

Macroeconomic Determinants of Islamic Banking Financing

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Abstract. *The purpose of this study is to analyze the relationship between Islamic banking financing and macroeconomic variables as well as its response to key economic variables including real output, price level, interest rate and trade for the case of Indonesia. This research uses time series econometric analysis such as Granger Causality and Vector Error Correction Model (VECM). Time series data used are total Islamic banking financing, industrial production index (IPI), customer price index (CPI), Certificate Bank Indonesia (SBI) rate and international trade. The results show that there is bi-directional relationship between Islamic banking financing and price level as well as Islamic banking financing and interest rate. Meanwhile, the uni directional causality occurs between Islamic banking financing and real output as well as Islamic banking financing and trade. In this case, Islamic banking financing is affected by IPI. Islamic banking financing is not affected by trade but trade is significantly affected by Islamic banking financing. In addition, Islamic banking financing is relatively sensitive to the shock of price level, real output and interest rate.*

Keywords: *Islamic banking financing, macroeconomic variables, VAR/VECM*

Abstrak. *Tujuan dari penelitian ini adalah untuk menganalisis hubungan antara perbankan syariah dengan variabel makroekonomi serta responnya jika terjadi guncangan dari variabel-variabel makroekonomi termasuk output riil, tingkat harga, suku bunga dan perdagangan di Indonesia. Penelitian ini menggunakan analisis deret waktu, seperti Granger Causality dan Vector Error Correction Model (VECM). Data deret waktu yang digunakan adalah total pembiayaan perbankan syariah, industrial production index (IPI), customer price index (CPI), Sertifikat Bank Indonesia, dan perdagangan internasional. Hasilnya menunjukkan bahwa ada hubungan dua arah antara pembiayaan perbankan Islam dan tingkat harga serta pembiayaan perbankan Islam dan suku bunga. Sementara itu, hubungan satu arah terjadi antara pembiayaan perbankan Islam dan output riil serta pembiayaan perbankan Islam dan perdagangan perbankan syariah. Dalam hal ini, pembiayaan perbankan Islam dipengaruhi oleh IPI. Pembiayaan perbankan syariah tidak terpengaruh oleh perdagangan tetapi perdagangan secara signifikan dipengaruhi oleh pembiayaan perbankan Islam. Selain itu, pembiayaan perbankan Islam relatif sensitif terhadap guncangan tingkat harga, output riil, dan suku bunga.*

Kata Kunci: *Pembiayaan perbankan syariah, variabel makroekonomi, VAR/VECM*

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Introduction

Islamic financial industry has grown rapidly since its first establishment in around 1960's. During 2000 to 2012, the average growth of total industry was more than 20 percent per year. In the end of 2012, Islamic financial assets noted at USD 1.6 trillion or it has been growing by 20.4 percent y-o-y since the end of 2011 (IFSB, 2013). However, the total assets of Islamic finance in 2016 was USD 1.89 trillion or only slightly increased by 1.07 percent compared to the previous year (IFSB, 2017). Globally, the year 2016 is the second consecutive year of stagnant for the growth of assets of Islamic financial institutions, including the three main sectors such as Islamic banks, capital market and *takaful*. Although the growth of Islamic finance is stagnant in two previous year, many scholars still optimistically believe that its growth will slowly improve in the future.

Islamic banks are one of the three major sector in Islamic financial industry. Its assets was recorded approximately USD 1.49 trillion in 2016, represented 78.84 percent of the total industry followed by *sukuk*, Islamic funds, and *takaful* by 16.8, 3.0, and 1.3 percent respectively (IFSB, 2017). Furthermore, The International Monetary Fund (IMF) released a report that Islamic banking is one of the fastest growing segments in the financial industry with a tracking Islamic banking and economic growth of 10-15 percent growth over the past decade.

The excellent growth of Islamic banks is caused by many reasons, including their distinguish characteristics than conventional banks. From a theoretical perspective, Islamic banks actually have different characteristics than their counterpart, particularly to the contracts (*aqd*). Compared to the conventional banks which is limited by loan transaction, Islamic banks vary their contract, especially for the financing part by providing sale or *bay*, rent (*ijārah*), partnership (*shirkah*) and other contracts. Furthermore, Islamic banks are always linked their transaction to the real sectors and lead the transaction to be trade based and asset linked. As it deals to the real sector, the system of

Islamic banks denies the creation of bubbles that is usually caused by speculative activities in financial market (Kassim and Majid, 2010). Consequently, the Islamic banks propose their system to be more resilient to the financial crises.

The system of Islamic banks is actually based on the sharia law, which strictly prohibits *riba* (interest-rate), *gharar* (speculative), and *maysir* (gambling) to be exist in economic activities. Those activities are actually conducted by conventional banks transaction and lead them to the impact of the financial crises in 1998 and 2008. The existence of *riba* that refers to the interest gained by debt transaction. In aggregate, the total debt is actually not repayable and it finally causes the banking crisis and economic problem (Meera and Larbani, 2006). However, in Islamic banks, every loan transaction are not allowed to take any profit so when they are willing to gain the profit, they have to perform other transactions like partnership (*shirkah*) and sale (*bay*).

The existence of Islamic banks have note many contributions to economic growth. Many literatures show that Islamic banks have contributed in short and long run (Furqani and Mulyany, 2009; Abduh and Chowdhury, 2012; Abduh and Omar, 2012; Yusof and Bahlous, 2013; Kassim, 2016). The results find that Islamic banking financing has significant contribution to the economic growth in many countries like Malaysia, Indonesia, Bangladesh, and GCC countries. As the huge demand and their advantages through the economic growth, many countries started to participate and amend their regulations to support the development of Islamic banks both in moslem and non-moslem countries.

Indonesia as the biggest moslem population in the world has placed its position through the development of Islamic finance like Islamic banks, *sukuk*, *takaful*, and Islamic shares. Although Islamic banks has placed the first portion of Islamic financial industry in Indonesia, the total market share for banking industry is only around 5 percent during the mid of 2017 to the early of 2018. It indicates that Islamic banks in Indonesia have to strive more to

capture the market from their counterparts. However, the development of Islamic banks in Indonesia actually marked a significant enhancement. According to Financial Authority Service or OJK, in 2013 to 2017, the total assets of Islamic banks continuously increase from IDR 242,276 trillion to IDR 401,451 trillion or increase by 65.7 percent. Similarly, as an intermediary institution which accommodate the third fund and financing activities, the number of both gain to approximately 50.2 percent and 75.8 percent respectively. The number of assets, third funds and financing in Islamic banks in Indonesia could be seen in Figure 1.

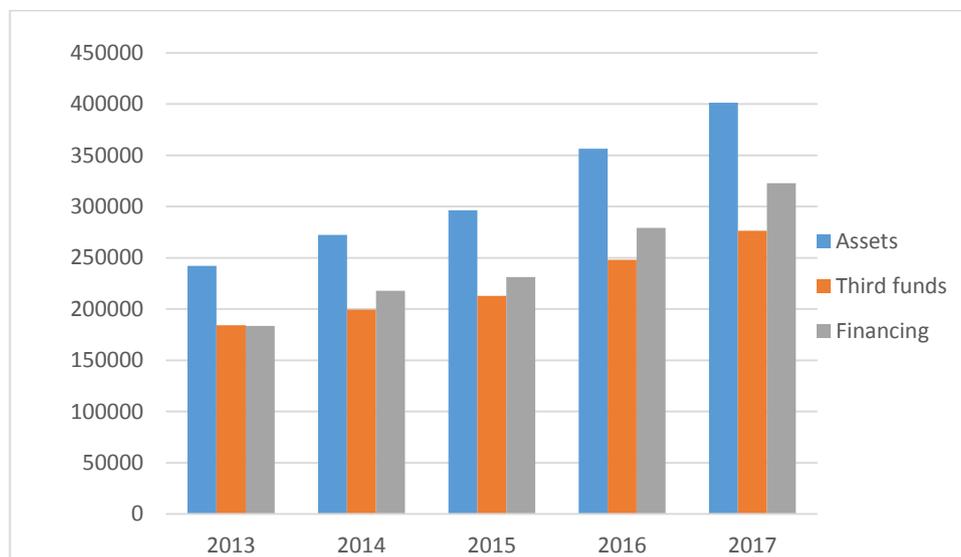


Figure 1. The Number of Assets, Third Funds and Financing in Islamic Banks in Indonesia Period 2013-2017

Source: OJK (2017)

As a dual banking system country like Malaysia and Bahrain, Islamic banks in Indonesia are actually threatened by the volatility of macroeconomic variables like interest rate. Dual banking system simply refers to the financial system that provide both conventional and Islamic system. It indicates that shock of macroeconomic variable such as interest rate may possibly influence the Islamic banking system though it claims as free-interest system. According to Hachicha and Amar (2015), most Islamic banks marginalize the profit and loss sharing (PLS) system and more engage in non-participatory

activities, thus their effect on economic growth only in short-run term. It means many Islamic banks work similarly to their counterparts and the possibility to be impacted by interest rate is still exist. In case of Malaysia, Kassim and Majid (2010) state both the Islamic and conventional banking systems are vulnerable to macroeconomic and financial shocks. Ibrahim and Sufian (2014) similarly argue that Islamic banking financing in Malaysia is still impacted by interest rate.

Given the hypothesis that Islamic banking financing is still vulnerable toward macroeconomic variables, it is interesting to contribute more empirical studies about this topic. Thus, the purpose of this study is to analyze the relationship between Islamic banking financing and macroeconomic variables as well as its response to key economic variables including real output, price level, interest rate and trade for the case of Indonesia.

Literature Review

Islamic banks in Indonesia started operating in 1992 by the establishment of Bank Muamalat Indonesia. It remained as the only Islamic commercial bank (BUS) until the financial crisis in 1997 that caused great damages for Indonesian financial sector. The 1997's crisis caused 16 banks collapse and four big banks (PT. Bank Dagang Negara, PT. Bank Bumi Daya, PT. Bank Exim and PT. Bapindo) under auspices of the government were merged into PT Bank Mandiri in 1999 (Abduh and Omar, 2012). In 1999, Bank Mandiri bought PT Bank Susila Bakti (BSB) that affected by financial crises and later operated as the second Islamic bank namely PT Bank Syariah Mandiri (BSM). To date, after the Islamic Banking Act No. 21 Year 2008 concerning Islamic banking legal, many conventional banks that had the Islamic windows or unit business spin-off their operation to full-fledge Islamic banks. In addition, demand from the customers, especially from the moslem customers support Islamic banks to grow faster. Nowadays, there are

13 Islamic commercial banks, 21 Islamic windows and 167 Islamic rural banks. The development of Islamic banks in Indonesia could be found in Table 1.

Table 1. The development of Islamic Banks in Indonesia

| Islamic Banks | 1992 | 1999 | 2010 | 2015 | 2017 |
|--------------------------|------|------|------|------|------|
| Islamic commercial banks | 1 | 2 | 10 | 12 | 13 |
| Islamic windows | 0 | 1 | 23 | 22 | 21 |
| Islamic rural bank | 9 | 78 | 146 | 163 | 167 |

Source: OJK (2017); Abduh and Omar (2012)

Islamic banks in Indonesia have brought many implications, particularly for the economic development. Research conducted by Abduh and Omar (2012) argue that in short-run and long-run period, Islamic banks have significant relationship to the economic growth in Indonesia. The relationship is neither supply leading nor demand following. The supply leading theory means that Islamic banking positively contributes the economic growth and business sectors. In addition, economic growth also contributes to the development of Islamic banking, so the relationship is bi-directional. Consequently, government has to fully support the development of Islamic banks for their contribution toward economic growth and the effectiveness of intermediary function that facilitate transmission of funds from surplus households to deficit households. However, since the relationship is bi-directional, the government also has to maintain the economic stability, so Islamic banking enables to stimulate business activities in the same time.

To focus on the influences of macroeconomic variables toward Islamic banks, some studies have been conducted to support our research. Ibrahim and Sufian (2014) investigate the interrelations between Islamic banking financing and key financial economic variables including real output, price level, interest rate and stock prices for the case of Malaysia. By using SVAR, it

is found that innovation in real output is positively responded by Islamic banking financing. The most attractive finding is that positive interest rate influences negatively and immediately to Islamic banking financing. It contradicts with the argument that Islamic banking financing is always shielded from interest rate shocks. Similarly, Ibrahim and Sukmana (2011) analyze the dynamic interactions between Islamic banking financing and macroeconomic variables in Malaysia by employing the Toda-Yamamoto causality test. The result shows that interest rate has significantly strong influences on Islamic banking financing but insignificant influence to real production.

Kassim and Majid (2010) use vector auto-regression (VAR) method to analyze the financial shocks on the Islamic banks and the conventional banks in Malaysia over the 1997 Asian financial crisis period, the non-crisis period and the 2007 financial crisis period. The results indicate that both Islamic banks and conventional banks are vulnerable to financial shocks based on IRF analysis. Islamic banking financing responds significantly to macroeconomic shocks in non-crisis and 2007 crises period, while Islamic deposit respond significantly to macroeconomic shocks during the 1997 crisis. However, descriptive statistics still suggests that Islamic banking is relatively resilient than its counterpart.

Kader and Leong (2009) attempt to investigate the impact of interest rate toward the demand of Islamic property financing by using vector error correction model (VECM). Like the other research findings, it is found that interest rate has significant influence to the demand of Islamic banking financing. Conceptually, the Islamic bank customers are not motivated by profit, thus any changes in base lending rate should not have any significant effects to them. However, it is found that the shocks of base lending rate and total residential property financing of conventional banks is positively responded by total residential property financing of Islamic bank. In addition, the response to base lending rate is relatively more immediate. It indicates

that Islamic bank customers are profit-oriented as they mostly choose the BBA (*bai bithaman ajil*) contract that will be influenced by the substitution effect based on the movement of the BLR (base lending rate). It implies that during the rising of interest rate, BBA financing will be more attractive while during falling interest rate, the customers will prefer conventional loan.

Yusof *et al.* (2018) conduct study about the interaction among macroeconomic shocks, banking fragility and home financing provided by conventional and Islamic banks in Malaysia. It is found that macroeconomic shocks have different long-run and short-run effects on amount of home financing offered by both conventional and Islamic banks. The Granger causality shows that gross domestic product (GDP), Kuala Lumpur Syariah Index (KLSI)/Kuala Lumpur Composite Index (KLCI) and house price index (HPI) are found to have a significant causal relationship with home financing provided by both conventional and Islamic banks.

Cham (2018) investigates the determinants of growth rate in Islamic banking by using annual time series data. The study applies some econometrics methods including generalized linear model and survey-based indicators. The results show that high oil prices, stable domestic prices, higher educated populace and greater presence of capital resources have positive effects on growth in Islamic banking. The main restraint obstructing Islamic banking growth include regulations, tax rates and skilled labor force.

Sakti *et al.* (2018) analyze reserve ratio (GWM) and capital buffer toward credit growth by using Vector Error Correction Model (VECM). This study finds that macro-prudential policy based on GWM instrument positively influences the credit growth of conventional and Islamic banks. The results find that credit growth provided by Islamic and conventional banks is positively affected by GDP and negatively affected by BI Rate and inflation.

Karim *et al.* (2012) examine the impact of subprime mortgage crisis on Islamic banking and Islamic stock market in Malaysia. This study uses time series econometric methods such as *cointegration* test, Granger causality test

and generalized impulse response functions (IRF). The findings show that the Islamic financing and Islamic stock market are *cointegrated* with the key macroeconomic variables in both pre and during crisis period. In addition, there are bidirectional causality from Islamic financing to overnight policy rate, real effective exchange rate and inflation during pre-crisis, while during crisis, only real exchange rate influence Islamic financing.

Kasri and Kassim (2009) attempt to examine the factors affecting saving in the Islamic banks in Indonesia by applying the Vector Autoregressive and Impulse Response Function (IRF) analysis. The result shows the existence of displaced commercial risk between Islamic and conventional banks. It indicates that customer of Islamic banks depositor might transfer their money to conventional banks when the rate of return provided by Islamic bank is lower than interest rate.

Abduh *et al.* (2011) examine to analyze the dynamic effects of macroeconomic variables toward the fluctuation of total deposits in Malaysian Islamic banks by using *cointegration* test and VAR-VECM. The results show inflation has negative effect on total deposits of Islamic banks which reflects the changes on depositors' consumption pattern during the recession. Likewise, financial crisis is positively affecting total deposits in Islamic banks. It indicates that due to financial crisis, more depositors believe that Islamic banking is more resilient in facing financial crisis.

Method

Data

Data used in this study is time series data from January 2005 to November 2017. The data used is the total financing by Islamic bank, industrial production index data (IPI) as the representative or proxy of real output, consumer price index (CPI), representing price level, and Certificate of Bank Indonesia rates (SBI) that reflects interest rate. The data is obtained from Bank Indonesia, the Financial Services Authority (OJK), and the

International Monetary Fund (IMF). The analysis is also supported by literature studies from various journals, articles and other literature related to this study.

Research Method

Stationary test is a crucial requirement for time series analysis to avoid spurious regression. Therefore, it is necessary to test stationarity on the data to be used in the model. The definition of stationary data is data that has a tendency to approach the average value and fluctuate around the mean value (Gujarati, 2004). The stationary test used in this study employs the Augmented Dicky Fuller or ADF test. ADF test can be determined as follows

$$\Delta Y = \beta_1 + \beta_2 t + \delta Y_{t-1} + \alpha_i \sum_i^m \Delta Y_{t-1} + \varepsilon_t$$

The hypothesis tested:

H0: $\delta = 0$ (contains a unit root, the data are not stationary)

H1: $\delta < 0$ (does not contains a unit root, the data are stationary)

Optimum lag determination enables use some criteria, such as Likelihood Ratio (LR), Schwarz Information Criterion (SC), Akaike Information Criterion (AIC), Final Prediction Error (FPE) and Hannan-Quinn Criterion (HQ). In this study optimum lag selected based on the coefficient shown by Akaike Information Criterion. Mathematically the AIC equation is as follows:

$$AIC(k) = T \ln \left[\frac{SSR(k)}{T} \right] + 2n$$

All variables used must be stationary in VAR model. If the variables are not stationary, it is necessary to employ cointegration test. Cointegration describes linear combinations of non-stationary variables. If the non-stationer variables are cointegrated, then the linear combination between variables in the system will be stationary, so that a stable equation can be obtained (Enders, 1995). The cointegration test was performed by using the optimum lag according to the previous test. While the deterministic assumptions

underlying the formation of cointegration equations is based on the value of AIC criteria. Based on the deterministic assumptions, it will be obtained information on the rank of cointegration between variables according to Trace and Max method. The cointegration rank is the number of cointegration vectors that are independent. For that will be tested the hypothesis as follows:

$$H_0: \text{rank} \leq r$$

$$H_1: \text{rank} > r$$

If the cointegration rank obtained is greater than zero, then the model used is the Vector Error Correction Model (VECM). If the cointegration rank is equal to zero then the model used is the VAR with differentiation to the d-lag.

VECM is restricted VAR used for non-stationary variables but has the potential to be cointegrated (Firdaus, 2011). Time series data tend to have stationarity at the first difference level. Information about short-term behavior of a variable over the long term due to a permanent change can be identified with VECM. The VECM model specifications in general are as follows:

$$\Delta y_t = \mu_{0x} + \mu_{1x}t + \Pi_x y_{t-1} + \sum_{i=1}^{k-1} \Gamma_{ix} \Delta y_{t-1} + \varepsilon_t$$

After performing the VAR test, it is necessary to have a method that can characterize the dynamic structure generated by VAR. Impulse response function (IRF) shows how the response of each endogenous variable over time to the shock of the variable itself and other endogenous variables. The function of impulse response is to see the effect of a variable to a particular variable in case the existence of shock.

The Variance Decomposition (VD) method can explain the role of a variable in explaining the shocks of other variables. This method can also be used to see the strengths and weaknesses of each variable in influencing other variables over long periods of time. The variance decomposition details the variance of forecasting error into components that can be associated with each endogenous variable in the model.

In this research we will see the relationship between total Islamic banking financing with macroeconomic variable by using variables such as total of Islamic banking financing in Indonesia, consumer price index (CPI), Industrial Production Index (IPI) growth, and SBI rate. Model specification can be written as follows:

$$\begin{bmatrix} \Delta LN_FN \\ \Delta CPI \\ \Delta SBI \\ \Delta IPI_G \\ \Delta TRADE \end{bmatrix} = \begin{bmatrix} \alpha_{10} \\ \vdots \\ \alpha_{50} \end{bmatrix} + \begin{bmatrix} \alpha_{11} & \cdots & \alpha_{41} \\ \vdots & \ddots & \vdots \\ \alpha_{51} & \cdots & \alpha_{55} \end{bmatrix} + \begin{bmatrix} \Delta LN_FN \\ \Delta CPI \\ \Delta SBI \\ \Delta IPI_G \\ \Delta TRADE \end{bmatrix} + \begin{bmatrix} \alpha_{1t} \\ \vdots \\ \alpha_{5t} \end{bmatrix}$$

Where:

LN_FN : total sharia banking financing

CPI : consumer price index

SBI : bank Indonesia certificate rate

IPI : industrial production index

TRADE: export plus import

Result and Discussion

This study uses Augmented Dickey-Fuller (ADF) tests to identify the variables' order of integration. Appendix 1 represents the result of the tests. It can be seen that based on ADF unit root test LN_FN, IPI, SBI, CPI, and Trade contain unit root at level. Therefore, the ADF is tested at first differences. The result of ADF test at the first differences or I (1) shows that all variables are significant at 5 percent.

The next step is to find the optimum lag, namely the optimum lag length test. The optimal lag length test is crucial for eliminating the autocorrelation problem in VAR system, so with the optimal use of the interval is no longer any autocorrelation problem. The optimal lag length is searched using the smallest value of AIC, LR, FPE, SC and HQ (Wei, 2006). The optimum lag test could be seen in appendix 2. Based on the AIC value, it can be concluded that the optimum lag used in the FN integration

model is lag 2. It means all the variables that exist in this model affect each other not only in the current period, but these variables are interrelated to the two previous periods.

After obtaining the optimum lag, we proceed to the cointegration test to see the existence of long-term relationship among the variables in the model. In the cointegration test, it can be seen that the variables in this study are cointegrated. The cointegration test could be seen in appendix 3.

Based on the cointegration test, it indicates that among the movement of CPI, IPI, SBI, and Trade, have long-term relationships. In other words, in each short-term period, all variables tend to adjust each other to achieve long-run equilibrium. This is indicated by the value of trace statistic that there is one cointegration equation. However, to analyze the relationship of the model, it requires Granger Causality test and VECM (Vector Error Correction Model) estimation.

The Granger Causality tests for Islamic banking financing and macroeconomic variables is given in appendix 4. Based on appendix 4, it could be seen that CPI, IPI, and SBI have reject the null hypothesis and statistically affect LN_FN, while trade is the only variable that does not significantly affect the LN_FN. Interestingly, there is bi directional relationship between LN_FN and CPI as well as LN_FN and SBI. It means Islamic banking financing significantly affect CPI and SBI, *vice versa*. However, there is uni-directional causality between LN_FN and trade as Islamic banking financing may stimulate productive activity in real sector.

Since the form of estimation parameters on the VAR and VECM models is often difficult to be interpreted, thus it conducts impulse response function (IRF) and variance decomposition to analyze the shock and response among variables (Gujarati, 2004). In order to ensure specific discussion in the context of this study, only the responses of LN_FN to the macroeconomic variables are highlighted.

Based on figure 2, it shows that in the first month, LN_FN positively respond to the shock of itself, but LN_FN not respond when the shocks occur from the other variables. From the second month to the 30th month, LN_FN still responds positively itself while other variables such as IPI, CPI (IHK), and SBI is responded negatively by LN_FN. Meanwhile, LN_FN responds negatively to the shock of trade from the second to the 15th period but finally it will go to its balance in the 16th to 30th period.

Previous studies found that the shock of real output (IPI) is positively responded by LN_FN (Kasri and Kassim, 2009; Ibrahim and Sukmana, 2011; Ibrahim and Sufian, 2014). However, this study finds an interesting result that IPI shocks is negatively responded by LN_FN. The increase of IPI indicates the improvement of real income received by the Islamic banking financing' customers increase. It impacts the increase of profit-sharing rate conducted by Islamic banks and leads the Islamic banking financing becomes more expensive (Muthohharoh, 2010; Nursechafia, 2010). Therefore, people might find other source of fund and the number of Islamic banking financing might be decrease. Besides, this study finds that the CPI's shock is responded negatively by LN_FN. It is similar to the other studies conducted by Kassim and Majid (2010).

Some previous studies show that financial intermediaries in Islamic bank is more stable compared to its counterpart as its free-interest rate nature (Darrat, 2002; Kia, 2001; Samad, 2004). However, the results of this study contradicts the previous findings and show that the shock of SBI is significantly responded by LN_FN. This finding is similar to the other studies (Kader and Leong, 2009; Kasri and Kassim, 2009; Ibrahim and Sufian, 2014; Ibrahim and Sukmana, 2011; Kassim and Majid, 2010) The shock of SBI from the second month drops LN_FN immediately and its decline remains over the plotted horizon.

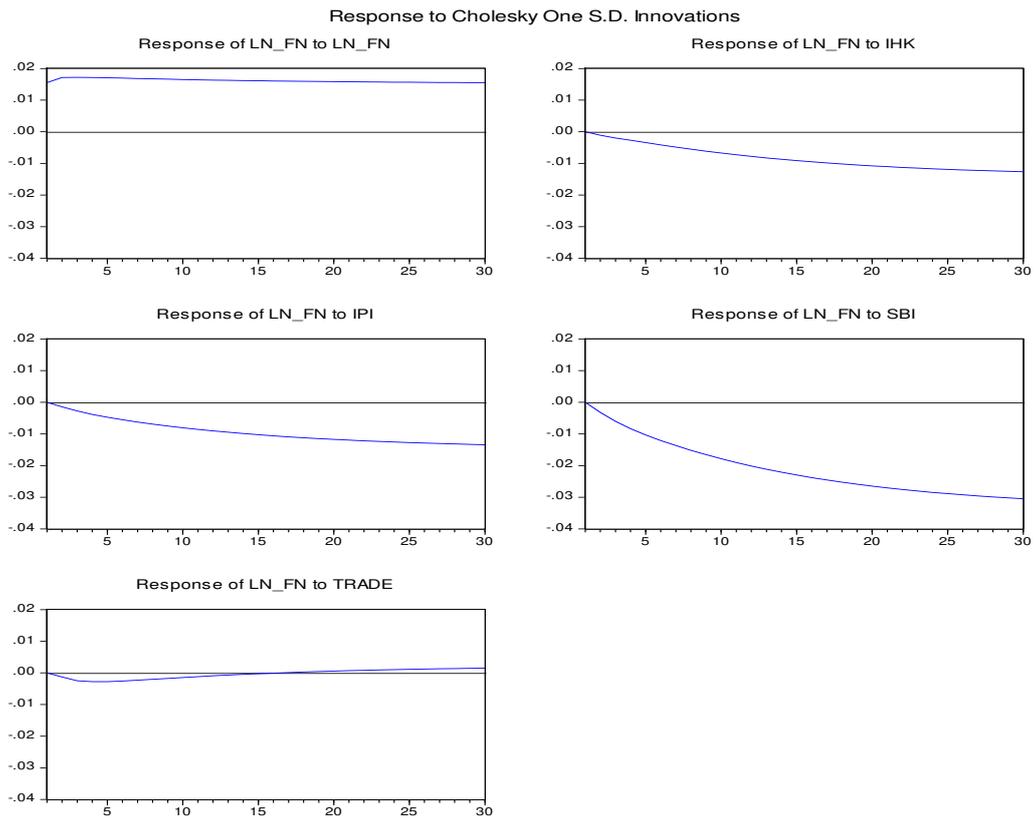


Figure 2. Impulse Response

Table 2 presents the variance decomposition of LN_FN. In the first month, all proportion of error variance of LN_FN can be explained by LN_FN's shock. However, in the second month until the 12th month, it shows that the diversity of LN_FN is influenced by other variables such as SBI, IPI, CPI and Trade. In addition, based on the table 2, it can be seen that among these four variables, the one that have a big effect on the diversity of LN_FN is SBI. It can be seen that in the second month until the 12th month, the diversity of LN_FN that can be explained by SBI has increased. In the 12th month, 34.69% error variance of LN_FN can be explained by SBI

Table 2. Variance Decomposition

| Period | S.E. | LN_FN | CPI | IPI | SBI | TRADE |
|--------|----------|----------|----------|----------|----------|----------|
| 1 | 0.015115 | 100.0000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 2 | 0.023015 | 96.55471 | 0.343123 | 0.096638 | 2.879864 | 0.125662 |
| 3 | 0.029388 | 95.13538 | 0.465063 | 0.100135 | 4.032590 | 0.266831 |
| 4 | 0.034657 | 93.45123 | 0.478048 | 0.187586 | 5.691179 | 0.191953 |
| 5 | 0.039449 | 90.77309 | 0.415646 | 0.449887 | 8.213150 | 0.148228 |
| 6 | 0.043893 | 87.51697 | 0.349328 | 0.870932 | 11.13922 | 0.123551 |
| 7 | 0.048220 | 83.52920 | 0.294316 | 1.499186 | 14.54343 | 0.133870 |
| 8 | 0.052555 | 78.95126 | 0.249057 | 2.262845 | 18.38010 | 0.156735 |
| 9 | 0.056981 | 74.02161 | 0.211878 | 3.128140 | 22.44148 | 0.196890 |
| 10 | 0.061552 | 68.90980 | 0.181977 | 4.055704 | 26.59735 | 0.255171 |
| 11 | 0.066289 | 63.81382 | 0.158172 | 4.992197 | 30.71764 | 0.318164 |
| 12 | 0.071200 | 58.87469 | 0.139362 | 5.912746 | 34.68648 | 0.386716 |

Conclusion

The Granger causality test shows that Islamic banking financing has relationship to real output, price level, interest rate, and trade. Islamic banking financing is affected by real output, price level, and interest rate. It implies that to enhance the Islamic banking financing, government has to support the economic condition, particularly to control the price level and interest rate.

Previous studies shows that Islamic banking financing is shield from macroeconomic variables' shocks as its free-interest banking system that lead Islamic banking is more stable than its counterpart (Darrat, 2002; Kia, 2001; Samad, 2004). However, this study found that Islamic banking financing significantly responds the macroeconomic variables, particularly interest rate. The variance decomposition shows that interest rate is the most dominant variable after Islamic banking financing itself. It indicates that the exposure of interest rate inevitably influence Islamic banking activities in dual banking system. Therefore, Islamic banking financing has to evaluate on how to reduce the risk of interest rate's shock.

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Appendix

Appendix 1. Stationary Test

| Variable | ADF Test | |
|----------|-----------|------------------|
| | Level | First Difference |
| LN_FN | -0.280004 | -4.367373 |
| SBI | -2.136354 | -4.173323 |
| CPI | -2.836675 | -9.572904 |
| IPI | -2.694566 | -15.20047 |
| Trade | -1.491742 | -15.94664 |

Appendix 2. Optimum Lag

| Lag | LogL | LR | FPE | AIC | SC | HQ |
|-----|-----------|-----------|-----------|-----------|-----------|-----------|
| 0 | -1321.829 | NA | 89.86846 | 18.68773 | 18.79181 | 18.73002 |
| 1 | -1238.555 | 159.5098 | 39.56102 | 17.86698 | 18.49145* | 18.12074 |
| 2 | -1197.481 | 75.78519 | 31.58706* | 17.64058* | 18.78544 | 18.10580* |
| 3 | -1174.052 | 41.57843 | 32.39884 | 17.66270 | 19.32796 | 18.33939 |
| 4 | -1158.303 | 26.83938 | 37.13434 | 17.79300 | 19.97865 | 18.68116 |
| 5 | -1135.893 | 36.61451 | 38.89908 | 17.82947 | 20.53551 | 18.92910 |
| 6 | -1116.502 | 30.31408 | 42.72605 | 17.90849 | 21.13492 | 19.21958 |
| 7 | -1106.141 | 15.46929 | 53.61277 | 18.11466 | 21.86148 | 19.63722 |
| 8 | -1084.371 | 30.96857 | 57.70095 | 18.16015 | 22.42737 | 19.89418 |
| 9 | -1059.401 | 33.76204 | 59.87305 | 18.16058 | 22.94819 | 20.10607 |
| 10 | -1044.491 | 19.10970 | 72.30652 | 18.30270 | 23.61069 | 20.45965 |
| 11 | -1033.158 | 13.72759 | 92.91977 | 18.49519 | 24.32358 | 20.86361 |
| 12 | -999.5930 | 38.29259* | 88.51515 | 18.37455 | 24.72333 | 20.95444 |

Appendix 3. Cointegration Test

| No. of CE(s) | Eigenvalue | Trace | 0.05 | Prob.** |
|--------------|------------|-----------|----------------|---------|
| | | Statistic | Critical Value | |
| None * | 0.204165 | 92.41600 | 88.80380 | 0.0267 |
| At most 1 | 0.162357 | 57.70472 | 63.87610 | 0.1481 |
| At most 2 | 0.110929 | 30.77582 | 42.91525 | 0.4568 |
| At most 3 | 0.056266 | 12.90398 | 25.87211 | 0.7457 |
| At most 4 | 0.026623 | 4.101463 | 12.51798 | 0.7274 |

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

Appendix 4. The Granger Causality tests for Islamic banking financing and macroeconomic variables

| Null Hypothesis: | F-Statistic | Prob. |
|------------------------------------|--------------------|--------------|
| CPI does not Granger Cause LN_FN | 3.74304 | 0.0260 |
| LN_FN does not Granger Cause CPI | 1.65471 | 0.1947 |
| IPI does not Granger Cause LN_FN | 4.97270 | 0.0081 |
| LN_FN does not Granger Cause IPI | 0.66229 | 0.5172 |
| SBI does not Granger Cause LN_FN | 5.99749 | 0.0031 |
| LN_FN does not Granger Cause SBI | 3.22692 | 0.0425 |
| TRADE does not Granger Cause LN_FN | 0.18612 | 0.8304 |
| LN_FN does not Granger Cause TRADE | 4.41259 | 0.0138 |