

Determinants of Sukuk Market Development: Macroeconomic Stability and Institutional Approach*

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Abstract

This study aims to analyze the determinants of macroeconomic and institutional stability on the development of the global *sukuk* market by controlling the effects of population. This study uses panel data namely GDP per-capita, exchange rate, and inflation as the proxies for macroeconomic stability sourced from the World Development Index, and six dimensions of Worldwide Governance Indicators (WGI) as institutional proxies sourced from WGI-World Bank. To make robust the relationship between macroeconomics and institutional on the global *sukuk* market, the population (POP) variable was included as a control variable. The development of *sukuk* uses a proxy for *sukuk* issuance in the International Islamic Financial Market, for the annual period from 2002-2017. The data was analyzed using the General Method of Moment, and the results show that by controlling the population effects that proved to be significant, GDP per-capita and the rule of law have a significant impact on the development of *sukuk*, especially when incorporating population effects as control variables, whereby further ascertaining the effect of each macroeconomic-stability variable and institutional stability on *sukuk* development, especially inflation, found not to affect *sukuk* development. These results also confirm the previous findings, whereby inflation remains controllable at a certain level for economic development.

Keywords: Institutional Quality, Macroeconomic Stability, Sukuk Development, Islamic Financial Market, Governance Indicators

JEL Classification Code: D51, E02, E44, G15, G30

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This research is the development of the first author's dissertation, regarding the effect of institutional quality and macroeconomic stability on the development of the global *sukuk* market. The difference is that, in this study the population is used as a control variable. In addition to the different uses of control variables, this study also uses institutional quality indicators individually. At the same time, the dissertation operates institutional quality either in an aggregate proxy or in individual proxies.

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1. Introduction

Sukuk is an Islamic financial instrument included in an important sub-sector to move the country's and world economy's wheels. Today, the *sukuk* market represents the second-largest Islamic finance industry component after Islamic banking (Kusuma & Silva, 2014; Thomson Reuters, 2018). *Sukuk* also accounts for 90% of the Islamic capital market (Al-Sayed, 2013). *Sukuk* have great potential to become an alternative funding instrument for corporate and state entities (Ahmad et al., 2012), as well as being the choice of a broader base of investors from both Muslim and non-Muslim communities (Abd.Aziz et al., 2016).

The development of the *sukuk* market has increasingly shown a significant growth after being strengthened by the presence of eight non-member countries of the Islamic Cooperation Organization (OIC) that are interested in issuing *sukuk* in the global market, namely France, Germany, Luxembourg, United Kingdom, Singapore, Hong Kong, and the United States (Smaoui & Ghouma, 2020). Despite the growing development of *sukuk* issuance in the domestic

and international markets, we still find limited literature on factors that influence the development of the *sukuk* market, especially in responding to market potential challenges so that *sukuk* instruments can develop optimally in the global market and contribute to supporting the economy (Paltrinieri et al., 2019).

Asian Development Bank (2005) revealed that among the essential factors for improving the investment climate are macroeconomic stability and government institutions. As a form of investment product, *sukuk* cannot be separated from the influence of the investment climate that surrounds it. An empirical study on the determinants of *sukuk* development has been conducted by Said and Grassa (2013), who test several macroeconomic variables and institutional dimension; the result is macroeconomic factors, such as GDP per capita have a positive effect on the development of *sukuk*, and from the aspect of institutional quality, the rule of law has a significant positive effect on the development of *sukuk*. The same empirical analysis of the determinants of *sukuk* development was also carried out by Smaoui and Khawaja (2016); the result is that a large economy of scale, a large Muslim population, an attractive investment profile, and good control over corruption will strengthen the development of *sukuk*. Another macroeconomic variable as the volatility factor is that inflation has a negative impact on financial developments (Cherif & Gazdar, 2010). These results are not different from the empirical tests conducted by Garcia and Liu (1999), that macroeconomics and institutions play an important role in the development of financial markets.

Among the main macroeconomic factors are economic growth, inflation, and exchange rates, which have been used as the basis for evaluating the country's macroeconomic performance so that the position of these three variables plays an important role in providing a measure of a country's economic condition, that is, stable or unstable conditions (Rousseau & Yilmazkuday, 2009; Abubakar & Kassim, 2018). On one hand, stable-economic conditions will positively affect the development of the country's economy and finances (Mo et al., 2018). On the other hand, unstable-macroeconomic conditions can be seen from high inflation and a weakening exchange rate that will have a negative impact on the development of the country's economy and finance (Ismail & Ahmad, 2016).

Various measures are used as institutional indicators. Kaufmann et al. (2004) have designed the World Governance Indicator (WGI) by reporting aggregate and individual governance indicators for more than 200 countries and territories; the six dimensions of governance have been adopted by Worldbank, namely Voice and Accountability, Rule of Law, Regulatory Quality, Political Stability and Absence of Violence, Government Effectiveness, and

Control of Corruption. Apart from WGI, researchers and experts used another institutional indicator in measuring institutions, i.e., the international country risk guide (ICRG). ICRG has been commonly used as an institutional indicator and has been tested empirically in economics, finance, politics, and others (Challe et al., 2019; Nasreen et al., 2020).

This study focuses on three leading macroeconomic and institutional indicators with the six-dimensional approach of the WGI by (Kaufmann et al., 2004). The difference with previous research is Said and Grassa (2013) only includes three institutional indicators WGI, while this study uses all of the six WGI indicators. Meanwhile, Smaoui and Khawaja (2016) tested institutions using the international country-risk guide (ICRG) approach.

Apart from a relatively high economic growth, one of the potential and other advantages of a country in developing its economy and finance is the demographic bonus in population. Population (POP) or the total population can be expected to influence the demand for Islamic financial instruments (Lackmann, 2014). Since the drivers of the *sukuk* are Muslim-majority countries, this will undoubtedly affect the demand for *sukuk* compared to conventional instruments, assuming that the higher the percentage of muslims in a country is, the higher the demand for Islamic securities will be, and therefore, the faster the *Sukuk* market will develop (Smaoui & Khawaja, 2016).

However, the fact is that this assumption has not been entirely accepted, as evidenced by the results of empirical tests conducted by Wong and Bhatti (2019). They concluded that the large population in Muslim countries does not necessarily guarantee the magnitude of Islamic finance development. They analyzed the growth of the money market in Hong Kong, a non-Muslim country that starts to have strong intentions in developing Islamic finance, especially *sukuk*. The empirical results are corroborated by Smaoui and Ghouma (2020), who states that *sukuk* has been in demand by non-Muslim individuals and countries so that it is not a guarantee that when the population of a country is predominantly Muslim, the development of Islamic finance will be at the highest level. It is proven that in Indonesia with its largest Muslim population among issuing countries, its development of Islamic finance, especially *sukuk*, seems to lag, even far behind a smaller population (Balli et al., 2019).

Besides, the population is the basis for measuring economic growth indicators in terms of GDP per capita, which positively impacts financial developments (Elgin & Oztunali, 2014). However, the other side of the population's influence on the economy states that high economic growth will also impact environmental degradation (Hanif & Gago-de-Santos, 2017). This is due to the possible emergence of financial problems related to the population, such as unemployment, labor force, income problems, which will

also affect investment behavior. The population has positive and negative effects on the economy of a country. These are the reasons why the population needs to be included as a control variable when examining the institutional impact on *sukuk* development.

This study focuses on empirical testing of the effect of macroeconomic stability and institutional quality on the development of *sukuk* by controlling the population effect (POP) to make robust the impact of the two independent variables (macroeconomic and institutional) on *sukuk*. As such, the results of this analysis will contribute significantly in increasing Islamic financial literacy, especially the development of *sukuk* in the global market, especially in the empirical test of macroeconomic stability and institutional quality on the limited effect of *sukuk*, especially the role of institutions as an indicator of the government's role in increasing the development of global *Sukuk*.

2. Literature Review and Hypothesis Development

Sukuk is an Islamic financial instrument as an alternative to debt or bond-based products (Godlewski et al., 2013). While the bond is based on interest or coupons, *sukuk* performance depends on the underlying contract (Zolfaghari, 2017). Asian Development Bank (2005) explained that macroeconomic instability, uncertainty in economic policies and regulations, and corruption are the most severe business obstacles. Macroeconomic indicators vary widely and have different basic sizes and objective functions (Al-Raeai et al., 2018; Tariq et al., 2020).

This study focuses on the leading macroeconomic indicators to analyze and obtain empirical evidence of the effect of the foremost macroeconomic indicators (GDP, inflation, and exchange rates) on *sukuk*-market development. Economic growth indicators in this study use a GDP per capita proxy. The results of empirical studies show that GDP per capita has a positive effect on *sukuk* development (Said & Grassa, 2013). Inflation is a macroeconomic indicator that measures the level of stability; inflation at a certain level is still needed to drive a country's economy. At a certain level, it can be disastrous for the economy, so empirical evidence shows different results of the effect of inflation on economic and financial development. In general, the findings from macroeconomic studies using theoretical and practical approaches reinforce the vital role of stable macroeconomics in improving and developing the economy and finance (Al-Raeai et al., 2018). The relationship and influence of macroeconomics on economic and financial development are supported by many empirical studies such as the reviews of Said and Grassa (2013), Bahloul et al. (2017), Smaoui and Khawaja (2016), who focuses on *sukuk*; other empirical

supports for macroeconomic effects on other similar financial instruments were also carried out by Piljak (2013), and Önder and Özyıldırım (2019). As such, the following hypotheses are worth testing:

H₁: GDP per capita has a positive effect on the development of the *sukuk* market

H₂: Inflation has a negative effect on the development of the *sukuk* market

H₃: The exchange rate has a negative effect on the development of the *sukuk*

In another debate, an institutional quality that is a set of rules and constraints can also shape economic behavior and its incentives. Experts argue that institutional quality is the primary determinant of economic development (Challe et al., 2019). Law and Azman-Saini (2012) conducted tests related to the impact of two institutional indicators, namely WGI and ICRG, on financial developments and get the results that WGI can show the vital size of an institution or institution (Vianna & Mollick, 2018). Worldwide governance indicators (WGI), formulated by Kaufmann et al. (2004) and adopted by the world bank, functions to measure how big a country's governance index is, through a survey for society on six dimensions, namely Voice and Accountability, Rule of Law, Regulatory Quality, Political Stability and Absence of Violence, Government Effectiveness, and Control of Corruption. Langbein and Knack (2012) state that the six indicators have the same concept both in aggregate and individual metrics. The importance of improving the quality of institutions for strengthening the financial sector was also emphasized by Pagano and Volpin (2005). Meanwhile, Ouyang and Rajan (2019) highlight the role of political intervention in financial development. Among these are some studies that examine the impact of institutional frameworks on economic growth, where weak institutional activity causes economic growth to stagnate (Jain et al., 2017), and to be worse, the low institutional quality will reduce the market (Ojeka et al., 2019). Challe et al. (2019) state that institutions are the main determinants of economic development (Yıldırım & Gökalp, 2016), and finance (Asif et al., 2019; Nguyen et al., 2019), especially Islamic finance (Smaoui & Nechi, 2017).

Furthermore, research using the institutional quality of the individual dimensions was also carried out by Gani (2007). Besides, research on the effect of political stability on financial development was conducted by Roe and Siegel (2011), who states that the indicators of political stability will affect financial developments. In the previous year, Huang (2010) found a positive effect of institutional upgrading on financial development at least in the short term, especially for low-income and developing countries. Institutional

quality proxied by RQ and PSAV shows a positive impact on investment development (Alam & Yazdifar, 2019). Ojeka et al. (2019) tested institutional quality with individual indicators (PSAV, GE, RL, VA). The results show that these indicators are positively related to financial markets. These results support the statement that institutional factors play an essential role in economic and financial development and pressure policymakers to build stable reforms to meet uncertainty (Cherif & Gazdar, 2010). Having in mind recommendations and suggestions by Khan et al. (2019) to include institutions as an essential factor in the development of Islamic finance, this research will contribute further to the analysis of macroeconomic and institutional influences on *sukuk* development. Given the above description, this article is also directed at answering the next hypotheses as follows:

H₄: The rule of law has a positive effect on the development of the sukuk market

H₅: Regulatory quality has a positive effect on the development of the sukuk market

H₆: Political stability and absence of violence have a positive effect on the development of sukuk

H₇: Government effectiveness has a positive effect on the development of sukuk

H₈: Control of corruption has a positive effect on the development of sukuk

H₉: Voice and accountability have a positive effect on the development of Sukuk

3. Research Methods

3.1. Data Types and Sources

From a population of all *sukuk* issuing countries listed on the International Islamic Financial Market (IIFM), encompassing 32 countries that are actively issuing *sukuk* in the global *sukuk* market, this research compiled a sample consisting of the top-five rankings of the country's *sukuk* issuer (IIFM, 2018; Reuters, 2017), namely Malaysia, Indonesia, KSA, UAE, and Bahrain, over the period 2002-2017.

This study uses panel data on *sukuk* issuance as a proxy for global *sukuk* development (in million USD) sourced from IIFM and data on institutional quality using six dimensions of WGI (World Government Indicators), i.e., Rule of Law (RL), Regulatory Quality (RQ), Political Stability and Absence of Violence (PSAV), Government Effectiveness (GE), Control of Corruption (CC) and Voice and Accountability (VA) sourced from WGI world Bank. Macroeconomic data in the form of GDPP, exchange rates, and inflation are sourced from the World Development indicators of the World Bank, while population (in a million) (POP) as control variables are sourced from the World Development Indicators-World

Bank. The data on *sukuk* issuance and the quality of the institutions were annually collected from 2002 to 2017.

3.2. Data Analysis Technique

Data were analyzed using dynamic panel regression or Generalized Method of Moment (GMM) developed by Arellano and Bond (1991). GMM is a method of estimating the expansion parameters of the moment method to get robust results. The moment method cannot be used if the number of instrument variables is greater than the number of estimated parameters. The GMM method is a method that can overcome data conditions with violations of the assumptions in the regression analysis (Ekananda, 2016). GMM is also to overcome the endogeneity of the dependent variable, heteroscedasticity, and correlation on the residuals because longitudinal data analysis is not enough to use OLS because some OLS assumptions such as homoscedasticity and no autocorrelation are too strong to fulfill in longitudinal data analysis. After all, they tend to influence cross-section and time-series observations in the model (Ghazali & Otok, 2016).

This study tested three different regression models to find the best regression model. The model tested is Model 1, a regression model that is run between macroeconomic stability variables and the three macroeconomic indicators, namely economic growth with a GDP per capita proxy, ER (exchange rate of the country in USD)---standard world currency exchange rates and inflation. Model 2 is a regression model applied to predict the impact of the institutional quality variables and the six-dimensional WGI indicators (RL, RQ, GE, PSAV, CC, VA) on *sukuk*, and Model 3, a regression model that include the three macroeconomic stability variables and the six indicators of WGI institutional quality. The purpose of incorporating the three models is to produce the strongest and best model in explaining the influence of the independent variables on the dependent variable as seen from the value of Adj. R² that is generated by each model. To ascertain the effect of the independent variables on the dependent variable, the author adds population as a control variable (POP). The reason for this is that since the WGI indicator is the result of a community survey of their government in certain indicators has been included in this WGI, community survey can be considered as the opinion of the local population towards their government (Kaufmann et al., 2005). To test these variables, the three regression models are as follows:

$$SD1_{it} = \beta_0 + \beta_1 GDPP_{it} + \beta_2 ER_{it} + \beta_3 INF_{it} + \beta_4 POP_{it} + e \quad \dots(1)$$

$$SD2_{it} = \beta_0 + \beta_1 RL_{it} + \beta_2 RQ_{it} + \beta_3 PSAV_{it} + \beta_4 GE_{it} + \beta_5 CC_{it} + \beta_6 VA_{it} + \beta_7 POP_{it} + e \quad \dots(2)$$

$$SD3_{it} = \beta_0 + \beta_1 GDPP_{it} + \beta_2 ER_{it} + \beta_3 INF_{it} + \beta_4 RL_{it} + \beta_5 RQ_{it} + \beta_6 PSAV_{it} + \beta_7 GE_{it} + \beta_8 CC_{it} + \beta_9 VA_{it} + \beta_{10} POP_{it} + e \quad \dots(3)$$

Where SD_{it} is the development of *sukuk* with a proxy for issuing *sukuk* (ICD-Thomson Reuters, 2018).

One explanation for measuring the level of development of *sukuk* is by looking at *sukuk* volume. This research uses *sukuk* volume in five countries that occupy the top-five (in *sukuk* issuance) sourced from IIFM. β_0 is a constant, $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8, \beta_9, \beta_{10}$ is the coefficients of each independent variable, i.e. GDPP Gross Domestic Product Per Capita is a proxy for economic growth as an indicator of macroeconomic stability; data was taken from the World Development Index (WDI-Worldbank); ER is Exchange Rate of domestic currency against USD which proved to be important in macroeconomic stability (Dornbusch, 1981), Inflation (INF) using a proxy of Consumer Price Index is an indicator of economic volatility (Ashimov et al., 2015), and POP (total population) as control variables. The six indicators Institutional sources from World Governance Indicators (WGI-Worldbank) are a description of people’s perceptions of their government in the points contained in each of the following indicators (Kaufmann et al., 2010).

Kaufmann et al. (2010) use a statistical tool known as the unobserved components model (UCM), that is, if it is assumed that the observation score of country j on indicator k is y_{jk} , as a linear function of unobserved governance in country j (g_j) and the disturbance is ε_{jk} , then the equation model is as follows:

$$y_{jk} = \alpha_k + \beta_k (g_j + \varepsilon_{jk}) \quad \dots(4)$$

It is assumed that the error term is normally distributed, with a mean of zero, and that each country’s variance is the same but differs between the indicators, i.e. $V(\varepsilon_{jk}) =$

σ_k^2 . If it is assumed that the error between data sources is independent, i.e., $E[\varepsilon_{jk} \varepsilon_{jm}] = 0$ from source m , different from source k . The model parameter estimates are α_k, β_k , and σ_k^2 then the estimation design of unobserved governance g_j can be designed, with data observations of each country as y_{jk} . In particular, for the unobserved component model, it is possible to summarize it with the unobserved component of country j using the distribution g_j provided the observed data Y_{jk} is also normally distributed, with the following mean: $\sigma_k^2 E[\varepsilon_{jk} \varepsilon_{jm}] = \sigma_k^2$

$$E[g_j | y_j, \dots, y_{jk}] = \sum_{k=1}^k w_k \frac{y_{jk} - \alpha_k}{\beta_k} \quad \dots (5)$$

The conditional average is used as the estimated governance estimate and is simply the weighted average of the scores scaled across countries, $\frac{y_{jk} - \alpha_k}{\beta_k}$. Scaling (measures in aggregate in two ways: in normal standard units of governance indicators, ranging from approx. -2.5 to 2.5, and in terms of ratings with percentiles ranging from 0 (lowest) to 100 (highest) among all countries in the world) is done for the observed data from each source into selected general units and to cover unobserved governance. The weight given to each source k is $w_k = \frac{\sigma_k^{-2}}{1 + \sum_{k=1}^k \sigma_k^{-2}}$, the larger it is, the smaller the error term variance of the source will be, implying that sources that provide more informative governance signals receive a higher weight. However, an important observation is that there is inevitable uncertainty in these governance estimates. This uncertainty is distributed to the standard deviation of governance depending on the size of the observed data, namely:

Table 1: Description and definition of WGI institutional quality indicators

Indicator	Definition	Units
VA	Capture perceptions about the extent to which citizens value freedom of expression, freedom of association and free media in their country	Percent (%)
RL	Captures perceptions of the extent to which agents have confidence in and comply with societal rules, particularly the quality of enforcement of contracts, property rights, police and courts, and the likelihood of crime and violence.	Percent (%)
RQ	Capture perceptions of the government’s ability to formulate and implement sound policies and regulations that enable and promote private sector development.	Percent (%)
PSAV	Capture perceptions of the likelihood that the government will become unstable or overthrown unconstitutionally or violently, including politically motivated violence and terrorism	Percent (%)
GE	Capture perceptions of the quality of public services, the quality of civil servants and the degree of independence from political pressure, the quality of policy formulation and implementation, and the credibility of the government’s commitment to these policies.	Percent (%);
CC	Capturing perceptions of the extent to which public power is exercised for private gain, including petty and significant corruption, as well as elite “capture” of the state and private interests	Percent (%);

Source: Kaufmann et al. (2010)

$$SD[g^j I y^j |, \dots, y^j k] = \left(\sum_{k=1}^k \sigma_k^{-2} \right)^{-1/2} \dots (6)$$

The larger the data is, the smaller the standard deviation, and the more precise the individual data sources, the smaller the meal σ_k^2 will be. The data sources that underlie the WGI come from a large number of individual sources and reflect views on the governance from thousands of surveyed respondents, and public, private, and NGO sector experts around the world. (Kaufmann et al., 2010). Data sources are based on capturing a wide diversity of views and experiences across the six WGI measures (www.govindicators.org).

4. Research Results and Discussion

The data analysis begins with data smoothing by making changes to some data that are too large when compared to other data, namely *sukuk* issuance, GDP per capita, and population. Data smoothing was run by converting some variable data into a logarithmic model (LogSD, LogGDPP, LogPOP) so that the unit of the variable that is converted into the logarithmic metrics will change from million USD (*Sukuk* and GDPP) and million (pop) to a percentage. To provide information about the data used in this study, the following table shows the results of descriptive statistics:

Table 2 above shows the descriptive statistics of the research variables. Furthermore, the results of the correlation test among the independent variables are shown in Table 3, showing that several variables indicate a high and strong correlation with other independent variables, as seen from the correlation test values of 0.7, 0.8, and 0.9 as shown in the following table:

The testing results using GMM as shown in table 4 shows the data was processed using three regression models: the first is a regression by testing the effect of macroeconomic stability on *sukuk*, the second is testing the effect of institutional quality on *sukuk*, and the third is the effect of macroeconomic stability and institutional quality on *sukuk*, including all models plus the population as a control variable. An important step that must be seen in GMM testing is to see the validity of the model in the Sargan test using J-statistics. Sargan statistic distributed by chi-square statistic $c(p_k)$ with the null hypothesis of overidentifying restrictions is valid. Calculating the *p-value* statistical Sargan by calculating the chi-square statistic $c(p_k)$, p is the rank instrument, and k together with the estimated number of parameters entered if $p > 0.05$ then valid over-identification is accepted. Calculation of the Sargan-test value through excel with this formula is shown as in the following table:

Table 2: Descriptive Statistics

	GDPP	ER	INF	RL	RQ	PSAV	GE	CC	VA	POP
Mean	9,383	2107,920	5,181	57,627	62,051	42,046	65,971	58,787	25,858	16,642
Med	9,679	3,670	5,465	62,529	66,909	38,138	68,331	61,260	25,296	17,042
Max	10,703	13795.00	20,149	78,365	83,163	81,407	91,346	87,204	53,694	19,394
Min	6,802	0.380	-16,908	19,802	20,918	3,015	38,235	9,596	2,347	13,508
St. Dev	1,029	4316,094	7,946	14,240	14,358	22,107	15,325	18,724	15,346	1,795
Skew	-0,761	1,644	-0,771	-1,203	-0.911	0.178	-0,221	-0,779	0.073	-0.089
Kurt	2,661	3,959	3,883	3,419	3,241	1,906	1,748	3,089	1,934	2,132
Obs	80	80	80	80	80	80	80	80	80	80

Table 3: Correlation tests

	GDPP	ER	INF	RL	RQ	PSAV	GE	CC	VA	POP
GDPP	1									
ER	-0,768	1								
INF	-0.178	0.174	1							
RL	0.815	-0.859	-0.298	1						
RQ	0.755	-0,739	-0.267	0.937	1					
PSAV	0.547	-0.499	-0.055	0.646	0.637	1				
GE	0.571	-0,629	-0,290	0.818	0843	0.745	1			
CC	0.874	-0.776	-0.211	0.902	0.877	0.789	0.810	1		
VA	-0.711	0.719	0.149	-0.506	-0.322	-0.051	-0.089	-0.471	1	
POP	-0,745	0.733	0.112	-0,755	-0,774	-0.337	-0.514	-0.711	0.509	1

Table 4: GMM results

	MODEL 1			Model 2			Model 3		
The dependent variable is the <i>Sukuk</i> issuance									
	Koef	t-stat	Prob	Koef	t-stat	Prob	Koef	t-stat	Prob
C	-64.59	-15.68	0.00 ***	-91.81	-10.08	0.00 ***	-83.84	-15.32	0.00 ***
GDPP	2.78	8.42	0.00 ***	-	-	-	2.74	7.79	0.00 ***
ER	0.00	2.99	0.00 ***	-	-	-	3.52	0.27	0.79
INF	-0.01	-1.39	0.17	-	-	-	-0.01	-1.15	0.25
RL	-	-	-	0.12	2.89	0.00 ***	0.08	2.44	0.02 **
RQ	-	-	-	0.01	0.25	0.80	-0.04	-1.57	0.12
PSAV	-	-	-	-0.00	-0.17	0.86	0.02	1.45	0.15
GE	-	-	-	-0.05	-1.89	0.06 *	-0.03	-0.88	0.38
CC	-	-	-	0.04	1.26	0.21	-0.03	0.36	0.71
VA	-	-	-	0.06	1.06	0.29	0.04	0.94	0.35
POP	2.76	9.57	0.00 ***	5.53	10.26	0.00 ***	3.82	8.79	0.00 ***
k	5			8			11		
A stat	9.83			3.24			8.10		
Sargan Test	0.911			0.261			0.857		
Adj. R2	0.81			0.72			0.84		
Durb.Wat	0.89			0.72			1.09		
Inst.Rank	9			12			15		

Note: Dependent variable = $\ln Sukuk$; *** refers to a significant level of 1%, ** refers to a significant level of 5%, * refers to a significant level of 10%; also the GDPP variable, and POP logarithmic models.

Source: the results are adapted from the Eviews output.

Given Table 4, the results of data analysis in Model 1 show that GDPP and ER have a significant positive effect on the development of *sukuk* as evidenced by the positive values of the coefficient and t-statistics (p -values=0.00 <0.05), suggesting that this model is valid to measure the relationship between variables; so, it can be assumed that if the GDPP and the exchange rate (ER) increases, *sukuk* development will also increase. The results of data analysis in Model 2 show that four of the six institutional qualities (RL, RQ, CC, VA) are positive. Still, only RL is positively significant (p -value=0.00 <0.05). This means that the increase in the RL variable has a significant positive effect on *sukuk*. Meanwhile, from the results of testing the two indicators (PSAV and GE), GE has a p -value of $0.06 > 0.05$, but $0.06 < 0.10$, implying that GE is significant at the 10% level of significance, that is, GE has a negative effect on the development of *sukuk*. From the results of data analysis in model 3, the probability values (p -values) of GDPP and RL are less than 0.05, suggesting that only GDPP and RL are proven to have a significant positive effect on *sukuk* development. The test results on the POP variable as a control variable showed a significant

p -value at a 1% (p -value=0.00) level, implying that the population can be included as a significant control variable in the relationship between the macroeconomic stability-and-institutional quality variables and *sukuk* development.

From the results of testing Model 1, Model 2, and Model 3, the variables that consistently have a significant effect on the development of *sukuk* are macroeconomic stability measured by the GDPP, and institutional quality measured by RL, suggesting that to increase *sukuk*, more attention to GDPP and the rule of law is needed. These results follow the previous research. Interestingly, controlling for the population effect, all models consistently show the consistent coefficients and signs in the three GMM models. The results of the hypotheses testing indicate that the highest coefficient of determination is in Model 3, which includes the impact of all macroeconomic stability and institutional quality indicators on *sukuk*, including the population as a control variable, which is 0.84, more than 80%.

Keeping in mind the previous research and the results of data analysis in this study, it is evident that macroeconomic stability, especially GDP per capita, and institutional quality,

especially the Rule of Law, plays an essential role in the development of a country's economy and finance. GDP per capita is a proxy for macroeconomic stability in which a country's economic conditions are growing and increasing. Since it is empirically proven that GDP per capita has a significant positive effect on the development of *sukuk*, it implies that economic growth is significant to increase *sukuk* development. The results of this study are supported by many previous studies that show that economic growth has a strong positive effect on financial development, both in conventional finance (González et al., 2018) and in Islamic finance (Lee et al., 2016).

RL dimension (*The rule of law*) describes the extent to which agents have confidence in the rules of society and, in particular, the quality of contract enforcement, property rights, policies, and courts, and the likelihood of crime and violence (Kaufmann et al., 2010). This research corroborates the findings, concluding that RL has a significant positive effect on *sukuk* development. The institutional variable (RL) is an indicator of public trust in the regulations and their enforcement. Weak enforcement of laws (business contracts) causes major losses to financial development; conversely, better institutions, and better law enforcement are useful in stimulating financial development (Bhattacharyya & Hodler, 2014). It is assumed that higher the public trust in the RL is, the more stable people's economic activities will be, and they will be more likely to increase along with the increase in the RL index. Furthermore, it will affect public confidence in deciding investment activities, especially in *sukuk* instrument. For issuers, the RL indicator is essential in giving the issuers confidence in issuing *sukuk* in the country, especially laws and regulations that support issuers and investors in reviving the *sukuk* market.

A different effect from this study compared to previous studies is that the existence of the population as a control variable can ensure the position and presence of inflation for the economy, especially financial developments, where the results of this study were not found to be significant when incorporating the inflation variable (the previous results regarding the inflation effect on *sukuk* indicate significant negative coefficients, and excluding population effects). This supports the evidence that the inflation rate at an individual (controlled) level does not endanger *sukuk* development; it is proven that there is a positive relationship between inflation and *sukuk*, and even, the inflation rate is also needed to revive the economy (Huang & Yeh, 2017).

5. Conclusions and Implications

Based on the results of data analysis and hypotheses testing, it can be concluded that macroeconomic stability, especially GDP per capita, has a significant effect on the development of *sukuk*. In contrast, the exchange rate and

inflation do not affect the development of *sukuk*. In terms of institutional quality, the RL indicator has a significant positive effect on the development of *sukuk*, while the other five indicators do not affect the development of *sukuk*. The coefficient of determination (Adj. R^2) is 0.84, indicating that 84% of the changes in the *sukuk* variable can be accounted for by the research model (three macroeconomic-stability variables and six institutional indicators), while the remaining 16% is explained by other factors which are not explained in this research.

The results contribute to increasing Islamic financial literature, especially the essential factors that play an important role in the development of *sukuk* in the global market. The development of Islamic finance in the world, especially in Indonesia, has not been empirically supported by the comprehensive development and improvement of Islamic financial literature, especially the literature on money market and capital market development. Adibuddin et al. (2019) concluded, in his literature study, that Islamic capital market literature is still limited, relative to the increase in Islamic banking literature, especially in Indonesia; only 8 (4.3%) out of the 184 accredited-journal articles concerning the theme of Islamic economics are related to the Islamic capital market, including *sukuk*. The urgency of increasing *sukuk* literature and its development factors is part of an effort to disseminate *sukuk* to the public through the introduction and improvement of understanding regarding these *sukuk* (Nguyen & Nguyen, 2020), empirical evidence suggests financial literacy plays a key role in investment and financial decision making (Lusardi & Mitchell, 2011).

The results of this test can also assist regulators in mapping, designing, and establishing legal rules for the management and development of the *sukuk* market so that stakeholders (investors and issuers) are increasingly interested in *sukuk* instrument. Investors need a guarantee of macroeconomic stability to ensure that their funds are safe and will continue to grow, while issuers need legal rules that support the fulfillment of their funding needs.

Suggestions for further research can be followed by adding a macroeconomic variables, in the form of interest rates, to see how the interest affects the development of *sukuk* as an investment instrument. The research results suggest that an interest rate affects *sukuk*, whereas the theory of Islamic finance is a fundamentally different instrument and does not depend on interest. Another suggestion can be made through running institutional tests using different indicators, such as ICRG and Business Environmental Risk Intelligence (BERI) (Keefer, 1995), to know whether the results are consistent or not. Research on the traditional approach can be conducted by exploring the legal rules that apply in the capital market, especially the *sukuk* market. As such, there is a difference between the cost of issuing Islamic instruments and that of conventional instruments.

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