		
Interaction with fellow human beings (*hablum minannash*)	How frequently did you betray the trusts of other people in the last week?	0.741	1.67	0.705
	How frequently did you prejudice (*suudzhan*) against other people in the last week?	0.731		
	How frequently did you perjury in the name of God in the last week?	0.711		
	How frequently did you defame or hear defamation in the last week?	0.64		
Morals (*akhlaq)*	How frequently did you speak the truth in every situation in the last week?	0.741	4.21	0.678
	How frequently did you keep every promise you made in the last week?	0.71		
	How frequently did you obey your parents in the last week?	0.66		
	How frequently did you make self-introspection on what you did last week?	0.652		
Worshiping/ praying behaviour	How frequently did you practice *tahajud shalat* in the last week?	0.745	3.43	0.668
	Prayers are compulsory for Muslims, consisting of the five obligatory prayers and sunnah prayers (rawatib, duha, tahajud, etc.). I have often performed various kinds of sunnah prayer services in the past week	0.604		
	I always read/ interact with *Al-Quran* at least a page every day.	0.601		

3.3. Control Variables

Sociodemographic Variables

The control variables of this study are the demographic variables of the respondents, namely gender, pocket money/ income, age, and participation in Islamic financial organizations. These variables are measured with dummy variables (Gender: male =1, female = 0; Age: 0= 17-20, 1 = 21-24, 2: 25-28, 3=>28; Monthly income/ pocket money: 0=<1,000,000, 1 = 1,000,000 – 2,500,000, 2 = 2,500,001-4,000,000, 3 > 4,000,001; Participation in Islamic financial organizations: 1 = active 0 = not active).

4. Results and Discussions

4.1. Descriptive Statistics

This section discusses the descriptive statistics of the religiosity measure and respondents' characteristics. Table 2 below explains the results of the measurement of religiosity.

Table 2 above informs that the respondents exhibit relatively balanced religiosity levels (observant, moderate, and relaxed). The highest proportion of religiosity levels is the moderate level (37%), followed by the observant level (36%). Next, women dominate our respondents (60% of total respondents), and men constitute the rest (40%). Most respondents earn monthly income or pocket money less than 1,000,000 rupiahs and are between 17 and 24 years old. Further, most respondents (58%) actively participate in Islamic financial organizations and are highly loyal to *sharia*-based financial products, as indicated by their willingness to hold *sharia*-based stocks regardless of the magnitude of the return declines (46%).

4.2. Multivariate Analysis

We then run the multivariate analysis using the multiple multinomial regression method after the descriptive analysis and bivariate analyses. This method belongs to logistic regression used when the dependent variable has a polychotomous or multinomial scale. The multinomial scale is a measure that is categorized into more than two categories. Hosmer and Lemeshow (2000) suggest using logistic regression when the response variable is categorical (nominal or ordinal), and the predictor variables are continuous or categorical. The following is the logistic regression model:

$$\pi(x)\frac{e^{g(x)}}{1+e^{g(x)}} \quad \ldots(1)$$

With $g(x) = \beta_{0+}\beta_1 X_1 + \beta_p Z_p$

Table 2: The Descriptive Statistics of Research Variables

Variable	Frequency	Percentage
Religiosity		
Observant	67	36%
Moderate	68	37%
Relaxed	49	27%
Gender		
Female	110	60%
Male	74	40%
Income / pocket money		
< 1,000,000	90	49%
1,000,000 – 2,500,000	81	44%
2,500,001 – 4,000,000	8	4%
> 4,000,001	5	3%
Age		
17 – 20	45	24%
21 – 24	119	65%
25 – 28	18	10%
>28	2	1%
Participation in Islamic Financial Organizations		
Not active	107	58%
Active	77	42%
Investment		
100% conventional	4	2%
70% conventional, 30% *sharia*	10	5%
50% conventional, 50% *sharia*	36	20%
30% conventional, 70% *sharia*	21	11%
100% *sharia*	113	61%
The Decline in the Returns of *Sharia*-based Stocks		
< 25%	55	30%
25%-50%	31	17%
50%-75%	13	7%
Any percentage of decline in the returns of *sharia*-based stocks	85	46%

$g_j(x)$ is investment decisions as the dependent variable with a multinomial scale (five possible decisions) and the decline in *Sharia*-based stocks' returns with four possible answers. Next, X is religiosity as the independent variable (total or per dimension), and Z is the control variables (gender, income, age, and participation in Islamic financial organizations). Table 3 below demonstrates the results of the multiple multinomial regression analysis between religiosity and investments.

Table 3: Multinomial Regression Analysis – The Effect of Religiosity on Investment Portfolios

Investment	Independent Variables	Model 1			Model 2		
		B	Sig.	Exp(B)	B	Sig.	Exp(B)
100% conventional	Intercept	2.027	1.000		128.706	0.990	
	Tot_Rel	-14.899	0.018**	0.000			
	Belf_Islamic *Sharia*				-10.252	0.937	0.000
	Belf_*Allah*				-28.360	0.903	0.000
	Interaction with fellow human beings				-26.395	0.882	0.000
	Akhlaq				11.497	0.951	98389,31
	Worshiping behavior				-4.124	0.968	0.016
	Gender	13.750	0.985	936.381	19.048	0.910	1872,12
	Income	12.178	0.994	194.482	53.743	0.994	2,189.320
	Age	-6.058	1.000	0.002	-39.594	0.995	0.000
	Orgn_Is	8.360	0.991	4.271	5.548	0.980	256.705
70% con 30% *sharia*	Intercept	-14.095	0.999		-7.359	0.999	
	Tot_Rel	-6.212	0.000***	0.002			
	Belf_Islamic *Sharia*				-1.493	0.094	0.225
	Belf_*Allah*				-5.044	0.017**	0.006
	Interaction with fellow human beings				-2.547	0.097	0.078
	Akhlaq				-0.511	0.560	0.600
	Worshiping behavior				-1.100	0.046**	0.333
	Gender	2.125	0.076	8.375	2.626	0.053	13.819
	Income	17.127	0.998	274.190	23.895	0.000***	2.383
	Age	16.583	0.999	159.164	12.958	0.998	4.244
	Orgn_Is	1.167	0.323	3.213	0.784	0.563	2.190
50% con 50% *sharia*	Intercept	-4.465	0.248		-1.516	0.999	
	Tot_Rel	-3.506	0.000***	0.030			
	Belf_Islamic *Sharia*				-1.950	0.000***	0.142
	Belf_*Allah*				-0.659	0.531	0.518
	Interaction with fellow human beings				-0.325	0.553	0.722
	Akhlaq				0.111	0.814	1.118
	Worshiping behaviour				0.000	0.999	1.000
	Gender	0.258	0.607	1.294	0.100	0.864	1.106
	Income	-0.879	0.510	0.415	-0.640	0.679	0.527
	Age	17.397	0.000***	359.241	15.447	0.995	511.340
	Orgn_Is	1.922	0.002***	6.838	2.600	0.001***	13.459

Table 3: Continued

30% con 70% *sharia*	Intercept	-7.106	0.089		-6.191	0.998	
	Tot_Rel	-2.857	0.005***	0.057			
	Belf_Islamic *Sharia*				-1.643	0.001	0.193
	Belf_*Allah*				0.124	0.911	1.132
	Interaction with fellow human beings				-0.078	0.888	0.925
	Akhlaq				-0.073	0.887	0.930
	Worshiping behaviour				-0.090	0.794	0.914
	Gender	0.304	0.580	1.355	0.069	0.909	1.071
	Income	-0.672	0.641	0.511	-0.931	0.544	0.394
	Age	17.374	0.000***	351.114	15.289	0.996	436.300
	Orgn_Is	0.818	0.158	2.267	1.121	0.08*	3.067

a. The reference category is: 100% *Sharia*-based stocks.
Explanation: significance levels 10 %(*), 5% (**), and 1% (***)

The above multivariate analysis shows the effect of religiosity (total or per dimension) on stock investment choices controlled by the sociodemographic variables (gender, age, income/ pocket money, and participation in Islamic financial organizations). The results demonstrate that the total religiosity variable has significant and consistent effects on every investment decision. Particularly, individuals with observant religiosity levels are less likely to select 100% conventional stocks than 100% *sharia*-based stocks. Hence, more religious individuals are less likely to select 100% conventional stocks than invest 100% of their funds in *sharia*-based stocks. We also find similar results for other investment choices (70% conventional 30% *sharia*, 50% conventional 50% *sharia*, and 30% conventional 70% *sharia*) compared with the reference value (100% *sharia*-based stocks).

Next, from each religiosity dimension's perspectives, individuals with the highest score for belief in *Allah* are less likely to invest in 70% conventional stocks and 30% *sharia*-based stocks than in 100% *sharia*-based stocks with the probability value of 0.006. Similarly, individuals with higher scores for their worshiping behavior are less likely to invest in 70% conventional stocks and 30% *sharia*-based stocks than in 100% *sharia*-based stocks with the probability value of 0.333.

Belief in Islamic *sharia* is significant for the investment choice of 50% conventional stocks-50% *sharia*-based stocks with 100% investment in *sharia*-based stocks as the comparison. Thus, individuals with higher belief in Islamic *sharia* are less likely to invest in 50% conventional stocks and 50% *sharia*-based stocks than in 100% *sharia*-based stocks with the probability value of 0.142. Several demographic variables exhibit significant values in model 1 (total religiosity), such as age and participation in Islamic financial organizations. Meanwhile, in model 2 (religiosity dimensions), income/ pocket money and participation in Islamic financial organizations are the significant sociodemographic variables.

Based on the above statistical results, religiosity generally affects investment decisions (Mahdzan et al., 2017). More observant individuals (those with higher religiosity scores) prefer 100% *sharia*-based stocks to other proportions in their investment portfolios. The results demonstrate that Islamic societies have strong desire to avoid conventional stocks that their Islamic religious teachings consider sinful (Fabozzi et al., 2008). The investors avoid firms whose activities conflict with Islamic religious teachings, such as firms who sale products that contain pork, alcohol, and casino contradict Islamic religious teachings (Durand et al., 2013). Canepa and Ibnrubbian (2014) document that religious teachings affect individuals' portfolio formation in Saudi Arabia. Hence, our findings support prior studies (Fabozzi et al., 2008; Durand et al., 2013; Canepa & Ibnrubbian, 2014; Mahdzan et al., 2017).

Next, the religiosity measurement dimensions that play crucial roles in investment decisions are belief in *Allah,* belief in Islamic *sharia,* and worshiping behaviour. Muslim investors consider *sharia*-based stocks important because they have strong beliefs in their religious teachings. Consequently, they are highly loyal to *sharia*-based financial products. These results show that observant Muslim investors will maximize metaphysical returns to obtain blessings (*barakah*) from *Allah* when making investment decisions by investing more in *sharia*-based stocks than conventional ones (Ghassan, 2015). Hence, the risk and return variables are insufficient in analysing the investment patterns of *sharia*-based financial products because other significant variables that are based on individuals' values affect investment decisions such as religiosity.

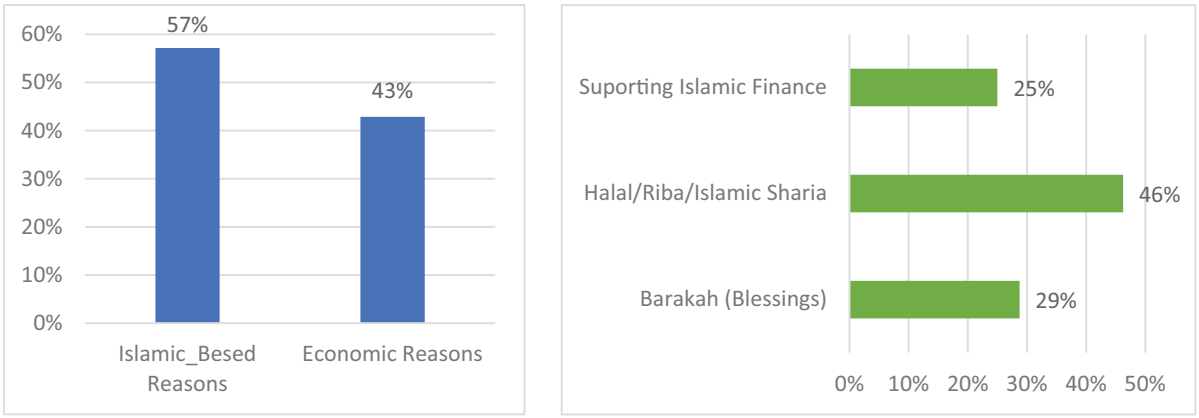

Figure 1: Investment Reasons in *Sharia*-based Stocks

Our findings also highlight that participation in Islamic financial organizations strengthens further the decisions to buy *sharia*-based stocks for both model 1 and model 2. Thus, Islamic financial organizations in Indonesia play a crucial role in socializing Islamic finance in Indonesia. This study also include an open-ended question that asks the reasons for the respondents' choices of investment portfolios. The following figure illustrates the results:

Figure 1 above indicates that more respondents invest in *sharia*-based stocks based on Islamic religious reasons (57%) than based on economic reasons (43%). Thus, the religiosity factor is more dominant in affecting investment decisions than the economic factor. Next, we analyse further the Islamic religious teachings on which Muslim investors base their investment decisions.

Muslim investors choose *sharia*-based stocks because they need to avoid *riba*, invest in *halal* products that comply with Islamic religious teachings (46%). Next, Muslim investors also expect other returns in the form of blessings (*barakah*) from *Allah* because they adhere to Islamic religious teachings (29%). After empirically underscoring the importance of metaphysical returns, we then investigate whether Muslim investors also consider materialistic returns as indicated by the returns of *sharia*-based stocks, especially when the returns of these stocks continue declining. Particularly, this study asks the percentage of the decline in *sharia*-based stocks' returns that are still tolerable by Muslim investors. Table 4 below demonstrates the results.

Table 4 informs that individuals' religiosity levels likely affect willingness to bear the declines in *sharia*-based stocks' returns. In model 1, more religious individuals are less willing to bear the declines in *sharia*-based stocks' returns of less than 25% than any percentage of decline in *sharia*-based stocks' returns with the probability of 0.300 times. We find similar results for other percentages of return declines (25%-50%, 50%-75%) as compared with any percentage of return decline. If analysed per religiosity dimension, belief in *Allah* and Islamic *sharia* have greater impacts on willingness to bear any percentage of decline in *sharia*-based stocks' returns than other dimensions.

Next, for both model 1 and model 2, ages of level 0= 17-20 and 1=21-24 as the control variable significantly affect willingness to bear the return decline. In particular, respondents in these age groups are less willing to bear any percentage of the decline of *sharia*-based stocks' returns, and they tend to accept a 25%-75% return decline.

The statistical results above suggest that highly observant Muslim investors tend to hold their *sharia*-based stocks although these stocks offer significant return declines (they are willing to bear any percentage of return decline). These findings demonstrate that more observant individuals are more loyal to *sharia*-based stocks and are more willing to sacrifice materialistic returns for metaphysical returns. However, the association is affected by individuals' age. Specifically, younger individuals are less willing to bear any percentage of declines in *sharia*-based stocks' returns. Thus, they still consider materialistic returns important, while older investors tend to prioritize metaphysical returns.

Overall, these findings do not support hypothesis 2 that predicts that individuals who adhere to their religious teachings more strongly are less willing to take risks. This study even documents the opposite results. Higher religiosity levels are associated with risk-taking behaviour, as indicated by the willingness to bear any percentage of the decline in *sharia*-based stocks' returns. Thus, *sharia*-based stocks have a highly loyal market segment, especially for Muslim investors.

Table 4: Multinomial Regression Analysis – The Effect of Religiosity on Tolerable Declines in *Sharia*-based Stocks' Returns

The decline in *Sharia*-based Stocks' Returns	Independent Variable	Model 1			Model 2		
		B	Sig.	Exp(B)	B	Sig.	Exp(B)
< 25%	Intercept	-12.616	0.000		-12.391	0.018	
	Tot_Rel	-1.206	0.083*	0.300			
	Belf_Islamic *Sharia*				-0.956	0.007***	0.385
	Belf_*Allah*				-0.280	0.763	0.756
	Interaction with fellow human beings				-0.400	0.333	0.670
	Akhlaq				0.733	0.167	2.080
	Worshiping behaviour				-0.157	0.528	0.854
	Gender	0.783	0.051*	2.189	0.670	0.112	1.954
	Income	-1.296	0.311	0.274	-1.702	0.225	0.182
	Age	17.381	0.000***	353.397	17.339	0.000***	339.002
	Orgn_Is	-0.312	0.460	0.732	-0.381	0.399	0.683
25%-50%	Intercept	-8.214	0.023		-9.058	0.101	
	Tot_Rel	-2.365	0.004***	0.094			
	Belf_Islamic *Sharia*				-0.998	0.012**	0.369
	Belf_*Allah*				-0.657	0.479	0.519
	Interaction with fellow human beings				0.309	0.535	1.362
	Akhlaq				0.284	0.540	1.328
	Worshiping behaviour				-0.310	0.301	0.734
	Gender	-0.614	0.211	0.541	-0.861	0.106	0.423
	Income	-0.696	0.650	0.499	-1.369	0.411	0.254
	Age	16.866	0.000***	211.232	16.821	0.000***	201.926
	Orgn_Is	0.970	0.096	2.639	1.241	0.054	3.458
50%-75%	Intercept	-9.654	0.046		-6.350	0.316	
	Tot_Rel	-1.650	0.161	0.192			
	Belf_Islamic *Sharia*				1.668	0.198	5.300
	Belf_*Allah*				-4.319	0.004***	0.013
	Interaction with fellow human beings				0.355	0.579	1.427
	Akhlaq				0.670	0.317	1.953
	Worshiping behaviour				-0.862	0.112	0.422
	Gender	-0.540	0.427	0.583	0.123	0.878	1.131
	Income	-2.197	0.169	0.111	-1.986	0.384	0.137
	Age	17.343	0.000***	340.355	16.698	0.000***	178.673
	Orgn_Is	-0.822	0.248	0.440	-0.556	0.453	0.573

a. The reference category is: Any percentage of decline in *sharia*-based stocks' returns.

Explanation: significance levels 10%(*), 5% (**), and 1% (***)

5. Conclusions

This paper concludes that individuals' religiosity levels affect investment portfolio choices. Individuals with higher piety towards Islamic teachings are more likely to have investment portfolios that entirely (100%) consist of *sharia*-based stocks. The belief dimensions of religiosity measure (belief in *Allah* and belief in Islamic *sharia*) strengthen the results. Further, more observant Muslim investors will bear any decline in sharia-based stocks' returns, implying that they are highly loyal to sharia products because they believe in *Allah* and Islamic *sharia*. The above discussions indicate that individuals' adherence to religious teachings positions metaphysical returns to be more important than materialistic returns. However, younger investors exhibit different tendencies because they consider both metaphysical and materialistic returns in their investment decisions. Besides, Islamic financial organizations also play crucial roles in socializing Islamic finance to Muslim investors. This study highlights the importance of religiosity in *sharia*-based stock investments. Hence, future studies can use archival data to investigate the optimal prices for *sharia*-based stocks by involving the religiosity factor in the analysis.

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