EFFECT OF INFLATION ON TOTAL DEPOSITS AND FINANCING OF SHARIA COMMERCIAL BANKS: A MONTHLY DATA EVIDENCE FROM INDONESIA

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Abstract

The main purpose of the paper is to determine the effect of inflation on total deposits and the financing of sharia commercial banks in Indonesia. A monthly time series data over the period of 2012.1-2017.6 was analyzed using Johansen Co-integration test, vector error correction model, and Granger causality test. The co-integration test indicates that there is a long-run relationship between the variables. In the long-run, inflation is negatively related to total deposits and sharia financing. In the short-run, the inflation has no significant effect on the two variables. The sharia financing has a negative effect on itself at the 1 and 2-month period. The result of the Granger causality test points out that there is a bidirectional causality relationship between total deposits and sharia financing. Furthermore, unidirectional causality running from the inflation to sharia financing and from total deposits to the inflation.

Keywords: Inflation, Total Deposits, Sharia Financing, VECM, and Granger Causality Test

JEL classification: E31, E51, G21, N15

1. Introduction

The presence of sharia commercial banks provides an expectation for the improvement of economic activities of the community in Indonesia. Most of the people of this country are Moslems who in all aspects of their lives are required to always guided by the shariah values, especially in the economic activity. Until 2012, there are 25 units of sharia finance institution in Indonesia. The number increase to 34 units in 2017. Along with the increase in the number of Islamic financial institutions in Indonesia, third-party funds and the distribution of Islamic financing also increased over year. The financing is not only distributed by sharia banks but also sharia business units. Until the period of January 2012, the total of sharia financing in Indonesia reached IDR101.689 billion, increased to IDR147.505 billion in January 2013 with the average growth for the period amount to 3.45 percent per month. The increase in the total financing indicates that sharia financing is in great demand by the public. The demand for the financing is not only intended to meet the needs of household consumption but also for the working capital and investment financing.

The dynamics of the total financing in the sharia commercial banks are related to the macroeconomic factors such as inflation. It is due to inflation is a monetary variable that affects the balance in the financial market. The inflation viewed as a profitable condition for the business activity, so in under conditions of rising inflation, the businessmen extremely want to improve their business capacity through the increases in the investment and working capital. The lack of internal financing resource to fund the two programs allows them to request for the financing of the bank. As a result, the demand for financing tends to increase over time. On the other side, based on deposits customer's point of view, inflation can also affect the propensity to save. When inflation increases, the cost of living is going to increases, and the condition will reduce the ability to save. In turn, the total deposits held in the financial institution tend to decline.

Study on the relationship between inflation with total deposit and sharia financing was carried out by previous researchers. However, they provide a relatively different conclusion from one another. The relationship between inflation and total deposits is negative (Abduh et al., 2011), insignificant (Ali et al., 2012), relatively weak (Sharma & Mani, 2012) and positive significant (Moussa & Chedia, 2016; and Husaeni, 2016). The study conducted by the researchers only investigate the one-way relationship between the variables without analyzing the presence or absence of the long-run relationship and causality direction among the three variables.

Furthermore, studies on the impact of inflation on financing also still provide paradoxical conclusions. The empirical results presented by Calza et al. (2004) revealed that inflation is the main determinant of bank lending. This finding is in line with the results of Katusiime's (2018) findings discovered that inflation has a statistically significant effect on the growth of private sector financing. The impact of inflation on bank lending is positive. In other words, an increase in inflation drives an increase in demand for bank financing (Shingjergji & Hyseni, 2015). The main argument underlying the positive relationship is that price increases are an incentive for entrepreneurs to increase their production output. They want to achieve optimal production levels to maximize profits, and bank financing is a source of capital to finance production activities. Previously, different findings were revealed by Arsene& Guy-Paulin (2013) for the case of the Cameroon economy providing empirical evidence that there was a negative relationship between bank financing and inflation. In contrast to some of the researchers above, Johnson (2015) concluded that there is no relationship between inflation and bank financing.

Since several studies such as those described above have not provided consistent conclusions our study re-examines the impact of inflation on total deposits and Islamic bank financing for the context of the Indonesian economy. In contrast to previous research, this study does not only examine the effect of inflation to total deposits and Sharia financing but also analysis the long-run and short-run relationships as well as the causality of the three variables. Therefore, the findings can be used to initial information for the next empirical studies. In term of practical implication, the findings provide information for governments and policymakers regarding the distribution of sharia financing in Indonesia.

The paper is arranged into five sections, following this introduction is section two which presents the literature reviews regarding the linkage of inflation, total deposits, and sharia financing. Section three consists of data sources, measurement of variable and model analysis. Section four pertaining estimation result and discussion, as well as section five, highlight the conclusion and suggestion.

2. LITERATURE REVIEW

2.1. The relationship between inflation and total deposits

Inflation has an impact on people's behavior in using their funds, including the decision to deposit funds in a bank financial institution. The total deposits have usually come from the community as savings customer. Economic theory states that savings are the difference between income and consumption. The greater the share of income used to meet consumption needs, the smaller the availability of funds for savings. Under conditions of inflation, the raising in prices leads to the increase in household's consumption spending which in turn reduce the propensity to saving (Athukorala & Tsai, 2003). Thus, inflation not only affects the

propensity to consume but also affects the volume of savings, including the number of third-party funds in Islamic financial institutions. This thing is in line with the empirical findings of Cetin (2014) which proved that the increase in price impacts on third-party funds of bank finance institution.

The total deposits on the sharia financial institutions are also related to inflation. As the research findings of Mobin & Masih (2014) pointing out that in the case of sharia bank, the inflation also has a strong impact on the total deposits. Several studies on the interrelation between the two variables also provide the empirical information that inflation has a negative and significant effect on the total deposits (Athukorala & Tsai, 2003; Akhtar et al., 2011; and Anthony, 2012). Haron & Azmi (2008) also concluded that inflation has a negative relationship with total deposits. The research conducted by Larbi-Siaw & Lawer (2015) also proves the negative impact of inflation on the total deposits in the long and short-run. In contrast to the research findings, Ali et al. (2012) found that inflation has an insignificant effect on mudharabah deposit as one of the main sources of third-party funds in sharia bank.

Several other studies also provide different conclusions. For example, Karim (2014) concludes that inflation has a positive and significant effect on total deposits of Islamic banks and has a significant negative effect on total deposits of conventional banks. Previously, Alfred (2010) found that the inflation rate has a positive - weak while the real interest rate has a negative - weak relationship with total deposits by a correlation coefficient of -0.05. An empirical study conducted by Abduh et al. (2011) also discovered that inflation negatively affects the total deposits of sharia bank..

2.2. The relationship between inflation and financing

The linkage between inflation and financing has been analyzed by previous researchers. Nahar & Saker (2016) in their study using the unbalanced panel data of 172 Islamic banks from 48 Islamic and Non-Islamic countries concluded that inflation rates have a significant positive relationship with Islamic banking financing. These findings are in line with the research finding of Adebola et al. (2011) found that there is a positive relationship between inflation and bank financing in the short run. Karim et al. (2014) also found that inflation has a positive and significant effect on Islamic bank financing. The positive effect of inflation on financing was also found by Nazir et al (2013) in their study for the case of Pakistan economy who found that the supply of loans positively related to the inflation.

Unlike with a number of those findings above, Sharma & Mani's (2012) studies in India provides empirical evidence that inflation has a weak relationship with financing. Similarly, the result of Husaeni (2016) which concludes that inflation has an insignificant positive effect on Islamic bank financing. Similar findings are also evidenced by Moussa & Chedia (2016) in their research in Tunisia which revealed that there is a positive relationship between inflation and bank credit (if inflation is rising by 1%, bank credit increase by 4%).

2.3. The relationship between inflation and financing

Bank financial institutions are basically just performing an intermediary function between people who excess funds on the one side with people suffering the lack of funds on another side. Third party funds in bank financial institutions are the accumulation of public savings. The funds are offered by banks to the public in the form of financing. Thus, the greater the third-party funds of the bank financial institution the greater the availability of funds offered to the financing customer. The results of empirical studies by previous researchers provide evidence that there is a very strong positive relationship between third-party funds saved by the community in Islamic banks with total financing (Karim et al., 2014). The increase in total deposits significantly increases the financing offered to customers (Husaeni, 2016). In line with the findings of Husaeni, research conducted by Amelia & Fauziah (2017) also proves that total deposits have a positive and significant effect on financing. The empirical findings of Nazir et al. (2013) for the case of Pakistan were also found out that the number of deposits positively related to the offered loan of financial institutions.

The empirical studies conducted by Mukoya et al. (2015) for the case of the commercial bank in Kenya point out that the volume of deposits has a positive and significant effect on total loans. From the findings, for every unit increase in the volume of deposits, a 10.9%, unit

increase in total loans advanced is predicted. A study conducted by Nguyen et al. (2018) for the case of Vietnamese banking is also conclude that bank deposits have a positive and significant impact on bank loans.

Contrast to the empirical findings explained above, Moussa & Chedia's (2016) studies in Tunisia provide strong evidence that total deposits have no significant effect on distributed loans. Other research conducted by Alfred (2010) for the case of Nigerian union bank uncover that there is a positive and moderately significant relationship between bank deposits and loans by a correlation coefficient of 0.53. Hence, loans are in-elastic to bank deposits..

3. Data and research methods

The data used is time series data in the form of monthly data for the period of 2012.1 to 2017.6, sourced from Statistics Report of sharia banks of Indonesia. The initial stage of data processing begins with unit root test or stationarity test of the data. There are two common ways to do unit root test, namely Augmented Dickey-Fuller test (ADF) and Phillips-Peron test (PP). Econometrically, using ADF-test to test the unit root of the data is formulated as follows (Albiman & Suleiman, 2016).

$$\Delta Y_t = \alpha_0 + \propto Y_{t-1} + \sum_{k=1}^{n} \propto \Delta Y_{t-k} + \varepsilon_t \quad (1)$$

$$\Delta Y_t = \alpha_0 + \sum_{k=1}^{n} \propto \Delta Y_{t-k} + \delta_t + \varepsilon_t \quad (2)$$

Then, the PP-test formulated as follows:

$$\Delta x_t = \beta_0 + \beta_2 x_{t-1} + \delta + \varepsilon_{2t} \quad (3)$$

$$\Delta x_t = \beta_0 + \beta_2 x_{t-1} + \delta + \varepsilon_{2t} \quad (4)$$

Where: Δ is the first difference for all variables, Y and X are time series data, t is linear time trend, n is the optimum lag for dependent variables important to make the serial of error terms not correlated between the first and second equations, and ε is random error terms. The same method applies to x_{t-1} in equations 3 and 4. By applicating of *E-views* software, the standard of the data stationarity using both ADF and PP refer to the probability values. A data justified reaching a stationary when the probability value of it less than 0.05. Conversely, if the probability value is greater than 0.05, means the data is not stationary or has a unit root.

After the unit root test, the analysis then continued with lag length criteria test. In analyzing the tardiness of the model, the most important question is how to determine the length of slowness, and this is a problem in the model specification (Amri, 2018). So, in order to determine the model of causality test (the relationship between variables) required determination of optimal lag length as an initial stage.

The next stage is to perform co-integration test for the equations. The co-integration test used in this research is Johansen's co-integration technique. The determination of whether the equations are co-integrated refers to the comparison of both the trace statistic value and critical value, and the max-Eige statistic value and the critical value with the provision that if the trace statistic value > critical value, and max-Eige statistic value > critical value can be concluded that the equations are co-integrated.

The result of the unit root test indicates that the variable achieves stationer at the first differencing and the co-integration test points out that the variables co-integrated. Therefore, the data were analyzed utilizing a vector error correction model (VECM). The equation formulating the causal relationship between variables in the dynamic model as follows:

$$\Delta LSF = \alpha_0 + \sum_{i=1}^{n} \beta_{1i} \Delta L(SF)_{t-i} + \sum_{i=1}^{n} \beta_{2i} \Delta L(TDs)_{t-i} + \sum_{i=1}^{m} \beta_{3i} \Delta L(Inf)_{t-i} + \gamma e_{t-1} + \varepsilon_1 \quad (5)$$

$$\Delta LTDs = \alpha_0 + \sum_{i=1}^{n} \beta_{1i} \Delta L(TDs)_{t-i} + \sum_{i=1}^{n} \beta_{2i} \Delta L(SF)_{t-i} + \sum_{i=1}^{n} \beta_{3i} \Delta L(Inf)_{t-i} + \gamma e_{t-1} + \varepsilon_2 \quad (6)$$

$$\Delta LInf = \alpha_0 + \sum_{i=1}^{n} \beta_{1i} \Delta L(Inf)_{t-i} + \sum_{i=1}^{n} \beta_{2i} \Delta L(SF)_{t-i} + \sum_{i=1}^{n} \beta_{3i} \Delta L(TDs)_{t-i} + \gamma e_{t-1} + \varepsilon_3 \quad (7)$$

Where ΔLSF is the first difference of the natural logarithm of sharia financing, $\Delta LTDs$ is the first difference of the natural logrithm of total deposits, and $\Delta LInf$ denotes the first difference of the natural logarithm of the inflation, α and β are constants to be estimated, as well as ε denotes a stochastic error term. t is the period of t, and i is lag length optimal.

The model above can avoid the loss of short-term information. The short-run deviation toward to long-term equilibrium, directly adjusted to long-run equilibrium. Therefore, the term of error helps to correct the proportion of imbalances on the next period. The term error correction model (ECM) is represented by the coefficient γ if the variables are cointegrated. Finally, Granger causality employed to test the causality relationship between the variables studied..

4. THE RESULT AND DISCUSSION

4.1. The descriptive statistics of the variables

During the period of 2012.1-2017.6, the total deposits on Islamic commercial banking in Indonesia tend to increase over monthly. In January 2012 the total deposits of IDR116.518 billions and then increases to IDR148.731 billions in January 2013. Until January 2017 the total deposits reached IDR177,930 billions. At the same period, the total of sharia financing of Islamic commercial banking also significantly increase. In January 2012 the total financing of IDR101.689 billions, and then growing to IDR149.672 billions in January 2013. The number has continued to IDR181.398 billions in January 2017.

Furthermore, the rates of monthly inflation for the same period are relatively fluctuated and tend to increases. At the period of January 2012, the monthly inflation rate of 3.75%, increased to 4.6% in January 2013 and 8.2% on January 2017. The Descriptive statistics of the three variables, as shown in Table 1.

Table 1. Descriptive statistics of the research variable

	Sharia financing (IDRBillions)	Total Deposits (IDRBillions)	Inflation rates (%)
Mean	150,952.0	150,076.6	5.909
Median	157,576.5	153,879.5	5.390
Maximum	187,885.0	185,508.0	8.790
Minimum	101,689.0	114,018.0	3.560
Std. Dev.	29,226.13	25,016.6	0.018
Skewness	-0.349	-0.163	0.412
Kurtosis	1.629	1.514	1.553
Jarque-Bera	2.758	2.699	3.236
Probability	0.252	0.259	0.198

Source: Author's Computation using E-views 9.0

Table 1 above also shows the Jarque-Bera test and the probability value of the respective variable. Econometrically, these two values are utilized to measure the normality of the data. The result of the econometric test shows that the statistical value of the Jarque-Bera test is respectively of 2.758 for the financing, 2.699 for the total deposits, and 3.236 for the inflation. The p-values of the respective variables are greater than 0.05. This thing indicates that the data of the respective variables have a normal distribution.

4.2. The result of unit root test

The initial stage of using the time series data in the research is checking the unit root of the data tested. As explained before, the unit root test in this research using ADF-test and PP-test. Prior to doing the test, the research variables transformed into logarithmic form. The unit root test at the level indicates that only the total financing reach stationary with p-value <0.05. Conversely, total deposits and inflation are not stationary with p-value> 0.05. The test then performed the first difference data. The result of unit root test as shown in Table 2.

Table 2. The summary of unit root test

Variable	Augmented Dicky Fuller (ADF)				Phillips-Perron (PP)			
	Constant		Constant and Trend		Constant		Constant and Trend	
	Level	First difference	Level	First difference	Level	First difference	Level	First difference
Shariah financing	0.032*	0.787	0.997	0.100	0.024*	0.006**	0.998	0.000**
Total Deposits	0.875	0.000**	0.782	0.000**	0.878	0.000**	0.743	0.000**
Inflation	0.677	0.005**	0.518	0.021*	0.654	0.006**	0.795	0.026**

Source: Author's Computation using E-views 9.0.
*) significant at the 95 percent level; **) significant at the 99 percent level.

Refer to the unit root test as shown on Table 2 above the data achieves stationary at the first difference. Previously, the results of co-integration test pointed out that there are two co-integration equations of the three variables. Taking into for reason, the econometric data analysis of our study utilizes vector error correction model (VECM).

4.3. The result of lag length criteria test

In analyzing the slowness model, the most important question is how to determine the lag length time of slackness, and this is a problem in the model specification. So, to determine the model of causality test (the relationship between the three variables) required determination of optimal lag length as the main stage.The optimal lag length is the duration of time that gives a significant effect or response of a certain variable to other variables (Amri, 2017). The tests were determined based on informational criteria - the Akaike information criterion (AIC), Hannan-Quinn (HQ), and Schwarz information criterion (SC) (Amri et al., 2019). Among the four criteria, the Akaike information criterion is believed to be more accurate than the others (Liew, 2004).The result of lag length criteria tests as shown in Table 3.

Table 3. The resulf of lag length criteria test

Lag	LogL	LR	FPE	AIC	SC	HQ
0	153.8557	NA	1.15e-09	-12.06846	-11.92219	-12.02789
1	249.9740	161.4786*	1.09e-12	-19.03792	-18.45286*	-18.87565
2	260.6255	15.33823	9.93e-13*	-19.17004*	-18.14619	-18.88607*

Source: Author's Computation using E-views 9.0
Note: * indicates lag order selected by the criterion; LR: sequential modified LR test statistic (each test at 5% level); FPE: Final prediction error; AIC: Akaike information criterion; SC: Schwarz information criterion; and HQ: Hannan-Quinn information criterion.

Referring to the E-views output above, the optimal lag length of the VECM model achieved in the second period. This thing means that the optimal effect of an exogenous variable on the endogenous variable occurs within the two-period horizon. Hence, the application of the econometric models operationalized at the lag of 2.

4.4. The result of Johanson's Co-integration test

The cointegration test in this study uses the Johansen cointegration test. The equation is indicated to be cointegrated refer to the comparison of the trace statistic value and critical value, and the max-Eige statistic value and critical value with the provision if the value of trace statistic > critical value and max-Eige statistic> critical value indicates that there is co-integration equation. On the contrary, if the trace statistic value < critical value, and max-Eige statistic value <critical value interpreted that the equation is not cointegrated. Johansen cointegration test results as shown in Table 4.

Table 4. The Result of Johansen's Co-integration Test

Variabel in Equation	Unrestricted Cointegration Rank Test (Trace)				
	NullHypothesis	Eigenvalue	Trace Statistic	0.05Critical value	Prob.**
LSF LTDs LInf	None *	0.661	48.548	29.797	0.000
	At most 1 *	0.399	20.404	15.495	0.008
	At most 2 *	0.239	7.133	3.841	0.008
Trace test indicates 3 co-integrating eqn(s) at the 0.05 level; * denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values					
	Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Variabel in Equation	Null ypothesis	Eigenvalue	Max-Eigen Statistic	0.05Critical Value	Prob.**
LSF LTDs LInf	None *	0.661	28.144	21.132	0.004
	At most 1	0.399	13.270	14.265	0.071
	At most 2 *	0.239	7.133	3.841	0.007
Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level; * denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values					

Source: Author's Computation using E-views 9.0.

Table 4 above shows the value of trace statistic > critical value, as well as max-Eige statistic > critical value. This means that in the long run there is co-integration within the model of the equation. In econometrics when the variables mutually co-integrated indicate a long-term equilibrium. That is, in the long-run, there are two co-integration equation describing the long run relationship between the inflation, total deposits and financing of sharia commercial banks in Indonesia.

4.5. The Result of Vector Error Correction Model

Since the data reaches the stationer at the first difference and has cointegration, the data analysis model then using VECM. As the previous analysis results, the optimal lag obtained at the lag of 2, therefore in the VECM analysis using the lag of 2. The first part is related to the co-integration equation and error correction pointing out the long-run and short-run relations between the three variables. The second part represents the short run equation between the variables. The result of VECM describing co-integration equation and error correction pointed in Table 5.

Table 5. The summary of co-integration equations and error correction

Cointegrating Eq:	CointEq1	CointEq2	
ΔLSF (-1)	1.0000	0.0000	
$\Delta LTDs$ (-1)	0.0000	1.0000	
$\Delta Linf$ (-1)	23.4728	21.0226	
	[5.0448]	[5.3867]	
C	-13.3218	-13.1664	
Error Correction:	Δ (ΔLSF)	Δ ($\Delta LTDs$)	Δ ($\Delta Linf$)
CointEq1	**0.4762**	0.9352	0.0117
	[5.9594]	[5.5648]	[0.1581]
CointEq2	-0.5795	**-1.0596**	-0.0149
	[-6.2667]	**[-5.4489]**	[-0.1748]

Source: Author's Computation using E-views 9.0.
Note: the number in [ ] is t-statistics

Refer to the result of VECM above, the co-integration equation describing the long-run relationship among the inflation and total deposit and total financing as shown in the following equation:

$$\Delta LSF = 13.323 - 23.472\Delta Linf \quad (8)$$

$$\Delta LTDs = 13.166 - 21.023\Delta Linf \quad (9)$$

The eight equation represents the long-run relationship between inflation and sharia financing. In the long-run there is a negative relationship between the two variables. This means that the increase in inflation significantly affects the decrease in financing. The existence of a negative relationship between the two variables is due to inflation leads Islamic banks to increase financing margins. The financing margin is a capital cost that will be paid by the financing customer. Therefore, when the margin increases, the demand for Islamic financing decreases. This finding supports the results of the study of Calza et al. (2004) for the case of European countries discovering that inflation is as determinants of bank lending. The empirical findings of Ibrahim & Shah (2012) from the Malaysian economy also provide a similar result, that the macroeconomic conditions as inflation have a positive and significant effect on bank lending. Likewise, research conducted by Katusiime (2018) for the case of Uganda economy also proves the existence of an inverse relationship between inflation and bank loan. The higher the inflation, the lower the bank loan. However, this finding contradicts the findings of Shingjergji & Hyseni's (2015) study in Albania for the case of conventional banks found that credit growth is positively related to the inflation rate. Even, an empirical study of Yuksel & Ozsari (2016) in Turkey which concluded that there is no causal relationship between inflation and bank credit.

The ninth equation represents the long-run relationship between inflation and total deposits of Islamic finance institution. In the long-run, the inflation also has a significant negative relationship with total deposits. The increase in prices, in general, reduce the propensity to save for deposits customers. The higher the inflation, the higher the need for funds for consumption purposes which in turn impact on the decrease in savings. This is what causes a negative relationship between inflation with total deposits.

The existence of a negative relationship between inflation and total deposits consistent with the findings of Epaphra (2014) studies on the determinants of national saving in Tanzania have concluded that inflation has negative effects on total deposits of bank financial institutions. When inflation is high, the purchasing power of the people decreases and the portion of the income they use to meet consumption needs will increase. In turn, the tendency to save will decrease. This finding also in line with the results of Tinoco-Zermeno (2014) for the case of Mexico economy that found out that high inflation rates contributed negatively to bank lending growth. So, the negative relationship between the two variables is related to the ability of income to meet the daily necessities of the people. The results of an empirical study conducted by Otiwu et al. (2018) in the case of the Nigerian economy explicitly explains that income is an important determinant of the ability to save, which in turn, it has an impact on the total of third party funds in banking institutions. Increased inflation reduces the incentive to save and people respond rationally by giving priority to ownership of goods compared to saving money at banking institutions (Abdelaty&Esmail, 2014).

Error correction term represents the short-run relationship of the variables. CointEq1 deals with the relationship between total financing and inflation. In the short-run, when the total financing is lying above the long-run equilibrium, then the inflation will increase at the next period. Increased financing by sharia banks directly increases the money supply in the community. At the same time, the growth of the real sectors is relatively slow. This finding is consistent with the empirical result of Gatawa et al. (2017) for the case of Nigerian economy pointing out inflation occurs when financial sector growth is faster than the real sector growth.

Furthermore, cointEq2 deals with the short-run relationship between total deposits and inflation. In the short-run, when the total deposit lies above the long-term equilibrium, then inflation will fall in the next period. This thing is due to an increase in deposits in bank financial institutions such as sharia banks means reduces in the money supply in the community so, that the general price tends to decrease. This finding supports the results of the study conducted by Shirvani & Bayram (2013) that discovers a negative impact of raising deposits on inflation. The increase in deposits is parallel to the increase in savings interest rate. The interest rate is the main instrument for financial policymakers to control the increase in prices of goods and services in the economy.

The short-run effect between variables pointed out by the short-run equations generated by VECM. The total financing of a certain month is negatively affected by its self at the one and

two-months before. This thing indicates that the distribution of financing in a certain period has a negative and significant impact on the total financing of the next one and two-period.

Table 6. The results of VECM estimates

Endogenous Variables	*Exogenous Variables*						Determination coefficient and F statistics	
	ΔLSF		ΔLTDs		Δ*Linf*			
	Lag1	Lag2	Lag1	Lag2	Lag1	Lag2		
ΔLSF	(-.742) [-2.392]**	(-.593) [-2.175]**	(.216) [2.329]**	(.169) [2.201]**	(.022) [.065]	(.339) [1.217]	R^2 Adj. R^2 F stat	: .869 : .799 : 12.473
ΔLTDs	(-.224) [-.344]	(.071) [.124]	(-.042) [-.124]	(-.146) [-.494]	(-.579) [-.802]	(.0453) [.077]	R^2 Adj. R^2 F stat	: .719 : .569 : 4.800
ΔLinf	(.181) [.630]	(-.201) [-.798]	(-.083) [-.549]	(.139) [1.065]	(.309) [.971]	(-.154) [-.598]	R^2 Adj. R^2 F stat	: .241 : -.164 : .594

Source: Author's Computation using E-views 9.0.

Note: Number in ( ) is regression coefficient, Number in ( ) is t statistics, ** significant at 95% level.

Total deposits have a positive and significant effect on total financing either in the period of 1 or 2 months. These findings support the research findings of Sholikhah et al. (2017)which also point out a positive effects of the total deposits on the financing volume of Islamic banking. The greater the total deposit, the greater the financing. Previously, the study conducted by Husaeni (2016) also showed the same result that the total deposits increase the financing of Islamic banking. The positive influence of total deposits towards financing due to banks performing financial intermediation functions in the community. When propensity to saving increases, the total third party funds flowing to banks also increase, so that the supply of financing for lending customers also increases.

The existence of a positive effect of total deposits on the financing of islamic commercial banks in Indonesia indicates that the availability of third-party funds is an important condition for banks to be able to distribute the sharia financing. This finding is consistent with the findings of Alfred (2010), Nazir et al. (2013),Mukoya et al. (2015) and Nguyen et al. (2018) which concludes that there is a positive relationship between the financing and total deposits. An increase in total deposits can directly increase the financing. On the contrary, this finding is in contrast to the research finding of Moussa & Chedia (2016) for the case of Tunisian banking uncovering there is not a significant effect of deposits on financing.

Total financing positively affects inflation at the 1-month period, but the effect is not significant. The positive effect of total financing on inflation is due to the increase in the money supply in the community, while at the same time the financing has not had an impact on developments in the real sector. The positive impact of total financing on the developments in the real sector requires at least a duration of more than 1 month. So, at the 2-month time horizon, the financing effects on inflation becomes positive, but still not significant. The absence of any significant effect of total financings on inflation is in line with the result of empirical findings of Korkmaz (2015) for the case of 10 European countries revealed that the lendings that distributed by the banking sector to financing customers did not affect inflation. Conversely, these findings contrast to the result of an empirical research study conducted by Igan & Pinheiro (2011) who concludes that bank lending growth impacts the price stability. This finding also contradicts Dhungana & Pradhan (2017) research in Nepal which concluded that bank lending has a positive and significant effect on inflation.

4.6. The result of Granger causality test

Granger causality test is not only used to determine the causal relationship between variables. But it is also capable of analyzing which of the two variables (examined) first appear. Given the variables used in this study theoretically and logically have relationships with each other, then the need for a test of causality. Such as the relationship between the variable of inflation and the distribution of financing. The increase in financing increases the money supply and in turn, promotes the existence of inflation. On the other hand, the general

rise in prices is usually an important consideration for the businessmen to utilize bank financing to improve its business capability, so inflation can also affect total financing.

The causality between total financing and total deposits logically can be explained that the financing distribution by financial institutions depends on the availability of third-party funds sourced from the savings account. In relation to inflation as one of the macroeconomic indicators, the variable can also affect the prospensity to save, The test of causality between inflation, total deposit and total financing of sharia financial institutions as shown in Table 7.

Table 7. The result of Granger causality tests

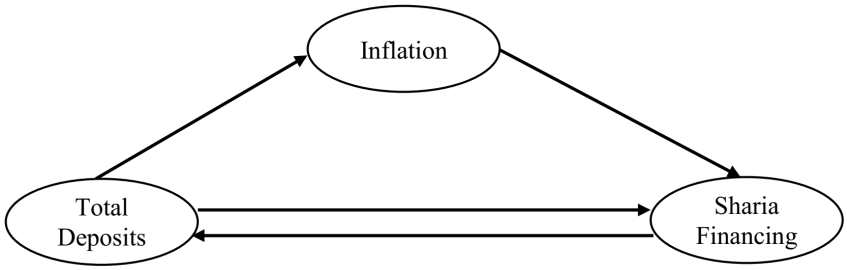
Endogenous Variables	Exogenous Variables		
	ΔLSF	ΔLTDs	ΔLInf
ΔLSF	-	(5.454) [.013]**	(4.024) [.034]**
ΔLTDs	(6.253) [.008]***	-	(.274) [.763]
ΔLInf	(1.773) [.196]	(2.362) [.089]*	-

Source: Author's Computation using E-views 9.0.

Note: Δ is the first difference operator, the values in parentheses ( ) are F-Statistic, the values in bracket [ ] are p-values. *, ** & *** indicates the significant at 90%, 95% and 99% level respectively.

Based on the result of the Granger causality test explained above, so the direction of causality relation among the three variables as in Figure 1.

Figure 1. The direction of causality relations between the variables



The Figure 1 above shows the existence of two-way causality between total financing and total deposits. That is, the financing distribution by sharia commercial banks in Indonesia was supported by the availability of third-party funds coming from savings customers. In other words, the increased financing of the commercial banks is a response to the increase in total deposit increases. Furthermore, the increase in total deposits is also due to an increase in the distribution of financing to the public. The financing distributed to the community will promote the productive economic activities which in turn leads to the increase of income. The increases in income, will lead to the ability to saving. This causes the bidirectional causality between financing and total deposits.

One-way causality exists from total deposit to inflation and from inflation to total financing. The existence of one-way causality from total deposit to inflation indicates that price increases are generally related to the money supply in the community. When the total deposit increases the money supply decreases and then the inflation decreases. This is what causes the causality of total deposits to inflation. This finding is not in line with the empirical result of Daood Al-Oshaibat & Banikhalid (2019) for the case of Jordan that discovers the existence of the mutual effect between the two variables.

The existence of one-way causality from inflation to total financing indicates that general price increases are still an important consideration for people to utilize the financing of Islamic financial institutions. Especially for those engaged in productive enterprises, the decision to take up financing at sharia financial institutions is based on the benefit-cost analysis. The financing decision is considered profitable when the financing is able to provide greater benefits than the cost that must be incurred.This finding is not in line with the results of Yuksel & Ozsari (2016) study in Turkey which found empirical evidence that there is no causal relationship between customer loans and inflation. This finding also refutes the results of Arsene & Guy-Paulin's (2013) research for the case of Cameroon economy concluding that there is only unidirectional causality from financing to inflation.

5. Conclusions and Suggestion

The main reason for this research is to investigate the effect of inflation on total deposits and total financing of sharia commercial banks in Indonesia. Using monthly time series data over the period of 2012.1-2017.6, Johansen cointegration tests, error correction model vectors, and Granger causality tests were employed to analyse the relationship between these variables. The results of the study prove that there is a long-term relationship between inflation and total deposits and total financing.

In the long run, inflation is negatively and significantly related to sharia financing and total deposits. In the short term, the financing is positively and significantly related to inflation. When financing lies above the long-term equilibrium, inflation will increase in the next period. Conversely, total deposits are negatively related to inflation. when the total deposit lies above the long-term equilibrium, inflation will decrease in the next period. The result of Granger causality test indicates that there is unidirectional causality running from total deposits to inflation and from inflation to the financing of sharia commercial banks. and then, bi-directional causality exists between the total deposits and the financing.

Referring to the conclusions above, the recommendations of this study are that policymakers in Indonesia should control inflation at the beneficial rate for the economy. Furthermore, the allocation of shariah financing on sharia commercial banks must be oriented towards developments in the real sector so that the increase in the financing will lead to the increases in goods and services production which in turn can reduce inflation.

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