The Asymmetric Effect of Sukuk on Government Budget: Dealing with Deficit in Malaysia

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Abstract

Islamic economists sought to find transactions that fit and conform to the principles of Islamic religion, where Islamic bonds were one of the most critical products compatible with Islam. This study aims to shed light on the impact of Sukuk as one of the alternatives available for funding expenditures and deficit in Malaysia. This research using a non-linear autoregressive distributed lag model (NARDL) during the period 1990-2016. After identifying the asymmetric effect and the dynamic multiplier of Sukuk on government budget balance during the fluctuations of the exchange rate of the Ringgit, we have found that Islamic bonds are a very useful tool in financing deficit making Malaysia a pioneering experience in the field of Islamic engineering.

Keywords: sukuk, government budget, deficit, Nonlinear ARDL

Abstrak


Kata Kunci: sukuk, anggaran pemerintah, defisit, ARDL non-linear

How to Cite:

Introduction

The development of the state in the modern era and its intervention in the economic and social fields was through fiscal policy, which is the central axis of economic policy as a useful tool in achieving economic and social goals. Therefore, the government budget is one of the most important financial instruments owned by governments to achieve its principal objectives by the distribution of public expenditure and the collection of public revenues. Besides, public resources are no longer able to cover expenditures, which has led to a financial problem represented by the emergence of deficits in many countries, whether developed or developing. These countries sought to cover the deficit basing on a set of tools and methods such as Federal Reserve, monetary printing, the imposition of more fees and taxes, or borrowing both local and external.

Because of the adverse effects of conventional financing mechanisms, it becomes necessary to find new alternatives to finance government spending by providing a remedy for this deficit by following the provisions of Islamic rules. Islamic finance has contributed to reducing the pressure on public spending using various forms such as Zakat, Waqf, and Takaful, which depends on individuals to assume their responsibilities towards the state, which depends on the Islamic loans in addition to the taxes under Islamic principles and controls.

In addition to these modern tools, Sukuk is one of the most prominent Islamic financial engineering products, and under the international interest in Islamic finance. Sukuk has been able to find a prominent position in the international financial markets. This Islamic instrument plays a vital role in mobilizing resources and covering the budget deficit, and financing projects, especially for infrastructure (Zulkhibri, 2015; Al-Raeai et al., 2018). Islamic instruments also play a significant role in risk reduction and stability (Akhtar & Jahromi, 2015).

However, According to AAOIFI, Sukuk is defined as “Investment Sukuk are certificates of equal value representing undivided shares in ownership of tangible assets, usufructs and the assets of particular projects or special investment activity. Though, this is true after receipt of the value of the Sukuk, the closing of subscription and the employment of funds received for the purpose for which the Sukuk issued.” Islamic instruments can also define as an investment tool represented in common shares in (capital A’ayan, benefits, services or project) issued following Islamic financing ethics, in compliance with Shariah principles.

Thus, the Asia region contains vast potential not only to advance Shariah-compliance across financial and non-financial sectors but also to utilize its methods for poverty alleviation covering deficit and microfinance projects. Hence, as Malaysia is leading in Islamic finance and sukuk issuance, this study sought to answer the following question “what role does Sukuk play in financing the Malaysian budget deficit?”

Therefore, this study analyses the effectiveness of Sukuk as a new solution to deal with the budget deficit problem. The budget deficit will have a long-run impact on economic growth (Rahman, 2012). Henceforth, it also shows the effectiveness of the new alternatives to funding the deficit (Sukuk) compared to traditional financing where developed countries
had also issued Sukuk according to the principles of Islamic law, such as Britain and France, even if they do not follow the provisions of the Islamic religion (Saiti et al., 2013).

However, what was remarkable is that this issue still discussed in a theoretical framework that allowed Muslims and non-Muslims to understand the principles of Islamic Shari’a and Islamic finance more evidently. Consequently, our research is considered one of the firsts that handle with the effectiveness of Sukuk on the real economic sector using an advanced econometric technics to obtain concrete results (Zin et al., 2011; Abduh & Omar, 2012; Manzoor et al., 2017). Therefore, there is an extensive debate between economists and decision makers within Islamic countries about the feasibility and efficiency of Islamic instruments, and this study will try to give evidence in favor of this subject depending on the Malaysian experience by evaluating the efficiency of Islamic instruments in financing the budget deficit.

Methods

This analysis employs annual data (extracted from the Bureau of Statistics and Financial Laws of Malaysia) throughout 1990-2016. In order to achieve our study’s goal, we used three variables such as government budget (GVB), return on sukuk (Rsukuk0), and exchange rate (EXC).

To investigate the effect of Sukuk on government budget we have adopted a nonlinear ARDL (NARDL) model imposed by Shin et al. (2014)). The NARDL approach is a generalization of the ARDL bounds testing approach that allows for estimating a long asymmetric run as well as short-run coefficients in a co-integration framework.

This model uses the decomposition of the exogenous variable “Rsukuk” into its negative and positive partial sums such as:

\[ Rsukuk^+ = \sum_{j=1}^{t} \Delta \text{Rsukuk} = \sum_{j=1}^{t} \max(\Delta \text{Rsukuk}, 0) \]

\[ Rsukuk^- = \sum_{j=1}^{t} \Delta \text{Rsukuk} = \sum_{j=1}^{t} \min(\Delta \text{Rsukuk}, 0) \]

The NARDL equation can frame in an nonlinear ARDL setting

\[ \Delta \text{GVB}_t = \alpha + \beta_0 \text{GVB}_{t-1} + \beta_1 \text{EXC}_{t-1} + \beta_2 \text{Rsukuk}_{t-1}^+ + \beta_3 \text{Rsukuk}_{t-1}^- + \sum_{i=1}^{p} \gamma_i \Delta \text{GVB}_{t-i} + \sum_{i=1}^{q} \delta_i \Delta \text{EXC}_{t-i} + \sum_{i=1}^{m} \gamma_{i1} (\alpha_i^+ \Delta \text{Rsukuk}_{t-i}^+ + \alpha_i^- \Delta \text{Rsukuk}_{t-i}^-) + \varepsilon_t \]

Where the superscripts (+) and (–) in Equation (3) denote the positive and negative partial sums decomposition which rely to the increase and the decrease defined previously. Added to \( p \) and \( q \) which represent the lag order for the dependent variable and the exogenous variable in distributed lag part,

Accordingly, Empirical implementation of the nonlinear ARDL approach involves the following steps. Though the ARDL approach to co-integration is valid regardless of whether the variables are I(0) or I(1), it is still essential to conduct unit root tests such that no I(2) variable is involved. We will first apply the widely used ADF unit root tests to establish the order of integration for all variables. After that, we estimate equation (3) using the standard STEPLS estimation method. Then, based on the estimated NARDL, we perform a test for the presence of co-integration among the variables using a bound testing approach; this involves the Wald F test. Finally, with the presence of co-integration, examination of the
long run and short-run asymmetries in the relations’ returns of government Sukuk and the government budget is made.

**Results and Discussion**

**Description of Malaysia Indicators**

Figure 1 and Table 1 represents the full range of sectors, which was, and still issuing Sukuk in Malaysia. Also, Figure 2 highlights the importance of the Malaysian Sukuk market in the world.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>World Sukuk issuance</td>
<td>45.1</td>
<td>85.1</td>
<td>131.2</td>
<td>119.7</td>
<td>118.8</td>
<td>63.3</td>
<td>72.7</td>
</tr>
<tr>
<td>Malaysian Sukuk issuance</td>
<td>32.8</td>
<td>60.9</td>
<td>97.1</td>
<td>82.4</td>
<td>77.9</td>
<td>30.4</td>
<td>29.9</td>
</tr>
</tbody>
</table>

Table 1 and Figure 1 shows an increase in the period from 2010 to 2014, reaching its peak in 2012. This data is due to the recovery witnessed by the major markets of Sukuk after the financial crisis in 2008 in Malaysia, Saudi Arabia, UAE, Turkey, and Indonesia. Malaysia has maintained the lead in terms of issue size due to the presence of a broad base of domestic investors and the success of Malaysia in attracting cross-border Sukuk issuance.

![Figure 1. The Development of The total Malaysian Sukuk Issuance](source: IFI Thomson Reuters, Bloomberg)

Otherwise, after the year 2015 Sukuk issuance witnessed a decline by the decision of the Central Bank of Malaysia “Bank Negara” and switch to other instruments to manage liquidity because the Islamic bonds issued by the Central Bank of Malaysia did not reach the intended investors, and then decided to use other financial instruments that are limited to Islamic banks. On the other hand, the decline in oil prices in 2016 urge the GCC and Malaysia towards reducing deposits and thus liquidity with banks.
Figure 2 highlights the importance of Islamic Malaysian Sukuk issuance with more than half of the total Sukuk issued in the world with 63% that make Malaysia the leader followed by UAE with 16%. Figure 3 demonstrates the continued growth of both government revenues and expenditures where revenue has been to some extent inactive over the past five years. This condition expected to continue given the prevailing economic climate and lower oil prices. The slowdown attributed to China’s slower economic growth, volatile international capital markets, and prolonged low commodity prices. The government expects to counter the declining revenue in 2016 with an estimated RM 39 billion derived from the newly introduced GST3 (see also IMF, 2015) and higher income tax collection from the corporate sector, totaling RM 74 billion (Devadason, 2015).

After the Asian financial crisis of 1997; the ringgit tied to the US dollar with an exchange rate set at 1 MYR for 0.26 USD. In July 2005, this anchorage abandoned in favor of a float administered by the Malaysian central bank using a basket of currencies. After a 2% decrease against the dollar in 2013, the MYR expected a further decline in 2014. The average exchange rate in 2013 was 3.15 MYR per USD and is expected to reach 3.23 MYR to USD 1 in 2014. In contrast, the currency appreciates and shows a rate of 2.80 MYR for 1 USD in 2016 (See figure 4).
Empirical Results

Unit root test is an essential test to choose which model is appropriate for the study and to reach this goal we have used the ADF test. If the variables in the regression model are not stationary, then it can be proved that the standard assumptions for asymptotic analysis will not be valid. The stationarity test shows in Table 2.

Table 2. Result of ADF Test Statistics

<table>
<thead>
<tr>
<th>Variables</th>
<th>ADF stationarity test (prob)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>level</td>
<td>1st difference</td>
<td></td>
</tr>
<tr>
<td>GVB</td>
<td>0.9663</td>
<td>0.0020</td>
<td></td>
</tr>
<tr>
<td>Rsukuk</td>
<td>0.4527</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>Exchange rate</td>
<td>0.6147</td>
<td>0.0020</td>
<td></td>
</tr>
</tbody>
</table>

Source: data processing

The stationarity test shows that all the variables stationary at first differences (See Table 2). Shin et al. (2014) recommended using a joint hypothesis of non-differenced variables to testing the co-integration after that compare their critical value with bound testing.

Table 3. Asymmetric Co-integration Test Result

<table>
<thead>
<tr>
<th>Model specification</th>
<th>Value</th>
<th>Probability</th>
<th>Critical value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonlinear ARDL</td>
<td>4.135419</td>
<td>0.0424</td>
<td>5%</td>
</tr>
<tr>
<td>Linear ARDL</td>
<td>9.821604</td>
<td>2.72</td>
<td>3.83</td>
</tr>
</tbody>
</table>

Source: data processing
Table 3 shows that there is evidence of co-integration for both linear and nonlinear ARDL. However, when the linear form is specified, since the F statistics (9.82) is bigger than the upper critical bound (3.83) so long run relation between variables exists. The result shows the long run relation (co-integration) between our variables exists for NARDL model because the value of wald test is more significant than the value of the upper bound of the bound test (4.13 > 3.83).

Table 4. Wald Test Result

<table>
<thead>
<tr>
<th>Test Statistic</th>
<th>Value</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>t-statistic</td>
<td>-2.088594</td>
<td>0.0663</td>
</tr>
<tr>
<td>F-statistic</td>
<td>4.362223</td>
<td>0.0663</td>
</tr>
<tr>
<td>Chi-square</td>
<td>4.362223</td>
<td>0.0367</td>
</tr>
</tbody>
</table>

Source: data processing

The positive and negative changes in the return of Sukuk issued by the government have a long-run effect on the government budget. Therefore, we must confirm if they are statically different or not using a basic asymmetry test. The results show in Table 4. The p-value is less than the critical value 10%, the null hypothesis of symmetry rejected, and an asymmetry in the long run of Sukuk on GVB exists where the positive and negative changes of Sukuk when it increases or decreases do not have the same effect on the government budget.

Table 5. NARDL Test Result

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.*</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGVB(-1)</td>
<td>-0.391998</td>
<td>0.220078</td>
<td>-1.781173</td>
<td>0.1086</td>
</tr>
<tr>
<td>DGVB(-2)</td>
<td>-0.504140</td>
<td>0.238267</td>
<td>-2.115861</td>
<td>0.0635</td>
</tr>
<tr>
<td>DSUKUK_POS</td>
<td>65498.77</td>
<td>29615.77</td>
<td>2.211618</td>
<td>0.0543</td>
</tr>
<tr>
<td>DSUKUK_POS(-1)</td>
<td>-83068.22</td>
<td>38530.30</td>
<td>-2.155920</td>
<td>0.0595</td>
</tr>
<tr>
<td>DSUKUK_POS(-2)</td>
<td>67878.61</td>
<td>33004.58</td>
<td>2.056642</td>
<td>0.0699</td>
</tr>
<tr>
<td>DSUKUK_POS(-3)</td>
<td>14917.07</td>
<td>23735.73</td>
<td>0.628465</td>
<td>0.5453</td>
</tr>
<tr>
<td>DSUKUK_NEG</td>
<td>-27226.98</td>
<td>25296.08</td>
<td>-1.076332</td>
<td>0.3098</td>
</tr>
<tr>
<td>DSUKUK_NEG(-1)</td>
<td>108375.8</td>
<td>24309.35</td>
<td>4.458195</td>
<td>0.0016</td>
</tr>
<tr>
<td>DSUKUK_NEG(-2)</td>
<td>-46637.64</td>
<td>28052.67</td>
<td>-1.662503</td>
<td>0.1308</td>
</tr>
<tr>
<td>DSUKUK_NEG(-3)</td>
<td>32086.03</td>
<td>25827.39</td>
<td>1.243236</td>
<td>0.2455</td>
</tr>
<tr>
<td>DEXC</td>
<td>-6.19E+06</td>
<td>5.05E+06</td>
<td>-1.225467</td>
<td>0.2515</td>
</tr>
<tr>
<td>DEXC(-1)</td>
<td>1.72E+06</td>
<td>7.06E+05</td>
<td>2.440192</td>
<td>0.0374</td>
</tr>
<tr>
<td>DEXC(-2)</td>
<td>-9.36E+06</td>
<td>3.85E+06</td>
<td>-2.433591</td>
<td>0.0378</td>
</tr>
</tbody>
</table>

R-squared: 0.840568  Adjusted R-squared: 0.627993
The results show in Table 5 are short-run coefficient, so we must divide the negative of the coefficient of each dependent variable (sukukp, sukukn, and exchange rate) by the coefficient of the independent variable (GVB). The equation obtained shows the long run effect of the variables of the study on the government budget. The coefficient determination 0.84 means that the model is good, because 84% of GVB variations explain by explanatory variables included in the study, only 16% is due to the error term.

\[ GVB = 129932.0968 \times Sukuk_p + 63645.07875 \times Sukuk_n - 18567744.5 \times EXC + U \]

The result shows that there are positive relations between Sukuk (positive and negative changes) and the government budget. Therefore, when sukuk return increases with 1% government budget will increase with almost 130000 MYR and the deficit will certainly decrease. While, when sukuk return decreases with 1% government budget will decrease with more than 63000 MYR (about the half of the amount when it increases) which means that deficit is covered by sukuk in a big percentage. Otherwise, the increase in the exchange rate with 1% will lead to a decrease in government budget with more than one million MYR due to the depression of currency.

The analysis of the dynamic effects between the involved variables, it is straightforward to derive the asymmetric dynamic multiplier impacts of unit changes in Sukukp and sukukn, respectively on government budget (GVB).

The above black line in Figure 5 shows a positive shock of Sukuk revenues while below-dotted line shows its adverse shocks and the red dotted line shows asymmetries. We can see due to positive shocks Sukuk behave positively on the government budget. So, when the return of the Islamic instruments increase, the government budget balance increases positively (deficit will decrease). While due to adverse shocks of the Sukuk it will have an adverse effect on GVB. We show especially that the response to positive changes in Sukuk return is gradual than to adverse changes.
Also, we observe from figure 5 that the Malaysian government budget response rapidly to the increases and decreases in Islamic sukuk’s return. It also shows that the response to the positive changes in Rsukuk is gradual than to the adverse changes corresponding to its equilibrium state.

In order to test the structural stability of the model, there are different tests based on recursive residuals. The two most important are the CUSUM and the CUSUM-OF-SQUARES, with the data ordered chronologically, rather than according to the value of an explanatory variable. The CUSUM test is based on a plot of the sum of the recursive residuals. If this sum goes outside a critical bound, one concludes that there was a structural break at the point at which the sum began its movement toward the bound.

The CUSUM-OF-SQUARES test is similar to the cusum test, but plots the cumulative sum of squared recursive residuals, expressed as a fraction of these squared residuals summed over all observations. The relationship between GVB and the other independent variables (Sukuk and exchange rate) is verified using the CUSUM, and the CUSUM squared tests. From Figures 6 and 7, we notice that the data as indicated in the two figures fall within the specified range of acceptance (critical bounds), which means that there is a significant Co-integration relationship between GVB and the other variables.
Discussion

The primary purpose of this study is to illustrate the effect of Sukuk return in both cases: first, increasing as a policy to finance public expenditures and/or to cover the deficit. Second, decreasing when public debt increases. The condition when Sukuk returns increase, it means that the Malaysian government has issued Sukuk to finance projects that have proven economic feasibility, but the shortage of sufficient of liquidity forces it to pursue investors in these worthwhile projects with the possibility of reducing the deficit. However, through the Islamic bonds, the financial savings are mobilized, leading to their investment in agricultural, industrial and commercial fields. This action may burden the government when public spending increases without using this alternative-financing tool.

Therefore, Mitsaliyandito & Arundina (2018) found that Islamic bonds are better than conventional financial as traditional instruments. Sukuk is more stable rather than conventional bonds in term of co-movement with global and regional uncertainty factors (Naifar et al., 2017). The traditional tools provide temporary solutions for the problem of the general budget deficit, but it causes the growth of its expenditures, creates inflation, and increase the public burden on current and future generations, as a result of its Ribatism (interest rate) and inflation. So, Islamic instruments (Sukuk) are the most appropriate in financing the budget deficit (Amaliah & Aspiranti, 2017; Al Parisi & Rusyridana, 2017). Conversely, when Sukuk decrease it will undoubtedly lead to a decrease in government budget balance because Malaysia is a leader in Islamic finance and depend in a significant percentage on Sukuk in financing public expenditures and financing the deficit. The development of sukuk markets will promote financial inclusion (Smaoui & Nechi, 2017).

Nevertheless, as Dissanayake (2016), we found that the fluctuation of the exchange rate of Ringgit have an adverse long-run effect on the government budget balance as much as it increases due to the depreciation of the currency. On the one hand, higher exchange rates create a situation that affects the demand for goods and services due to higher prices locally. This condition will turn an increase in the demand for imported goods, this will affect the current account movement and as a consequence on the balance of payments. On the other hand, it has a significant impact on the ability of exporters to compete. Ahmad & Muda (2013) conclude that inflation and exchange rate risk exposure for cross-border sukuk issuance.

Besides, there is a direct effect on an economy’s inflation rate due to the impact on import prices (Hamilton, 2012; Al-Mukit et al., 2013; Islam, 2013). It can affect returns on foreign investments and foreign debt. This condition will lead to a decline in the percentage of export taxes and then the decrease in revenues in the general budget while increasing expenditures on imports. These effects have not stopped to the extent that they extend to the competitiveness of locally produced goods and services. Besides the factors that used in this research, Hassan et al., (2018) state that there is a relationship between sukuk and other factors (market liquidity, crude oil prices, US credit information, and stock market certainty).
Conclusion

Malaysia is a pioneering and perhaps the most critical experience in Islamic finance in general and Sukuk in particular in the world making it an excellent sample to assess the reaction of the government budget to the changes (positive and negative) of Sukuk in financing the deficit. Where we found that Sukuk has a significant role in financing budget in both the long and the short term, through its ability to mobilize resources, to finance investment projects, and due to the Malaysian emphasis on attracting foreign investments to make Malaysia an international Islamic financial market.

In the light of the study’s results, policymakers in Malaysia or any other country need to spread the culture of investment in Sukuk as a new product instead of conventional investment instruments to attract funds that refuse to deal with conventional financial instruments. Besides, the state must reduce or abolish all restrictions on Islamic instruments such as taxes in order to encourage and attract Islamic financial institutions. Finally, it is obliged to develop Islamic instruments through the addition of new benefits to attract investors, especially foreigners.

References


