Capital market and economic growth in Malaysia: the role of ṣukūk and other sub-components

Yan-Ling Tan and Roslina Mohamad Shafi

Faculty of Business and Management, Universiti Teknologi MARA Johor Branch, Segamat Campus, Johor, Malaysia

Abstract

Purpose – The purpose of this paper is to explore the effects of the capital market on economic growth by considering the role of ṣukūk (Islamic investment certificates) and other capital market sub-components in Malaysia between 1998 and 2018.

Design/methodology/approach – The empirical investigation is based on the autoregressive distributed lag (ARDL) cointegration bounds test.

Findings – The results reveal the prevalence of a long-run equilibrium relationship between capital market variables and economic growth. As expected, bond market components (ṣukūk and conventional bonds) have a positive, albeit insignificant influence on economic growth. In contrast, in the long-term, stock market development – regardless of the indicator used on economic growth – is shown to have a significant and positive effect. The study suggests that stock market sub-components affect Malaysia’s economic growth the most.

Research limitations/implications – The primary limitation of this study is that only corporate ṣukūk were considered, while government ṣukūk were excluded from the estimation due to a lack of requisite information, resources and data.

Practical implications – A strategic framework should be established, especially in pricing efficiencies. Furthermore, there is a need to create more awareness on the benefits of ṣukūk investment among conventional bond investors, including retail investors. Thus, there will be more players in the ṣukūk market, and this will help to improve market liquidity.

Originality/value – Apart from conventional capital market sub-components, this study takes into account ṣukūk as a sub-component in the capital market on economic growth using the ARDL framework. Also, this study particularly concentrates on the world’s largest ṣukūk issuer, Malaysia, rather than focusing on other ṣukūk-issuing countries.

Keywords ARDL, Capital market, Economic growth, Malaysia, Ṣukūk

Paper type Research paper

Introduction

Linkages between the banking sector and economic growth have been researched extensively. Research on the capital market also questions its relevance to economic growth.
The majority of studies examining growth involve the two main financial development components, namely, stock markets and banks, while research on the contribution of bond markets is relatively small (Thumrongvit et al., 2013). There is also a lack of studies that consider the impact of sukūk (Islamic investment certificates), as a part of the capital market sub-components, on economic growth.

Changes in the landscape and pattern of capital markets have brought some innovations in financial market products. Hence, more sub-components in the capital market, including Sharīʿah-compliant products such as sukūk and Islamic warrants, have been introduced. Such scenarios can change the overall demand, leading to a shift in the demand and supply of capital market products.

In general, capital market debt instruments can be divided into conventional bonds and sukūk. Both debt instruments are quite similar in structure, but sukūk make it compulsory for sovereigns and corporations to raise funds according to the principles of Sharīʿah (Islamic law) (Godlewski et al., 2013). Among the Sharīʿah principles, asset ownership is an important feature that distinguishes clearly between bonds and sukūk. Sukūk are asset-based securities where the value is backed by underlying assets, and the sukūk holders own parts of the underlying assets. Conversely, bonds are pure debt obligations where the value of the certificate depends on the issuer’s creditworthiness (Alam et al., 2013; Godlewski et al., 2013). As such, sukūk are often seen as being more secure and attractive to a broad range of investors who intend to diversify their investment portfolios.

According to a recent sukūk report, total global sukūk issuance has increased substantially since the 2000s, from US$33.22bn in 2001–2005 to US$116.72bn in 2017 (The International Islamic Financial Market, 2018). As at July 2019, total global sukūk issuance reached US$145.70bn (The International Islamic Financial Market, 2020). Malaysia remains the lead issuing jurisdiction, with a share of 43.67% (US$63.63bn), followed by Saudi Arabia (US$28.48bn or 19.54%) and Indonesia (US$19.42bn or 13.33%) (The International Islamic Financial Market, 2020).

In relation to that, Figure 1 displays the new issues of stock, sukūk and corporate bonds in Malaysia over the period 2000–2019. The issuance of new conventional bonds each year was relatively larger than the issuance of new stock. Between 2000 and 2008, the issues of sukūk were substantially greater compared to the new stock issues. However, there was an opposite trend after 2008 onwards where the issues of new sukūk were lower than the issues of new stock.

This study is motivated by three reasons. First, despite the increasing attention paid to sukūk, to-date there is insufficient empirical research on the sukūk-economic growth nexus (Zulkhibri, 2015). Instead of examining capital market development as a single measurement, this study observes the sub-components of the capital market individually. Second, the capital market-economic growth nexus is assessed through the autoregressive distributed lag (ARDL) estimation (Pesaran et al., 2001), which allows for studying the short-run and long-run relationships among a set of variables. Lastly, rather than focusing on a number of sukūk-issuing countries similar to Echchabi et al. (2016) and Smaoui and Nechi (2017), this study focuses on Malaysia. Malaysia has been chosen as the country of study for three significant reasons. First, Malaysia has had remarkable growth in the sukūk market compared with other sukūk-issuing countries over the past 30 years, and it has been a reference point for the sukūk market, especially from the perspective of legal frameworks and tax regimes. Second, the conventional bond and sukūk markets are larger than the stock markets in capital structure decisions during a specific time period. Third, due to the complexity of
different šukūk structures and the country’s fundamentals, quantitative research should be conducted based on an individual country basis, which requires data of a longer time span. Therefore, the main contribution of the present study is that it focuses on the effects of šukūk and other capital market sub-components on economic growth using the ARDL framework on the world’s largest šukūk issuer, Malaysia.

The remaining parts of the paper are organized in the following way. The next section reviews the relations among various capital market components and economic growth. Further, the data and econometrics models are introduced. The empirical results and robustness checks are discussed next, and the last section provides the conclusion.

**Literature review**

*Conventional finance and economic growth*

The financial development-economic growth nexus has been a prime concern for scholars and practitioners over the past few decades. In parallel, many studies have helped to shed considerable light on the link between financial market sub-components (stock and bond markets as well as banking institutions) and economic development. With respect to the increasing number of studies in this area, the literature has evolved around four different possibilities, namely, supply-leading, demand-following, feedback (bi-directional causal) and neutrality (no causality) relationships. According to Patrick (1966, p. 175), the supply-leading relationship is:

[... ] the creation of financial institutions and instruments in advance of demand for them to stimulate economic growth. This strategy seeks to make the allocation of capital more efficient and to provide incentives for growth through the financial system.

Alternatively, the demand-following view relates to the real sector development driving the financial sector, implying that causation may run from the real sector to the financial sector. The two-way causation indicates interconnection among financial development and output.
growth. Lastly, neutrality shows that there is no causality between financial development and output.

Some early studies including McKinnon (1973) and Shaw (1973) have discussed the nexus between financial development and economic growth. Since then, extensive empirical studies (Cole, 1974; King and Levine, 1993b; De Gregorio and Guidotti, 1995; Demetriades and Hussein, 1996; Levine et al., 2000; Calderón and Liu, 2003) have been conducted in this area. Notably, the results of financial development encouraging economic growth are well documented in most cases (King and Levine, 1993b; De Gregorio and Guidotti, 1995; Calderón and Liu, 2003). Specifically, the studies of Holmström and Tirole (1993) and Boyd and Smith (1998) empirically supported the positive effects of stock markets on growth, by claiming that well-performing stock markets can effectively lower transaction and information costs, thereby promoting economic growth. Similarly, Enisan and Olufisayo (2009) found that output growth is Granger-caused by stock markets in Egypt and South Africa; however, a bi-directional causal relationship does exist in Cote D’Ivoire, Kenya, Morocco and Zimbabwe. Meanwhile, Ngare et al. (2014) reported that nations without stock markets have a tendency to develop more slowly than those with stock markets.

Stock markets aside, banking sectors are yet another important factor that affects economic development. A group of studies on economic development have considered the role of stock markets and banking sectors collectively (Levine and Zervos, 1998; Arestis et al., 2001; Beck and Levine, 2004; Fufa and Kim, 2018; Appiah et al., 2020). A recent study by Appiah et al. (2020) of three West African countries from 1992 to 2012 highlighted that, in the long-term, capital market development [captured by stock market capitalization to gross domestic product (GDP)] has a significant adverse impact on economic growth. They furthermore found that financial development (measured by domestic credit) also exhibits a negative, albeit insignificant effect Opoku et al. (2019) revisited the causal link between financial development and economic growth in 47 African countries from 1980 to 2016. Drawing on the work of Sahay et al. (2015), they employed a broad measure of financial development that includes measures of access, depth and efficiency of the financial markets. Specifically, the findings were mostly supportive of the neutrality hypothesis, inferring the absence of a causal link between the two variables. Using various non-linear threshold regression models, Botev et al. (2019) generated three interesting findings. First, they cannot confirm that financial development appears to reduce economic development beyond a certain financial development level. Second, the banking and finance markets are complementary; and finally, the response of economic growth to changes in financial development relies heavily on economic development and trade openness. Fufa and Kim (2018) also reported that the mechanism between financial development (stock markets and the banking system) and growth depends on a country’s stage of economic development. In a similar context, Levine and Zervos (1998) and Beck and Levine (2004) showed a beneficial effect of both stock markets and the banking sector on growth. In a study that applied cointegration technique on five advanced economies, Arestis et al. (2001) discovered that both the stock market and banks stimulate economic growth; however, the effect of the stock market is relatively lower than that of the banking sector. On a similar note, Ake and Ognaligui (2010) also concluded that stock markets do not have significant influence on economic development in Cameroon.

Attention has shifted over time to examining the influence of conventional bonds on output growth (Fink et al., 2003; Thumrongvit et al., 2013; Nordin and Nordin, 2016; Coşkun et al., 2017; Smaoui and Nechi, 2017). Using the aggregate bond market and real income of developed nations, Fink et al. (2003) found evidence of a bi-directional causation between two variables in Japan, Italy and Finland. They noted that real growth is highly influenced
by the bonds market development, in line with the supply-leading view in Austria, Germany, Switzerland, the UK and the USA. For the Netherlands and Spain, the evidence is weaker but still not negligible. Another cluster of studies have disaggregated the capital market into the stock market and debt market. Using a sample of 38 countries, Thumrongvit et al. (2013) supported the view that the stock market and the banking system lead to economic development. Nevertheless, the role of banking to output growth reduces as domestic bond markets grow. According to Nordin and Nordin (2016), the stock market is found to have a larger impact on output than the debt market. Coşkun et al. (2017) explored the aggregated effects of mutual funds, pension funds, corporate bond and stock markets on economic development in Turkey. They observed a cointegrating relation between the capital market and economic development and found causality to be one-way, flowing from the capital market to economic development between 2006 and 2016. The results further indicated that, although the government bond market has an inverse influence, the aggregated effects of other sub-components have a direct influence on economic development.

Islamic finance and economic growth

In spite of the studies on the financial market-growth nexus being plentiful, the relationship between Islamic finance, banking and output growth is comparatively scarce in the literature. Major efforts have been initiated in recent years. For example, Furqani and Mulyany (2009) found that in the short-term, fixed investment Granger causes Islamic bank financing in Malaysia; in the long-term, there is evidence pointing towards a two-way causation among the two variables. In contrast, Manap et al. (2012) supported a unidirectional causality from Islamic banking to economic development. Unlike Malaysia, Indonesia appears to have different impacts of Islamic banking development. Abdur and Omar (2012) provided evidence for the presence of short-run and long-run linkages between Islamic banking and economic development in Indonesia. Azouzi and Echchabbi (2013), however, found no correlation between the two variables, either in the short-run or the long-run, in Kuwait over the period 2004–2011. In a recent study related to Islamic banking loans in the Middle East and North Africa (MENA) region, Boukhatem and Ben Moussa (2018) showed that a direct connection is obtained between Islamic banking and output growth. Nevertheless, the direct connection will be reduced under a poor institutional environment.

In addition, the research available on sukūk and economic development remains limited. Ahmad et al. (2012) assessed the influence of macroeconomic determinants on the sukūk market in Malaysia between 1996 and 2011. They documented that sukūk Granger causes income, while income Granger causes both business cycle and inflation. Apart from that, Echchabi et al. (2016) also revealed quite similar findings. They demonstrated that sukūk issuance has effects on income and gross capital formation only when all the nations, for instance the Gulf Cooperation Council (GCC) and other nations, are assembled jointly; otherwise, no influence was found for Saudi Arabia and the GCC. Similarly, in a sample of sukūk-issuing countries from 1995 to 2015, Smaoui and Nechi (2017) revealed strong evidence that the sukūk market has a significant impact in promoting long-run economic development after considering a range of other factors. In the context of Indonesia, Mitsaliyandito and Arundina (2018) assessed the impact of sovereign bonds and sovereign sukūk on output growth between 2009 and 2016. The results highlighted that only sovereign sukūk positively affects economic growth, implying that it is comparatively more productive than conventional sovereign bonds. Lastly, in a recent study from 2008 to 2017, Muharam et al. (2019) pointed out that economic growth is found to have no significant effect on the sukūk market in Malaysia, while, in Indonesia, economic growth exerts a significant
negative long-term effect on the sukūk market using vector error correction model (VECM). Moreover, Granger-causality results suggested that there is a bi-directional causation between the Islamic stock market and economic growth and between the sukūk market and economic growth in Indonesia. In Malaysia, a unidirectional causal relationship exists between the sukūk market and output growth while neutrality is detected between the Islamic stock market and output growth.

All in all, theoretical and empirical analyses of the finance-growth nexus are abundant. Nevertheless, this issue remains important to be further studied especially in relation to sukūk issuances. Scholars continue to advance this discussion from various aspects such as the stages of the economy as well as financial development and the institutional environment of a country.

Data and methodology

Data

Quarterly data from 1998:1 to 2018:4 in Malaysia were collected. The data for sukūk (SUKUK), conventional bonds (CB), total conventional bonds and sukūk (CBS), stock market capitalization (SMC) and stock market turnover value (SMTURN) were extracted from the CEIC database and the Central Bank of Malaysia (Bank Negara Malaysia, BNM), while the remaining data were retrieved from the International Financial Statistics (IFS) database. All the monetary series are denominated in the local currency. The content and details of the variables are presented in Table 1.

Theoretical model

The Solow growth model (Solow, 1956) was extended by Mankiw et al. (1992) (Mankiw, Romer, Weil or MRW, henceforth) to study the possible effects of accumulation of human capital. Atje and Jovanovic (1993) and Cooray (2010) suggested a further extension to augment the stock market development in the MRW model with the following process:

\[
\ln\left(\frac{Y(t)}{L(t)}\right) = a + \frac{\theta}{1-\theta-\sigma-\beta}\ln(s_K) + \frac{\sigma}{1-\theta-\sigma-\beta}\ln(s_{HC}) + \frac{\beta}{1-\theta-\sigma-\beta}\ln(s_{SM}) - \frac{\theta + \sigma + \beta}{1-\theta-\sigma-\beta}\ln(n + g + \delta) + \epsilon
\]

Table 1. Variables description

| Variables | Unit of measurement |
|-----------|---------------------|
| Per capita real GDP | GDPPC | Thousands (MYR) |
| Sukūk | SUKUK | Million (MYR) |
| Conventional bonds | CB | Million (MYR) |
| Total conventional bonds and sukūk | CBS | Million (MYR) |
| Stock market capitalization | SMC | Billion (MYR) |
| Total stock market turnover | SMTURN | Million (MYR) |
| Real savings | SAVR | Million (MYR) |
| Growth rate of employment | NE | % |

Notes: All nominal variables are deflated by the consumer price index (2010 = 100). According to Bank Negara Malaysia (BNM), the terminology of “private debt securities” has changed to “corporate bond and/or sukūk” since 2016.
where \( \ln \) is the natural logarithms, \( a \) is a constant, \( Y \) is output, \( L \) is labour force; \( S_K \), \( S_H \) and \( S_SM \) represent the shares in output of physical capital, human capital and stock market, \( n \) is the population rate, \( \delta \) refers to the depreciation rate of the capital stock, \( g \) denotes the exogenous rate of technological change, and \( e \) is the country-specific shift or shock.

For simplicity, this study assumes that \( S_H \) does not vary over time due to mainly the limitations of data (Law and Habibullah, 2006). Therefore, \( S_H \) can be treated as a constant term of the regression performed.

**Autoregressive distributed lag cointegration bounds test**

ARDL methodology offers more merits over conventional cointegration testing. For instance, it permits a combination of I(0) and I(1) time series variables; it is favourable for small sample properties; and the endogeneity issue is less severe if the residuals are uncorrelated (Baharumshah et al., 2009). Following equation (1), the long-run effect is specified as follows:

\[
LGDPPC_t = \theta_1 + \theta_2LSUKUK_t + \theta_3LCB_t + \theta_4LSMC_t + \theta_5LSAVR_t + \theta_6LNE_t + e_t \tag{2}
\]

where \( t = 1, \ldots, T \), \( L \) denotes the natural logarithms, GDPPC stands for real gross domestic product per capita, SUKUK represents \( \text{sukuk} \) issuance, CB stands for conventional bonds excluding \( \text{sukuk} \), SMC is stock market capitalization, SAVR is real gross fixed capital formation, NE is the employment growth rate, and \( e \) is the error term. \( \delta \) and \( g \) are as defined earlier; both are assumed to be invariant across individual countries; thus \( (g + \delta) \) is assumed to be 0.05 (Di Liberto et al., 2011).

According to the Solow model, greater savings level or lower population growth will lead to a higher income level while financial development (stock market development) is expected to have a permanent effect or transitory effect on growth rate (Atje and Jovanovic, 1993). Theoretically, a well-functioning stock market will stimulate savings and reduce transaction costs, leading to an efficient allocation of resources and thereby accelerating economic growth (Cooray, 2010). An argument is made by King and Levine (1993a) in which there are two channels through which the financial system can affect investment decisions on productivity activities and hence boost economic growth. The first is that financial institutions may provide research, as well as evaluate and monitor services, more effectively and at less cost than individuals. Second, these financial institutions perform more consistently and efficiently in mobilizing and providing financing to business activities than individual investors. Meanwhile, the bond market plays a role in making funds available to borrowers in the long run by setting the benchmark interest rate for debt instruments as a signal to save and lend for household decisions and to borrow and invest for business decisions (Thumrongvit et al., 2013). Therefore, all the explanatory variables are expected to exert a positive influence on economic growth, except for the employment rate (LNE).

Alternatively, one can write the unrestricted error correction representations of the ARDL model as follows:

\[
\Delta LGDPPC_t = \alpha_0 + \sum_{i=1}^{p-1} \alpha_1 \Delta LGDPPC_{t-i} + \sum_{i=0}^{q-1} \alpha_2 \Delta LSUKUK_{t-i} + \sum_{i=0}^{r-1} \alpha_3 \Delta LCB_{t-i} + \sum_{i=0}^{s-1} \alpha_4 \Delta SMC_{t-i} + \sum_{i=0}^{v-1} \alpha_5 \Delta SAVR_{t-i} + \sum_{i=0}^{w-1} \alpha_6 \Delta NE_{t-i} + \beta_1 LGDPPC_{t-1} + \beta_2 LSUKUK_{t-1} + \beta_3 LCB_{t-1} + \beta_4 SMC_{t-1} + \beta_5 SAVR_{t-1} + \beta_6 NE_{t-1} + \epsilon_t \tag{3}
\]
where $L$ is the natural logarithms and $\Delta$ represents the difference operator; the long-run parameters are $\theta_2 = -\beta_2/\beta_1$, $\theta_3 = -\beta_3/\beta_1$, $\theta_4 = -\beta_4/\beta_1$, $\theta_5 = -\beta_5/\beta_1$, $\theta_6 = -\beta_6/\beta_1$ and $e$ is the white noise residuals.

**Results and discussion**

Panel A of Table 2 provides the summary statistics. The average real GDP per capita (GDPPC) is RM15,882, ranging from the lowest of RM985 to the highest of RM20,718 during the sample period. The average new issues of conventional bonds (CB) are nearly 8 times higher than the new issues of sukuk (SUKUK). As the table shows, the capital market sub-components (SUKUK, CB, SMC and SMTURN) exhibit considerable variations as revealed by their standard deviations over the 21-year period. Meanwhile, the correlation matrix as presented in the same Table (Panel B) signifies that both the conventional bonds and stock market variables are positively linked with real GDP per capita. On top of this, there is little correlation among the explanatory variables, except for real savings (LSAVR) and stock market variables. More importantly, LSAVR and stock market capitalization (LSMC) have a strong correlation of 0.9652, which leads to unreliable and unstable parameter estimates and hence LSAVR is dropped from the model.

It is important to verify the integration order of the series although the ARDL cointegration bounds test enables a combination of I(0) and I(1) data series. Nevertheless, the $F$-test could lead to spurious results in the presence of I(2) series (Ouattara, 2004; Odhiambo, 2009). Table 3 provides the results for the unit root tests of augmented Dickey–Fuller, ADF (Dickey and Fuller, 1979, 1981), Phillips–Perron, PP (Phillips and Perron, 1988) and KPSS (Kwiatkowski et al., 1992) on the variables in level and difference forms. The three unit root tests consistently record that all the series are integrated of either one or zero; thus, all the variables are not I(2).

Table 4 presents the bounds test of the ARDL specification. The calculated $F$-statistic values (Models 1 and 2) are relatively higher than the upper bound critical values obtained from Narayan (2005), indicating that there is a cointegration between LGDPPC, LSUKUK, LCB, LSMC (or LSMTURN) and LNE. Thus, this cointegrating relation ARDL bounds test for cointegration is also accordant with Nordin and Nordin (2016).

To highlight the possible effects of the capital market, real income per capita (LGDPPC) is first regressed on conventional bonds (LCB), sukuk (LSUKUK) and each stock market indicator. Table 5 shows the results for the long-run and short-run estimations. All the long-

| Panel A: Summary statistics | GDPPC | SUKUK | CB | SMC | SMTURN | SAVR | NE |
|-----------------------------|-------|-------|----|-----|--------|------|----|
| Mean                        | 15.8822 | 1655.8240 | 13932.1500 | 3137.5140 | 82200.6100 | 44824.6900 | 0.0566 |
| Maximum                     | 20.7184 | 6487.1000 | 44574.6300 | 5797.9800 | 165672.2000 | 75670.9000 | 0.1074 |
| Minimum                     | 9.8517 | 0.0000 | 455.8000 | 705.5900 | 13885.4000 | 19233.8900 | 0.0128 |
| Std. Dev.                   | 3.0666 | 1632.5220 | 9360.3540 | 1529.7730 | 43299.3700 | 17371.4500 | 0.0156 |
| n                           | 83    | 83    | 83   | 83   | 83     | 83    | |

| Panel B: Correlation matrix |
|-----------------------------|
| LGDPPC | SUKUK | CB | SMC | SMTURN | SAVR | LNE |
| LGDPPC   | 1.0000 | -0.0171 | 0.7655 | 0.9182 | 0.7936 | 0.9186 | 0.0289 |
| SUKUK    | -0.0171 | 1.0000 | 0.0260 | -0.0534 | -0.1369 | -0.0735 | -0.0309 |
| CB       | 0.7655 | 0.0260 | 1.0000 | 0.7887 | 0.6846 | 0.7635 | 0.1282 |
| SMC      | 0.9182 | -0.0534 | 0.7887 | 1.0000 | 0.8883 | 0.9652 | 0.1198 |
| SMTURN   | 0.7936 | -0.1369 | 0.6846 | 0.8883 | 1.0000 | 0.7913 | 0.1356 |
| SAVR     | 0.9186 | -0.0735 | 0.7635 | 0.9652 | 0.7913 | 1.0000 | 0.0899 |
| LNE      | 0.0289 | -0.0309 | 0.1282 | 0.1198 | 0.1356 | 0.0899 | 1.0000 |

**Table 2.** Summary statistics and correlation matrix
run coefficients have the theoretically expected signs. As for the long-run effects, all capital market variables carry their expected positive sign in all regressions, supporting the supply-leading relationship. These results are very similar to Thumrongvit et al. (2013), Nordin and Nordin (2016) and Coskun et al. (2017), but contradict the findings of Opoku et al. (2019) and Appiah et al. (2020). Specifically, bond market variables (LCB and LSUKUK) and growth are not statistically significant. Stock market variables, on the other hand, exert a highly significant positive impact, regardless of the indicator used (Models 1 and 2). This indicates that, a 1% increase of stock market turnover (LSMTURN), ceteris paribus, raises real GDP per capita (LGDPPC) by about 0.30%, while the corresponding effect from stock market capitalization (LSMC) is 0.38% in Malaysia. The employment growth rate (LNE) has a negative sign and is significant in all models implying that if employment keeps increasing while the capital stock remains constant, this may lead to the use of less capital per worker and may reduce income per capita.

Moving forward, an alternate approach of supporting cointegration of the model is shown in Table 5 (Panel B). The parameter estimates on the lagged error correction term (ECT\textsubscript{t-1}) are highly significant at 1% level and carry an inverse sign in all specifications. This reinforces that a cointegrating relationship indeed exists among the underlying variables. For instance,

### Table 3. Unit root tests

| Variables     | ADF          | PP           | KPSS         |
|---------------|--------------|--------------|--------------|
|               | Level I      | 1% 5% 10%    | I 1% 5% 10%  |
| LGDPPC        | -2.0320      | 3.6870       | 2.7250       |
| LSUKUK        | -3.3424**    | 11.7946***   | 3.7180       |
| LCB           | -3.1932**    | 5.9223***    | 2.3130       |
| LSMTURN       | -0.9983      |              |              |
| LSMC          | -0.8496      |              |              |
| LNE           | -12.3243***  |              |              |

Notes: *** and ** are 1 and 5% significance levels, respectively. I and T and I represent intercept and trend and intercept, respectively. The optimal lag length (k) is selected using Akaike Information Criteria (AIC) for ADF test; for PP and KPSS tests, Newey–West procedure is used to specify the bandwidth.

### Table 4. The bounds test for cointegration

| Model | Calculated F-statistic | Critical bound values |
|-------|------------------------|-----------------------|
| 1     | LGDPPC = f(LSUKUK, LCB, LSMC, LNE) | 5.9223*** k = 4 I(0) | 3.6870 2.7250 2.3130 |
| 2     | LGDPPC = f(LSUKUK, LCB, LSMTURN, LNE) | 11.7946*** I(1) | 4.8420 3.7180 3.2280 |

Notes: *** is 1% significance level. k is the number of regressors. Equation (3) is estimated by imposing a maximum of four lags on each first differenced variable and followed by Akaike Information Criterion (AIC) to select the optimum lags.
the error correction coefficients for Models 1 and 2 are \(-0.0927\) and \(-0.1359\), respectively, suggesting that on average approximately 9.3 and 13.6% of the deviation from the long-run equilibrium is adjusted in the following quarter.

Lastly, various diagnostic tests are illustrated at the bottom part of Table 5. The two models pass the diagnostic checks, revealing that the residuals are independent, homoscedastic and normally distributed except for the model misspecification in Model 1. Alternatively, both the CUSUM and CUSUM squared tests confirm the stability of parameter at a 5% level (Figure 2).

**Robustness checks**

Tables 6 and 7 provide the estimation results when conventional bonds (LCB) and ṣukūk (LSUKUK) are replaced with total conventional bonds and ṣukūk (LCBS). Using the same
specifications and independent variables, Tables 6 and 7 would yield results identical to those in Tables 4 and 5. Table 6 also reveals a clear rejection null hypothesis of no cointegration at 1% level of significance. Thus, there is compelling evidence for a long-run relationship among economic growth and capital market variables. Moreover, Table 7, Panel A shows that the total conventional bonds and sukuk (LCBS) variables remain positive, albeit statistically insignificant. Meanwhile, the stock market variables continue to exert a positive and significant influence. The parameter estimates reflect that, ceteris paribus, there are about 0.35 and 0.30% rise in real GDP per capita (LGDPPC) with a 1% rise in stock market capitalization (LSMC) and total stock market turnover (LSMTURN), respectively. These empirical results are robust regardless of the choice of bond market variables. Lastly, Panel C of Table 7 and Figure 3 show the results for diagnostic checks, indicating that Models 3 and 4 pass all diagnostic checks except serial correlation in Model 3.

Specifically, these empirical results are broadly in accordance with the supply-leading view, suggesting that financial development is a key driver of output growth. The findings are very close to the results stated by Thumrongvit et al. (2013) that conventional bonds do not significantly affect economic development. However, the findings are dissimilar to

### Table 6.
The bounds test for cointegration: an alternative measure

| Model | Calculated F-statistic | Critical bound values |
|-------|------------------------|-----------------------|
|       |                        | 1%        | 5%        | 10%       |
| 3     | LGDPPC = f(LCBS, LSMC, LNE) | 10.9938*** | k = 3     | I(0)      | 4.0480    | 2.9460    | 2.4820    |
| 4     | LGDPPC = f(LCBS, LSMTURN, LNE) | 14.1328*** | I(1)      | 5.0920    | 3.8620    | 3.3340    |

Notes: *** is 1% significance level. k is the number of regressors. Equation (3) is estimated by imposing a maximum of four lags on each first differenced variable and followed by Akaike Information Criterion (AIC) to select the optimum lags.
Nordin and Nordin (2016) and Smaoui and Nechi (2017). Nordin and Nordin (2016) found a significant role of the debt market in the Malaysian economy. This, of course, is not surprising as the debt market consists of public debt (also known as government/sovereign debt) and private debt (corporate debt). Similarly, Smaoui and Nechi (2017) suggested that sukuk may promote economic growth.

**Conclusion and policy implications**

Although financial markets have become increasingly important worldwide, there remains a lack of discourse on Islamic financial development and output growth. The growing demand for and supply of sukuk deserves to be documented, especially its role in stimulating economic development. Subsequently, the study aims to explore the impact of the capital market by considering the role of sukuk and other sub-components on economic growth in Malaysia from 1998 to 2018. Overall, the ARDL cointegration bounds test provided the evidence of a long-run relation among economic growth and capital market variables.

### Table 7. The long-run and short-run estimates: an alternative measure

| Variables     | Dependent variable: LGDPPC | Coeff | t-stat | Coeff | t-stat |
|---------------|----------------------------|-------|--------|-------|--------|
|               | Model 3                    | Model 4 |       |       |        |
| LCBS          | 0.0189                     | 0.0393 | 2.162  | 1.2113|
| LSMC          | 0.3517                     | 0.3024 | 3.2284***| 7.6459***|
| LSMTURN       | -0.6231                    | -0.3463| -2.1638**| -3.7297***|
| LNE           | 0.3517                      | 0.3563 | 2.1506**| 3.7297***|
| C             | -1.9508                    | -4.0604***| -1.9304 |        |

**Panel A: ARDL long-run coefficients**

**Panel B: Short-run coefficients**

**Panel C: Diagnostic tests**

Notes: ***, ** and * are 1, 5 and 10% significance levels, respectively. k is the number of regressors. LM = Breusch–Godfrey Serial Correlation LM test for serial correlation; ARCH = Autoregressive conditional heteroskedasticity test; RESET = Ramsey’s RESET test for functional form; JB = Jacque–Bera test for normality of residuals. Optimal lag length is selected by the Akaike Information Criterion (AIC).
Specifically, the empirical results suggest that *sukūk* and conventional bonds are not the driving forces of economic growth in the long-term. In contrast, stock market development irrespective of its proxy (stock market capitalization or total stock market turnover) would be able to foster long-term growth.

Despite the fact that *sukūk* shows no important effect on economic growth over the studied period, Malaysia remains the leading player in the global *sukūk* market. Malaysia is not only the issuer for domestic investors but also an arranger for international investors. If the central authority intends to lift the *sukūk* market, a strategic framework should be made, especially in pricing efficiencies, where Malaysia is still lacking. Another hindrance for *sukūk* issuance among corporate players is the lack of Shari’ah-compliant assets available, hence contributing to a limited supply of AA-rated papers against the large appetite for stable fixed-income assets, and this contributes to a reduction in secondary trading.

It is recommended that the government encourage more awareness and promote a mentality shift on the impact of *sukūk* investment (for instance, achieving social objectives without compromising commercial returns) among conventional bond investors. For example, responsible investing/green *sukūk* could be promoted in the market. The primary limitation of this study is that it considers only corporate *sukūk*; government *sukūk* are excluded from the estimation due to a lack of requisite information, resources and data. To obtain better results, future research is needed to account for both corporate and government *sukūk* for greater impact on output growth.

References
Abduh, M. and Omar, M.A. (2012), “Islamic banking and economic growth: the Indonesian experience”, *International Journal of Islamic and Middle Eastern Finance and Management*, Vol 5 No. 1, pp. 35-47.
Ahmad, N., Daud, S.N.M. and Kefeli, Z. (2012), “Economic forces and the *sukūk* market”, *Procedia – Social and Behavioral Sciences*, Vol. 65, pp. 127-133.
Ake, B. and Ognaligui, R. (2010), “Financial stock market and economic growth in developing countries: the case of Douala stock exchange in Cameroon”, *International Journal of Business and Management*, Vol. 5 No. 5, pp. 82-88.

Alam, N., Hassan, M.K. and Haque, M.A. (2013), “Are Islamic bonds different from conventional bonds? International evidence from capital market tests”, *Borsa Istanbul Review*, Vol. 13 No. 3, pp. 22-29.

Appiah, M., Idan Frowne, D.Y. and Tetteh, D. (2020), “Capital market and financial development on growth: a panel ARDL analysis”, *Indonesian Capital Market Review*, Vol. 12, pp. 28-41.

Arestis, P., Demetriades, P.O. and Luintel, K.B. (2001), “Financial development and economic growth: the role of stock markets”, *Journal of Money, Credit and Banking*, Vol. 33 No. 1, pp. 16-41.

Atje, R. and Jovanovic, B. (1993), “Stock markets and development”, *European Economic Review*, Vol. 37 Nos 2/3, pp. 632-640.

Azouzi, D. and Echchabbi, A. (2013), “Islamic banking and economic growth: the Kuwait experience”, *Middle East J. Of Management*, Vol. 1 No. 2, pp. 186-195.

Baharumshah, A.Z., Mohd, S.H. and Masih, A.M.M. (2009), “The stability of money demand in China: evidence from the ARDL model”, *Economic Systems*, Vol. 33 No. 3, pp. 231-244.

Bank Negara Malaysia (2019), *Monthly Highlights and Statistics in September 2019*, Bank Negara Malaysia, Kuala Lumpur.

Beck, T. and Levine, R. (2004), “Stock markets, banks, and growth: panel evidence”, *Journal of Banking and Finance*, Vol. 28 No. 3, pp. 423-442.

Botev, J., Égert, B. and Jawadi, F. (2019), “The nonlinear relationship between economic growth and financial development: evidence from developing, emerging and advanced economies”, *International Economics*, Vol. 160, pp. 3-13.

Boukhatem, J. and Ben Moussa, F. (2018), “The effect of Islamic banks on GDP growth: some evidence from selected MENA countries”, *Borsa Istanbul Review*, Vol. 18 No. 3, pp. 231-247.

Calderon, C. and Liu, L. (2003), “The direction of causality between financial development and economic growth”, *Journal of Development Economics*, Vol. 72 No. 1, pp. 321-334.

Cole, D.C. (1974), “Financial deepening in economic development by Edware S. Shaw”, *The Journal of Finance*, Vol. 29 No. 4, pp. 1345-1348.

Cooray, A. (2010), “Do stock markets lead to economic growth?”, *Journal of Policy Modeling*, Vol. 32 No. 4, pp. 448-460.

Coşkun, Y., Seven, Ü., Ertaş, H.M. and Ulussever, T. (2017), “Capital market and economic growth nexus: evidence from Turkey”, *Central Bank Review*, Vol. 17 No. 1, pp. 19-29.

De Gregorio, J. and Guidotti, P.E. (1995), “Financial development and economic growth”, *World Development*, Vol. 23 No. 3, pp. 433-448.

Demetriades, P.O. and Hussein, K.A. (1996), “Does financial development cause economic growth? Time-series evidence from 16 countries”, *Journal of Development Economics*, Vol. 51 No. 2, pp. 387-411.

Di Liberto, A., Pigliaru, F. and Chelucci, P. (2011), “International TFP dynamics and human capital stocks: a panel data analysis, 1960–2003”, *Review of Income and Wealth*, Vol. 57 No. 1, pp. 156-182.

Dickey, D.A. and Fuller, W.A. (1979), “Distribution of the estimators for autoregressive time series with a unit root”, *Journal of the American Statistical Association*, Vol. 74 No. 366a, pp. 427-431.

Dickey, D.A. and Fuller, W.A. (1981), “Likelihood ratio statistics for autoregressive time series with a unit root”, *Econometrica*, Vol. 49 No. 4, pp. 1057-1072.

Echchabi, A., Abd. Aziz, H. and Idriss, U. (2016), “Does sukuk financing promote economic growth? An emphasis on the major issuing countries”, *Turkish Journal of Islamic Economics*, Vol. 3 No. 2, pp. 63-73.
Enisan, A.A. and Oluolufayo, A.O. (2009), “Stock market development and economic growth: evidence from seven Sub-Sahara African countries”, *Journal of Economics and Business*, Vol. 61 No. 2, pp. 162-171.

Fink, G., Haiss, P. and Hristoforova, S. (2003), “Bond markets and economic growth”, IEF Working Paper (49), Research Institute for European Affairs, University of Economics and Business Admin, Vienna.

Fufa, T. and Kim, J. (2018), “Stock markets, banks, and economic growth: evidence from more homogeneous panels”, *Research in International Business and Finance*, Vol. 44, pp. 504-517.

Furqani, H. and Mulyany, R. (2009), “Islamic banking and economic growth: empirical evidence from Malaysia”, *Journal of Economic Cooperation and Development*, Vol. 30 No. 2, pp. 59-74.

Godlewski, C.J., Turk-Aris, R. and Weill, L. (2013), “Sukuk vs conventional bonds: a stock market perspective”, *Journal of Comparative Economics*, Vol. 41 No. 3, pp. 745-761.

Holmström, B. and Tirole, J. (1993), “Market liquidity and performance monitoring”, *Journal of Political Economy*, Vol. 101 No. 4, pp. 678-709.

King, R.G. and Levine, R. (1993a), “Finance, entrepreneurship and growth”, *Journal of Monetary Economics*, Vol. 32 No. 3, pp. 513-542.

King, R.G. and Levine, R. (1993b), “Finance and growth: Schumpeter might be right”, *The Quarterly Journal of Economics*, Vol. 108 No. 3, pp. 717-737.

Kwiatkowski, D., Phillips, P.C.B., Schmidt, P. and Shin, Y. (1992), “Testing the null hypothesis of stationarity against the alternative of a unit root”, *Journal of Econometrics*, Vol. 54 Nos 1/3, pp. 159-178.

Law, S.H. and Habibullah, M.S. (2006), “Financial development, institutional quality and economic performance in East Asian economies”, *Review of Applied Economics*, Vol. 2 No. 2, pp. 201-206.

Levine, R. and Zervos, S. (1998), “Stock markets, banks, and economic growth”, *The American Economic Review*, Vol. 88 No. 3, pp. 537-558.

Levine, R., Loayza, N. and Beck, T. (2000), “Financial intermediation and growth: causality and causes”, *Journal of Monetary Economics*, Vol. 46 No. 1, pp. 31-77.

Manap, T.A.A., Abduh, M. and Omar, M.A. (2012), “Islamic banking-growth nexus: evidence from Toda-Yamamoto and bootstrap granger causality test”, *Journal of Islamic Finance*, Vol. 1 No. 1, pp. 29-66.

Mankiw, N.G., Romer, D. and Weil, D.N. (1992), “A contribution to the empirics of economic growth”, *The Quarterly Journal of Economics*, Vol. 107 No. 2, pp. 403-437.

McKinnon, R.I. (1973), *Money and Capital in Economic Development*, Brookings Institution Press, Washington, DC.

Mitsaliyandito, R.Q. and Arundina, T. (2018), “Dynamic relationship between sovereign bond and sukuk market developments in Indonesia”, *Pertanika Journal Social Sciences and Humanities*, Vol. 26 No. S, pp. 27-38.

Muhamad, H., Anwar, R.J. and Robiyanto, R. (2019), “Islamic stock market and sukuk market development, economic growth, and trade openness: the case of Indonesia and Malaysia”, *Business: Theory and Practice*, Vol. 20 No. 1, pp. 196-207.

Narayan, P.K. (2005), “The saving and investment nexus for China: evidence from cointegration tests”, *Applied Economics*, Vol. 37 No. 17, pp. 1979-1990.

Ngare, E., Nyamongo, E.M. and Misati, R.N. (2014), “Stock market development and economic growth in Africa”, *Journal of Economics and Business*, Vol. 74, pp. 24-39.

Nordin, S. and Nordin, N. (2016), “The impact of capital market on economic growth: a Malaysian outlook”, *International Journal of Economics and Financial Issues*, Vol. 6 No. 7S, pp. 259-265.

Odhiambo, N.M. (2009), “Energy consumption and economic growth nexus in Tanzania: an ARDL bounds testing approach”, *Energy Policy*, Vol. 37 No. 2, pp. 617-622.
Opoku, E.E.O., Ibrahim, M. and Sare, Y.A. (2019), “The causal relationship between financial development and economic growth in Africa”, International Review of Applied Economics, Vol. 33 No. 6, pp. 789-812.

Ouattara, B. (2004), “The impact of project aid and programme aid inflows on domestic savings: a case study of Côte d’Ivoire”, Centre for the Study of African Economies Conference on Growth, Poverty Reduction and Human Development in Africa.

Patrick, H.T. (1966), “Financial development and economic growth in underdeveloped countries”, Economic Development and Cultural Change, Vol. 14 No. 2, pp. 174-189.

Pesaran, M.H., Shin, Y. and Smith, R.J. (2001), “Bounds testing approaches to the analysis of level relationships”, Journal of Applied Econometrics, Vol. 16 No. 3, pp. 289-326.

Phillips, P.C.B. and Perron, P. (1988), “Testing for a unit root in time series regression”, Biometrika, Vol. 75 No. 2, pp. 335-346.

Sahay, R., Čihák, M., N’diaye, P., Barajas, A., Bi, R., Ayala, D. and Yousefi, S. (2015), “Rethinking financial deepening: stability and growth in emerging markets”, No. SDN/15/08, IMF Staff Discussion Note.

Shaw, E.S. (1973), Financial Deepening in Economic Development, Oxford University Press, New York, NY.

Smaoui, H. and Nechi, S. (2017), “Does sukuk market development spur economic growth?”, Research in International Business and Finance, Vol. 41, pp. 136-147.

Solow, R.M. (1956), “A contribution to the theory of economic growth”, The Quarterly Journal of Economics, Vol. 70 No. 1, pp. 65-94.

The International Islamic Financial Market (2018), “Sukuk report: a comprehensive study of the global sukuk market”, 7th ed., available at: www.iifm.net/sukuk-reports/ (accessed 19 November 2020).

The International Islamic Financial Market (2020), “Sukuk report: a comprehensive study of the global sukuk market”, 9th ed., available at: www.iifm.net/sukuk-reports/ (accessed 19 November 2020).

Thumrongvit, P., Kim, Y. and Pyun, C.S. (2013), “Linking the missing market: the effect of bond markets on economic growth”, International Review of Economics and Finance, Vol. 27, pp. 529-541.

Zulkhibri, M. (2015), “A synthesis of theoretical and empirical research on sukuk”, Borsa Istanbul Review, Vol. 15 No. 4, pp. 237-248.

About the authors
Yan-Ling Tan, PhD, is a Senior Lecturer at the Faculty of Business and Management, Universiti Teknologi MARA Johor Branch, Segamat Campus, Malaysia. Her research interest includes development economics and applied economics. Yan-Ling Tan is the corresponding author and can be contacted at: tanya163@uitm.edu.my

Roslina Mohamad Shafi, PhD, is a Senior Lecturer at the Faculty of Business and Management, Universiti Teknologi MARA Johor Branch, Segamat Campus, Malaysia. Her research interest includes Islamic finance, investment and corporate finance.