

An Empirical Analysis of The Impact of Islamic Banking on Real Output in Indonesia

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Abstract: The role and contribution of Islamic finance on economic growth in Indonesia has increased gradually and steadily. This is because the Islamic economy's universal and comprehensively basic principle is the primary foundation of Islamic banking. This research aimed to analyze the role of Islamic Banking on Indonesia's real sector during 2007.01 – 2016.04. This study used the Vector Error Correction Model (VECM) as a tool to analyze secondary data. The result showed that in Indonesia, sharia deposit positively and significantly influenced actual output in the short term. In addition, in the long-term, sharia financing positively and significantly influenced actual output. Moreover, Granger Causality Test proved the occurrence of one-way causality between actual output and inflation. Thus, Islamic banking can encourage actual output in Indonesia. The results of this study become a consideration for stakeholders and policymakers to pay more attention to strategies and policies that support economic growth in Indonesia.

Keywords: Islamic Banking; Sharia Deposit; Sharia Financing; Inflation; GDP

Abstrak: Perkembangan keuangan syariah di Indonesia semakin meningkat setiap tahunnya. Prinsip-prinsip dasar ekonomi syariah yang universal dan komprehensif merupakan landasan utama perbankan syariah. Tujuan penelitian ini untuk menginvestigasi peran perbankan syariah terhadap sektor riil di Indonesia selama periode 2007.01 – 2016.04. Penelitian ini menggunakan Vector Error Correction Model (VECM) sebagai alat untuk menganalisis data sekunder. Hasil penelitian menemukan bahwa dalam jangka pendek deposito syariah berpengaruh positif dan signifikan terhadap output riil. Selain itu, dalam jangka panjang pembiayaan syariah berpengaruh positif dan signifikan terhadap output riil di Indonesia. Lebih lanjut, Uji Kausalitas Granger membuktikan terjadinya kausalitas satu arah antara output riil dan inflasi.

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Dengan demikian, perbankan syariah mampu mendorong output riil di Indonesia. Hasil penelitian ini menjadi bahan pertimbangan bagi para pemangku kepentingan dan pengambil kebijakan untuk lebih memperhatikan strategi dan kebijakan yang mendukung pertumbuhan ekonomi di Indonesia.

Kata Kunci: Perbankan Syariah; Deposito Syariah; Pembiayaan Syariah; Inflasi; PDB

Introduction

The financial sector has an important role in achieving economic growth. This sector becomes the locomotive for real sector growth through capital accumulation and technological innovation. This sector can mobilize funds from people with a surplus condition to those with a deficit of funds (Abduh, Brahim, and Oma 2012). This sector can also mobilize savings and provide borrowers with a variety of financial instruments with high quality and low risk (Bakar and Sulong 2018). These conditions can increase investment and accelerate economic growth.

One part of the financial sector is banking institutions. Therefore, banking institutions also have an important role in the economy, especially economic growth. Banking function in the economy consists of the functions of transmission, intermediation function, transformation, and distribution of risk function, and stabilization function (Simatupang 2019). As a transmission institution, banking institutions can control the amount of money and its circulation. As institution intermediation, banking institutions become the channel of funds from surplus units to deficit units. Finally, through the intermediation function, banking institutions can more effectively reallocate funds between two parties (surplus and deficit units). Therefore, through this function, banking institutions have a very important role in economic growth.

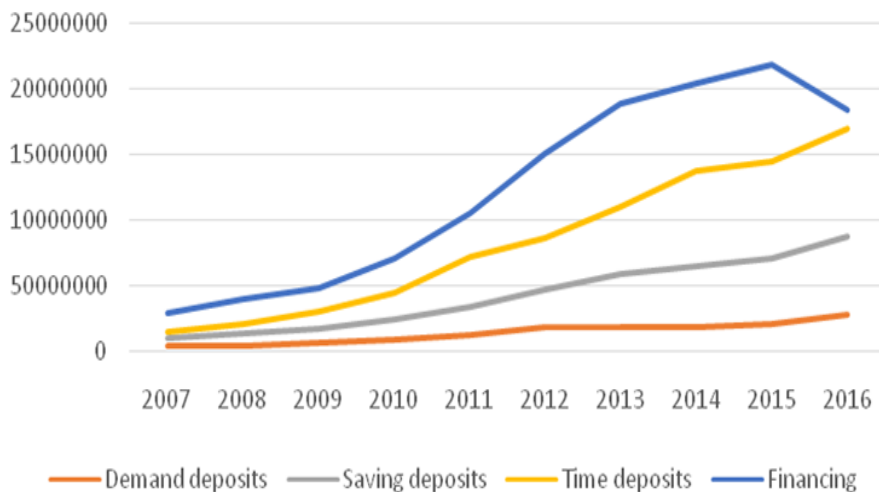
An effective and efficient bank intermediation function will support economic growth. The distribution of funds from surplus units and the availability of funds for deficit units indicate economic activity running. Furthermore, if these funds are invested in productive sectors that require financing, it can encourage economic growth. The relationship between investors and bank depositors that leads to investment will impact sustainable economic growth (Kassim 2016).

In Indonesia, the growth of banking institutions continues to increase, including Islamic banking. According to Pambuko & Pramesti (2020), Islamic

banking in Indonesia has a bright future as a part of the financial sector. This is because the majority of Indonesia's population is Muslim. The implementation of Islamic banking is carried out based on sharia principles which are regulated according to Islamic law. Sarwer et al. (2013) state that the Islamic financial system is more stable than the conventional financial system because it can eliminate debt financing. In addition, Islamic banks are considered to have less risk than conventional banks. Moreover, the development of Islamic banking in Indonesia continues to increase every year. The value of Islamic products and the development of Islamic banking in Indonesia over the last 10 years from 2007-2016 can be seen in Figure 1.

Islamic banking institutions apply the asset and production-based system reflected in *mudharabah* and *musyarakah* (Rama 2013; Fitri 2015). This financing pattern creates both the real sector and the financial sector to operate in a balanced way. As a result, the performance and contribution of Islamic banking are increasing along with the development of Islamic banking.

Figure 1. Development of islamic banking in indonesia



In addition, in their research, Adeel et al. (2015) state that financing in Islamic banking encourages economic growth in a country and capital accumulation.

The development of the collection and financing of third-party funds (accounts, savings, and time deposits) in Islamic banking in Indonesia continues to show a positive trend. At the same time, economic growth in Indonesia also shows a positive trend. As a result, positive trend-taking that occurs in the same relative time must influence each other. Therefore, this phenomenon needs to be studied whether the Islamic banking sector has influenced economic growth in Indonesia in the long term. If so, the two-way causality of the two also needs to be analyzed further..

Literature review

The relationship between financial sector development and economic growth is a topic of interest that needs to be further studied. Croitoru (2012) mentions the importance of the banking system and the growth of national income in economic development by identifying and financing the productive investment sector. According to Todaro & Smith (2011) explains that to increase the growth rate, new investment is needed, so that the ratio of national saving and national income will determine the rate of economic growth. In addition, Solow's growth theory adds another factor in the equation model, namely labor, and introduces the third independent variable in the form of technology (Christianto Leasiwal 2013).

According to Arac and Ozcan (2014), there are three patterns of relationship between financial sector development and economic growth: supply-leading hypothesis, demand-following hypothesis, and bi-directional causality. The supply-leading hypothesis, first popularized by Schumpeter, states that the development of the financial sector plays an important role in stimulating economic growth. The financial sector's capability to encourage economic growth and the importance of the existence of financial institutions in the development of the economy. This hypothesis implied that the financial

sector could create technological innovation to encourage economic growth. Furthermore, the development of the financial sector was considered capable of affecting the level of savings, investment, technological innovation, and long-term economic growth of a country.

Meanwhile, the demand-following hypothesis, popularized by Robinson, states that economic growth encourages the development of the financial sector (Carby et al. 2012). Therefore, the financial sector does not cause a causal impact on economic growth because the development of the financial sector following the economic growth leads to a rise in the demand for financial services. According to this hypothesis, as the economic growth created a rise in demand for financial services, the demand of the market activity for financing and credit increase. The study of Arac & Ozcan (2014) explained a parallel relationship between economic growth and the financial sector in Turkey.

Finally, bi-directional causality is the hypothesis stating that the financial sector's development and economic growth are related or have a causality relationship. Many empirical studies of the relationship between financial sector development and economic growth have been conducted. For example, Abu-Bader & Abu-Qarn (2008) prove the bi-directional causality relationship between Egypt's financial sector development and economic growth. Previously, Amiruddin (2007) finds that the development of the financial sector significantly caused economic growth in both the short term and long term in Malaysia. Those two findings prove to be supporting the bi-directional causality hypothesis. However, Dularif (2010) explains different results that the impact of the financial sector development did not encourage economic growth in Indonesia.

Meanwhile, in the context of Islamic finance, many empirical studies of the relationship between the Islamic financial sector and economic growth have also been conducted. For example, the research conducted by Tabash & Dhankar (2013) about the Islamic financial system and economic growth in

Bahrain. Their findings supported the hypothesis of bi-directional causality as Islamic financing proved to contribute to economic growth in the long term. Furthermore, Furqani & Mulyani (2009), in their study about the contribution of Islamic banking to the Malaysian economy, find the existence of a significant relationship between economic growth and third-party funds collected by Islamic banking.

Moreover, Croitoru (2012) believes in the importance of keeping the existence between the banking system and national income growth in economic development by identifying and financing assistance to the productive investment sector. Previous studies have examined the financial sector's influence on Indonesia's economic growth based on the Vector Error Correction Model (VECM) (Inggrid 2006). However, the previous study uses different research variables to measure the development of the financial sector, such as the banking credit variable and the interest rate differential variable. Based on a review of the previous study, the difference between this study and previous studies is that this study focuses on the role of Islamic banking in actual output in Indonesia and uses different variables such as sharia deposits and financing.

Methods

This study used a quantitative approach. Secondary data of quarterly time series of 2007.1-2016.4 obtained from the International Monetary Funds (IMF), financial and economic statistics Indonesia (Statistik Ekonomi dan Keuangan Indonesia or called SEKI), Bank Indonesia, Islamic Banking Statistics (Statistik Perbankan Syariah or called SPS), and The Financial Services Authority (Otoritas Jasa Keuangan or called OJK) were used. Then, this study used four (4) variables. Variable Sharia Financing (Fin) and Sharia Deposits (Deps) were used as indicators of the development of the Islamic banking sector. Variable inflation (Inf) and Gross Domestic Product (GDP) based on constant prices of 2010 were used to describe the real sector

economy. The data that has been collected was analyzed using Vector Error Correction Models (VECM) as a development model of VAR that considers the existence of not stationary data (Sinay 2014; Ingrid 2006). The basic model of VAR modified into the VECM model is shown as follows:

$$\Delta X_t = \alpha_i + \sum_{i=1}^k A_i \Delta X_{t-i} + \sum_{i=1}^k B_i \theta_{t-i} + \mu_t$$

Description:

- Δ : difference operator
- A_i dan B_i : estimated parameter
- μ_t : error correction term

Moreover, the specification model of the Granger causality equation of VECM in this study is as follows:

$$\Delta \ln GDP_t = \alpha_1 + \sum_{i=1}^k \beta_{1i} \Delta \ln GDP_{t-1} + \sum_{i=1}^k \gamma_{1i} \Delta \ln Deps_{t-1} + \sum_{i=1}^k \delta_{1i} \Delta \ln Fin_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta \ln f_{t-1} + \varphi_1 ECT_{t-1} + \mu_t$$

$$\Delta \ln Deps_t = \alpha_1 + \sum_{i=1}^k \beta_{1i} \Delta \ln Deps_{t-1} + \sum_{i=1}^k \gamma_{1i} \Delta \ln GDP_{t-1} + \sum_{i=1}^k \delta_{1i} \Delta \ln Fin_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta \ln f_{t-1} + \varphi_1 ECT_{t-1} + \mu_t$$

$$\Delta \ln Fin_t = \alpha_1 + \sum_{i=1}^k \beta_{1i} \Delta \ln Fin_{t-1} + \sum_{i=1}^k \gamma_{1i} \Delta \ln GDP_{t-1} + \sum_{i=1}^k \delta_{1i} \Delta \ln Deps_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta \ln f_{t-1} + \varphi_1 ECT_{t-1} + \mu_t$$

$$\Delta \ln f_t = \alpha_1 + \sum_{i=1}^k \beta_{1i} \Delta \ln f_{t-1} + \sum_{i=1}^k \gamma_{1i} \Delta \ln GDP_{t-1} + \sum_{i=1}^k \delta_{1i} \Delta \ln Deps_{t-1} + \sum_{i=1}^k \theta_{1i} \Delta \ln Fin_{t-1} + \varphi_1 ECT_{t-1} + \mu_t$$

Where: Fin is Sharia financing, Deps is Sharia deposits, GDP is Gross Domestic Product based on constant prices of 2010, and Inf is inflation. Δ is the first difference, k_i ($i= 1,2$) represents various lag on regresor, ECT_{t-1} is the first lag value on error term of the integrated regression, and μ_t is an error term.

Result and discussion

The result of the test using Augmented Dickey-Fuller (ADF) on variables LGDP, LnDEPS, LnFIN, and stationary inflation at first difference is summarized in Table 1.

The relationship among economic variables might create a deviation in the short term, but it will be normal in the long term using a balance mechanism. According to Houssain (2016), in dual system banking, low and stable inflation is important to keep sharia banking and monetary alive; otherwise, macroeconomic instability may thread competition of the monetary product of the sharia banking. Meanwhile, Johansen's co-integration test showed two co-integrated equations existed, as shown in Table 2.

Table 1. Augmented Dickey-Fuller (ADF) Unit Root Test

<i>Variable</i>	<i>Level, I(0)</i>	<i>1st Difference, I(1)</i>
LnGDP	-1.926261	-3.110871*
LnDeps	-2.586544	-4.933997*
LnFin	-2.820740	-4.551062*
Inflation	-2.089266	-5.496259*

The mark (*) represent significance at 5%.

Source : Data processed

Table 2. Johansen Co-integration Test

<i>Hypothesis the number of equations of co-integration</i>	<i>Trace statistic</i>	<i>Critical value = 0,05</i>	<i>Max eigen statistic</i>	<i>Critical value = 0,05</i>
r = 0*	84.86694	63.87610	35.12136	32.11832
r ≤ 1*	49.74557	42.91525	27.57552	25.82321
r ≤ 2	22.17005	25.87211	17.66017	19.38704
r ≤ 3	4.509881	12.51798	4.509881	12.51798

The mark (*) denotes a co-integrated rank.

Source: Data processed

Table 3. Granger Causality Test

Variable	F- statistic &probability ()			
	LnGDP	LnDepts	LnFin	Inflation
LnGDP	-	0.32430 (0.8077)	0.23903 (0.8684)	6.63156 (0.0014)*
LnDepts	0.20538 (0.8919)	-	0.96925 (0.4201)	1.55590 (0.2206)
LnFin	0.33298 (0.8015)	0.45235 (0.7175)	-	1.85966 (0.1578)
Inflation	1.72583 (0.1828)	0.57874 (0.6335)	0.66982 (0.5772)	-

The mark (*) represent significance at 5%.

Source: Data processed

Moreover, the causality relationship resulted from the Granger Causality test shown in Table 3 shows one-way causality between actual output and inflation.

This finding showed that the growth of the actual output affected the inflation rate in Indonesia. This finding was in line with Lubis (2014) result that there is a one-way causality of the gross domestic product against the consumer price index. In contrast, a different result was proposed by Datta & Mukhopadhyay (2011), who found a one-way causal relationship of inflation to economic growth based on the Malaysian case study. In addition, the finding of Gupta & Singh (2016) confirmed that the existence of Johansen co-integration produces a single vector co-integration (long-term relationship) between FDI and GDP in India and China.

Furthermore, the Granger Causality test showed that a causal relationship did not occur between sharia banking and the real sector. This was understandable because the role of sharia banking has not been maximized yet in Indonesia's macroeconomic. Moreover, macroeconomic variables (the growth of GDP and inflation) significantly influence the stability of the monetary sector; therefore, low economic growth but high inflation affects the monetary stability of banks as its side effect (Männasoo and Mayes 2009).

Table 4. Estimation Result of Sharia Banking and Economic Growth

	Variable	Coef. dan t statistic ()
Short Term	D(LNGDP(-1))	0.087133 (0.47313)
	D(LNGDP(-2))	0.294977 (1.57160)
	D(LNGDP(-3))	0.288052 (1.65880)
	D(LNDEPS(-1))	0.018484 (1.95805)*
	D(LNDEPS(-2))	0.011190 (1.54311)
	D(LNDEPS(-3))	0.014877 (2.04091)**
	D(LNFIN(-1))	-0.002342 (-0.39790)
	D(LNFIN(-2))	-0.004305 (-0.79357)
	D(LNFIN(-3))	-0.007431 (-1.54062)
	D(INFLASI(-1))	3.01E-05 (0.14643)
	D(INFLASI(-2))	-0.000312 (-1.46021)
	D(INFLASI(-3))	-0.000524 (-2.58441)**
	Long Term	D(LNGDP(-1))
D(LNDEPS(-1))		0.000.000
D(LNFIN(-1))		0.402373 (4.80379)***
D(INFLASI(-1))		-0.012782 (-4.15509)***
R ²		0.678929
F-statistic		3.578518

The mark (*, **, ***) represents significance at 10%, 5%, and 1% respectively

Source: Data processed

Furthermore, the estimation result of sharia banking's role to the real sector in Indonesia is shown in Table 4.

The values of the t tables used in this research were 2.704, 2.021, and 1.684, which were significant at a confidence level of 1%, 5%, and 10%, respectively.

The estimation result showed a short-term relationship between sharia banking and accurate Gross Domestic Product (GDP). In the short term, in Indonesia, sharia deposits in the first lag positively affected the actual output increase at 10% confidence with a coefficient of 0.018484. This figure meant that when sharia deposits increased by 1%, actual output increased by 0.02%. The development of Sharia Bank and low inflation rate and exchange rate stability drove the development of actual output. Abduh et al. (2012) identified similarities between Sharia bank (total savings and total financing) and

economic growth in Bangladesh. Using co-integration and Granger Causality, Hasan & Dridi (2012) concluded the positive relation between the two sectors both in the short and long term.

In the third lag, sharia deposits also positively and significantly affected actual output by a 5% confidence level with a coefficient of 0.014877. Therefore, when sharia deposits in the second lag increase by 1%, the actual output in the current period will increase by 0.01 percent. Thus, Sharia system banks have been growing and successfully mobilizing additional resources for the financial sector to encourage the real sector (Beck, Demirgüç-Kunt, and Merrouche 2013). The economic growth resulting from the Sharia bank's asset escalation has been accepted as low risk cohered within Sharia bank was applied during financial global crashed.

In the long term, sharia financing had a positive effect on actual output in Indonesia. Sharia financing was identified had an impact on the increase of the real output at a confidence level of 1% with a coefficient of 0.402373. This indicated that when sharia financing increased by 1%, the actual output would also increase by 0.4%. Therefore, sharia financing contributed to upliftreal output in Indonesia. This result was consistent with the conclusions suggested by Abduh et al. (2012) that financing provided by banks contributes to Indonesia's economic growth because the financial intermediation is running effectively in facilitating the transmission of the surplus funds to the deficit of funds. However, in the short term, the relationship between sharia financing and actual output was inconclusive. This result was also in accordance with Abduh et al. (2012) study, which showed that short-term sharia financing is not significantly related to economic growth in Bahrain. Conventional and Sharia banks have different approaches in the financial transaction, as sharia banks avoid unlawful aspects following Islamic law principles (El-Gamal 2006).

Another finding was that inflation affected actual output both in the short and long term in Indonesia. In the short term, inflation negatively affected

actual output in the third lag with a confidence level of 5% with a coefficient value of -0.000524; while, in the long run, inflation also negatively affected actual output at a 1% confidence level with a coefficient value of -0.012782. A low and controllable inflation rate encouraged economic growth. This finding was in line with the result of the study of Najaf (2017) that explains a negative relationship between the inflation rate and the economic growth in Nigeria. Moreover, Shakhaowat (2015) also found a significant and negative relationship between inflation and long-term economic growth.

The results of this study give implications for the policymakers to emphasize promoting strategies and policies to support economic growth, such as promoting foreign investment, trade liberalization for services, and improving investment and trade climate to improve microeconomic stability. To achieve these goals, fiscal balance, trading balance, debt, exchange rate stabilization, and inflation should be controllable.

Conclusion

Based on the results and discussion of the influence of sharia bank on actual output in Indonesia, it could be concluded that in the short term, sharia deposit positively and significantly affects the actual output in Indonesia. Moreover, in the long term, sharia financing also has a positive and significant effect on actual output in Indonesia. Thus, Islamic banking effectively contributes to economic growth both in the short term and long term. In addition, the Granger Causality Test proves that there is one-way causality between actual output and inflation, which means that the growth of actual output affects the inflation rate in Indonesia. Furthermore, inflation has a negative effect on the real sector both in the short term and in the long term in Indonesia. This conclusion has implications for stakeholders and policymakers to pay more attention to strategies and policies that support economic growth. The limitation of this study is using secondary data from 2007-2016 and indicators used to measure research variables. Further

studies can analyze data in the following period, add research variables or use other indicators to measure variables. Future research also needs to compare the impact of Islamic banking on economic growth in some countries or some regions in Indonesia to enrich the results and produce more comprehensive policy recommendations to the policymakers and stakeholders.

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