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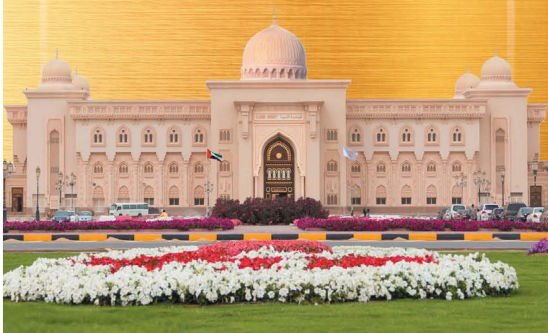


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تحديد وجهة سوق الصكوك المرنة المستقبلية في ماليزيا : ما الذي يمكن تعلمه من  
محددات الاقتصاد الكلي لإصدار الصكوك؟

## CHARTING FUTURE RESILIENT SUKUK MARKET IN MALAYSIA: WHAT CAN BE LEARNED FROM MACROECONOMIC DETERMINANTS OF SUKUK ISSUANCE?<sup>1</sup>

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## الملخص

تبحث هذه الدراسة في آثار متغيرات الاقتصاد الكلي على إصدار الصكوك في ماليزيا من الربع الأول من عام 2005 إلى الربع الرابع من عام 2019. وتسعى إلى تحليل العلاقة بين إصدار الصكوك ومتغيرات الاقتصاد الكلي المختارة مثل مؤشر بورصة ماليزيا المركب، سعر الصرف، الناتج المحلي الإجمالي، التضخم، وسعر الفائدة. تستخدم هذه الدراسة تقنيات تحليل السلاسل الزمنية مثل تحليل يوهانسن للتكامل المشترك، ونموذج تصحيح الخطأ المتجه (VECM)، وتحليل تحليل تباين أخطاء التنبؤ (FEVD) لكشف الديناميكيات على المدى القصير والمدى الطويل بين المتغيرات المحددة. تشير النتائج التي توصلنا إليها إلى أن مؤشر بورصة ماليزيا المركب، سعر الصرف، وسعر الفائدة مهمة في التأثير على إصدار الصكوك في ماليزيا على المدى الطويل في حين أن مؤشر بورصة ماليزيا المركب، سعر الصرف والناتج المحلي الإجمالي مهمان على المدى القصير. يُعدّ سعر الصرف المساهم الأكثر أهمية على المدى القصير في إصدار الصكوك، يليها الناتج المحلي الإجمالي ومؤشر بورصة ماليزيا المركب. تشير هذه النتائج أيضًا إلى أنه يمكن للحكومة أن تراقب عن كثب حركة سعر الصرف لتعزيز تمويل المشاريع التجارية من خلال إصدار الصكوك. تشير النتائج المتعلقة بأهمية مؤشر بورصة ماليزيا المركب على المدى القصير والمدى الطويل إلى أنه يمكن للمستثمرين أيضًا التفكير في الاستثمار في الأوراق المالية للصكوك ضمن استثماراتهم في محافظتهم لإدارة المخاطر والعوائد. يوصى أيضًا بأن يضع صانعو السياسات سياسات تضمن أداء مؤشر بورصة ماليزيا المركب ونمو الناتج المحلي الإجمالي لتحقيق سوق صكوك مرّن، خاصة أثناء وبعد جائحة كوفيد-19.

## Abstract

This article examines the effects of macroeconomic variables on *sukuk* issuance in Malaysia from the first quarter of 2005 to the fourth quarter of 2019. It seeks to analyse the relationship between *sukuk* issuance and selected macroeconomic variables such as Bursa Malaysia

composite index (BMCI), exchange rate (EXR), GDP, Inflation (INF) and interest rate (INT). This study employs time series analysis techniques such as Johansen Co-Integration Analysis, Vector Error Correction Model (VECM), and Forecast Error Variance Decomposition (FEVD) analysis to unravel the short run and the long run dynamics among the selected variables. Our findings suggest that BMCI, EXR, INT are significant in affecting *sukuk* issuance in Malaysia in the long run while for the short run, the BMCI, EXR, and GDP, are significant. EXR is the most important contributor in short-term for *sukuk* issuance, followed by GDP and BMCI. These findings further suggest that the government can closely monitor exchange rate (EXR) movement to promote fundings of business projects through *sukuk* issuance. The findings on the significance of BMCI in both the short run and the long run suggest that investors can also consider investing in *sukuk* securities within their portfolio investment to manage the risk and return profile. It is also recommended that policy makers can design policies to ensure the performance of BMCI and GDP growth to achieve a resilient *sukuk* market especially during and post the Covid-19 pandemic.

الكلمات الدالة: اصدار الصكوك، مؤشر بورصة ماليزيا المركب، الناتج المحلي الاجمالي.

**Keywords:** *Sukuk* issuance, Bursa Malaysia composite index, Gross Domestic Product.

## 1.0 Introduction

Globally, *sukuk* has emerged as an exuberant market during the recent decades, providing a comprehensive venue for *sukuk* operations through its issuance environment, investment promotion policies, and comprehensive Islamic financial infrastructures. *Sukuk* market has also become particularly appealing to both international investors and local participants.

The participation of United States, Hong Kong, Singapore, United Kingdom, Luxembourg, Germany, France and South Africa, although not members of the Islamic Cooperation Organization (OIC),

issuing *sukuk* in global markets and have bolstered the creation of the international *sukuk* market (Smaoui & Ghouma, 2020). This also demonstrates that the contribution of *sukuk* has garnered significant support even from developed countries with minority Muslim population.

Being a buoyant market, there are still on-going debates pertaining to issues related to *sukuk* issuance. Firstly, *sukuk* is not as established as the bond market that provides alternative financing options with the ability to make short and long-term arrangements to address the challenge of funds raising. *Sukuk* functions to avoid *riba*, *gharar* or other elements of manipulation whilst adhering to the *Shari'ah* fundamentals whilst helping in contributing to economic growth (Smaoui & Nechi, 2017). Simultaneously, *sukuk* is believed to have raised the level of well-being in Islamic society and promotes the economic development of Muslim countries in general.

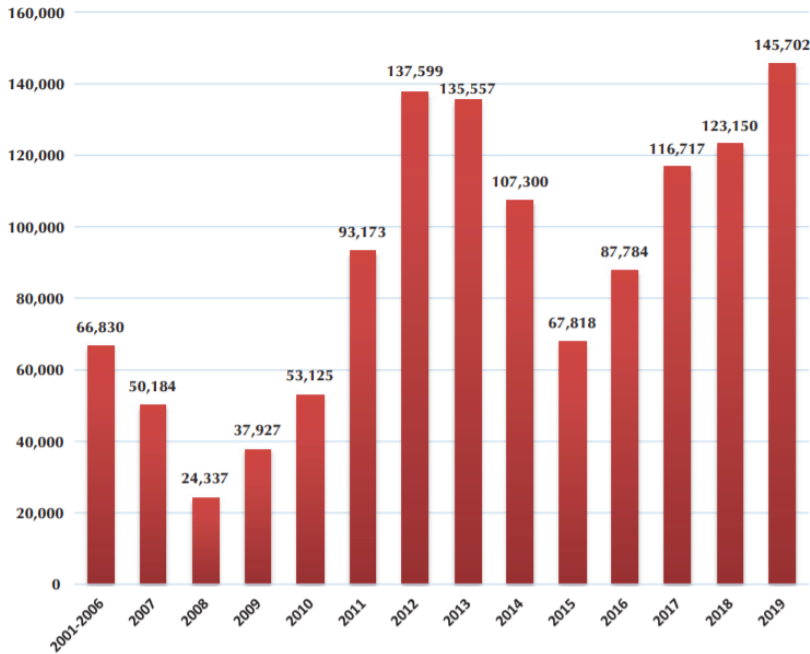
Malaysia's success story in the *sukuk* market reflects the government's strategic strong commitment to establishing a robust Islamic financial system that will eventually resulted in Malaysia becoming the global centre for Islamic Finance (*Sukuk* Report, IIFM 2020). In the current *sukuk* market, understanding the real connection between the funding arrangement and the asset to which it relates as well as the economic impact associated with its issuance are of paramount interest.

Despite the growing prevalence of *sukuk* issuance on both the local and foreign markets, there is still a scarcity of literature on the factors that drive the market's growth, specifically in dealing with issuance, in a way that *sukuk* products can expand effectively in the global market and contributes to the economic growth (Paltrinieri et al., 2019). This article aims to assess the performance of *sukuk* issuance in Malaysia in the period covering the year 2005 to 2019 and to examine the relationship between selected macroeconomic variables (composite index, exchange rate, GDP, inflation, and interest) on *sukuk* issuance in Malaysia in the long run and short run. In addition, identifying the significant variables impacting the *sukuk* issuance would benefit in terms of understanding it from an investor's, industry's and regulator's perspectives as we navigate towards a more sustainable and resilient *sukuk* market in Malaysia.

### 1.1 Overview of Sukuk Market in Malaysia

*Sukuk* issuance totalled 145.70 billion US dollars worldwide in 2019 continued to rise to about 18.32 percent per year internationally. 123.15 billion US dollars in 2018 to 145.70 billion US dollars in 2019. In 2019, the consistent amount of issuance was primarily due to national government *sukuk* issuances from Asia, the Gulf Cooperation Council (GCC), Africa, and a few other jurisdictions. Meanwhile, Malaysia continues to dominate the *sukuk* market, with a significant increase in volume like in the cases of Indonesia, Saudi Arabia, the United Arab Emirates and Turkey. This is depicted in Figure 1.1.

Figure 1.1: Total Global *Sukuk* Issuance (Jan. 2001 – Dec. 2019) in USD Millions

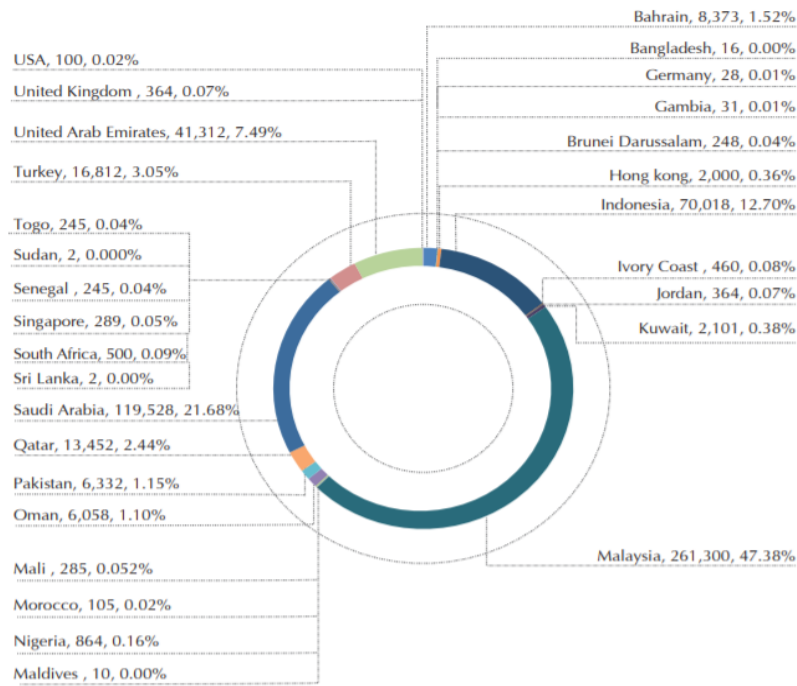


Source: *Sukuk* Report. IIFM, 2020

Even though Gulf States and Saudi Arabia have larger Islamic banks and Indonesia has the world's largest Muslim population, Malaysia is

deemed to be an international Islamic Financial Hub. Figure 1.2 illustrates Malaysia having the largest share of *sukuk* issuance outstanding. Saudi Arabia and Indonesia came in second and third, respectively, at 47.38 percent, 21.68 percent, and 12.70 percent respectively (Ahmed Alvi et al., 2020).

Figure 1.2: Country wise breakdown of *Sukuk* Issuance Outstanding as of 31 Dec. 2019



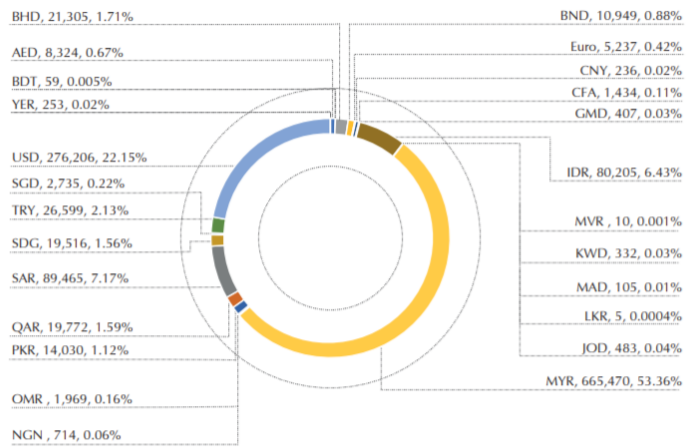
Source: *Sukuk* Report. IIFM, 2020

Moreover, Malaysia issued the world’s first government five-year global *sukuk* in 2002, valued at 600 million USD and Malaysia has since continued to push the formation of novel *sukuk* structures by Khazanah Nasional Berhad (Malaysian government’s investment arm) such as the exchangeable *Sukuk Musharakah*. Following the introduction of the world’s first Global sovereign *sukuk*. Sovereign *sukuk* issuance has been encouragingly duplicated over the years, and

we can observe that sovereigns and quasi-sovereigns led *sukuk* issuance in Malaysia’s corporate and financial institutions has resulted in an increase in volumes, which has surpassed the previous year’s record level. (*Sukuk Report*, IIFM 2020).

Figure 1.3 depicts a currency-by-currency breakdown of the worldwide *sukuk* market. Malaysia has an issuance totalling 53.36 percent (MYR665.45 billion) since the establishment of the market. *Sukuk* issuance denominated in USD accounts for 22.15 percent of the worldwide *sukuk* market (USD 276.20 billion). Apart from the US dollar and the Malaysian ringgit, *sukuk* has been issued in 26 foreign currencies, which is encouraging. We can thus observe the significance of Turkey, Pakistan, GCC, Indonesia and other Asian currencies growing over time as more sovereigns continue to offer liquidity in their local markets (*Sukuk Report*, IIFM 2020).

Figure 1.1: Global *Sukuk* Issuances Currency Break-up (Jan. 2001 – Dec. 2019, USD Millions)



Source: *Sukuk Report*. IIFM, 2020

Undeniably, *sukuk* has great potential to grow considering its sustainable performance and as a secured investment tool for investors. Given the ongoing global financial and economic crisis, the low price of crude oil, and political uncertainty as the Covid 19 Pandemic, it is



therefore imperative for Malaysia to understand the role of macroeconomic factors with regards to issuance of *sukuk*.

The fact that macroeconomic conditions will affect the advancement of *sukuk* efficiency is notable in literature. According to Haron & Ayojimi (2019), exchange rates, foreign economic conditions, and the economic cycle of a country are factors that influence the capital market. Investors in the capital market need to understand the impact of economic variables when making investment decisions. The composite index of the stock market for example can impact the *sukuk* market, as *sukuk* is a lower-risk investment than conventional bonds given that *sukuk* finances prospective ventures and the underlying assets in its structure (Haron & Ibrahim, 2012).

Several studies have documented evidence to indicate that there is a significant inverse relationship between the performance of conventional bonds and GDP during the period of 1990 – 2011 with GDP effect being found to be insignificant on bond performance (Ahmad & Radzi, 2011; Elkarim, 2012). This result can suggest that conventional bond performance is not linked to the real sector of the economy which makes it fundamentally different from the structure of *sukuk* as theoretically, *sukuk* should be more linked to the real sector of the economy. As stock prices are affected with an by a rise in bank interest rates, the effect on *sukuk* issuance in particular is also expected given that in general, there is a co movement between interest rates and returns on *sukuk* (Sakti & Harun, 2013). Subsequently, based on Suciningtias (2019), evidence shows that currency exchange, interest, and inflation rates have long-term co-integration with *sukuk* performance. With that, the exchange rate fluctuations should be monitored by investors since they have both short and long-term implications for *sukuk* and have an impact on *sukuk* returns over time especially during the period of inflation (Sakti & Harun, 2013; Suciningtias, 2019).

Against this backdrop, this present study departs from the above studies in terms of looking at *sukuk* issuance rather than performance of *sukuk*. The study seeks to assess the effects of selected macroeconomic variables; Bursa Malaysia composite index, exchange rate, GDP, inflation rate, and interest rate on *sukuk* issuance in Malaysia. This thus considers s economic growth, inflation, and

exchange rates among the key macroeconomic factors that have been used to evaluate a country's macroeconomic output, and the status of these three variables has played an important role in providing a measure of a country's economic situation (Rousseau & Yilmazkuday, 2009; Abubakar & Kassim, 2018). Understanding the direction and magnitude of each macroeconomic variable effect on Islamic capital market via *sukuk* issuance can benefit the country's economic and financial growth as well sustaining the position of Malaysia as the International Islamic Financial Hub (Mo et al., 2018).

## 2.0 Theoretical Underpinnings and Literature Review

Pecking Order Theory and Trade-off Theory are two significant components of a firm's capital structure, according to corporate financing studies. The literature on corporate capital structure offers comprehensive explanatory viewpoints based on capital structure theories such pecking order and trade-off, although Islamic finance is the subject of a few restricted studies. (Stwr C Myers, 1984) proposed a pecking order in which retained earnings are favoured first, followed by debt, and finally equity financing.

The Pecking Order Theory asserts that corporate executives have a higher level of knowledge than external investors. Because the company is financed through equity, the argument states that outside investors require more information. As a result, according to Pecking Order Theory, *sukuk* finance is subordinated to traditional debt financing, but comes before the issuing of equity. According to Trade-off Theory, businesses aim to find the best amount of debt financing that balances the tax benefits of more debt with the costs of bankruptcy (Myers, 2001). The Trade-off Theory proposes that the issuer chooses *sukuk* before seeking external finance because the financial scheme provides administrative benefits to the issuer.

Consistent with the theories underpinning mentioned, several studies in this strand of research imply that *sukuk* issuance can have favourable economic implications such as encourages businesses to raise money, motivates *sukuk* issuance as well as to evaluate the impact of stock market on *sukuk* issuance.

## 2.1 Concept & Structure of Sukuk

In the Islamic financial system, *sukuk* is one of the most common securities, particularly in the secondary market. *Sukuk* is described by the Islamic financial Services Board (IFSB) as certificates that indicate the holder's proportional ownership in an undivided share of an underlying asset, for which the holder anticipates all rights and duties. The fundamental of *sukuk* structure based on three parties. The first is the originator of *sukuk* (the obligor), the second is an independent body that has the certificate of legality to acquire an asset and issued a certificate of *sukuk* known as the Special Purpose Vehicle (SPV), and the third is the investor who will buy the *sukuk*.

*Sukuk* also has a maturity date and along with the payment at the maturity date, the holders have the right to receive revenue annually over the life of *sukuk*. In practice, *sukuk* is usually in the form of an asset-based or an asset-backed. *Sukuk* investors profit from owning the properties of SPV. The value of the underlying assets is covered by the value of the capital assets, but no distributions are made directly from the assets to the holders of the *sukuk*. In addition, *sukuk* does not have a warranty or investment guarantee. Thus, through SPV, *sukuk* holders have an underlying asset without any promise of payment to investors (Wilson, 2004).

The *sukuk* market in Malaysia provides specialized solutions to government and corporate issuers through a variety of *sukuk* structures that use different Islamic contracts such as *Wakalah*, *Mudhharabah*, *Musyarakah*, *Murabahah*, or hybrid structures based on variations of Shariah contracts. The *sukuk* mechanisms are backed by real economic activity and have the potential to access the Islamic and traditional spectrum of a broader investor base, including international investors. A growing number of businesses, including international corporations, are also leveraging on the strength of the Islamic capital market in Malaysia to issue periodic short-term business papers to meet their ongoing funding needs.

The *sukuk* classification should not be correlated with the contract form. Depending on the categories of the issuer, such as sovereign, corporate, exchangeable/convertible *sukuk*, subordinate *sukuk*, asset-backed *sukuk*, stapled *sukuk*, and project finance *sukuk*, the types of *sukuk* may also be considered such as:

- *Murabahah Sukuk* is an award of protection under the *murabahah* contract agreement. The *murabahah* contract is a selling and purchase arrangement where all parties concerned accept the price of an item and profit (profit margin). The payment may be made in cash or credit as the distribution of the goods takes place at the beginning of the transaction. The deal for *murabahah* is also known as the cost-plus financing scheme.
- *Mudharabah Sukuk* is the issuance of securities under the *mudharabah* contract arrangement, which offers money (*Rab al-mal/Shahibul maal*) to one party and labor or skills (*Mudharib*) to other parties. The profit of such an arrangement would be split depending on the proportion of the comparison previously decided upon. The losses sustained would be borne completely by the supplier of the capital, as long as the losses are not caused by the incompetence or non-good intentions of the *Mudharib*.
- *Wakalah Sukuk* is a trust certificate provided by a party to obtain capital or invest in properties, products, or services that are shariah-compliant. Under the *Wakalah Sukuk* agreement, the *sukuk* holder is the party that invested his capital. The debtor is a party that needs the money, and the investment agent (*wakeel*) is a party that manages the *sukuk's* properties. Usually, the investment agent also functions as the debtor. Furthermore, *Wakalah Sukuk* acts as a Special Purpose Vehicle (SPV). The issuer will also operate as the deputy mandate for the *sukuk* holders, retaining ownership and administering assets in a trustworthy manner on their behalf.

## 2.2 Literature on Sukuk

Roslan and Hussin (2019) employed variance error composition method (VECM) to examine the link between Islamic Stock Market, *sukuk*, and Islamic Bank Assets and other macroeconomic parameters such as exchange rate, gross domestic product, interbank rate, crude palm oil price, and crude oil price.

Similar method is utilized by Suriani et al., (2018) including the Dickey-Fuller unit root test, Johansen cointegration test, and VECM variance decomposition to examine the macroeconomic determinants of Islamic (*sukuk*) and conventional bond markets in Indonesia. The

findings provide evidence that exchange rates have the most impact on the *sukuk* market, whereas interest rates, exchange rates, and price levels have an impact on the bond market. The revelation of the *sukuk* market's independence from interest rates suggests that *sukuk* in Indonesia adhered to the fundamental tenet of Islamic finance which is interest free.

Recent study by Suciningtias (2019) assessed the impact of macroeconomic variables in the long and short run by employing data from Indonesia in 2014-2017. The selected factors include interest rate, inflation, currency rate, worldwide gold price movements, crude oil prices and global oil price change. Changes in exchange rates, inflation, and world gold prices all have an impact on *sukuk*. Besides, the findings revealed short run dynamics where *sukuk* performance is influenced by (one and two months) the interest rates, currency rates, and global gold prices while crude oil prices have no effects on the performance of *sukuk* in the long or medium run.

Meanwhile, a study by Rahman (2017) on the *sukuk* yield in Asia and middle east found that not all macroeconomic variables (inflation, GDP and money supply) were able to explained *sukuk*. The study investigates *sukuk* yield movement over 13 years and found that GDP and money supply have no effects to sovereign *sukuk* yield. The study also highlights the use of similar pricing with conventional bond to *sukuk* and if it is for *sukuk* to have a stand alone mechanism may need some more empirically investigations.

Despite the tremendous growth of *sukuk* issuance and increased interest in them, empirical research is rather limited in the literature. Paltrinieri et al. (2019) conducted a comprehensive bibliometric analysis of *sukuk* literature from 1950 to 2018. Three key research streams were established.

The first discusses the significance of *sukuk* markets as a development engine in the financial industry. Kusuma & Silva (2014) regarded *sukuk* as an alternative financing mechanism intended to diversify funding sources within this stream of literature. According to Usmani (2007), *sukuk* are a better tool for financing big ventures than traditional financial institutions. Godlewski et al.(2013) and Nagano (2017) investigate the differences between *sukuk* and bond related to the factors in issuing *sukuk* compared to bond and the market reactions

on both instruments. Boujlil et al. (2020) examined the factors that influence policymakers' decisions to issue *sukuk* instead of conventional bonds. The systemic, financial developmental, institutional, and macroeconomic determinants of *sukuk* market growth were studied by Said and Grassa (2013) and Smaoui and Khawaja (2017). The evidence shows that well-developed *sukuk* markets are correlated with an investment profile, Muslim population, economic size, and lower corruption.

### *2.3 Bursa Malaysia Composite Index*

Bursa Malaysia is the name of Malaysia's stock exchange. The Kuala Lumpur Stock Exchange was its previous name and is located in Kuala Lumpur. The Bursa Malaysia composite index includes the top 30 companies on Bursa Malaysia's main board in terms of complete market capitalization. In a study, a researcher looked at whether *sukuk* issuance announcements included any fresh information that could affect market reactions. The Bursa Malaysia composite index was used to gauge market reactions. This study's findings revealed a positive and significant relationship between market reaction and *sukuk* issuance (Mohamed et al., 2017).

### *2.4 Exchange Rate*

According to Sukirno (2015), the essence of the exchange rate is the number of domestic currencies needed to redeem one unit of foreign currency. The number of local currencies needed to purchase one unit of foreign currency will be shown in the exchange rate. As the exchange rate fluctuates, the price of domestic and imported products fluctuates as well. High prices would raise production costs, which will have an effect on investment activities. Furthermore, Nafisah (2020) asserted that between 2010 and 2017, the exchange rate and inflation were important factors in rising Indonesia's balance of payments.

### *2.5 Gross Domestic Product*

Economic growth as proxied by the GDP explains why GDP has a positive impact on sovereign *sukuk* issuance. The findings support Tandelilin's (2020) theory, which notes that macroeconomic factors

empirically influence capital market conditions in many countries. These findings support the findings of Muharam, Anwar, and Robiyanto's (2019) which found a causal association between economic growth and the creation of the Malaysian *sukuk* sector. Said and Grassa (2013) further posit that GDP per capita has a positive impact on the *sukuk* market's growth, Abrorov (2020) found that *sukuk* has a positive impact on the economy as evidenced by *sukuk* emission as a factor in rising Muslim countries' income. Similarly, Alam et al. (2020) study on economic growth impact on Pakistan documents evidence that the medium-term and long-term *sukuk* are more powerful and useful as tools for capital market that follow shariah rules.

## 2.6 Inflation Rate

The Consumer Price Index measures inflation as a rise in the price of goods and services. Inflationary pressures mean that consumers have low buying power, which reduces their ability to spend, including in bonds and *sukuk*. As a result, inflation is expected to have a negative effect on *sukuk* market liquidity (Kucuk, 2010; Kapingura et al., 2015).

The inflation regression coefficient is expected to have a negative correlation with *sukuk* issuance, indicating that as inflation rises, the issuance of sovereign *sukuk* decreases. The negative notation depicts a trend of continual price rises that are not accompanied by a rise in wages, resulting in a reduction in people's purchasing power. This finding echoes the findings of Wahyudi and Shofawati's (2019) which posit that during inflation, firms tend not to issue securities in the form of *sukuk* because their profitability suffers as a result of higher production costs. Inflation is also one of the factors that determines the growth of the *sukuk* industry (Zanudin et al., 2019).

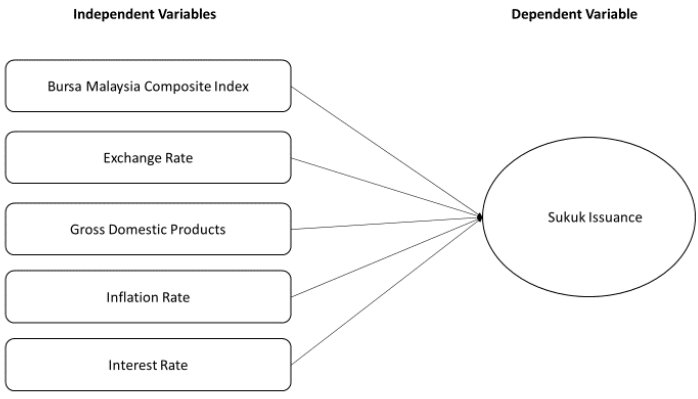
## 2.7 Interest Rate

One of the most often utilized macroeconomic indicators is the interest rate in terms of examining its negative correlation with stock prices (Hasan & Zaman, 2017). This means that, since economic theory assumes that stock prices are measured in a forward-looking manner by projected future earnings, monetary policy shocks can impact stock prices both directly and indirectly through the discount rate's effect on

the risks that an agent faces on the market. A rise in the interest will increase the risk and required rate of return of investments, resulting in a higher cost of capital, firms' profits will begin to decline this in turn would lead to a fall in stock prices. Higher interest rates reduce the discounted value of potential dividends, implying that buyers are willing to pay less for these stocks, and the price will fall and thus reduces *sukuk* issuance (Alshogeathri, 2011).

Consistent with the findings of the above studies, the research framework for this present study can be best depicted as follows:

Figure 2.1 Research Framework



### 3.0 Variables and Methodology

Our analysis begins with the measurement of variables and the data sources.

#### 3.1. Measurement of Variables

Data were gathered from two distinct sources which are the Department of Statistics Malaysia for the macroeconomic indicators and Thomson Reuters Database for the *sukuk* issuance in Malaysia. The following is a summary of the variables that were measured:



Table 3.1 Summary of Variables

Variable	Time frame	Measures	Source
SUKUK	Quarterly Sukuk issuance volume in currency from 2005 - 2019	Sukuk issuance in volume (USD)	Thomson Reuters Database
BHCI	Quarterly Bursa Malaysia Composite Index data from 2005 - 2019	Index data used (in points)	Department of Statistics Malaysia
EXR	Quarterly exchange rate data from 2005 - 2019	The exchange rate used is Ringgit Malaysia (RM) to United States Dollar (USD).	Department of Statistics Malaysia
GDP	Quarterly GDP data from 2005 - 2019	Per Capita Growth (%) at constant 2015 Prices	Department of Statistics Malaysia
INF	Quarterly CPI data from 2005 - 2019	Consumer Price Index (CPI) at weight 2010 = 100.	Department of Statistics Malaysia
INT	Quarterly INT data from 2005 - 2019	The interest rate data used one year fixed deposit interest rate in Commercial Banks.	Department of Statistics Malaysia

The dependent variable in this study is gathered from Thomson Reuters Database whereas the independent variables are from the Department of Statistics Malaysia (macro-economic indicators). This

study uses time-series analysis for quarterly data from 2005 to 2019, resulting in a total of 60 observations.

### 3.2 Model Specification

In assessing the long run and short run dynamics between sukuk issuance and the selected macroeconomic variables, the following equation is developed.

The equation for analysing the relationship between the sukuk issuance and macroeconomic variables is presented as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 \ln X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + ut$$

Where;

Y : dependent variable

X : independent variables

$\beta$  : slope (coefficient)

ut : error term

The dependent variable (Y) that is Malaysia *sukuk* issuance and the independent variables (X) are Bursa Malaysia composite index (BMCI), exchange rate (EXR), GDP, inflation rate (INF) and interest rate (INT). This study used equation as above to apply on SUKUK model as follows:

$$SUKUK = \beta_0 + \beta_1 LBMCI + \beta_2 EXR + \beta_3 GDP + \beta_4 INF + \beta_5 INT + ut$$

Where;

SUKUK : Malaysia sukuk issuance

LBMCI : Natural logarithm of Bursa Malaysia composite index

EXR : Exchange rate

GDP : Gross domestic products

INF : Inflation rate

INT : Interest rate

$\beta_0$  : Intercept

ut : error term

$\beta_0$  refers to the constant slope for the regressions and the beta one until five ( $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ ) means the coefficient for independent variable.

Lastly, it refers to the error term that cannot be explained by the model known as disturbance term.

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$  : Slope (coefficient) of parameters.

We start our analysis with a descriptive analysis to measure the source and impact of correlations between variables.

3.3 *Correlation Analysis*

Correlation analysis can determine whether the variables are connected. The Person Correlation technique is employed to determine the degree of correlation and to avoid a multicollinearity issue that could result in erroneous results. As shown below, the range is from perfect positive to perfect negative correlation:

Table 3.2 *Pearson Correlation Coefficient Relationship*

Value of R	Strength of Relationship
-1.0 to -0.5 or 1.0 to 0.5	Strong
-0.5 to -0.3 or 0.5 to 0.3	Moderate
-0.3 to -0.1 or 0.3 to 0.1	Weak

The strongest linear link has a correlation coefficient of -1 or 1, while the weakest linear link has a correlation coefficient of 0.

3.4 *Unit Root Analysis*

To check for the presence of unit root, the Augmented Dickey-Fuller (ADF) unit root test and the Phillips Perron (PP) unit root test are utilized. An advanced test was considered by Augmented Dickey-Fuller (ADF) and Philips Perron (PP) to rectify a series with a unit root. Additionally, the Augmented Dickey-Fuller (ADF) test is recognized to sort the autocorrelation problem.

3.5 *Co-Integration Analysis*

In the long run, co-integration analysis is used to estimate the significance of independent variables to the dependent variables. The goal of a co-integration analysis is to determine the level of relevance of internal and external factors in this study with respect to the issuing

of Sukuk and other macroeconomic variables. The Johansen Co-Integration is done through ranking that represents coefficient matrices. The number of ranks will determine some linear combination to identify cointegration. Meanwhile, the VECM Analysis approach allows for a variety of co-integrating relationships which enables long-term parameter assessment. To normalise the unit of coefficient on exogenous variables, the cointegrating regression in VECM can be obtained to see the empirical effects in determining the short run dynamics and long run relationships (Granger, 1988). The short run and long run effects can be seen through the coefficient in the error correction term. VECM will show the presence of these effect on the estimation.

### *3.6 Forecast Error Variance Decomposition*

To estimate the short-term effect on time series data, the Vector Error Correlation Model (VECM) is employed. It also calculates the amount of time it takes for the dependent variable to return to equilibrium, as well as the effect of the independent factors on the dependent variable. The summary and purpose for each of the analyses are listed in the table below for easy reference:

Table 3. 3 *Summary of the Analysis*

<b>Analysis</b>	<b>Method Used</b>	<b>Purpose</b>
Descriptive Analysis	Descriptive Statistic	To reflect data distribution and overall trend of sukuk issuance
Correlation Analysis	Pearson Correlation Method	To determine if there is a problem with multicollinearity
Unit Root Analysis	Augmented Dickey Fuller (ADF) and Phillip Perron (PP) Method.	To determine if the selected data is stationary at the difference level.

Co- Integration Analysis	Johansen Co-Integration Method (VECM)	On each independent variable, to determine the potential of a long-term relationship.
Variance Decomposition Analysis	Forecast Error Variance Decomposition Analysis (FEVD). Trace Test and Maximum Eigen Value Test is involved.	The objective is to find the short- term relationship between the independent and dependent variables.
Source: Eviews		

4.0 Data Analysis and Findings

4.1.1 Descriptive Analysis

Table 4.1 shows the results from the descriptive analysis of the data.

Table 4.1 Descriptive Analysis

Details	LSUKUK	LBMCI	EXR	GDP	INF	INT
Mean	8.511002	3.155756	3.612322	4.906667	2.475000	3.030833
Median	9.418424	3.199523	3.523500	5.150000	2.550000	3.000000
Maximum	10.23964	3.273203	4.459500	10.10000	5.400000	3.500000
Minimum	0.000000	2.938936	2.984000	-6.200000	-0.800000	2.000000
Std. Dev	2.666731	0.104825	0.436734	2.446711	1.319428	0.382907

Malaysia *sukuk* issuance has a mean of 8.511002 which indicates average *sukuk* issuance amount that are issued between 2005 to 2019. The standard deviation of 2.666731 is lower indicating the data are close to the mean. The highest amount issued reaches to about 2.666731 while the least are nil.

For the macroeconomic variables, table 4.1 similarly presents the descriptive result of each of the variables’ mean, standard

deviation, minimum and maximum. It shows that average BMCI is around 3.155756 point (mean value) with an acceptable standard deviation of about 0.104825. The maximum point reaching 3.273203 and smallest recorded at minimum of 2.938936 point.

Descriptive statistics for exchange rate shows the mean is 3.612322 which is the average rate for exchange rate during the study period. Its standard deviation is low at 0.436734 which shows the data are close to mean. The highest amount of exchange rate is recorded at 4.459500 while the lowest is 2.984000.

The minimum and maximum amount for gross domestic products is (6.200000) and 10.10000 respectively indicate the lowest and the highest GDP recorded. The lowest GDP recorded happened in first quarter 2009 which is during the 2009 recession. The mean shows the value of 4.906667 being the average value and the standard deviation is high at 2.446711 which shows that the data are spread out over a large range of values.

The inflation rate has a mean of 2.475000 with a standard deviation of 1.319428. However, there are several large differences in the range between mean with minimum and minimum and maximum. The minimum inflation rate is -0.800000, which occurs in the first quarter 2019. This could be due to the eliminated goods and services tax (GST). Inflation can be lowered especially if there is continuous decline in producer prices (Shah & Jamal, 2014). The maximum inflation rate of 5.40000 happens in 2008, which could be due to the 2008 Financial Crisis. Government implements the expansionary fiscal policy to increase income and the money supply, however, due to a degree of stagflation in 2008, the output is not increasing, while the inflation is rising. This is mainly due to the increasing oil price during the year.

Finally, the interest rate has a mean of 3.030833. The range for minimum and maximum too are the smallest among the variables, which is a minimum interest rate of 2.000000 versus the maximum interest rate of 3.500000. This is further supported by the low standard deviation of 0.382907, meaning the data samples for interest rate are closely spread or close to the mean of the data.

4.1.2 Correlation Analysis

Correlation analysis is aims to measure how the variables are related to each other, either in a perfect relationship, or in a positive, negative or in other word strong, weak and moderate correlations.

Table 4.2 *Pearson Correlation Matrix*

Variable	Sukuk	BMCI	EXR	GDP	INF	INT
Sukuk	1.00000	0.570536	0.051916	-0.113033	-0.165188	-0.171297
BMCI	0.570536	1.00000	0.092019	0.268977	-0.246776	0.198740
EXR	0.051916	0.092019	1.00000	-0.085437	-0.205695	0.107620
GDP	-0.113033	0.268977	-0.085437	1.00000	0.240461	0.464002
INF	-0.165188	-0.246776	-0.205695	0.240461	1.00000	0.366388
INT	-0.171297	0.198740	0.107620	0.464002	0.366388	1.00000

Table 4.2 shows that, except for inflation (INF), there are positive relationships between *sukuk* issuance with BMCI and EXR. Meanwhile, there are negative relationships between *sukuk* issuance with GDP, INF and INT. The fact that *sukuk* issuance is strongly related with bursa Malaysia composite index (0.57), GDP (-0.11), INF (-0.16) and INT (-0.17) explains why, as economic performance improves the development of *sukuk* in Malaysia. The weak correlations however found between the EXR and *sukuk* issuance however it is acceptable moderate relationship with interest rate (GDP:0.05). It indicates that there is no multicollinearity in this study. The relationship between each of the macroeconomic variables ranges between 0.57 and 0.05, indicating that there is no perfect positive or negative correlation. Overall, there will be more prospects for the issuance of Sukuk causing both the public and private sectors to boost their Sukuk issuance, allowing interested investors to invest more in the Sukuk market. Especially during the period where the growth of economy is substantially good at the same helps the sectors in managing their excess funds.

4.2 Unit Root Analysis

The raw data may be influenced by numerous causes, an analysis without testing the set of data, particularly in macroeconomics for their

stationary test, may not yield correct results. In most cases, stationary time series does not follow a random walk process, and their motions can be categorized as predictable. According to (Stock & Watson, 2011), data series analysis revealed that macroeconomic time series have a unit root, implying that these non-stationary series may not be providing valid empirical results.

The most prevalent type of economic time series data is differencing, which produces a stationary result. The test of stationery is critical to satisfy the specific expectation by using the correct estimation and model.

The Augmented Dickey-Fuller Test (ADF) test checks for stationarity indirectly by looking for the presence (or absence) of a unit root. ADF also includes a deterministic trend (and trend squared), which allows for a trend-stationary process. Similarly, the Phillips Perron (PP) is another common method to correct the series that contains unit root. Allowing the process of differencing will fulfill the condition for stationary of the data and for the co-integration test to be proceed.

The following is a summary of the unit root test output for ADF and PP as summarized in Table 4.3.

Table 4. 3 *The Summary Output as Result for Unit Root Test*

Variables	ADF	ADF	PP	PP	ADF	ADF	PP	PP
	At Level				First Difference			
	Intercept	Intercept with trend	Intercept	Intercept with trend	Intercept	Intercept with trend	Intercept	Intercept with trend
LSUKUK	-0.42***		-3.410**		-8.20***		-21.05***	-20.490***
LBMCI	-2.10***	-7.38***	-1.830	-7.310***	-5.20***	-8.18***	-5.20***	-5.340***
EXR	-0.9600	-2.1000	-1.0000	-1.6500	-7.26***	-5.34***	-7.26***	-7.380***
GDP	-5.40***	-1.760**	-3.410**	-1.7600	-6.80***	-7.380***	-4.410***	-4.350***
INF	-3.270**	-5.35***	-3.380**	-3.390*	-7.84***	-6.740***	-7.99***	-7.910***
INT	-2.8400*	-2.610** -2.7900	-2.5700	-3.61** -2.5300	-5.830***	-6.230*** -5.790***	-5.830***	-5.790***

Note:

\*\*\*1% significance level,

\*\*5% significance level,

\*10% significance level



The unit root results for the six variables, namely Sukuk issuance, BMCI, EXR, GDP, INF, and INT, are provided in the above table, and the null hypothesis ( $H_0$ ) with a unit root is rejected. All data for are stationary.

For the first difference, we can rule out the null hypothesis ( $H_0$ ), which states that the series is stationary once the unit root is eliminated. The T-Statistic value is compared to both the ADF and PP critical values. (See the appendix for more information.) In the first difference, all variables are stationary, and it is integrated of order one  $I(1)$ .

Lastly, the data is examined using the Johansen Cointegration Test to see whether there is a long-term link between the variables and the issue of Sukuk.

4.3 Co-Integration Analysis

The variables employed in this investigation are confirmed to be stationary in the first difference, that is, they are  $I(1)$  series, as we rule out  $H_0$  in section 4.2 Unit root test above (integrated of order one). To establish a long-run relationship, a cointegration test is required. That is, even if the series are drifting apart or trending upward or downward, we can infer that a long-run link exists in this model. As a result, Johansen cointegration test is used to perform a cointegration test for  $I(1)$  series generated in previous section with the hypothesis stated that;  $H_0$ : no cointegrating equation while  $H_1$ :  $H_0$  is not true.

Table 4. 4 Johansen Test for Co-integration Result

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.630905	136.5820	95.75366	0.0000
At most 1 *	0.577106	78.77336	69.81889	0.0081
At most 2	0.219373	28.85654	47.85613	0.7751
At most 3	0.161705	14.49237	29.79707	0.8119
At most 4	0.053586	4.262046	15.49471	0.8813
At most 5	0.018240	1.067677	3.841466	0.3015
Trace test indicates 2 cointegrating eqn(s) at the 0.05 level				
* Denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

NOTE: “None \*” and “At most 1 \*” imply the null hypothesis i.e., no cointegration equation in this model. Asterisk (\*) represents the likelihood to reject the null hypothesis. The trace statistic for None \* is 136.5820 greater than the critical value 95.75366. Row At most 1 \* also have a trace statistic value of 78.77336 that is greater than the critical value of 69.81889. These two lines meet the decision criteria to reject the  $H_0$ . Another decision criteria to reject the  $H_0$  is that when the probability is not exceeding the 0.05 level (Johansen, 1988). From the result above, both probabilities for None and At Most 1 has 5% significant level at 0.0000 and 0.0081 respectively. Hence, we find that there is cointegration in this model used.

The Vector Error Correction Model (VECM) output is display in Table 4.5.

Table 4. 5 Vector Error Correction Model output

Variables	Coefficients	Standard Error	t-statistics
LBMCI	0.001238***	15.3166	2.6776
EXR	0.014720*	1.7036	1.5138
GDP	-1.2580***	0.12811	-3.92005
INF	-0.05279**	0.13035	-1.30384
INT	-0.40260***	0.01863	-2.59844

\*, \*\*, \*\*\* indicate significant at least at 10%,5% and 1% respectively

Based on the cointegration and VECM analysis, there exists a long run equilibrium between *sukuk* issuance and the selected variables BMCI, EXR, GDP, INF and INT and GDP and INT..

The cointegration of VECM Model can be written as follows

$$\text{SUKUK} = 0.430427 + 0.001238*** \text{ LBMCI} - 1.014720*\text{EXR} - 1.2580***\text{GDP} - 0.05279***\text{INF} - 0.40260***\text{INT} + ut$$

The analysis shows that BMCI, GDP and INT are significant at 1% level, INF and EXR are significant at 5% and 10% respectively. The positive significant sign between *sukuk* and BMCI consistent with the notion of *sukuk* represents positive market reactions highlighted in Mohamed et al., (2017). The negative significant sign of INF is consistent with the study by Wahyudi and Shofawati’s (2019) where firms prefer not to issue securities in the form of *sukuk* during the inflation time.

This finding generally lends support to the study by Majid & Yusof (2009), who found the cointegration between macroeconomic variables and Islamic stock market in Malaysia. Moreover, the above finding echoes the findings of Suriani et al., (2018), where, by employing Johansen cointegration test, and VECM, the study documents additional evidence that there is long run relationship between macroeconomic determinants factors and the issuance of *sukuk* in Malaysia. This study reiterates Suciningtias (2019) that exchange rate should be monitored by investors since they have both short and long-term implications on *sukuk* market and thus impacts *sukuk* return. The study utilizing the similar method of analysis using data in Indonesia for the year 2014-2017. Suriani et al., (2018) added based on her findings that exchange rates have the most impact on the *sukuk* market, whereas interest rates, exchange rates, and price levels have an impact on the bond market. Consistent with this study, her study highlights the revelation of the *sukuk* market's independence from interest rates has added to the evidence on *sukuk* practices and its contributions in Indonesia.

#### 4.4 Variance Decomposition Analysis

We proceed with the short run analysis via Variance Decomposition. All of the variables affecting the *sukuk* issuance in Malaysia utilizing macroeconomic variables are listed below in this section.

Table 4. 6 *Forecast Error of Variance Decomposition*

<b>Variance Decomposition of <i>Sukuk</i>:</b>							
<b>Period</b>	<b>S.E.</b>	<b><i>Sukuk</i></b>	<b>BMCI</b>	<b>EXR</b>	<b>GDP</b>	<b>INF</b>	<b>INT</b>
1	2545752805.80074	100	0	0	0	0	0
2	2648504375.92812	95.58489	1.223203	1.896601	0.712112	0.534573	0.048619
3	2730735039.87496	90.04083	2.606896	4.108520	2.201261	0.921283	0.121212
4	2810898487.15740	85.00569	3.742965	5.951834	4.043352	1.036717	0.219440
5	2884696531.26811	80.74138	4.656840	7.393536	5.839793	1.017015	0.351440
6	2950409793.80527	77.21787	5.433502	8.514340	7.345741	0.972287	0.516258
7	3007662887.43198	74.33559	6.141772	9.394938	8.480230	0.945375	0.702098
8	3057029524.29102	71.97589	6.825244	10.09711	9.274007	0.936810	0.890936
9	3099662177.36930	70.02364	7.505708	10.66419	9.807280	0.934169	1.065009
10	3136899148.37825	68.37964	8.188658	11.12571	10.16587	0.928347	1.211782

The short-run association between *sukuk* issuance and other macroeconomic indicators is shown in Table 4.6. In comparison to INF and INT, the results suggest that the BMCI, EXR, and GDP have a high level of correlation.

The BMCI, EXR, and GDP are significant variables in affecting *sukuk* issuance in the short run. INF and INT, on the other hand, contribute less to the issuance of *sukuk* in Malaysia, accounting for 0.928 percent and 1.212 percent, respectively. The results show that in the short run, INF does not have strong effect on the *sukuk* issuance. Besides, INT has no significant effect on the amount of the *sukuk* issued. This complies with the nature of *sukuk* that it is independent of interest rate changes in the compared to conventional bonds in the short run. The finding of independence of the *sukuk* issuance in Malaysia from INT and INF further confirmed that the performance of *sukuk* issuance in Malaysia is consistent with the tenets of shari'ah principles.

Meanwhile, similar to case of Indonesia (Sakti & Harun, 2013; Suciningtias, 2019), EXR is the most significant contributor in the short run, accounting for 11.126 percent in the 10-period horizon. This finding of the existence of a short run dynamics between the EXR and *sukuk* issuance in Malaysia suggests that, the exchange rate fluctuations should be monitored by investors since they have both short and long-term implications for *sukuk* and have an impact on *sukuk* returns over time.

In the short run, GDP and BMCI are the other two factors, with 10.166 percent and 8,189 percent attributable to shocks in *sukuk* issuance in the short run. This means that exchange rate (EXR) is the most important variable in influencing *sukuk* issuance, followed by the economic performance (GDP) and the stock market (BMCI). BMCI is used as a measure of the overall degree of capital market performance and contributes significantly to the *sukuk* issuance in Malaysia. These findings further support the finding that there is a significant inverse relationship between the performance of conventional bonds and GDP during the period of 1990 – 2011.

Since *sukuk* issuance are influenced by GDP both in the long run and in the short run further affirm that *sukuk* issuance is linked to the real sector of the economy in the case of Malaysia. Thus, policy

makers can consider designing new policies to enhance the functional aspects of Islamic capital market. This further implies that economic growth has a strong potential to improve performance of *sukuk* issuance.

## 5.0 Conclusion

EXR is the most important independent variable in a short-run relationship because changes in a country's exchange rate policy have a direct impact on *sukuk* issuance. The government can closely monitor exchange rate (EXR) movement to promote fundings of business projects through *sukuk* issuance. However, the environment of volatile exchange rate especially in times of crisis need to be mitigated to ensure a sustainable and resilient *sukuk* market.

The stock market (BMCI) is found to positively contribute to the development of *sukuk*. Other variables too have an effect, the exchange rate (EXR) Gross Domestic product (GDP), inflation (INF) and (INT) on *sukuk* issuance in Malaysia in long run. The findings on the significance of BMCI in both the short run and the long run suggest that investors who are familiar with equity issues can also consider investing in *sukuk* securities within their portfolio investment to manage the risk and return profile. GDP which measures economic growth suggests that policymakers need to develop strategies to help Malaysian economy to reach sustainable growth to stimulate the development of the domestic *sukuk* market. Finally, it is also recommended to maintain the stability of exchange rate in promoting the *sukuk* issuance in Malaysia while ensuring the of BMCI and GDP to achieve resilient growth especially during post Pandemic Covid-19 should be a focus of macroeconomic policy design by the relevant authorities in Malaysia.

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