The role of Islamic banking financial intermediation on Indonesia’s economic growth

Tjetjep Djuwarsa¹*, Kristianingsih ¹, and Hasbi Assidiki Mauluddi¹
¹Accounting Department, Politeknik Negeri Bandung, West Java, Indonesia

Abstract. This study attempts to examine the relationship between deposits, disbursed financing, the number of bank offices, and economic growth before and during the COVID-19 crisis. The time series data of Indonesian Islamic banking for the period from 2009 to 2022, has been utilized in this study, estimated using Auto Regressive Distributed Lag (ARDL). Deposits and disbursed financing respectively are the ratio of total deposits and total disbursed financing to nominal GDP. Economic growth is measured using Indonesia’s real GDP growth based on 2010 constant prices. The results show that in the long run, deposits have a very significant positive effect on economic growth. Meanwhile, financing and the number of bank offices do not affect economic growth. In the short term, except for the number of bank offices, real GDP, deposits, and financing contribute to the adjustment of changes in real GDP towards long-term balance, which takes approximately seven quarters. This study fills a gap in the literature on the role of Islamic banking on economic growth. This study also adds a new view of the role of Islamic banking in economic growth during the COVID-19 crisis. This study provides an important contribution to policymakers and other stakeholders.

1 Introduction

1.1 Background

Due to its reputation for resilience in the face of the global financial crisis of 2007-2008, Islamic banking developed rapidly, attracting increasing curiosity from stakeholders [1]. Islamic banks do not only focus on economic issues but also promote spiritual and social aspects of doing business [2]. Islamic banks must comply with the principles of fair income through Profit and Loss Sharing (PLS), prohibit Riba (interest), prohibit Gharar (uncertainty), and prohibit Maysir (gambling or speculation) as ordered by the al-Qur’an and Al-Sunnah [3].

The development of Islamic banking has led to significant growth in scientific and academic production [1]. Several former studies have examined the role played by Islamic banks in fostering economic growth, Yusof and Bahlous [4] in GCC & East Asia countries, Hachicha [5] in Malaysia, Lebdaoui and Wild [6] in Southeast Asia, Ledhem and Mekidiche

* Corresponding author: tjetjepdjuwarsa584@gmail.com
[7] in Brunei, Indonesia, Turkey, Malaysia, and Saudi Arabia, Gani and Bahari [8] in Malaysia, Tabash et al., [9] in Nigeria. In general, all of these studies report that the Islamic banking sector makes a significant positive contribution to economic growth.

The results of the literature review show that studies evaluating the contribution of Sharia banking to economic growth in the Indonesian context are still limited. In Indonesia, it seems that only Anwar et al., [10] has examined The impact of Islamic banking institutions on the development of the economy. In addition, existing studies report inconsistent results. For example, [7] concluded that the only significant factor of Islamic bank performance that influences economic growth is the return on equity (ROE). Tabash et al., [9] shows that Islamic banking, through financing and deposits, contributes positively to the Nigerian economy, but this contribution is not statistically significant.

Furthermore, Anwar et al., [10] found a significant relationship in the short-term and long-term deposits and offices of Islamic banks with economic growth. Taking into account the limited number of studies regarding the contribution of the Islamic banking sector to economic growth and the existence of gaps in the results of reported studies, this research seeks to develop existing literature, especially developing Anwar et al., [10] by adding the COVID-19 crisis variable. This research considers real GDP growth as a proxy for economic growth.

Indonesia's main macroeconomic indicators in 2020, when the COVID-19 crisis peaked, declined sharply, marked by real GDP growth of -2.07% and an unemployment rate of 7.17%, so it is important to consider this crisis in the model that will be estimated. Therefore, by adding important variables that have never been examined by previous studies, this research can develop existing writings on the contribution of Islamic banks to economic growth, especially in the Indonesian context. This research also adds insight and understanding for practitioners, such as the government, investors, Islamic bank management, and other concerned parties.

Based on the background that has been stated, several problems from this research can be stated as follows:
1. Does the growth of total Sharia banking deposits have a significant positive effect on Indonesia's economic growth as measured by real GDP growth?
2. Does the growth of total sharia banking financing have a significant positive effect on Indonesia's economic growth as measured by real GDP growth?
3. Does the growth in the number of Sharia banking offices have a significant positive effect on Indonesia's economic growth as measured by real GDP growth?
4. Has the COVID-19 crisis reduced the contribution of Sharia banking to Indonesia's economic growth as measured by real GDP growth?

2 Literature review

2.1 Theoretical study

There are five approaches to testing the causal relationship between Islamic banking and economic growth [10]. First, is supply-leading, where Islamic banks encourage economic growth as a productive input [11,12,13]. Second, is demand-following which states that financial development follows economic growth [14,15]. Third, previous studies have confirmed that there exists a two-way causal relationship between Islamic banks and the economic growth [15,16]. Fourth, is the approach that the absence of a causal relationship between Islamic banks and economic growth is evident in both the UAE [17] and Turkey [18]. Fifth, is the adverse effects of the advancement of sharia finance on the progress of economic growth in Bangladesh [19] and in Nigeria [20].
Using these five approaches, here are six recent studies that fill the state of the art in the scholarly literature discussing the contribution of Islamic banks to the advancement of economies in diverse nations, namely Ledhem and M. Mekidiche [7], Gani and Z. Bahari [8], Tabash et al., [9], Anwar et al., [10], Boukhatem and F. Ben Moussa [21], Chowdhury et al., [22]. A study Anwar et al., [10] found that Islamic bank deposits and the number of offices had a significant positive relationship with Indonesia's economic growth. It was also found that there was a two-way relationship between Islamic banks and economic growth in Indonesia. A study Gani and Bahari [8] reports that in the short term, there exists no substantial association between the Islamic banking index and the actual economic conditions in Malaysia. However, in the long term, Malaysia's economic growth is greatly influenced by the substantial contributions made by Islamic bank financing and savings. These financial mechanisms, rooted in Islamic principles, play a pivotal role in driving the country's economic development. A study Tabash et al., [9] shows that Islamic banking does not have a significant contribution to the Nigerian economy.

In contrast to the researchers above, this study covers the COVID-19 crisis period starting from the first quarter of 2020. Thus, this research can provide a more comprehensive explanation of the contribution of Islamic banking to economic growth, especially in the Indonesian context. This research also adds insight and understanding for practitioners, such as the government, investors, Islamic bank management, and other concerned parties.

2.2 Hypothesis development

Total deposits as a proxy for Islamic banking performance about economic growth have been examined by Anwar et al., [10] in Indonesia and Ledhem and M. Mekidiche [7] in Malaysia, Indonesia, Brunei, Turkey, and Saudi Arabia. Both authors show that total Islamic banking deposits contribute significantly positively to the economic growth of the countries studied. Therefore, the first hypothesis (H1) formulated is: that the growth of total sharia banking deposits has a significant positive effect on Indonesia's economic growth as measured by real GDP growth.

The results of the study Anwar et al., [10] show that total Sharia banking financing does not have a significant contribution to Indonesia's economic growth. However, studies Yusof and M. Bahlous [4] and Tabash et al., [9] report that total Islamic banking financing has a significant positive relationship with economic growth in GCC countries, East Asia, and Nigeria. Our research uses a different period and model specifications from Anwar et al., [10], so it is expected that total Sharia banking financing will have a significant positive contribution to Indonesia's economic growth. Therefore, the second hypothesis (H2) formulated is: that the growth of total sharia banking financing has a significant positive effect on Indonesia's economic growth as measured by real GDP growth.

The number of Sharia banking offices as a proxy for Sharia banking performance to economic growth has been examined by Anwar et al., [10] and Anggraini [23] in Indonesia. These two studies prove that the number of Sharia banking offices has a significant positive contribution to Indonesia's economic growth. Therefore, the third hypothesis (H3) formulated is: that the growth in the number of Sharia banking offices has a significant positive effect on Indonesia's economic growth as measured by real GDP growth.

A study Golubeva [24] found a significant decline in the performance of conventional and sharia banks in 13 countries during the COVID-19 crisis. In this case, the author reports that conventional banks have better resilience than Islamic banks during the COVID-19 crisis in the 13 countries studied. Therefore, the fourth hypothesis (H4) formulated is: that the COVID-19 crisis reduces the contribution of Sharia banking to Indonesia's economic growth as measured by real GDP growth.
3 Research methods

3.1 Sample

This research uses quarterly time series data from 2009Q1 to 2022Q3. The use of quarterly time series data in research follows suggestions from Anwar et al., [10], Levine et al., [25] and Imam and Kpodar [26]. Data obtained from Indonesian Financial Statistics (SEKI) published by Bank Indonesia (BI) via the site https://www.bi.go.id/id/statistik/ekonomi-keuangan/seki, and Sharia Banking Statistics (SPS) published by the Financial Services Authority (OJK) via Statistik Perbankan Syariah (ojk.go.id).

3.2 Variable description

The dependent variable real GDP is used as a proxy to calculate economic growth as has been used by Ledhem and M. Mekidiche [7], Gani and Z. Bahari [8], Tabash et al., [9], Anwar et al., [10], and Majid and S. Kassim [12]. Real GDP (trillions of rupiah) is calculated based on constant 2010 prices. Regardless of the direction of the causal relationship between the financial sector and economic growth, it has been proven that there is a significant relationship between the financial sector and the real sector [12]. We use total deposits, total financing, number of bank offices as proxies for the financial intermediation role of Sharia banking. Total deposits (DEP) and total financing (FIN) are each expressed as a ratio to nominal GDP [12], while the number of bank offices (LIBO) is in the natural logarithm. This study's data observations cover the COVID-19 crisis period which was officially announced by the Indonesian government on March 31, 2020 [27]. The COVID-19 crisis dummy variable is coded 1 for the first quarter of 2020 to the third quarter of 2022 and coded 0 for observations before the COVID-19 crisis.

3.3 Data analysis model

The model consists of a dependent variable (real GDP) and seven explanatory variables, which are generally stated in statement (1) below.

\[
GDP = f(DEP, FIN, LIBO, COVID, COVID*DEP, COVID*FIN, COVID*LIBO)
\]

where:

- \(LGDP\) = Natural logarithm of real GDP
- \(DEP\) = The ratio of total deposits to nominal GDP (%)
- \(FIN\) = The ratio of total financing disbursed to nominal GDP (%)
- \(LIBO\) = Natural logarithm of the number of sharia banking offices
- \(COVID\) = COVID-19 crisis dummy

The ARDL model is suitable for time series data with a combination of integration order level I(0) and first order I(1), but not second order, I(2). This process can elude problems linked to endogeneity, and the ability of the Engle & Granger method [28] to perform long-term tests. Autocorrelation and endogeneity problems can be fixed through this model as long as proper lags are used [29]. Another advantage of the ARDL model is the competence to exploit small sample characteristic for study Halicioglu [30] and the ability to measure the short and long-term concurrently.

This study's Auto Regressive Distributed Lag (ARDL) estimator is expressed by equations (2) and (3).
\[ LGDP_t = \beta_0 + \beta_1 DEP_t + \beta_2 FIN_t + \beta_3 LIBO_t + e_t \]  
\[ (2) \]

\[ \Delta LGDP_t = \gamma_0 + \sum_{i=1}^{p} \gamma_i \Delta LGDP_{t-i} + \sum_{j=0}^{q} \gamma_j \Delta (DEP)_{t-j} \]
\[ + \sum_{k=0}^{q2} \gamma_k \Delta (FIN)_{t-k} + \sum_{l=0}^{q3} \gamma_l \Delta (LIBO)_{t-l} \]
\[ + \sum_{m=0}^{q4} \delta_m \Delta (COVID)_{t-m} + \sum_{n=0}^{q5} \delta_n \Delta (COVID * DEP)_{t-n} \]
\[ + \sum_{o=0}^{q6} \delta_o \Delta (COVID * FIN)_{t-o} + \sum_{r=0}^{q7} \delta_r \Delta (COVID * LIBO)_{t-r} \]
\[ - \theta ECT_{t-1} + v_t \]  
\[ (3) \]

Note:
(2) Long-term ARDL model
(3) Short-term ARDL model
\[ \beta_0, \beta_1, \beta_2, \beta_3 = \text{Long-term ARDL model coefficients} \]
\[ e_t = \text{Long-term ARDL model error components} \]
\[ \gamma_0 = \text{Short-term ARDL model intercept} \]
\[ \gamma_i, \gamma_k, \gamma_m, \gamma_n, \gamma_o, \gamma_r = \text{Short-term ARDL model coefficients} \]
\[ \delta_m = \text{Coefficient of dummy variable for the COVID-19 crisis} \]
\[ ECT = \text{Error correction component} \]
\[ \theta = \text{The speed of adjustment of the dependent variable towards its equilibrium} \]
\[ v_t = \text{Short-term ARDL model error component} \]

In this study, besides the intercept coefficient, the COVID-19 crisis variable and its interactions are treated as deterministic (fixed) regressors. The ARDL model consists of long-term and short-term models, expressed in equations (2) and (3).

### 4 Results and discussion

#### 4.1 Results

**4.1.1 Descriptive statistics**

The average value for all research variables is greater than the standard deviation value. Except for the variable number of bank offices, the kurtosis values for all variables range between values 1 to 3. As a result, except for the variable number of bank offices, the raw data for all variables are normally distributed, indicated by the relative Jarque-Bera probability value greater than the significance level of 5%. Apart from seeking robust estimation techniques, data smoothing is simply done by taking the natural logarithm value, or the ratio value of the regressor variables to a related variable outside the model which is considered to be underlying and moves in the same direction as the regressor variables.
4.1.2 Stationarity test

Testing the stationarity of the real GDP variable by inserting the Break of the COVID-19 event which started on March 31, 2020 [27] gives ADF statistics of – 3.83 and Prob. Amounting to 0.2241, significant at the 5% level. This is evidence of unit roots and the COVID-19 break. So, the real GDP variable is not stationary, accompanied by the presence of a break in the data in the first quarter of 2020. The break in the real GDP data is the reason for including the COVID-19 dummy variable in the research model. The COVID-19 dummy variable is treated as a deterministic regressor and also has the potential to moderate the direct relationship of other explanatory variables to the real GDP variable.

<table>
<thead>
<tr>
<th>Variable</th>
<th>ADF-level Prob.</th>
<th>Variable</th>
<th>ADF-1st difference Prob.</th>
<th>Order of integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>LGDP</td>
<td>0.852</td>
<td>d(LGDP)</td>
<td>0.0811</td>
<td>*** I(1)</td>
</tr>
<tr>
<td>DEP</td>
<td>0.5615</td>
<td>d(DEP)</td>
<td>0</td>
<td>* I(1)</td>
</tr>
<tr>
<td>FIN</td>
<td>0.3394</td>
<td>d(FIN)</td>
<td>0.0006</td>
<td>*** I(1)</td>
</tr>
<tr>
<td>LIBO</td>
<td>0.1353</td>
<td>d(LIBO)</td>
<td></td>
<td>I(1)</td>
</tr>
</tbody>
</table>

Source: OJK, BI; processed
** Demonstrates statistical significance at the 5% level
*** Demonstrates statistical significance at the 1% level

Referring to the ADF statistics in Table 1, all variables are non-stationary at level, stationary at 1st difference, and none are stationary at 2nd difference or more. Because all variables are stationary at I(1), it is necessary to test the possibility of the existence of cointegration or relationships between variables in the long term using the ARDL bounds test (F-Bounds Test) approach. The small sample size available is also a reason to utilize the ARDL approach. In addition, the ARDL approach, using a short-term dynamic model as one of its elements, provides information about the speed of equilibrium adjustments in each period in the relationship between cointegrated variables.

4.1.3 Cointegration test: F-Bounds Test approach

Table 2 presents the results of the cointegration relationship test between variables using the F-Bounds Test approach. Because the sample size is not large (n = 55 < 100), the Schwarz criterion (SC) was chosen to determine the model selection criteria. Then, the lag length was determined to be a maximum of 4 for the research variables, and the ARDL model (4, 3, 3, 0) was selected based on the SC criteria. In Table 3, the F statistic value of 36.1440 is greater than the upper bound value at all significance levels. Thus, it is statistically proven that there is a cointegration relationship between Islamic banking financial intermediation variables (DEP, FIN, LIBO) and real GDP growth for the observation period from the first quarter of 2009 to the third quarter of 2022.

<table>
<thead>
<tr>
<th>F-statistic = 36.1440</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical Bound (k = 3)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Signif.</th>
<th>Asymptotic: n = 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower Bound: I(0)</td>
</tr>
<tr>
<td>10%</td>
<td>2.37</td>
</tr>
<tr>
<td>5%</td>
<td>2.79</td>
</tr>
<tr>
<td>1%</td>
<td>3.65</td>
</tr>
</tbody>
</table>

Source: OJK, BI; processed
4.1.4 Long-term model estimation results

Table 3 presents the empirical results of the performance of the relationship between variables in the long term. Several important things can be stated as follows.

**First.** The total deposit coefficient (DEP) with a positive value of 0.1230 is the only indicator of Islamic banking financial intermediation that is significant at the 1% level. This means a 1% increase in total deposits will increase economic growth by an average of 0.12% if other factors do not change. So in the long term, there is a very significant positive influence from the growth of total Sharia banking deposits on Indonesia's economic growth during the observation period 2009Q1 – 2022Q3.

Table 3. Long-term model estimation results.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEPt</td>
<td>0.1230</td>
<td>***</td>
<td>0.0005</td>
</tr>
<tr>
<td>FINt</td>
<td>-0.0784</td>
<td>-1.6256</td>
<td>0.1135</td>
</tr>
<tr>
<td>LIBOt</td>
<td>-0.0626</td>
<td>-0.6141</td>
<td>0.5434</td>
</tr>
<tr>
<td>C</td>
<td>14.9771</td>
<td>***</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Note: ***, **, and * are significant at the 1%, 5%, and 10% significance levels, respectively, ARDL((4, 3, 3, 0).

Source: OJK, BI; processed

**Second.** The coefficients for total financing and number of bank offices are both negative, but not significant. This means that there is a negative influence of each of these two variables on economic growth, but it is not statistically significant. So, total financing and the number of bank offices did not affect Indonesia's economic growth during the 2009Q1 – 2022Q3 observation period.

4.1.5 Short-term model estimation results

Table 4 presents several short-term relationship results between the real GDP variable and several explanatory variables. The short-term model explains the dynamic pattern of relationships between variables, and how quickly deviations in the dependent variable can return to equilibrium. Several important notes can be stated as follows.

**First.** Except for the LIBO variable, all explanatory variables are captured in the short-run model. Based on the Wald test, changes in the variables real GDP (Δ(LGDP)) in the previous quarter, total deposits (Δ(DEP)), and total financing (Δ(FIN)) have a significant effect on the adjustment to real GDP growth (Δ(LGDP)) at the moment. Changes in real GDP in the previous quarter, and changes in total deposits occurring symmetrically, harm the current real GDP growth adjustment. **Second.** The interaction coefficient of the COVID-19 crisis dummy with total financing is negative and very significant at the 1% level. This means that the COVID-19 crisis dummy is a moderator variable which in this case weakens the negative effect of total financing on economic growth. **Third.** The ECTt-1 coefficient takes a value of −0.1431 and is very significant at the 1% level with a negative sign. That means that the correction to the real GDP deviation is 14.31% per quarter. In other words, in the context of the contribution of Islamic banking, the recovery of real GDP growth from short-term imbalance to long-term balance takes around 7 quarters or around 21 months. Finally, as shown in Table 4, The diagnostic tests of normality, serial correlation, functional form, and heteroscedasticity have been successfully passed by the underlying ARDL estimators for all models, both short and long run.
Table 4. Short-term model estimation results.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta (LGDP_{t,1})$</td>
<td>-0.4162</td>
<td>-4.5464</td>
<td>***</td>
</tr>
<tr>
<td>$\Delta (LGDP_{t,2})$</td>
<td>-0.6699</td>
<td>-9.5278</td>
<td>***</td>
</tr>
<tr>
<td>$\Delta (LGDP_{t,3})$</td>
<td>-0.4190</td>
<td>-5.9235</td>
<td>***</td>
</tr>
<tr>
<td>$\Delta (DEP_{t})$</td>
<td>-0.0076</td>
<td>-1.8341</td>
<td>*</td>
</tr>
<tr>
<td>$\Delta (DEP_{t,1})$</td>
<td>-0.0287</td>
<td>-6.2719</td>
<td>***</td>
</tr>
<tr>
<td>$\Delta (DEP_{t,2})$</td>
<td>-0.0184</td>
<td>-3.8197</td>
<td>***</td>
</tr>
<tr>
<td>$\Delta (FIN_{t})$</td>
<td>-0.0128</td>
<td>-1.9400</td>
<td>*</td>
</tr>
<tr>
<td>$\Delta (FIN_{t,1})$</td>
<td>0.0245</td>
<td>3.9122</td>
<td>***</td>
</tr>
<tr>
<td>$\Delta (FIN_{t,2})$</td>
<td>0.0178</td>
<td>2.5474</td>
<td>**</td>
</tr>
<tr>
<td>$COVID_{t}$</td>
<td>0.4652</td>
<td>0.8197</td>
<td></td>
</tr>
<tr>
<td>$COVID_{t}*DEP_{t}$</td>
<td>0.0037</td>
<td>0.5743</td>
<td></td>
</tr>
<tr>
<td>$COVID_{t}*FIN_{t}$</td>
<td>-0.0710</td>
<td>-6.8853</td>
<td>***</td>
</tr>
<tr>
<td>$COVID_{t}*LIBO_{t}$</td>
<td>0.0175</td>
<td>0.2289</td>
<td></td>
</tr>
<tr>
<td>$CointEq(-1)^*$</td>
<td>-0.1431</td>
<td>-14.2347</td>
<td>***</td>
</tr>
</tbody>
</table>

Serial Correlation, Breusch-Godfrey, prob. $\chi^2(2) = 0.0844$

Heteroscedasticity, Breusch-Pagan-Godfrey, prob. $\chi^2(17) = 0.1139$

Functional Form, prob. F(1,32) = 0.7437

Normality, Jarque-Bera =1.0532(0.5906)

D-W = 1.8556

Wald-test, restriction coefficients $\Delta (LGDP)\gamma_1 = \gamma_2 = \gamma_3 = 0$, prob. $\chi^2(3) = 0.0002$

Wald-test, restriction coefficients $\Delta (DEP)\gamma_4 = \gamma_5 = \gamma_6 = 0$, prob. $\chi^2(3) = 0.0000$

Wald-test, restriction coefficients $\Delta (FIN)\gamma_7 = \gamma_8 = \gamma_9 = 0$, prob. $\chi^2(3) = 0.0030$

Note: ***, **, and * are significant at the 1%, 5%, and 10% significance levels, respectively. ARDL (4, 3, 3, 0).

Source: OJK, BI; processed

4.1.6 Model stability

In Figure 4, the CUSUM and CUSUMSQ statistical plots are within the range of the 5% significance level (see figure: are in two dotted straight lines), then the null hypothesis cannot be rejected that, all coefficients in the model are stable.

![CUSUM and CUSUMSQ real GDP variable](image)

Source: OJK, BI; processed

**Fig. 1.** Plot of CUSUM and CUSUMSQ real GDP variable.
4.2 Discussion

In the long term, there is a significant positive influence of total deposit growth on Indonesia's economic growth during the observation period 2009Q1 – 2022Q3. These results support the first research hypothesis statement (H1). Our findings confirm the results of studies Lebdaoui and J. Wild [6], Ledhem and M. Mekidiche [7], Gani and Z. Bahari [8], Tabash et al., [9], Anwar et al., [10], Jouini [16], and Zirek et al., [31]. The positive effect of total deposits on economic growth proves that through its role as a financial intermediary, Islamic banking proves to be a proficient institution in channelling productive resources towards economic growth [10]. However, in the short term, total deposits for all-time lags adjust significantly negatively to changes in real GDP. These results follow the findings of Gani and Z. Bahari [8] but contradict the results of Anggraini [23] and Anwar et al., [10]. Total deposits can drive economic growth only if there is a transformation of resources into capital accumulation [32]. However, growth in total deposits will also increase leverage. The higher the leverage, the higher the risk and instability of financial resource intermediation [33].

The growth in total sharia banking financing does not affect Indonesia's economic growth for the observation period 2009Q1 – 2022Q3. This finding rejects the second hypothesis statement (H2). Our results confirm the results of the study Tabash et al., [9]. Financial intermediation that is not conducive makes it difficult to generate capital in the real sector and hinders economic growth [33]. Inefficiency and less selective allocation in financing distribution activities may be the cause of no influence, even a negative influence of total financing on economic growth. Indonesian society is consumerist so investment is lower than consumption [34]. Also, the share of Sharia banking business activities in profit-sharing financing is still relatively small, so according to Khan and O. K. M. R. Bashar [35], the efficiency benefits of interest-free resource allocation are not achieved.

In the long term, the growth in the number of Sharia banking offices does not affect Indonesia's economic growth for the 2009Q1 – 2022Q3 period. This finding is not by the third research hypothesis statement (H3). It is not just an increase in the number of branch offices, but an intermediation process supported by technological innovation, which can increase the efficiency and productivity of the use of financial resources so that it can contribute significantly to economic growth. In this regard, the results of the study Ihsan [36] for example, imply that there is a negative relationship between the number of Sharia banking branch offices and economic growth. However, contrary evidence was found in research Anggraini [23], Anwar and L. P. Nguyen [37].

In the short term, except for the number of bank offices, changes in the total deposit and total financing variables contributed significantly to the adjustments that occurred in economic growth for the 2009Q1-2022Q3 period. In the short term, the COVID-19 crisis acts as a moderating variable that weakens the negative influence of total financing on real GDP growth. This finding rejects the fourth research hypothesis statement (H4). This may be due to rehabilitation efforts during the crisis through the distribution of the government's budget for handling COVID-19.

5 Conclusion

Indonesia's economic growth is primarily influenced by the long-term growth of deposits. Therefore, the positive impact of Sharia banking on the country's economy is expected to stem from the efficiency of deposit generation rather than from financing activities or expanding the network of bank branches. In the short term, except for the growth in the number of bank offices, the growth in total deposits and total financing contributes to the process of adjusting real GDP growth to return to its equilibrium condition. The COVID-19 crisis weakens the negative influence of total financing on economic growth, so it does not
disrupt the financial intermediation process of Islamic banking. The adjustment of real GDP towards long-run equilibrium takes about seven quarters, a relatively long time. However, through deposit generation, Sharia banking contributes positively to economic growth, which proves that Sharia banking is quite resilient in facing the COVID-19 crisis.

This study makes significant contributions in two areas. **First**, it fills the gap in the literature on Sharia banking governance, especially on the characteristics of deposit growth related to economic growth in the Indonesian context during the COVID-19 crisis. **Second**, actors such as Islamic bank management, investors, government, and other stakeholders in Indonesia will gain a better understanding. Therefore, this research recommends that internal Sharia banking stakeholders be able to manage deposits optimally. The ability to manage risk also needs to be continuously improved to deal with various possible negative shocks in the economy. This study contains at least the following major weaknesses. **First**, the COVID-19 crisis dummy variable to capture the existence of structural breaks is determined a priori by referring to official government announcements. **Second**, the study has not included control variables. Therefore, other researchers can improve at least the two weaknesses mentioned above.

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