

The Impact of Macroeconomics towards Islamic Banking Third Party Funds in Indonesia

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This study discusses the impact of macroeconomic variables collected by economic growth, inflation, and interest against party funds collected by Islamic banks in Indonesia, both in the long and short term. The data used is quarterly time series data from 2006 Q1 to 2018 Q4, after stationarity testing, it turns out that the non-stationary data is then fermented and becomes stationary at I (0) and at I (1), then the cointegration test is performed; the dependent variable and independent variables are not cointegrated, so that the model is suitable using the Autoregressive Distributed Lag (ARDL) model. The Result obtained from macroeconomic variables have a long period or can be determined on third party funds in Islamic banks, where most of the variables are interest rates and inflation rates. For short-term analysis, the results of the analysis of inflation and interest rate positively impact on third party funds in Islamic banks in Indonesia, while economic growth is not related to third party funds in Islamic banks in Indonesia.

Key words: *Third party funds, economic growth, inflation, interest rate, ARDL.*

Introduction

An Islamic Bank is a bank that applies sharia principles in carrying out its business activities that have not applied interest in setting prices. Islamic banks have grown rapidly since the 1970s, especially in the Middle Eastern countries that want to implement Islamic rules in their financial transactions (Imam & Kpodar, 2016). With sharia principles, the number of Sharia Commercial Banks in Indonesia is 14 and Conventional Banks have as many as 20 Sharia Business Units (OJK Statistics Report, January 2019)

Indonesia is the nation with the world's biggest Muslim population, based on data from the Central Agency of the Islamic adherents statistics in Indonesia amounting to 87.2 percent of the total population and is 13.1 percent of all Muslims in the world. The large number of Muslims in Indonesia should be a potential for the Indonesian Islamic banking world (BPS Census, 2010). The Financial Services Authority (FSA Banking Statistics as of June 2018) states that data as of June 2018, the number of Conventional Bank Third Party Funds (TPF) amounted to 5,218 trillion rupiahs while Sharia banking concerned only 348.38 trillion rupiahs, seen as a percentage of total deposits Islamic banking has only 6.25% of deposits. The number of deposits accounted for in Sharia banking was 27.27 million accounts (9.33%), while the number of customers collected was 21,609,703 people (9.07%).

So the quantity of thirdparty funds, thirdparty fund accounts and deposit clients that can be gathered in Islamic banking is still very low, less than 10% of the total of commercial banks, while the Muslim population in Indonesia accounts for 87.2% of the total population of Indonesia.

The largest source of funds available to the Bank comes from Third Party Funds, both for conventional banks and Islamic banks. Based on an OJK study in Islamic bank statistics (reprocessed) in March 2018, total sources on deposit financing exceeded 96 percent of total sources of bank financing, as depositors cash is the primary source of Islamic bank funds, so knowing the variables influencing customer decision making in saving their cash with Islamic banks is crucial, so TPF leadership will be an interesting subject to be studied.

Some empirical studies use a number of variables that can determine the level of savings, especially variables outside the macro economy such as compliance with religion, service quality, advertising, products offered, bank reputation and many others, but in this study the author will examine whether the variables the economy (economic growth, inflation and interest rate) as an independent variable has a significant impact on Islamic bank savings deposits.

Keynesian Theory (1930) assumes that elevated domestic revenue (GDP) will boost present

savings; the Permanent Income Hypothesis proposed by Friedman (1957) predicts that greater future revenue expectations will decrease present savings. Modigliani's Life Cycle Hypothesis (1966, 1970) says that greater development will boost the working population's total revenue and thus boost aggregate savings. Another (Deaton, 2003) theory known as the bufferstock hypothesis indicates that the primary reason customers retain assets is to safeguard their assets against future revenue changes so customers attempt to save more. Carroll, Hall, Zeldes, & Carroll (2003) show that when wealth is below the specified target, more savings will be made, but when wealth is above the chosen target it will override efforts to save.

Inflation can affect savings in several ways: first, inflation can create uncertainty in the future, so to avoid the risk of negative changes in income, the public will increase their savings. Second, inflation can affect real income, and people will try to save themselves from buying goods so that savings will be raised.

Economic interest rates can influence bank deposits, although Islamic banks do not apply interest in their company operations, so the impact of interest rates on deposit in Islamic banks can have an unclear connection. It will have a negative relationship if the community considers the interest rate in the economy as one of the determinants of saving decisions, when the interest rate increases the community will choose to save in conventional banks rather than Islamic banks, so savings in Islamic banks will decrease. But if interest is not one of the determinants in saving money in Islamic banks, there may be no change or increase in the quantity of savings.

This research aims to determine the impact of macroeconomic factors (financial growth, inflation, interest rate) on third party funds (DPK) in long-term and short-term interactions in Islamic banks in Indonesia where variables are estimated using the Auto Regressive Distributed Lag (ARDL) method.

Literature Review

(Naz, Ahmad, & Majid, 2018) discuss the long-term relationship between macroeconomic variables of interest rates, the amount of money spent, the index of consumer prices (conversion) and the financial development of deposits in Pakistani Islamic banks. Further they discuss the amount of interest, the amount of money spent, the consumer price index and economic growth on deposits in Pakistani Islamic banks.

Personal, Archive, & Abdelrahman, (2018) & Policy, (2016) explore the effect of macroeconomic factors on savings in Malaysia's Islamic banking scheme by evaluating long-

term interactions and brief numbers between variables. They discovered that inflation determinants had a powerful effect on Islamic banking deposits while there was no important effect on other factors, namely the Kuala Lumpur GDP and Composite Index.

Sakiru & Corresponding, (2011), (Akhtar, Akhter, & Shahbaz, 2017) examine the factors influencing Islamic banking savings in Malaysia on the basis of deposits types using the least square residual improved (RALS) and use the Johanes cointegration break-up method. They found that the index of industrial manufacturing, real deposit interest rates still have a positive impact on certain components of sharia bank deposits and full sharia deposits, while actual savings rates in commercial banks have an adverse effect; but the role of the sharia banks indexes and varied true exchange rates.

Akhtar et al., (2017) examined the effect of macroeconomic factors on conventional bank and Islamic bank deposits in Pakistan, using Auto Regressive Distributed Lag, and the findings revealed that variable interest rates in conventional banks, Islamic bank revenues, consumer price indices, and exceptional amounts of money and loan rates have a distinct effect on conventional bank deposits and Islamic banks. Savers are susceptible to the yields obtained from deposits in standard banks and Islamic banks.

Arshad & Nurfadilah, (2017) investigate the factors that influence changes in mudharabah deposits in a comparative study of Islamic banks in Malaysia and Indonesia. The research findings indicate that the interest rate and non-performing finance in both nations have an adverse connection to changes in Mudharabah deposits, while the return rate and reserves have a favourable and substantial connection to changes in Mudharabah deposits.

Authuk, (2017) reveal that the interest rate has no long-term or short-term effect on bank deposits in Islamic countries, whereas the interest rate has a substantial impact on bank deposits in non-Islamic nations.

Research examined in Turkey (Aysan, Disli, Ng, & Ozturk, 2015) discovered that, with the exception of public savings, interest rates, depth of economic measures, and inflation have a beneficial effect on savings. With the method of cointegration, Hondroyannis (2004) with samples in Greece discovered that changes in fertility, lengthy dependency ratios, actual interest rates, and liquidity and government finances had a major impact on the function of storage.

Khan et al. (2014) states the impact of interest rates on Islamic countries have no long-term or short-term effect on bank deposits, but in instances where non-Islamic economic interest

rates have a substantial effect on bank deposits, his research utilizes the Auto Regressive Distributed Lag strategy.

Ali, Hassan, Kasim, & Mara (2012) studied the impact of macroeconomic factors on mudharabah asset deposits in Malaysia. The findings showed that the rate of exchange had a substantial effect on mudharabah savings, while GDP and inflation had no effect on mudharabah savings.

Abduh, Omar, & Duasa (2011) evaluate the vibrant impacts of interest rate and profit shifts, level of manufacturing, inflation and financial crises in Malaysian Islamic banks, from January 2000 to December 2010 with cointegration test methods and vector error correction models used to disclose the vibrant connection between macroeconomic factors and the complete Islamic banking deposit crisis. Results indicate that changes in interest rates and revenues and development in manufacturing have no significant impact, while inflation has a adverse impact on complete Islamic bank deposits, reflecting changes in consumer habits during the recession. This shows that bank depositors trusted Islamic banking to be more resilient to the financial crisis, which resulted in deposit inflows to Islamic banks during the financial crisis.

Research undertaken by (Kasri & Kassim, 2009) using Vector Autoregressive and Impulse Response Function Analysis from March to August 2009 on the variables influencing Islamic bank savings in Indonesia, this show that bank depositors trusted Islamic banking to be more resilient to the financial crisis leading to deposit inflows to Islamic bank during the financial crisis (Hussain et al., 2018).

Athukorala & Sen (2003) examines, in Indonesia, the effects of economic growth, real interest rates, the spread of banking facilities and inflation, and the results show that inflation has a negative relationship with savings, while the impact of population dynamics, disposable income growth, interest rates have a positive effect on savings performance.

Loayza & Shankar (2000) utilizes a co-integration strategy to identify the connection between savings and variables such as actual interest rates, per capita earnings, dependency ratio, economic growth, public interest rates and share of GDP in agriculture. The findings show that the real interest rate, per capita income and agricultural share of GDP have a favourable savings connection, while economic growth, inflation and dependency ratios have an adverse savings relationship.

Research Gap

The variations in the outcomes of prior studies on the effect on deposits in Islamic banks of macroeconomic factors are:

1. Economic growth affects deposits in Islamic banks: *Adebola Solarin, Hammoudeh, & Shahbaz (2018); Ozcan (2003); Authukorala and Sen (2003); Loayza and Shankar (2000)* but are contrary to the results of research from: *Naz, Ahmed, & Majid (2018); Personal, Archive, Mobin, & Still (2015); Abduh, Omar, & Duasa, 2011; Ali, Hassan, Kasim, & Mara (2012)*) which revealed that economic growth had no effect on public savings in Islamic banks
2. Inflation has a significant effect according to the results of the study: *Naz, Ahmed, & Majid (2018); Personal, Archive, Mobin, & Still (2015); Abduh, Omar, & Duasa (2011); Authukorala and Sen (2003); Ozcan (2003); Loayza and Shankar (2000)* but contrary to the results of research from: *Ali, Hassan, Kasim, & Mara (2012)*, which disclosed that inflation had no impact on Islamic banks' government deposits
3. According to study outcomes, interest rates influence deposits in Islamic banks: *Adebola Solarin, Hammoudeh, & Shahbaz (2018); Naz, Ahmed, & Majid (2018); Akhtar, Akhter, & Shahbaz (2017); Arshad & Nurfadilah (2017); Kasri & Kassim, 2009; Authukorala and Sen (2003); Ozcan (2003); Loayza and Shankar (2000)* but are contrary to the results of research from: *Mustaq, Siddiqui (2017); Abduh, Omar, & Duasa, 2011; Athuk (2017)*.

Research in several countries shows different results, the authors are interested in verifying and confirming the results of these studies in Indonesia. There has been little study in Indonesia examining the effect of macroeconomic factors on deposits in Islamic banking, in addition to deposits that will be used instead only deposits but total and third party quantities from demand deposits, saving and deposits.

Data and Methodology

The data used is Quarterly time series data for the period Q.1 2006 to Q.4 2018 with the dependent variable being the total third party funds in Islamic banks in Indonesia, while the dependent variable is the macroeconomic variable represented by the implicit GDP index as the proxy of economic growth.

The problem that often arises in time series data is autocorrelation which results in data not being stationary and will give rise to a false (spurious regression) regression model. In other words, the model obtained from the dependent variable and the independent variable used to form the regression are not stationary and or formation of the variable does not correlate

substantially. According to Granger and Newbold, if $R^2 >$ statistics from the Durbin Watson test, we must suspect that the result is a false regression. To test whether the data is stationary or not, several methods may be used, including (1) graph method and (2) unit root method. However, the unit root technique will be used in this research, with the requirements that if the test findings for unit root level are higher than 0.05, it can be found that the information used is not stationary. To ensure that information is not stationary, the data is deferred at the first level, if it is not stationary, continue to be deferred to the second level.

If two random variables are not stationary at the unit in level root test, but linear combination between the two variables is stationary time series, then the dependent and independent variables are cointegrated. There are also conditions in which the random variable is stationary while there is a tendency for joint movement between the dependent and independent variables, so that they eliminate each other so the non-stationary variables can produce stationary residuals. In other words, two variables that are not stationary before being deferred but are stationary at the first level of deference, it is probable that these variables are co-integrated with each other, which means that there is a long-term balance relationship and the regression result is called cointegration regression and this is not a false regression. The cointegrated regression model is in accordance with the truth for long-term analysis.

The technique used to test for cointegration is by using the johansen test, and then if there is no cointegration between the dependent and independent variables, to determine the model Auto Regressive Distributed Lag (ARDL) will be used, the advantages of this technique are: limited to 30 to 80 observations. Second, it does not see whether the stationary regressor is at I (0) or I (1) and there is no one stationary of the independent variable with difference I (2) or above. Third, ARDL applies a general-specific modeling framework by taking sufficient amount of lag. Interpretation of the ARDL model to measure the permanent long-term influence of the independent variable on the dependent variable whose magnitude is measured from $k = -\theta / \rho$, which means if the independent variable changes permanently by one percent eating the dependent variable will change as much as percent

Thirdparty fund model requirements in Indonesian Islamic Banks using ARDL as follows:

$$TPF = f(GDP, INF, INT)$$

$$\Delta TPF_t = \alpha + \delta_t + \rho(TPF)_{t-1} + \gamma_1(\Delta TPF)_{t-1} + \theta_1(GDP)_t + \beta_1(\Delta GDP)_t + \beta_2(\Delta GDP)_{t-1} + \theta_2(INF)_t + \beta_3(\Delta INF)_t + \beta_4(\Delta INF)_{t-1} + \theta_3(INT)_t + \beta_5(\Delta INT)_t + \beta_6(\Delta INT)_{t-1} + \varepsilon_t \dots\dots\dots(1)$$

where :

- TPF = DEP = Deposit = Third Party Funds in Islamic Banks in Indonesia
- GDP = Gross Domestic Product (proxy index implisit GDP)
- INF = Inflation (proxy Consumers Price Index)

INT = interest (proxy Bank Indonesia Rate)

Data Processing Results

The first step is to detect TPF (DEP), GDP, INF, INT data whether stationary or not, then the unit root test is used with the following results:

Table 1. Root Test Estimation

Variable	Unit-Root Estimation Augmented Dickey-Fuller (ADF) with intercept			
	Level		First difference	
	t-Statistic	Prob.	t-Statistic	Prob.
DEP	-1.842884	0.3561	-7.031386	0.0000
GDP	-1.483085	0.5341	-6.922155	0.0000
INF	-2.752175	0.0725	-7.592683	0.0000
INT	-3.781720	0.0056	-4.556974	0.0006

Source: results of Eviews data processing

Based on the ADF test outcomes in table 1, it indicates that it is stationary for all variables. The variable TPF (DEP), GDP, and stationary INF on first difference while the INT variable (interest rate) is stationary at the level, this indicates that the interest rate is stationary at I (0) and other variables (total third party fund, economic growth, and inflation) are stationary at I (1). The next stage is the cointegration test using the Johansen test between the dependent and independent variables and the outcomes are shown in the following table:

Table 2. Cointegration Test Results

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None	0.364086	37.15785	47.85613	0.3401
At most 1	0.151401	14.52323	29.79707	0.8100
At most 2	0.117273	6.314793	15.49471	0.6583
At most 3	0.001555	0.077810	3.841466	0.7803

Trace test indicates no cointegration at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Based on the Johansen test results at the level of 5%, there is no cointegration between the dependent and independent variables. From the stationary test and cointegration test it can be concluded that the data is stationary at I (0) for interest rate while other variables (third party funds, economic growth, inflation) are stationary at level I (1), and none of the factors are stationary on the second line, then the dependent variable and the autonomous variable are not cointegrated, the ARDL model is the appropriate model estimate.

The third step, estimating the ARDL model in equation (1), but the result is that most of the variables are not significant so as to re-estimate the ARDL model, the final results are obtained as below:

Table 3. Estimated ARDL Model Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.17E+16	8.49E+15	-3.738622	0.0005
TIME	4.31E+10	1.15E+10	3.737394	0.0005
TPF(-1)	-0.445142	0.133113	-3.344092	0.0017
GDP	1.04E+11	5.48E+10	1.897095	0.0642
INF	5.71E+11	2.38E+11	2.394773	0.0209
INT	5.95E+12	2.80E+12	2.124360	0.0392

Source: results of Eviews data processing

From the ARDL model equation (1) the value of the long-run multiplier is obtained for each variable as follows:

Table 4: The coefficient of long run multiplier

	θ	ρ	$-(\theta / \rho)$
GDP	1.04E+11	-0.445142	2.33633
INF	5.71E+11	-0.445142	1.28274
INT	5.95E+12	-0.445142	1.33665

Based on table 4, it can be interpreted that if there is a permanent change in the form of an increase in INF of 1 percent, it will increase the TPF value by 1.28 percent. INT variable indicates that if INT rises one percent then the TPF value will increase by 1.33 percent. Meanwhile GDP does not have a permanent change in changes in the TPF.

In the brief term, it demonstrates that it is not important at a substantial rate of 5% of GDP, which means that the increase and fall of the GDP price does not influence the TPF value changes. This can occur because people have expectations of future income, when wealth is below the specified target then more savings will be made, but when wealth is above the chosen target it will override effort to save.

INF has a positive effect on TPF with a regression coefficient of 5.71 which shows that when the INF rises by one unit it will increase the TPF by 5.71 units, this indicates that; first, inflation can create uncertainty in the future, so to avoid the risk of negative changes in income, the public will increase their savings. Second, inflation can affect real income, which

means that real income can decline, and people will try to save themselves from buying goods, so that people will increase their savings in the bank.

INT shows significant positive effect on TPF with a regression coefficient of 5.95 which means that if INT rises by one unit, the TPF will increase by 5.95 units. This condition shows that when the interest rate is increased by the economy, the community responds by increasing its savings to Islamic banks even though in its business activities Islamic banks do not apply interest.

Discussion

The results of the study concluded that:

1. Economic growth affects third party funds in Islamic banks in Indonesia and is consistent with studies undertaken by: *Naz, Ahmed, & Majid (2018)* ; *Personal, Archive, Mobin, & Still (2015)* ; *Abduh, Omar, & Duasa, 2011* ; *Ali, Hassan, Kasim, & Mara (2012)* which revealed that financial development in Islamic banks had no impact on government savings;
However, it was not consistent with the studies carried out by *Adebola Solarin, Hammoudeh, & Shahbaz (2018)* ; *Ozcan (2003)* ; *Authukorala and Sen (2003)* ; *Loayza and Shankar (2000)*
2. Inflation has a substantial impact on third party funds in Islamic banks in Indonesia and is consistent with study findings: *Naz, Ahmed & Majid (2018)* ; *Personal, Archive, Mobin & Still (2015)* ; *Abduh, Omar & Duasa (2011)* ; *Authukorala & Sen (2003)* ; *Ozcan (2003)* ; *Loayza and Shankar (2000)*,
but contrary to research from: *Ali, Hassan, Kasim, & Mara (2012)*, which revealed that at inflation had no impact on Islamic banks' government deposits.
3. Interest rates have a significant effect on third party funds in Islamic banks in Indonesia and are in line with the results of the research: *Adebola Solarin, Hammoudeh, & Shahbaz (2018)*; *Naz, Ahmed, & Majid (2018)*; *Akhtar, Akhter, & Shahbaz (2017)*; *Arshad & Nurfadilah (2017)*; *Kasri & Kassim, 2009*; *Authukorala and Sen (2003)*; *Ozcan (2003)*; *Loayza and Shankar (2000)*, but are contrary to the results of research from: *Mustaq, Siddiqui (2017)*; *Abduh, Omar, & Duasa, 2011*; *Athuk (2017)*



Conclusion

Based on the estimation results of the Auto Regressive Distributed Lag, long-term macroeconomic variables have a permanent influence with a positive direction on third party funds collected in Indonesian Islamic banks. While in the short term, inflation and interest rates affect third party funds while economic growth has no effect towards third party funds collected on Islamic banks in Indonesia.

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