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Do *sukuk* ratings *non-contingently* affect stock returns? Evidence from Indonesia and Malaysia

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ABSTRACT

Objective: The objective of the article is to investigate two issues. First, whether the Islamic bond (*sukuk*) ratings are the key determinant in affecting stock returns and, second, whether firm-characteristic variables moderate the *sukuk* ratings effect on stock returns.

Research Design & Methods: This study applied the panel estimated generalized least squares (EGLS) regression for two samples (from Indonesia and Malaysia) spanning two years, 2015-2016, for all variables, except for the intrinsic-value variable which spanned eight years, 2009-2016.

Findings: The results show that the direct and positive effect of *sukuk* ratings on stock returns are significantly present in Malaysia but not in Indonesia, while the positive and significant moderating effects of firm-characteristic variables – especially leverage and intrinsic value of the firm – are more pronounced in the positive *sukuk* rating-stock return relationship in Indonesia than in Malaysia.

Implications & Recommendations: The types of firm-characteristic variables involved in determining the effect of *sukuk* ratings on stock returns depend on the country's characteristics. As a result, adopting *sukuk* ratings to determine stock returns is not constant but, instead, it is contingent – to an extent – on other variables: firm-characteristic variables. These results suggest that still many factors should be explored so as to reach a better judgment on the quality of credit, including *sukuk*.

Contribution & Value Added: While most previous studies employed the event-study method and did not specifically consider firm-characteristic effects on analysing the relationship between *sukuk* ratings and stock returns, this study sought to reveal whether *sukuk* ratings are the key determinant in affecting prices (or stock returns), and the extent to which firm-characteristic variables moderate the relationship between *sukuk* ratings and stock returns.

Article type: research article
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INTRODUCTION

This study aims to examine whether *sukuk* ratings can be the key determinant in affecting stock returns directly, which is not contingent on firm-characteristic variables, or whether the *sukuk ratings* effect on stock returns is subject to the varying firm-characteristic factors: leverage and firm value. This issue arises from the basic assumption that the significant role of *sukuk* ratings, including credit ratings, is an intermediary providing information through which are conveyed some signals of creditworthiness and sustainability, commonly sourced from an assessment to a firm's fundamental analysis, e.g. expected future cash flows, firm value, leverage level, default-risk profile, market competitiveness, or governance (see Muhamad Sori, Mohamad, & Al Homsi, 2019). Therefore, *sukuk* ratings can reduce information asymmetry between investors and managers, so *sukuk* rating changes will be efficiently reflected in stock prices.

As defined by most scholars, *sukuk* are sharia-compliant debt instruments or non-interest-based securities with the ownership of an underlying asset (Bhatti, 2007) or Islamic bonds (Alam, Hassan, & Haque, 2013). The main characteristic of *sukuk* that distinguishes it from conventional bonds is the underlying asset, a reference of issuing debt whose value is not allowed to exceed the value of the asset. Thus, as a risky instrument, *sukuk* is also an instrument of debt-based financing that has certain restrictions which, if uncontrolled, will endanger a firm. Due to the *sukuk* characteristics, the quality and credibility of the *sukuk* owned by a firm can also be assessed. Since a 'good' or 'bad' rating rendered by a credit-rating agency is usually attributed to the assessment of a historical record on *sukuk* issuers' credibility in their credit, repayment, underlying assets, and whole business performance (Arundina, Omar, & Kartiwi, 2015), we may argue that stock returns respond to credit or *sukuk* ratings while also retaining other firm-characteristic factors to be considered.

Until recently, studies regarding the effects of conventional credit and *sukuk* ratings on returns show that, among other things, credit rating changes show a reaction among investors, mostly indicated by stock price reaction irrespective of symmetric (Muhamad Sori *et al.*, 2019) or asymmetric stock price changes for *sukuk*; *i.e.* a bond or *sukuk* that tends to emphasise more downward than upward credit-rating changes (Bissoondoyal-Bheenick & Brooks, 2015; Freitas & Minardi, 2013). Most scholars support of these findings. Among others, Ng and Ariff (2019) conventionally find the significant credit rating change effect on *sharia*-compliant stock prices. Ab Hamid, Zakaria, and Ab Aziz (2014) reveal the significant effect of *sukuk* ratings on firm performance. Paltrinieri, Hassan, Bahoo, and Khan (2019) find a significant *sukuk*–stock market behaviour relationship. Abd Rahim and Ahmad (2016) document a positive and significant asymmetrical reaction to *sukuk* issuance in which the announcement of 'high-quality,' 'excellent,' and 'good' of *sukuk* ratings receives positive responses, while 'medium,' 'questionable,' and 'weak' ratings show negative reactions. Khartabiel, Abu-Alkheil, Tunku Ahmad, and Khan (2020) find that in the post-crisis period, market reaction to *sukuk* is positive and significant, while insignificant for conventional bonds (see also Mohamed, Yahya, & Ishak, 2017).

However, other studies find different results, e.g. Alam *et al.* (2013) find that markets reacted negatively to *sukuk* announcements before and during the 2007 global financial crisis. Godlewski, Turk-Ariss, and Weill (2010) find no significant stock market reaction to conventional bond announcements, which reacted negatively to the issuance of *sukuk*. Furthermore, Godlewski, Turk-Ariss, and Weill (2013) find evidence that the stock market is neutral to conventional bond announcements but reacts negatively to *sukuk* announcements instead. Hassan, Paltrinieri, Dreassi, Miani, and Sclip (2018) find that *sukuk* and conventional bonds at the investment-grade level had lower volatility reactions to market shocks and higher persistence, while Khartabiel *et al.* (2020) suggest that there was no market reaction to the announcement of *sukuk* and conventional bonds in the pre-crisis period of the 2008 global financial crisis and during the crisis period, as the market reacted negatively significantly to both groups.

Given these studies, we may conclude that the phenomena of *sukuk* and *sukuk* ratings still show different reaction from their users and investors. Moreover, previous studies never explicitly review the issue of whether *sukuk* ratings can be used as a key determinant in pricing – mostly considered by investors – or whether the *sukuk* ratings as a determinant of prices is influenced by other variables. These two issues remain understudied in previous studies. In theory, like conventional credit ratings, *sukuk* ratings are not only built by financial and accounting data but also by other relevant information (see Hand, Holthausen, & Leftwich, 1992; Grier & Katz, 1976). This is also stated explicitly by Moody's (1995) who argues that the credit rating development process is indeed subjective because it refers to assessing the ability of future entities, which involves many unique factors related to certain industries and debt issuers so that if there is an attempt to simplify this process with a formula, it will be misleading and will result in serious mistakes. Hence, *sukuk* rating practices – including conventional credit ratings – are always dynamic under scientific scrutiny. Some results support the market reaction when the *sukuk* was announced, but other do not confirm such an investors' reaction. The reasons why the results were dynamic may also be attributed to many factors, like firm-characteristic factors.

Furthermore, to the best of my knowledge, most previous studies focus on employing the event-study method, but not to specifically consider whether *sukuk* ratings are the key determinant in affecting stock returns disregarding firm-characteristic variables or whether the relationship be-

tween *sukuk* ratings and stock returns is contingent on firm-characteristic variables. As such, this research seeks to reveal whether *sukuk* ratings are the key determinant in affecting stock prices (or stock returns), and the extent to which firm-characteristic variables moderate the relationship between *sukuk* ratings and stock returns.

To answer these research issues, the stock markets from two countries – Indonesia and Malaysia – were used as samples in this study due to their dominance of the global *sukuk* market. The global *sukuk* market share for Malaysia and Indonesia is 68.06% (60.84% + 7.225%) or approximately 749 613 million USD (670 121 million USD + 79 492 million USD) (IIFM, 2019). Because of the dominance of these two countries – which account for nearly 70% out of the global *sukuk* market – Indonesia and Malaysia as the samples in this study should be considered reasonable.

The rest of this paper will present a literature review and hypothesis development, describe materials and methods, provide results and discussion, and draw a conclusion and implications.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

As conclusively stated by many scholars, *sukuk* functions as a debt-based instrument with an underlying asset, and it enjoys a specific and complicated assessment. Due to the complexities and potential conflicts of interest when the assessment is conducted internally by the issuing firm or externally by investors, the quality of the *sukuk* is delivered for assessment by rating agencies who have the ability and expertise and who are considered to be independent and objective. This means the big three rating agencies – Moody's, Fitch, and Standard & Poor's – and smaller rating agencies on the country level. For example, at the level of the Association of Southeast Asian Nations (ASEAN), agencies that usually assign rating attributes are Perseroan Terbatas Pemeringkat Efek Indonesia (PT. PEFINDO) in Indonesia, Rating Agency Malaysia (RAM) services and Malaysian Rating Corporation Berhad (MARC) in Malaysia, Universal Ratings (RTS Ratings Pte Ltd.) in Singapore, Thai Rating and Information Services Co. Ltd. (TRIS) in Thailand, and Philippine Rating Services (Phil Ratings) in the Philippines.

Since Blume, Lim, and Mackinlay (1998) mapped credit-rating studies from the conventional literature viewpoint, the literature on *sukuk* ratings has been extensively growing. Zulkhibri (2015) identifies three groups of *sukuk* studies. The first group indicates *sukuk's* qualitative descriptions like the extent of *fiqh* (jurisprudence) explanation related to *sukuk,* the differences in nature of *sukuk* from conventional bonds, and the differences in characteristics of *sukuk*-risk indicators, the mechanism of *sukuk*, and its compliance with the norms of Islamic jurisprudence; the prime components of *sukuk* from the Iranian *Syiah fiqh* viewpoint (see *e.g.* Rohim & Shereeza, 2013; Usmani, 2008; Kordvani, 2009). In the second group – as discussed in conventional credit rating studies – *sukuk*-related studies are associated with the investigation of the determinants of *sukuk*, *i.e.* the difference between *sukuk* and Eurobonds, the macroeconomic impact on *sukuk* issuance, and how the financial crisis affects *sukuk* market development (see *e.g.* Ariff & Safari, 2015; Ahmad, Daud, & Kefelia, 2012; Said & Grassa, 2013).

Furthermore, *sukuk* issuance that has declined in recent years – attributed to the financial crisis – also results in various findings of *sukuk* rating studies; many new determinants are then considered in bond and *sukuk* rating policies. Hand *et al.* (1992) and Grier and Katz (1976) suggest that financial statements are considered inadequate in providing explanations related to rating standards (see also Arundina *et al*., 2015; Blume *et al*., 1998). This is also in line with Moody's statement that credit ratings have more characteristics than the description of contents of financial statements, involving so many factors unique to particular industries, issuers, and countries. As a result, no formulaic methodology can be applied (Moody's Credit Ratings & Research, Moody's Investors Service, 1995, p. 14).

The third group deals with the extent to which information on *sukuk* can be utilized by stakeholders – primarily investors – or tests the extent to which *sukuk* issuance is a determinant in prices or wealth for investors or other firm performance, *e.g.* insolvency risk. *Sukuk*-related studies in this domain are not diverse: stock price reaction to credit/*sukuk* rating changes or information content of *sukuk* issuance on abnormal return either in the crisis period or non-crisis period and *sukuk* rating impact on firm performance (see *e.g.* Ng & Ariff, 2019; Alam *et al*., 2013; Abd Rahim & Ahmad, 2016; Hassan *et al*.,

2018; Khartabiel *et al*., 2020; Mohamed *et al*., 2017; Smaoui, Mimouni, & Temimi, 2019; Ab Hamid *et al*., 2014; Godlewski *et al*., 2010). Hence, the first hypothesis is as follows:

H1: *Sukuk* ratings positively impact stock returns.

Paltrinieri *et al*. (2019) group *sukuk* literature into three research themes: *sukuk* overview and growth, *sukuk* and finance theories, and *sukuk* and stock market behaviour. The first theme addresses the definition of *sukuk* (see *e.g.* Hassan, Aliyu, Paltrinieri, & Khan, 2019; Ahmed & Elsayed, 2019; Asutay & Hakim, 2018; Smaoui & Khawaja, 2017; and many others), the classification of *sukuk* as asset-backed and asset-based *sukuk* (see Ahmed & Elsayed, 2019; Naifar & Hammoudeh, 2016), and the recent growth of *sukuk* (Smaoui & Nechi, 2017).

From the major finance theories perspective (the second group), *sukuk* literature conclusively addresses beneficial effects from diversifying portfolio, choosing *sukuk* over conventional bonds, and investors' religiosity (Alam *et al*., 2013; Naifar & Hammoudeh, 2016; Nagano, 2017; Mohamed *et al*., 2017; Azmat, Skully, & Brown, 2014; Klein, Turk, & Weill, 2017; Shafron, 2018). Meanwhile, for the third group, *sukuk* is mostly linked to how much the stock market responds to *sukuk* and bonds (Godlewski *et al*., 2013; Fauzi, Foo, & Basyith, 2017), how *sukuk* and bonds show inter-temporally their co-movements and linkages (Aloui, Hammoudeh, & Hamida 2015a; Alaoui, Dewandaru, Rosly, & Masih, 2015; Sclip, Dreassi, Miani, & Paltrinieri, 2016), what are the changes of *sukuk* structure due to the global financial crisis and other influential economic events, how different price regimes lead to the different correlation between the stock market and *sukuk* (Naifar, Hammoudeh, & Al dohaimanae, 2016; Aloui, Hammoudeh, & Hamida, 2015b, 2015c), and how interest rate impacts the *sukuk* market (Akhtar, Akhtar, Jahromi, & John, 2017).

The above literature review from either Zulkhibri (2015) or Paltrinieri *et al*. (2019) suggests that their studies highlight the same angle from one of the three themes they identified. It is empirical evidence that stock market reaction, stock abnormal returns to *sukuk* issuance, or *sukuk* rating changes occur even though its effects are different and contingent. As such, its effects are not constant and may vary with changes, *e.g.* in the quality of *sukuk* ratings (Abd Rahim & Ahmad, 2016). Furthermore, *sukuk* ratings are contingent on the specific characteristics of Islamic bonds (Azmat *et al*., 2014), along with macroeconomic and market conditions (Hassan *et al*., 2019). Besides, *sukuk* ratings are influenced by the different settings of crisis vs non-crisis period (Khartabiel *et al*., 2020), by the different absorption process levels of the received information from *sukuk* announcement (Mohamed *et al*., 2017), and by different insolvency risk levels and the size of issuing firms, including financial institutions (Islamic banks) (Smaoui *et al*., 2019).

Extant literature conceptually shows that a moderating variable plays a role in influencing the nature – *i.e.* the magnitude, strength, or direction – of the effect on the relationship between an independent variable and a dependent variable (Wu & Zumbo, 2008; Aguinis, Edwards, & Bradley, 2017). Thus, this insight shows that a moderating variable depends on the conditions under which an antecedent affects an outcome. The effect of independent variables on a dependent variable is generally contingent on many factors. Given the contingency effect of other factors on the *sukuk* rating–capital market behaviour relationship, as mentioned above, and the existence of various determinants of credit ratings – *i.e.* firm-characteristic variables, including leverage, profitability, size, growth, and financial market performance (Murcia, Murcia, Rover, & Borba, 2014; Elhaj, Muhamed, & Ramli, 2015) – firm-characteristic variables also presumably serve as a moderating role in influencing the positive relationship between *sukuk* ratings and stock returns. Thus, the following hypothesis is worth testing:

H2a: Firm-characteristic variables (*i.e.* leverage) positively moderate the relationship between *sukuk* ratings and stock returns.

H2b: Firm-characteristic variables (*i.e.* firm value) positively moderate the relationship between *sukuk* ratings and stock returns.

RESEARCH METHODOLOGY

Population, sample, and variables

This study applied the panel estimated generalized least squares (EGLS) regression to two samples (Indonesia and Malaysia) purposively taken from two sets of the population of financial and non-financial firms listed on the Indonesia Stock Exchange (IDX) consisting of eight industries (61 *sukuk*-issuing firms): miscellaneous industry (5), trade, service, and investments (8), mining (5), property, real estate, building construction (10), consumer good industry (4), finance (25), infrastructure, utility and transportation (3), basic industry and chemical (1). Moreover, they were taken from the Kuala Lumpur Stock Exchange (KLSE) covering eleven industries (30 *sukuk*-issuing firms): among others, financial services (4), industrial products and services (5), energy (3), construction (2), real estate investment trusts (3), plantation (2), property (2), technology (1), telecommunications and media (3), transportation and logistics (3), utilities (2). To determine the dependent variable – *i.e.* stock returns (RET) – the data were taken from the annualised data returns for the 2015–2016 period from *sukuk*-issuing firms while independent variables – consisting of *sukuk* ratings (SRAT) – stemmed from *sukuk* rating agencies, *i.e.* PT. PEFINDO for the Indonesian samples and RAM Rating Services Berhad for the Malaysian samples available online on their official websites.

Referring to Ayturk, Asutay, and Aksak (2017), credit rating scales were transformed into a continuous score index evenly spanning from the highest scale (indexed as 1) to the lowest scale (indexed as 1 divided by the total number of the specific credit rating agency's scales). In PT. PEFINDO, for example, there are eighteen levels of credit-rating scales from 'idAAA' to 'idD'. Since each range from a higher scale to a lower scale is approximately 0.056 (*i.e.* 1 divided by 18), the first score index for the highest scale (idAAA) is equal to 1, while the second scale (idAA+) will be 0.944 (1 minus 0.056), and so on until the end (18^{th}) level of the credit-rating scales (idD), indexed as 0.056. When a firm is assigned with more than one *sukuk*-rating scale due to different *sukuk* types, the score index is the average score index of combined *sukuk*-rating scales. Henceforth, firm-characteristic variables were proxied by leverage (LEV) and firm-value variables (VAL) consisting of return on investment (ROI), intrinsic value (IVAL), and the market value of the firm measured by Tobin's Q (TBNQ), interchangeably applied depending on the relative importance of the tests (Haj-Salem, Damak Ayadi, & Hussainey, 2020), while the natural logarithm of total assets (ln_SIZE) was used to control for firm-size effect, as usually adopted by many researchers (see Dang, Li, & Yang, 2018).

While these variables involve some common proxies such as RET, ROI, LEV, ln_SIZE, SRAT, and other firm value proxies, IVAL and TBNQ are measured for specific purposes. The continuous measurement of *sukuk* ratings is intended to consider more the whole information of their variance explained rather than categorical-scale measurement that was mostly applied by previous studies. Next, a firm's value proxied by IVAL reflects a firm's intrinsic value that the market does not necessarily reflect in stock prices. On the one hand, the advantage of using IVAL is that it more comprehensively represents all the tangible and intangible assets of the firm in the long run, based on fundamental analysis, rather than in the short run as reflected in stock prices (Lin & Sung, 2014). On the other hand, a firm's value proxied by TBNQ better reflects the market price of the firm in the short run. Tobin's Q that indicates more than 1 means 'overvalued' while TBNQ that lies between 0 and 1 points to 'undervalued;' its advantage is the value being more relevant in the short-run analysis (Haj-Salem *et al.*, 2020). As a result, the specific measurement of some variables (*i.e.* SRAT and TBNQ vs IVAL) included in the testing models was also a gap to be filled with the findings of this study, which was different from previous studies. Then, the data were sourced from Thompson Reuters Datastream for the 2015-2016 period, while a firm-value variable proxied by IVAL was generated from a longer data series, *i.e.* 2009-2016. The source, description, and measurement of all the variables in detail are depicted in Table 1.

Empirical Models

The empirical models are divided into two, *i.e.* Model 1 includes RET (a dependent variable), SRAT, and firm-characteristic variables proxied by LEV and VAL (a firm's value) that consist of ROI, IVAL,

TBNQ (independent variables), and Ln_SIZE (control variable). Model 2 contains the same variables as Model 1 with the addition of interaction terms between SRAT and all firm-characteristic variables, *i.e.* the SRAT-ROI, SRAT-LEV, SRAT-IVAL, and SRAT-TBNQ interactions as the independent variables to reflect the moderating effects of ROI, LEV, IVAL, and TBNQ on the SRAT-RET relationship. The empirical models 1 and 2 appear as follows:

$$RET_{i,t} = \alpha_0 + \alpha_1 SRAT_{i,t} + \alpha_2 LEV_{i,t} + \sum \alpha_3 VAL_{i,t} + \alpha_4 Ln\_SIZE_{i,t} + \omega_{i,t} \quad (1)$$

$$RET_{i,t} = \beta_0 + \beta_1 SRAT_{i,t} + \beta_2 LEV_{i,t} + \sum \beta_3 VAL_{i,t} + \beta_4 SRAT_{i,t} * LEV_{i,t} + \sum \beta_5 SRAT_{i,t} * VAL_{i,t} + \beta_6 Ln\_SIZE_{i,t} + \varepsilon_{i,t} \quad (2)$$

Table 1. Source, description, and measurement of all the variables

Variables	Description and measurement	Source
RET_{it} -	Average annualised stock returns for the 2015-2016 period.	Thompson Reuters Datastream
$SRAT_{it}$ -	*Sukuk* ratings were rendered by a specific rating agency (PT. PEFINDO for Indonesia sample, and RAM Rating Services Berhad for Malaysia) on the *sukuk*-issuing firms from 2015 to 2016. The qualitative *sukuk* ratings are then converted into continuous metrics calculated by referring to Ayturk *et al.* (2017). For the Indonesian sample, the *sukuk* ratings range from idAAA (a score index=1) to 1dD (a score index = 0.056), plus additional mixed ratings, while for the Malaysian sample, the *sukuk* ratings span from AAA (a score index=1) to D (a score index = 0.05), plus additional mixed ratings (see the detailed distribution in Table 2).	The Indonesian Sample: PT. PEFINDO (Pemeringkat Efek Indonesia) (https://www.pefindo.com); The Malaysian sample: RAM (Rating Agency Malaysia) Rating Services Berhad (https://www.ram.com.my)
LEV_{it} -	Firm leverage and leverage (LEV) calculated by the ratio of debt divided by total assets for the 2015–2016 period.	Thompson Reuters Datastream
VAL_{it} -	Firm value: the first one was proxied by the ratio of earnings divided by total assets (return on assets or ROI);	Thompson Reuters Datastream
	The second one was proxied by the value of Tobin's Q (TBNQ), which is the value of the equity market capitalization plus total assets minus the book value of equity, all of which are then divided by total assets;	Thompson Reuters Datastream
	The third one was represented by intrinsic value (IVAL) that was determined by adopting the Graham formula (Lin & Sung, 2014), as applied by Qizam and Fong (2019). $IVAL = \frac{(EPS*(8.5+2g)*4.4)}{Y}$ (3) in which IVAL represents the next seven-year expected value of growth; earning per share (EPS) is the last earnings per share for a firm; 8.5 is a price-to-earning (PE) base for a non-growth firm; *g* is the rate of a reasonably expected seven-year growth; 4.4 is the average yield of 20-year AAA corporate bonds (US) in 1962 (instead of 4.4, the central bank interest rates of each country are adopted attributable to the application of risk-free rates for the two samples); Y is the current yield on AAA corporate bonds. Meanwhile, the calculation of intrinsic value (IVAL) of firm *i* in year *t* itself necessitates an array of lagged EPS to arrive at the expected EPS growth. In this regard, two-year observations of the firm's intrinsic value (IVAL), 2015-2016, are determined, each of which was built from a long array of lagged seven-year observations, *i.e.* a 2009-2015 EPS-growth data series for IVAL of 2015 and a 2010–2015 EPS-growth data series for IVAL of 2016.	Thompson Reuters Datastream
Ln_SIZE_{it} -	Control variable, proxied by the total asset (in the natural logarithm of total assets) for the 2015–2016 period.	
$\omega i, t;\ \varepsilon i, t$	Error terms.	

Source: own study.

RESULTS AND DISCUSSION

Frequency Distribution and Descriptive Statistics

The specification of Ayturk *et al.* (2017) applies to model credit/*sukuk* ratings. A credit/*sukuk* rating score index as a continuous variable is constructed by using the data available from PT. PEFINDO for the Indonesia sample and the data from RAM Rating Services Berhad for the Malaysian sample. The frequency distribution of *sukuk* ratings for the two samples, Indonesia and Malaysia, is portrayed in detail in Table 2.

Table 3. Descriptive statistics for variables of interest for the Indonesian and Malaysian samples

A. The Indonesian Sample							
Items of statistics descriptive	RET	SRAT	ROI	LEV	IVAL	TBNQ	LN_SIZE
Mean	0.178	0.794	0.034	0.292	1492.94	1.318	23.404
Median	-0.0025	0.777	0.028	0.254	665.03	1.076	23.542
Maximum	4.994	1.00	0.204	0.795	16780.46	3.85	27.663
Minimum	-0.910	0.444	-0.073	0.0008	-2841.75	0.578	11.711
Standard Deviation	0.85	0.137	0.041	0.187	2529.92	0.668	2.230
Observations	122	122	122	122	122	122	122
B. The Malaysian Sample							
Mean	-0.012	0.897	0.035	0.285	5.965	1.404	16.333
Median	-0.027	0.912	0.023	0.277	5.141	1.021	16.279
Maximum	0.794	1.000	0.369	0.737	51.713	9.894	20.415
Minimum	-0.779	0.050	-0.193	0.000	-79.782	0.635	12.944
Standard Deviation	0.266	0.147	0.087	0.190	16.795	1.460	2.079
Observations	60	60	60	60	60	60	60

Source: own elaboration of outputs from Eviews 11.

Given Table 3, it appears that some variables (the average ROI, Leverage, and Tobin's Q values) are comparable between the Indonesian and Malaysian samples, but other variables are not (SRAT, IVAL, and Ln_SIZE) as their mean values are significantly different (at the significance level of 0.01). *Sukuk* ratings in Malaysia look more evenly distributed compared to Indonesia, leading to the highest level of *sukuk* rating scale. However, when viewed as a whole, the variation in the *sukuk ratings* values are comparable for either the Indonesian sample or the Malaysian sample, showing a standard-deviation value of 0.137 vs. 0.147. Unlike the *sukuk ratings* variable, it appears that stock returns for the Indonesian sample are higher than the ones for the Malaysian sample, *i.e.* 0.178 vs. -0.012 with a more even distribution for the Malaysian sample (standard deviation = 0.266) compared to Indonesia (standard deviation = 0.85).

Multicollinearity among variables

Table 4 shows the results of multicollinearity tests among the variables for the two samples, Indonesia and Malaysia. Even though all the variables for the two samples denote the VIF (variance inflation factor) values less than 10 (free from the multicollinearity problem), considering the high cross-correlation between ROI and TBNQ (0.617) (the Indonesian sample), between ROI and IVAL (0.515), and between ROI and TBNQ (0.713) (the Malaysian sample), and also the notion that ROI, IVAL, and TBNQ reflect the same firm-characteristic factor, *i.e.* firm value (e.g. Haj-Salem *et al.*, 2020), ROI will be excluded in further analysis.

Table 2. Frequency (Freq.) distribution of *sukuk* ratings for the Indonesian and Malaysian samples

A. The Indonesian sample																	
Column No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Sukuk Ratings	idAAA	idAA+	idAA	idAA-	idA+	idA	idA-	idBBB+	idBBB	idBBB-	idBB+	idBB	idBB-	idB+	idB; idB-	idCCC; idD	TOTAL
Sukuk Index	1	0.94	0.89	0.83	0.78	0.72	0.67	0.61	0.56	0.5	0.44	0.39	0.33;	0.28	0.22; 0.17	0.11; 0.06	
Freq. in 2015	13	1	5	8	10	12	6	3	2	1	0	0	0	0	0	0	61
Freq. in 2016	12	1	5	8	10	6	10	6	2	0	1	0	0	0	0	0	61
Total Freq.	25	2	10	16	20	18	16	9	4	1	1	0	0	0	0	0	122
Total Freq. (%)	40.98	3.3	16.39	26.2	32.8	29.5	26.2	14.75	6.56	1.64	1.64	0	0	0	0	0	100%
B. The Malaysian sample																	
Column No.	1	2	3	4	5	6	7	8	9	10	11	12[§]	13[§]	14[§]	15[§]	16[§]	17
Sukuk Ratings	AAA	AA1	AA2	AA3	A1	A2	A3	BBB1; BBB2; BBB3; BB1; BB2	BB3	D	B1; B2; B3; C1; C2; C3	AAA; AA1	AA2; AAA	AA3; AAA	AA1; A3; AA1	A1; AA2	TOTAL
Sukuk Index	1	0.95	0.9	0.85	0.8	0.75	0.7	0.65; 0.6; 0.55; 0.5; 0.45	0.4	0.05	0.35; 0.3; 0.25; 0.2; 0.15; 0.1	0.975	0.95	0.925	0.866	0.85	
Freq. in 2015	8	5	6	6	1	0	0	0	0	1	0	0	1	1	1	0	30
Freq. in 2016	6	6	7	5	1	1	1	0	1	0	0	1	0	0	0	1	30
Total Freq.	14	11	13	11	2	1	1	0	1	1	0	1	1	1	1	1	60
Total Freq. (%)	23.33	18.33	21.67	18.3	3.33	1.67	1.67	0.00	1.67	1.67	0.00	1.67	1.67	1.67	1.67	1.67	100

Note: Table 2 contains rating index scales calculated using the formula of Ayturk *et al.* (2017); the highest percentage of rating frequency lies in the sample of Indonesia, *i.e.* 41% (25 companies), and Malaysia, *i.e.* 23.33% (14 companies), while the rest is spread to the lowest index, idBB + (0.444) for the Indonesian sample, and D (0.05) for the Malaysian sample.

[§]This score index is the average score index of the combined *sukuk*-rating scales because of the different *sukuk* types.

Source: own elaboration of *sukuk* ratings published by PT. PEFINDO for the Indonesian sample and by RAM Rating Services Berhard for the Malaysian sample.

Table 4. Multicollinearity among the variables for the Indonesian and Malaysian samples

A. The Indonesian Sample								
Variables	RET	SRAT	ROI	LEV	IVAL	TBNQ	LN_SIZE	VIF
RET	1.000	0.0196	0.091	-0.207**	0.191**	0.357***	0.089	-
SRAT		1.000	0.169*	-0.275***	0.187**	0.182**	0.334***	1.35
ROI			1.000	-0.098	-0.0072	0.617***	-0.355***	2.16
LEV				1.000	0.123	-0.113	-0.190**	1.16
IVAL					1.000	0.078	0.146	1.09
TBNQ						1.000	-0.0046	1.75
LN_SIZE							1.000	1.56
B. The Malaysian Sample								
RET	1,000	-0,432***	0,145	0,038	0,151	-0,003	0,099	-
SRAT		1,000	-0,009	0,012	-0,009	0,117	0,153	1.06
ROI			1,000	-0,354***	0,515***	0,713***	-0,156	5.04
LEV				1,000	-0,476***	0,024	0,083	1.46
IVAL					1,000	0,040	0,149	2.23
TBNQ						1,000	-0,093	3.45
LN_SIZE							1,000	1.20

Source: own elaboration of outputs from Eviews 11.

Results of hypotheses testing

For the Indonesian sample (Table 5), the testing of Hypothesis 1 began directly with applying the two models that include all the independent variables, *i.e.* SRAT and all the firm-characteristic variables, LEV, IVAL, TBNQ, and ROI (Step 0), by running Model 1 and Model 2. Due to the high cross-correlation between ROI and TBNQ (0.61) and previous literature (Baron, Harjoto, & Jo, 2011; Siagian, Siregar, & Rahadian, 2013; Haj-Salem *et al*., 2020), it appears that ROI and TBNQ reflect the same variable, *i.e.* firm value, so Model 1 and Model 2 were repeated by excluding ROI (Step 1) either with interactions (Model 2) or without interactions (Model 1). The results showed no significant and positive effect of SRAT on RET in Model 1. When applying the moderated regression analysis (MRA) method (Sharma, Durand, & Gur-Arie, 1981), the positive and significant coefficient in the SRAT-RET relationship is consistently absent from all the interaction terms included in the model (Model 2). These results suggested that Hypothesis 1 is supported. In Step 2, Model 1 and Model 2 were repeated by excluding TBNQ but, this time, by including leverage and firm-value effects (LEV, IVAL) as seen in Model 1 and Model 2. No positive effect of SRAT on RET appeared as significant. Thus, these results do not support Hypothesis 1. In Step 3, to shed more light on the market value of the firm effect, TBNQ – the most-recommended firm-value variable (see, *e.g.* Fooladi, Shukor, Saleh, & Jafar, 2014; Haj-Salem *et al*., 2020) – was inserted in the model with and without interactions with SRAT, while IVAL was excluded. The results still showed the same conclusion that the SRAT effect on RET is not found to be positively significant. As such, these results are not consistent with Hypothesis 1.

Meanwhile, following the same steps as when testing Hypothesis 1, Hypothesis 2 was tested by looking into the results of Model 2 and referring to the MRA method (Sharma *et al*., 1981). Model 2 was repeated from Step 0 to Step 3. Step 1 controlled for size effect (ln_SIZE), when all the independent variables (excluding ROI) and their interactions with SRAT were included, and only the SRAT-LEV and SRAT-IVAL interactions were found to be positively significant, while the SRAT-TBNQ interaction was negatively significant, as depicted in Model 2 of Step 1 (significant at p-value < 0.05 and marginally significant at p-value < 0.10, respectively). These results suggest that Hypotheses 2a and 2b are supported. In Step 1, Model 2 seemed to be the best because it enjoyed the highest adjusted-R^2 (adj. R^2) after including all the relevant independent variables but excluding ROI.

In search of consistency, models in Step 1 were repeated in Step 2 by excluding TBNQ, the positive SRAT-LEV and SRAT-IVAL relationship are found to be consistently significant, as depicted in Model 2 of Step 2 (all significant at p-value < 0.01), while in Step 3 the model was repeated when two of firm-

characteristic effects (LEV, TBNQ) were included. The results showed that the positive SRAT-LEV relationship appeared consistently significant while the SRAT-TBNQ relationship denoted its negative significance, as seen in Model 2 of Step 3. These results confirm that LEV and IVAL are the main variables that positively moderate the positive SRAT effect on RET, whereby supporting Hypotheses 2a and 2b. The results also show that TBNQ was more consistent in affecting RET as a pure independent variable, while LEV and IVAL better reflected its persistence as pure moderating variables on the relationship between SRAT and RET (see Sharma *et al*., 1981). Moreover, Ln_SIZE positively and significantly controlled all the tests for size effect, except for Model 1 of Step 0 and Step 1, meaning that size effects significantly and positively accounted for RET.

Table 5. The results of the testing models on Hypotheses 1, 2a, and 2b for the Indonesian sample

Dependent Variable: RET									
Independent Variables:	**Signs**	**Step 0**	**Step 1**	**Step 2**	**Step 3**	**Step 0**	**Step 1☆**	**Step 2**	**Step 3**
		Model 1	Model 1	Model 1	Model 1	Model 2	Model 2	Model 2	Model 2
C	?	0.628	0.271	0.666***	-0.387	-0.328	-1.205	1.491***	-1.458
SRAT	+/?	-0.779*	-0.9167**	-0.687***	-0.712***	-0.026	0.237	-1.672***	0.300
ROI	+/?	-1.995				3.172			
LEV	+/?	-0.771**	-0.717**	-0.747***	-0.824***	-2.439***	-2.513***	-3.260***	-3.411***
IVAL	+/?	2.28E-05	2.23E-05	2.24E-5		-6.79E-05	-5.34E-05	-5.63E-05	
TBNQ	+/?	0.362***	0.288***		0.429***	1.498***	1.880***		1.955***
SRAT*ROI	+					-7.211			
SRAT*LEV	+					1.753*	1.928**	3.171***	3.315***
SRAT*IVAL	+					0.00014**	0.00013*	7.77E-05***	
SRAT*TBNQ	+					-1.168***	-1.749***		-1.831***
Ln_SIZE	?	-0.0022	0.018	0.010***	0.034**	0.005***	0.034***	0.010***	0.043**
R^2		0.234	0.271	0.144	0.235	0.297	0.288	0.168	0.259
Adj. R^2		0.187	0.1876	0.107	0.202	0.226	0.231	0.117	0.214
F-statistic (stat.)		4.943	5.658	3.910	7.123	4.181	5.034	3.288	5.709
p-value		0.000	0.000	0.002	0.000	0.000	0.000	0.003	0.000
Pooled-OLS		No	No	No	No	No	No	No	No
Fixed-effect		Yes♠	Yes♠	Yes♠	Yes♠	Yes♠	Yes♠	Yes♠	Yes♠
Random-effect		No	No	No	No	No	No	No	No
F-stat. (Chow test) (*p*-value)		10.587 (0.0015)	11.44 0.001)	11.349 (0.0010)	10.051 (0.0019)	9.084 (0.0032)	10.285 (0.0017)	11.749 (0.0008)	10.739 (0.0014)
LM-statistic (*p*-value)		0.01 (0.4541)	0.02 (0.4444)	0 (1)	0.11 (0.3713)	0.02 (0.4472)	0.02 (0.4492)	0 (1)	0.05 (0.4130)
Observations		122 (61X2)	122 (61X2)	122 (61X2)	122 (61X2)	122 (61X2)	122 (61X2)	122 (61X2)	122 (61X2)

Note: ♠Considering the Chow tests (all *p*-values are lower than 0.05) and LM (Breusch and Pagan Lagrangian multiplier) tests (all *p*-values are higher than 0.05), the fixed-effect models were applied; thus, Hausman test is not relevant. '+/?' indicates the two predicted signs among the models: the predicted sign of '+' stands for a non-interaction model (without moderating effects), while the predicted sign of '?' that may appear as various signs because of the pure-or-quasi-moderator assumption (Sharma *et al.*, 1981) stands for a model with the moderating effects.

☆It is the best model since it enjoys the highest adj. R^2, after including all the relevant independent variables, but excluding ROI.

*, **, *** refers to 10%, 5%, and 1% levels of significance respectively.

Source: own study.

For the Malaysian sample (Table 6), Hypothesis 1 was tested by following only two steps, preceded by Step 0. Furthermore, the MRA analysis was adopted to arrive at a consistent inference. From the results of Step 0 in Model 1, all ROI effects were significant, but due to the existence of a high cross-correlation between ROI and TBNQ (0.71) and between ROI and IVAL (0.51) – with insights from the measurement of ROI and TBNQ reflecting the same firm-value variable from Baron *et al*. (2011), Siagian *et al*. (2013), and Haj-Salem *et al*. (2020) – Model 1 and Model 2 were repeated from Step 0. The two models incorporated all the independent variables, *i.e.* SRAT, and all the firm-characteristic variables, *i.e.* LEV, IVAL, and TBNQ (excluding ROI), either with or without their interactions. The two models in Step 1 suggest that when effects of the three variables, LEV, IVAL, and TBNQ, were included to serve as pure independent variables, the positive effect of SRAT on RET was not found to be significant, as indicated in Model 1, but when they were included in the model to appear as both independent and moderating variables on the SRAT–RET relationship, the positive effect of SRAT on RET was found to be consistently significant at the significance level of *p*-value < 0.01, as seen in Model 2.

Next, when TBNQ was inserted in the model with IVAL excluded due to all of its non-significant effects on the IVAL–RET relationship in Step 1 of Model 1 and Model 2, the result did not show significant and positive coefficients; that is, the positive effect of SRAT on RET was not found to be significant. Meanwhile, the positive effect of SRAT on RET was found to be consistently significant in Model 2 of Step 2 when TBNQ and interaction terms were included but IVAL was excluded. These results confirm that Hypothesis 1 is supported when controlling for size effect and considering the effects of leverage, firm value (TBNQ), and their interaction terms.

Meanwhile, to test Hypotheses 2a and 2b, the study focused only on Model 2, following the same steps as when testing Hypothesis 1. Analysis was conducted but only on moderating effects of firm-characteristic variables (excluding ROI) on the SRAT–RET relationship (with the MRA method). In Step 1, by excluding ROI (in Step 0), the results suggested that the significant and positive effects of LEV, IVAL, and TBNQ did not exist to moderate the positive SRAT–RET relationship. Likewise, when IVAL was excluded and replaced by TBNQ to proxy for firm-value, the results were still inconsistent with the expected hypothesis. Hence, the significant and positive effects of LEV and TBNQ were not found to moderate the positive SRAT-RET relationship, as seen in Model 2 of Step 2. In this step, Model 2 shows the best model because its highest adj. R^2 was obtained after including all the relevant independent variables but excluding ROI. These results suggest that Hypotheses 2a and 2b are not supported. In this regard, the positive Ln_SIZE effect on RET was also significantly found to control for size effects in all the tests, suggesting that RET was also significantly and positively accounted for by size effects.

Table 6. The results of the testing models on hypotheses 1, 2a, and 2b for the Malaysian sample

Dependent Variable: RET							
Independent Variables:	**Signs**	**Step 0**	**Step 1**	**Step 2**	**Step 0**	**Step 1**	**Step 2☆**
		Model 1	Model 1	Model 1	Model 2	Model 2	Model 2
C	-	-20.601***	-14.558***	-13.623***	-1.320***	-34.286***	-19.274***
SRAT	+/?	-0.303***	-0.082	0.003	0.776*	12.525***	8.488***
ROI	+/?	2.964***			7.167**		
LEV	+/?	1.859***	1.131***	1.008**	2.126**	19.650***	11.814***
IVAL	+/?	-0.009***	-0.0004		-0.049***	0.028	
TBNQ	+/?	0.265***	0.358***	0.358***	0.735***	3.764***	3.217***
SRAT*ROI	+				-6.437*		
SRAT*LEV	+				-2.081*	-19.922***	-11.940***
SRAT*IVAL	+				0.052***	-0.037	
SRAT*TBNQ	+				-0.765***	-3.681***	-3.174***
Ln_SIZE	?	1.219***	0.844***	0.785***	0.027***	1.347***	0.667***
R^2		0.976	0.957	0.947	0.625	0.989	0.9969
Adj. R^2		0.941	0.898	0.879	0.549	0.973	0.9925
F-stat.		28.124	16.436	14.029	8.179	58.657	2252.74
p-value		0.000	0.000	0.000	0.000	0.000	0.000
Pooled-OLS		No	No	No	Yes♠	No	No
Fixed-effect		Yes♠	Yes♠	Yes♠	No	Yes♠	Yes♠
Random effect		No	No	No	No	No	No
F-stat. (Chow test) (*p*-value)		11.865 (0.000)	8.438 (0.000)	8.411 (0.000)	0.651 (0.424)	17.972 (0.000)	70.775 (0.0000)
LM-statistic (*p*-value)		0.62 (0.215)	0.28 (0.299)	0.00 (0.478)	0.37 (0.272)	0.09 (0.384)	0.02 (0.445)
Observations		60 (30x2)	60 (30x2)	60 (30x2)	60 (30x2)	60 (30x2)	60 (30x2)

Note: ♠Considering the Chow tests (all *p*-values are lower than 0.05) and LM (Breusch and Pagan Lagrangian multiplier) tests (all *p*-values are higher than 0.05), the fixed-effect models were applied, except for Model 2 in Step 0 (*p*-value of the Chow test is 0.424, higher than 0.05, a pooled-OLS model is preferred). In this regard, the Hausman test is not relevant. '+/?' indicates the two predicted signs among the models: the predicted sign of '+' stands for a non-interaction model (without moderating effects), while the predicted sign of '?' that may appear as various signs because of the pure-or-quasi moderator assumption (Sharma *et al.*, 1981) stands for a model with the moderating effects.

☆It is the best model since it enjoys the highest adj. R^2, after including all the relevant independent variables but excluding ROI.

*, **, *** refers to 10%, 5%, and 1% levels of significance respectively.

Source: own study.

CONCLUSIONS

When controlling for size effect and considering some firm-characteristic effects, all the results from the Malaysian sample convincingly support Hypothesis 1 rather than Hypotheses 2a and 2b. Thus, Malaysian investors place more emphasis on their *sukuk* ratings than the Indonesian investors, who base their business strategy on aggregate insights from both their *sukuk* ratings and firm-characteristic metrics, *i.e.* especially the level of leverage and firm (intrinsic) value. In other words, when controlling for size effect, the moderating effects of LEV and IVAL are found to be positively significant on the *sukuk* ratings–stock return relationship in the Indonesian sample, thereby supporting Hypotheses 2a and 2b. Thus, these results illustrate that when valuing stock (stock returns) in Indonesia, the interactions between *sukuk* ratings and leverage and also between *sukuk* ratings and firm value (IVAL) – which reflect a firm's fundamental value – is more pervasive among investors' investment activities. Meanwhile, a firm's value reflecting a market-based firm-value indicator (TBNQ) is more commonly found to serve as a pure independent variable that affects stock returns positively.

Therefore, we may conclude that – in some cases – *sukuk* ratings have a positive and direct effect on stock returns, which is consistent with the findings of Ng and Ariff (2019), Khartabiel *et al.* (2020), Mohamed *et al*. (2017), Rahim and Ahmad (2016), and Ab Hamid *et al*. (2014). However, utilizing *sukuk* ratings to determine the stock price (stock return) in other cases, is to some extent not direct and constant but, instead, contingent on and involving other variables, *i.e.* firm-characteristic variables. This certainly supports the abovementioned statement from Moody's, one of the big three rating agencies in the world, that many factors are involved in the judgement of the quality of long-term credit, including *sukuk* (Moody's Credit Ratings & Research, Moody's Investors Service, 1995). One reason why these *sukuk* rating effects on stock returns look to be different could be attributed to the fact that the types of other specific variables involved in examining the *sukuk* rating effect on stock returns may vary depending on the comparative characteristics of the sampled countries.

In some respects, Malaysia has statistically enjoyed better macroeconomic indicators than Indonesia. In the last three years (2017-2019), the average GDP per capita for Malaysia was higher than in Indonesia: 28 937.43 USD for Malaysia vs 12 113.88 USD for Indonesia (The World Bank, 2020). Besides, in 2018–2020 the default-risk profile for Malaysia was also better than for Indonesia, indicated by their comparative credit rating values: A3 for Malaysia vs Baa2 for Indonesia (Moody's Rating), A- vs BBB (S&P Rating), and A- vs BBB (Fitch Rating). Specifically, the global *sukuk* market share for Malaysia is also much greater than Indonesia, *i.e.* 60.84% vs 7.225% of the global *sukuk* market share. Thus, Malaysia is the world leader in *sukuk* (IIFM, 2019). Moreover, *sukuk* is regarded in Malaysia as an instrument that is not riskier than conventional bonds; the risk profile of *sukuk* (measured by value-at-risk or VaR) is evidently in line with credit rating predictions (Alam, Bhatti, & Wong, 2018).

Given all the above comparative performance of these country-specific characteristics (macroeconomy, risk-default, and *sukuk* market share profile), Malaysia seems to place at a relatively more advanced level of *sukuk* ratings than Indonesia. Thus, *sukuk* ratings in Malaysia attract much more interest and trust from many investors than *sukuk* ratings in Indonesia. Furthermore, the comparability of risk between *sukuk* and conventional bonds, along with consistency between *sukuk*-risk profile and credit-rating predictions in Malaysia (Alam, Bhatti, & Wong, 2018), could be another plausible explanation. The above explanations lead us to confirm one reason why the assessment of *sukuk* by *sukuk* rating agencies has a direct effect on stock returns and is more pronounced in Malaysia than in Indonesia. Therefore, *sukuk* ratings tend to better serve as the key determinant in pricing stock (stock returns) in Malaysia than in Indonesia, in which they are relatively less accounted for by its investors but, instead, their role seems to be contingent on some firm-characteristic variables (LEV and IVAL).

When testing the hypotheses, the study conducted some robustness checks. First, the models were tested by excluding the control variable (ln_SIZE) to make sure that there appears the effect of the control variable. To the best of my testing abilities, most of the control variable effects in all the models appear to be significant. Thus, all the above results are reported by controlling for size effect (ln_SIZE). Besides, a conjecture of a simultaneity bias and reverse causation regarding stock returns also impacts *sukuk* ratings, which has been checked by applying the Durbin-Wu-Hausman (DWH) test. All the samples show that reverse causation does not exist. The null hypothesis that there is no simultaneity correlation failed to be rejected (p-value = 0.18 > 0.10 and p-value of 0.4149, higher than a 10% level of significance, for the Indonesian and Malaysian sample respectively).

However, some limitations remain and require much attention from future studies, *e.g.* the data is still limited, especially from Malaysia. To receive better insights of a country's characteristic effect, coverage could be increased from a limited number of countries (Indonesia and Malaysia) to more countries, especially Muslim or non-Muslim *sukuk*-issuing countries. Moreover, moderating variables could involve not only some firm-characteristic variables or a company-level analysis but also a wider level of analysis, such as an industry-level or country-level analysis. The use of *sukuk*-rating data from credible credit-rating agencies is also highly recommended, given the significance credit-rating reputation (Baghai, Servaes, & Tamayo, 2014; Bedendo, Cathcart, & El-Jahel, 2018).

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Conflict of Interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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