

DEPOSIT BEHAVIOUR IN INDONESIA ISLAMIC BANKING: DO CRISIS AND FATWA MATTER?

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Abstract

This paper attempts to examine factors that influence deposit behaviour of bank depositors in Indonesia Islamic banking. Several explanatory variables are tested namely interest rate, Islamic deposit rate, inflation, income as well as financial crisis. Cointegration test and impulse response functions are utilized to examine the long run and short run relationship among the variables. The period of analysis is from December 2000 to January 2011 (122 number of observation-monthly data). The results show that crisis has no significant impact on the volatility of Islamic banks deposits. This suggests that the Islamic banks' expansion towards the real economic activities by partnership contracts is one of the best practices. It depicts also that depositors have a strong believe towards the resilience of Islamic banks against financial crisis and thus, they did not withdraw their money excessively during the crisis. However, it is also found that interest rate and income are still dominating the people's decision to deposit their funds in Islamic banks which in turns, indicating the effectiveness of the anti-riba campaign in Indonesia is still low and thus, the strategy of educating the people need to be redesigned.

Keywords: Deposit behaviour, Islamic banking, financial crisis, fatwa, Indonesia

JEL Classification: C58, G01, G21.

INTRODUCTION

Background of the study

The initial and fundamental function of a bank is as a financial intermediary institution which connecting the surplus group with the deficit group so that productions do not stop and other economic activities can be financed. The indirect finance, which involves the activities of financial intermediaries, is many times more important than direct finance, in which businesses raise funds directly from lenders in financial markets, towards economic growth (Mishkin, 2006).¹

¹ For the period of 1970-1996, for example, sources of external funds of nonfinancial businesses in Japan were 85 percent from bank loans and 15 percent from financial markets while in Germany

With regard to the causal-relationship between the development of financial intermediaries' activities and economic growth, study on this issue has been carried out extensively. They have revealed that the development of financial intermediary institutions has a significant role towards the economic growth of a country. Among the seminal works done in this field is a study by Levine et al., (2000), Beck et al., (2000), Beck and Levine (2004), and Furqani and Mulyany (2009).

There are at least three types of causal relationships between financial development and economic growth that have been found: (i) supply-leading, (ii) demand-following, and (iii) bi-directional causal relationships. Supply-leading relationship is the creation of financial institutions and instruments in advance of demand for them in an effort to stimulate economic growth. This strategy seeks to make allocation of capital more efficient and to provide incentives for growth through the financial system. Demand-following relationship, on the other hand, appears as a consequence of the development of the real sector. This implies a continuous widening of markets and a growing product differentiation which makes necessary more efficient risk diversifications as well as better control of transaction cost.

King and Levine (1993) studies this issue using data from 80 countries over the 1960-1989 periods. They have constructed four indicators of the level of financial sector developments which is regressed with the real GDP per capita and its sources. First is financial depth which equals the ratio of liquid liabilities of the financial system to GDP. Second is the ratio of deposit money bank domestic assets to deposit money bank deposit assets plus central bank domestic assets to measure the relative importance of specific financial institutions. The third and fourth financial development indicators are designed to measure domestic asset distribution. The proportion of credit allocated to private enterprises by the financial system and the ratio of claims on the non-financial private sector to GDP

were almost 80 percent from bank loans and the rest from financial markets (Mishkin, 2006, p. 171).

are the third and fourth indicators respectively. Their conclusion is consistent with Schumpeter's view that the financial development promotes economic growth. This conclusion is also supported by the works of Calderón and Liu (2002).

Some studies have taken a more microeconomic approach and some used stock markets as the proxy for financial development. Fisman and Love (2003) result is in supporting the hypothesis that financial development helps industries with good growth opportunities. It also reinforces their hypothesis that the role of financial development is to reallocate resources to industries that have good growth opportunities and not to industries with 'technological dependence' on external finance. Another study by Beck and Levine (2004) investigates the impact of stock markets and banks on economic growth using a panel data set for the period 1976–1998. The results strongly reject the notion that overall financial development is unimportant or harmful for economic growth. Therefore, they argue that stock markets and banks positively influence economic growth.

With regard to the role of Islamic financial development in economic growth, Furqani and Mulyany (2009) and Majid and Kassim (2010) are among the limited articles in this area. However, using not-so-different time span of quarterly data, their findings are different in terms of the direction of the relationship. Furqani and Mulyany (2009), on the one hand, posit that the relationship between Islamic financial development and economic growth is following the view of demand-following which means that economic growth causes Islamic banking institutions to change and develop. Conversely, finding from Majid and Kassim (2010) is in favor of the supply-leading view.

In the case of Indonesia, Abduh and Omar (2011) utilizes autoregressive distributed lag (ARDL) framework and vector error correction model to uncover the long run and short run relationship between islamic finance development and economic growth. Using quarterly data from the years of 2003 quarter 1 to 2010 quarter 2, this paper demonstrates a significant relationship in short-run and long-run periods between Islamic financial development and economic growth. The

relationship, however, is neither Schumpeter's supply-leading nor Robinson's demand-following. It appears to be bi-directional relationship.

However, to increase and deepen its financial intermediaries' activities so that they can significantly contribute on the development of the economy, a bank need inflow money. Shareholders' money per se is not sufficient. Banks need inflow money from the people so that they can be able to give loans or financing to promote productivity and economic growth and at the same time to gain profit for themselves through interest or margin applied. This is why deposits are very important for banks and as a result, for the economy of a country.

Problem statement

Similar to its conventional counterpart, Islamic banks also depend on depositors' money as a major source of funds. In fact, since interest is forbidden in Islam, the flexibility of Islamic bank in collecting inflow money for expenses and financing is limited. For that reason, deposits are even more important in Islamic bank compared to conventional bank. Consequently, significant fluctuation in total deposits is a big concern to Islamic banks and thus need to be carefully managed. One of the way is by being able to identify factors affecting fluctuation of islamic banking deposits.

Objective of the study

Studies by Haron and Azmi (2008) and Kasim et al (2009) have demonstrated that Malaysia Islamic banking deposits fluctuation is not only affected by changes in profit margin in Islamic banks but also affected by changes in interest rate on conventional deposits and shocks in monetary policy. Afterwards, the study by Abduh et al (2011) has successfully proven that financial crisis event is positively affecting Malaysia Islamic banking deposits.

Therefore, as a complimentary of those studies, this study aims to test to what extent the macroeconomics variables, i.e. growth, interest rate, and inflation, are able to influence Islamic bank deposits fluctuation in Indonesia. Furthermore, this study is also enriched by incorporating dummy variable of 2007/2008 global financial crisis in order to find out the impact of the event towards Indonesia Islamic bank deposits fluctuation.

LITERATURE REVIEW

Indonesia Islamic banking

Indonesia is a country within the south East Asia region with the largest Muslim community in the world. From the total population of 290 millions, out of 13000 small islands and 5 main islands², Muslim population is about 80 percent or equal to 232 million from the total population. However, huge number of Muslim community does not related with the achievement of this country, particularly with the development of Islamic banking.

History of Islamic banking in Indonesia is started in 1992 when Bank Muamalat Indonesia was established and Banking Act No 7 Year 1992 that allowing bank to operate under zero interest was legitimized and implemented. However, although Islamic banking in Indonesia is considered as among the first banks, it was actually 10 years behind Malaysia and Turkey, as well as 20 years behind GCC countries.³

In Indonesia, currently there are 11 commercial banks⁴ operate under Islamic principles and values with 1,280 branches and 23 conventional banks that has

² Sumatera, Jawa, Kalimantan, Sulawesi, and Irian Jaya

³ In Malaysia, Bank Islam Malaysia Berhad was incorporated in July 1983 while in Turkey, AlBaraka Turk Islamic Bank was started in 1985. Out of these Islamic banks, Dubai Islamic Bank (DIB) is the oldest Islamic Commercial Bank which was established in 1975.

⁴ These banks are Bank Syariah Muamalat, Bank Syariah Mandiri, Bank Syariah Mega Syariah, Bank Syariah BRI, Bank Syariah Bukopin, Bank Panin Syariah, Bank Victoria Syariah, BCA Syariah, Bank Jabar and Banten, Bank Syariah BNI, and Maybank Indonesia Syariah.

Islamic window with 298 branches. Moreover, the number of Islamic rural banks also increases significantly from 92 in 2006 to 153 in 2009. And now, overall there are 1,877 branches of Islamic banks spread around Indonesia to facilitate the needs of the Muslims within the country (Table 1). It is interesting to say that Islamic banking in Indonesia is not limited only to commercial bank or Islamic window of a conventional bank per se. It includes Islamic rural banks which have been established almost in all provinces and districts in Indonesia. It is done in order to support the development of Islamic finance and at the same time is to increase the number of bankable rural-communities in Indonesia.

Table 1. Islamic banking network development in Indonesia

	1992	1999	2002	2006	2009	2011
Islamic commercial banks	1	2	2	3	6	11
Islamic windows	0	1	6	20	25	23
Islamic rural banks	9	78	83	92	139	153
Number of branches	1	40	127	637	1211	1877

Source: Monthly report of Islamic banking performance in Indonesia (www.bi.go.id)

The growth of Islamic banks in Indonesia, although increases significantly in the nominal amount, but it does not increase in terms of the percentage share of the total banking asset. Within the period of 1992 to 1999, although the average increase of total asset is 40%, but the share is still below 1% of the total banking asset in Indonesia. In the year of 2000, total Islamic banking assets amounted to Rp 1,790,168 million and that amount accounted for only 0.17% of total banking assets (see Table 2). The year of 2008 marked as the year in which the proportion of Islamic banking assets out of total banking assets reached beyond 2 %.

Table 2. Total Assets, Financing and Deposits of Islamic Banks in Indonesia

Year	Asset ^a	Financing ^b	Deposit ^c	Growth (%)		
				Asset	Financing	Deposit
1992	120,880	32,560	20,800			
1993	166,960	92,000	60,320	38.12	182.56	190.00
1994	246,080	188,800	132,880	47.39	105.22	120.29
1995	394,400	285,920	275,680	60.27	51.44	107.47
1996	515,200	310,480	396,560	30.63	8.59	43.85
1997	586,720	456,160	463,440	13.88	46.92	16.87
1998	479,200	317,040	391,920	-18.33	-30.50	-15.43
1999	692,800	342,560	528,080	44.57	8.05	34.74
2000	1,790,168	1,271,162	1,028,923	158.40	271.08	94.84
2001	2,718,770	2,049,793	1,806,366	51.87	61.25	75.56
2002	4,045,235	3,276,650	2,917,726	48.79	59.85	61.52
2003	7,858,918	5,530,167	5,724,909	94.28	68.78	96.21
2004	15,325,997	11,489,933	11,862,117	95.01	107.77	107.20
2005	20,879,874	15,231,942	15,582,329	36.24	32.57	31.36
2006	26,722,030	20,444,907	20,672,181	27.98	34.22	32.66
2007	36,537,637	27,944,311	28,011,670	36.73	36.68	35.50
2008	49,555,122	38,194,974	36,852,148	35.6	36.68	31.55
2009	66,090,000	46,886,000	52,271,000	33.36	22.75	41.83
2010	97,519,000	68,181,000	76,036,000	47.55	45.41	45.46

Note. ^{a, b, c} are in Million IDR

Source: Monthly report of Islamic banking performance in Indonesia
(www.bi.go.id)

As can be seen in Table 2, total deposits and total financing of Islamic banks in Indonesia is always increasing except for the year of 1998. It is the year when global financial crisis hit Indonesia very hard and many banks were bankrupt and liquidated. Fortunately, Bank Muamalat Indonesia, as the only Islamic bank in Indonesia at that time, was survived and provided evidence that Islamic banks is

more resilient towards the hits of financial crisis. The significant growth depicted in Table 2 is always be understood as the result of effective collaboration among the stakeholders of Islamic finance in Indonesia to promote Islamic banking as the best alternative banking for Muslim and non-Muslim which advocates justice and profitability at the same time.

Determinants of Islamic bank deposits

In general, the discussion about Islamic bank deposit is divided into three groups. First, is study which mainly focused on the rate of return of bank deposits and factors influence its volatility. Chong and Liu (2008) has attempted to show the relationship between Islamic bank deposit rate with conventional fixed deposit rate in Malaysia. Using time series data ranges between April 1995 to April 2004, Chong and Liu (2008) was able to provide evidence that rate of return in Islamic bank deposit is highly pegged to interest rate in conventional bank fixed deposit.

Secondly, studies which are directly discuss the amount of bank deposits and its determinants. Haron and Azmi (2008) uses macroeconomic variables as explanatory variables to predict the behavior of bank deposits in Malaysia and revealed that growth in the economy and an increase in money supply, composite index, and consumer price index, continue to increase Islamic bank deposits. Furthermore, Haron and Azmi (2008) also empirically proven that any increase in rates of interest, the volume of conventional bank deposits will increase and Islamic bank deposits will decrease, and vice-versa. Similar results are presented by Rohmah (2006) for Indonesia. Using autoregressive distributed lag approach, Rohmah (2006) provides evidence of long run cointegration between Islamic bank deposits with islamic and conventional rate of return on deposit, level of income and number of Islamic banks' branches.

Another study conducted in investigating the behavior of Islamic bank deposits is done by Kasim et al (2009). Using monthly data covering the period from January 1999 to December 2006, this paper study the impact of monetary

policy shock on Islamic bank's balance sheet in Malaysia. The study convincingly provides evidence that the impacts of policy shocks are more de-stabilizing on the Islamic banks than the conventional banks, in particular, the Islamic bank balance sheet items are more sensitive to interest rate changes compared to their conventional counterparts.

Haron and Ahmad (2000), moreover, examines the effects of conventional interest rates and rate of profits on funds deposited with Islamic banking system in Malaysia. The negative relationship emerged between the interest rate of conventional banks and the total deposits in Islamic banks provides evidence for the existence of the utility maximization theory among the Muslim customers. Meanwhile, Kasri and Kasim (2009) provides similar conclusion for similar study done for Indonesia. It supports Haron and Ahmad (2000), Rohmah (2006), Haron and Azmi (2008) and Kasim et al (2009) by concluding that higher Islamic deposit is significantly correlated with higher rate of return and lower interest rate.

Recently, Abduh et al (2011) studies the relationship between macroeconomic variables and financial crisis towards the fluctuation of total deposits in Malaysia Islamic banking industry. Using cointegration and vector error correction model techniques, Abduh et al (2011) evidences that inflation has negative effect towards total deposits while other macroeconomic variables are not proven to have an impact on total deposits. Interestingly, financial crisis is significantly and positively affecting the Malaysia Islamic banking total deposits.

Third, is a group of studies which combine the discussion between rate of return on bank deposits and the volume of the deposits. Bacha's (2004) seminal work discusses causality relationship between conventional bank interest rate with Islamic banking rate of return as well as between conventional fixed-deposit and Islamic bank deposit. Using time series data spread from January 1994 to July 2003, the study shows that the changes in conventional banks interest rates and total deposits Granger cause changes in Islamic banks rate of return and total deposits respectively.

Zainol and Kasim (2010) examines the determinants of rate of return and total deposits in Islamic banking. Utilizing 10 years monthly data spread from January 1997 to October 2008, they found that Islamic banks' rate of return and conventional banks' interest rate are cointegrated and have a long-run equilibrium. Furthermore, the study also indicates the profit motive among the Islamic banks' depositors due to the significant impact of the mudharabah deposit rate with the total deposit and negatively significantly related with the changes in conventional fixed-deposit rate.

In the case of inflation, Blinder et al (1985) studies the relationship between inflation, tax rate increase and consumption behavior in US using data spread from 1971 to 1984 and conclude that inflation has a substantial impact in consumption. However, this effect is more on services, particularly financial services, rather than on nondurable goods. During the time of high inflation, people reduce their very costly and insignificant expenditures for their real consumption. One of the best choice is by reducing cost of services charged by financial institutions. Huybens and Smith (1999) and Boyd et al (2001) provide evidence which indicate a significant, and economically important, negative relationship between inflation and banking sector development.

In relation with saving behavior in financial services, Juster and Wachtel (1972) has concluded that unanticipated inflation tend to increase households saving in US while fully anticipated inflation is otherwise. However, different result has been shown for the relationship between inflation and households saving behavior in Australia. When studying the roles of inflation and consumer sentiment in explaining Australian consumption and savings pattern, Williams and Defris (1981) has evidenced that inflation, together with unemployment and general consumer sentiment have significantly affected households consumption and saving pattern. Furthermore, perceived seriousness of inflation is giving more impact on households consumption and saving pattern compared with recorded inflation. Hence, general consumer sentiment plays more significant role in affecting the changes in households consumption and saving pattern in Australia.

In term of the financial crisis impact towards Islamic banking performance, Kaleem (2000) analyzes the Malaysian data over the period of January 1994 to December 1999 in order to investigate the performance of Islamic banks in pre and post global financial crisis 1997-1998. As anticipated, the conclusion derived is that Islamic banking system is more crises-proof due to its asset-linked nature. However, although he claims that the analysis is for the pre and post crisis, the time period used in his study is not reflecting the post crisis since the impact of the 1997/1998 global financial crisis is felt until beyond the year of 1999.

Hasan and Dridi (2010) evidences that Islamic banks' credit and asset growth were at least twice higher than that of conventional banks during the crisis, suggesting a growing market share going forward and larger supervisory responsibility. This result is similar to what has been found by Abduh et al (2011). The global crisis gave Islamic banking an opportunity to prove their resilience.

Yudistira (2004) studies the performance of eighteen Islamic banks from South-East Asian and Middle East for the period of 1997 to 2000. In contrast with other researches, Yudistira (2004) has proven that Islamic banks included in the sample were suffered from the global crisis in 1997-1998, however, they were able to perform very well after those difficult periods.

Embarked from many interesting points from those literatures, this study tries to explore the explanatory power of independent variables introduced in the previous studies for the case of Indonesia. Afterwards, additional explanatory dummy variable of financial crisis is also included in this study to identify its impact on deposit behavior. Therefore, hypotheses developed in this study are:

H1: Deposit behavior in Islamic banking is determined by conventional interest rate;

H2: Deposit behavior in Islamic banking is determined by Islamic deposit rate;

H3: Deposit behavior in Islamic banking is determined by economic growth;

H4: Deposit behavior in Islamic banking is determined by inflation;

H5: Deposit behavior in Islamic banking is determined by event of financial crisis;

DATA AND METHODOLOGY

All data are retrieved from Bank Indonesia official website are Islamic bank total deposit (*deposit*), Investment Mudharabah Account certificate as a proxy for Islamic rate (*israte*), conventional interest rate (*inrate*), and consumer price index (*lcpi*). However, for the industrial production index (*lipi*) as a proxy for income, data are retrieved from central beareu of statistics (BPS) official website. In this study, a dummy variable is introduced in order to cater the crisis event (*crisis*) with 1 equal to ‘crisis’ and 0 is ‘otherwise’. Based upon the information retrieved from many e-media, the event of 2007/2008 financial crisis is assumed to be started from the fourth month of 2007 to month twelve of 2008. All data are in the log-form except for the rates.

Thus, to study the relationship between the Islamic bank deposit and its determinants, the following model is derived in Eq. (1):

$$deposit = \beta_0 + \beta_1 israte + \beta_2 inrate + \beta_3 lcpi + \beta_4 lipi + \beta_5 crisis \quad \dots\dots\dots (1)$$

Empirical framework

As in any time series estimation procedure, we undertake the pre-tests to determine the unit root properties as well as the degree of integration of the variables involved in the study before more rigorous investigation techniques are adopted. As such, the following steps are undertaken: first, the unit root and cointegration tests, impulse response functions. The details of the tests are elaborated in the following sections.

Unit root tests

A unit root is tested on the data using with Augmented Dickey-Fuller (ADF) and Phillip-Perron (PP) unit root test. There are possibilities that the variables observed have a tendency to return to the long-term trend following a shock or a random walk. If the variables follow a random walk after a temporary or permanent shock, the regression between variables is spurious. Hence, the OLS will not produce consistent parameter estimates. This situation will happen if the variable is not stationer. Therefore, all series included in the analysis should be stationary at a certain level. ADF test is can be determined as in Equation (2).

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \alpha_i \sum_i^m \Delta Y_{t-1} + \varepsilon_t \quad (2)$$

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)

Gujarati and Porter (2009) states that an important assumption of the Dickey-Fuller (DF) test is that the error terms (ε_t) are independently and identically distributed. The ADF test adjust the DF test to take care of possible serial correlation in the error terms by adding the lag difference terms of the regressand. Phillips-Perron (PP) test uses nonparametric statistical methods to overcome the serial correlation in the error terms without adding lagged difference terms (Gujarati and Porter, 2009. p.758).

There at least two advantages of the PP tests over the ADF tests. Firstly, the PP tests are robust to general forms of heteroskedasticity in the error term.

Secondly, since PP test uses nonparametric statistics, therefore the user does not have to specify a lag length for the test regression.

Cointegration Test

Cointegration is said to exist if two or more series are linked to form an equilibrium relationship spanning the long-run, even though the series themselves may contain stochastic trends or non-stationary. They will nevertheless move closely together over time and difference between them will be stable (Harris, 1995).

From the above definition, it implies that even though examining non-stationary variables may result in spurious regression however, if the residual of the model is found to be stationary, then the variables is said to have co-movement in the long run or they have a long term equilibrium relationship. Hence the regression is meaningful. There are at least two types of cointegration tests, namely the Engle-Granger (EG) and Johansen and Juselius (JJ) tests. In this study, the JJ method will be adopted.

The JJ procedure is able to prevent the use of two-step estimator and can test for the presence of multiple cointegrating vectors. The JJ procedure is nothing more than a multivariate generalization of the DF test. The key important thing in this procedure is the determination of the rank matrix (π). Rank π is equal to the number of independent cointegrating vectors. If rank $\pi = 0$, then the matrix is null, hence the standard VAR model in first differences is employed. If rank π is of rank n (number of variables) then the vector is stationary. If rank of $\pi = 1$, there is a single cointegrating vector and the component of πx_{t-p} is the error correction factor (Enders, 1995). Other case whereby $1 < \text{rank } \pi < n$, there are multiple cointegrating vectors.

At this point in time, it is necessary to outlines the VAR order selection or the selection of relevant lag length in the modelling of VAR. There are some of the

criteria used in selecting the VAR lag length for each variable are, among others, the Akaike's Information Criterion (AIC) and the Schwarz Criterion (SIC). The lag length used should be long enough to confine the dynamics of the system. However, it should not be too long to exhaust the degree of freedom.

Impulse Response Functions (IRF)

An IRF measures the time profile of the effect of shocks at a given point in time on the expected future values of variables in a dynamical system (Pesaran and Shin, 1998). The approach is well-suited because not only that it allows for the relative strength of various shocks to be quantified in terms of their contributions to variations in a particular variable of interest, but it also enables the pattern and direction of the transmission of shocks to be traced. In the context of this study, we are interested to analyze the explanatory power of the independent variables, namely *lipi*, *israte*, *inrate*, and *lcpi* towards the *ldposit*.

Tabel 3. Unit Root Test

Variable	Code	ADF				PP	
		Level		1st Difference		Level	1st Difference
		LL ¹ AIC	Trend & Itcpt	LL ¹ AIC	Trend & Itcpt	Trend & Itcpt	Trend & Itcpt
Deposit	<i>ldposit</i>	12	-1.98	0	-12.72***	-1.36	-12.62***
Price	<i>lcpi</i>	12	-2.69	11	-4.65***	-2.69	-10.85***
Ipi	<i>lipi</i>	12	-2.1	11	-5.66***	-7.59***	31.73***
Islamic rate	<i>israte</i>	0	-3.17*	2	-5.96***	-3.2*	12.09***
Interest rate	<i>inrate</i>	6	-2.92	5	-2.84	-1.99	-5.09***

¹Denotes Lag Length

* Significant at 10% alpha; ** Significant at 5% alpha; *** Significant at 1% alpha.

RESULTS

Unit root test

This study utilizes Augmented Dickey-Fuller (ADF), Phillips Perron (PP) tests to identify the variables' order of integration. In all the cases, the test was conducted with trend term. Table 3 reports the result of those tests. It can be seen that based on ADF unit root test, *ldeposit*, *lcpi*, *lipi*, *israte*, and *inrate* contain unit root. Namely, the null hypothesis of the presence of unit root cannot be rejected even at 5 % significance level. However, they are stationary when first differenced except for interest rate. But using PP test, interest rate is found to be stationary in first different. We therefore conclude that they are I(1) variables. Therefore, for our analysis, this serves as a prerequisite for our cointegration test.

Cointegration and long-run equation

Having concluded that each of the series is stationary at first differenced, we continue to examine whether there exist long run equilibrium between deposit and their determinants. Table 4 presents the result from the Johansen-Juselius cointegration test. We employ two criteria which are commonly used i.e. AIC and SC in order to determine the vector autoregressive lag order. The optimal lag length for deposit is 2. As may be observed from Table 4, trace statistics and maximum eigenvalue statistics for the deposit show 1 and 2 cointegrating equations respectively.

One cointegrating vector in Trace statistics is shown by the fact that 129.52 is greater than 114.9 (5 percent critical value). Similarly two cointegrating vectors in max eigenvalue are shown by 47.49 which is greater than 43.97 (5 percent critical value) and 40.78 which is greater than 37.52 (5 percent critical value). These mean that deposit and its determinants namely consumer price index (*lcpi*), industrial production index (*lipi*), conventional bank interest rate (*inrate*), islamic bank deposit rate (*israte*) and crisis are found to be cointegrated. In short, the presence of cointegration between deposit and other variables provide evidence

that these variables share a long-run relationship. Therefore, it concludes that there is a long run equilibrium governing the relationship among the variables.

Table 4. Cointegration test

Hypothesized No of CE(s)	Trace Statistic	5% Critical Values	Max. Eigen Statisic	5% Critical Values
$r \leq 0$	129.5273***	114.9	47.4929***	43.97
$r \leq 1$	82.0345	87.31	40.7806**	37.52
$r \leq 2$	41.2538	62.99	19.4605	31.46
$r \leq 3$	21.7933	42.44	12.0392	25.54
$r \leq 4$	9.7541	25.32	6.3336	18.96
$r \leq 5$	3.4205	12.25	3.4204	12.25

** Significant at 5% alpha.

*** Significant at 1% alpha.

The estimated long run equation based on the relationship proposed in Eq. (1) is as follow:⁵

$$ECT = ldeposit + 0.137israte + 0.058inrate + 0.154lcp_i - 9.154lip_i + 0.49crisis + 11.175$$

(2.165) (1.368) (0.544) (-6.579) (1.94)

..... (2)

From the estimated coefficients, it is found that all relationship directions between dependent variable and independent variables are as expected. Conventional bank interest rate, inflation and crisis are giving a negative impact towards total deposit in Islamic bank. Only production gives significant and positive impact towards the total deposit volatility in Indonesia Islamic banking in the long run.

⁵ t statistic is in the bracket

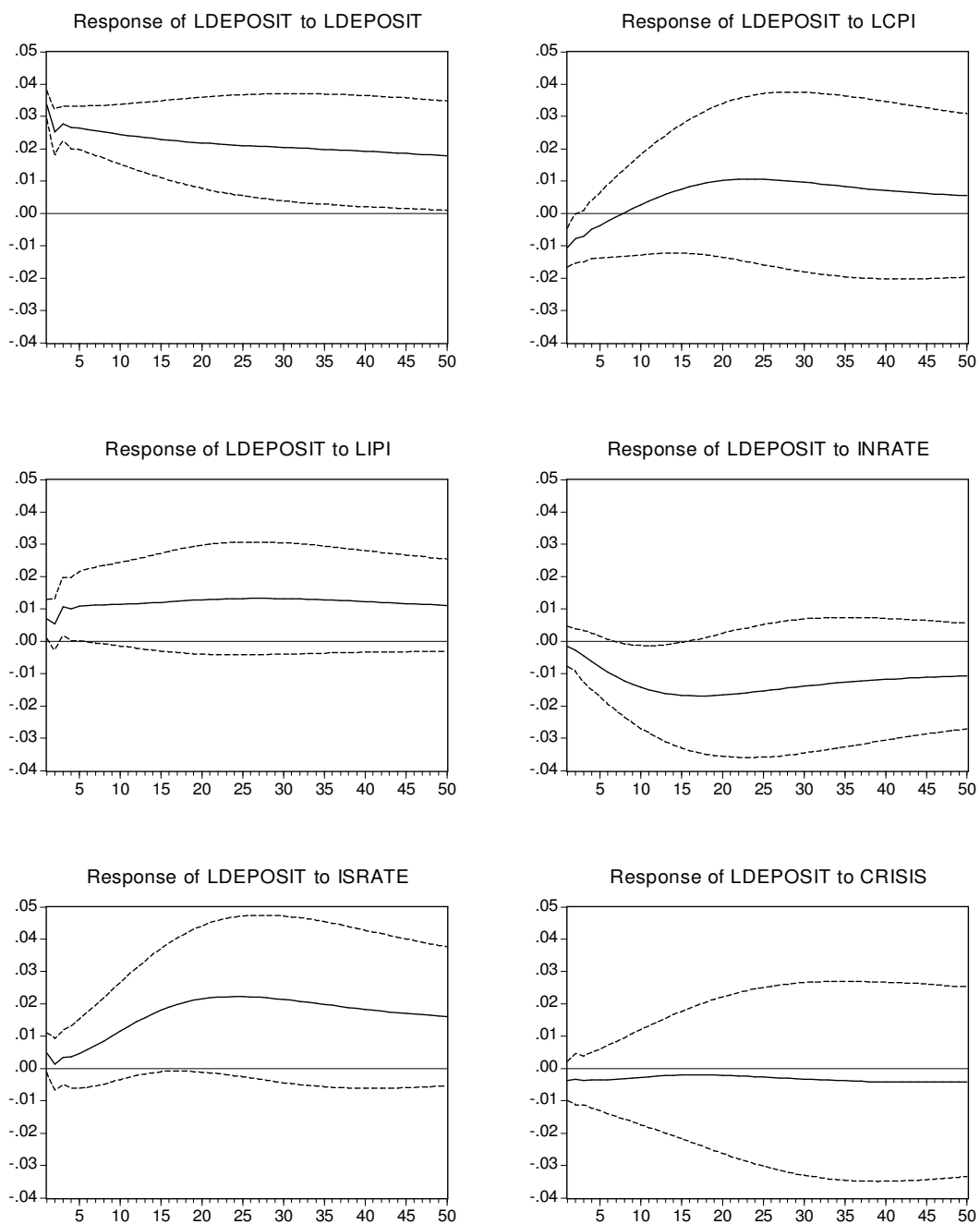
Response to Generalized One S.D. Innovations ± 2 S.E.

Figure 1. Impulse Response Function

Impulse Response Function

This section continues to examine the Impulse Response Functions (IRF). The functions basically trace out the response of a variable in the VAR system, to shocks in other variables (Gujarati, 2003). In other words, it is used to see how shock in one variable is transmitted to other variables through a dynamic VAR structure besides directly affecting the concerned variable itself. Generalized impulse response is applied in all cases since it does not depend on the VAR ordering. Results of this impulse response function can be seen in Fig. 1.

It is noted that deposit responds positively to the shock of income as represented by Industrial Production Index. This is as expected since increase in income will likely be followed by an increase in bank deposit. Recall the basic economics theory which would tell us that income is equal to consumption plus saving. An increase in the income leads to the increase in consumption and saving. Meanwhile, for the shock in interest rate and inflation, Islamic bank deposits response negatively.

DISCUSSION AND IMPLICATIONS

The relationship sign for all variables in the long run are as expected. The insignificant coefficient for dummy variable crisis in Eq. (2) indicates that people perceived Islamic banks slightly better than conventional banks. Islamic banks have received a positive image and good trust from their depositors regarding their resilient towards banking crisis. Therefore, whenever crisis comes, it seems that Islamic bank depositors will not withdraw their money substantially in both the short run and the long run periods.

Other explanations on why crisis is not a significant factor to influence deposit in Indonesia Islamic bank are as the following. First is that Islamic banks do not indulge with the derivative instruments. Secondly, during the time of crisis, institutional investors which put the huge amount of investment in US were also affected. In turn, people dump their dollar to the market which resulted in dollar

being significantly decrease in value. For those banks which provide loan/financing overseas, obviously, will be greatly affected. Fortunately, Islamic bank in indonesia has spreaded the financing to domestic market which certainly adopt the local currency of rupiah. The dynamic movement of US dollar will have no influence to the performance of islamic banks.

Thus, instead of being involved in derivatives or any speculation activities, it is strongly recommended for Islamic banks to deeply involved in real economic activities using *mudharabah* or *musharakah* contracts to support production and economic growth and at the same time as a risk management tools against the cyclical financial crisis.

The negative relationship between interest rate and Islamic deposit is consistent with many other studies such as that of Kasim et al. (2009) and Sukmana and Kasim (2010). Essentially, this phenomenon is known as the displaced commercial risk which may occur in the context of a dual banking system such as in Indonesia. In a situation whereby interest rate on deposit is relatively attractive as compare to the profit rate given to Islamic bank depositor, one would likely see a significant deposit withdrawal from Islamic bank to conventional bank. This result would also suggest that Islamic bank depositors are still dominated by profit motive depositors which are normally come from institutional depositors such as companies or other banks. In this case, the fatwa released by Majelis Ulama Indonesia about impermissibility of bank interest in the late 2003 is not effective yet. Thus, education about the prohibition of *riba* towards the people needs not to be stopped or reduced.

Meanwhile, shock on Islamic rate does not seem to have an impact on the deposit. This means that depositors use interest rate as a benchmark in order to decide their investment portfolios. Ismal (2011) reveals that the most important point to manage deposit withdrawals from depositors, particularly corporate depositors, is to keep maintaining the robust performance of Islamic banks, particularly in a very difficult time when others are collapsed.

With regard to the relation between consumer price and deposit, it shows that consumer price has a negative significant influence to the deposit. In other words, a shock of the consumer price lead to the decrease in the deposit. This is inline with the theory of money demand. When the price level rises, the value of money in terms of what it can purchase is lower. To restore their purchasing power in real terms to its former level, people will want to hold a greater nominal quantity of money by withdrawing their deposit. In conclusion, the higher the inflation and rental price, the more people need cash money for expenses and thus leads to withdrawal action and reduces total deposit in general.

Finally, the total deposit of Islamic banks is positively corelated with real economic activities of the country through the aggregat production. When the economic condition is good, factories can produce and sell more goods which in turn will give more advantages and returns for companies. The increase in corporates' income will increase the possibility of the increment in the total deposits of Islamic banks.

Policy implications

This study provides several suggestions for Indonesia Islamic banking stakeholders, particularly policy makers, as following:

1. Islamic banks should strongly tight to real economic activities in order to promote economic growth and at the same time as a risk management tool in facing cyclical global financial crisis. It can be achieved through optimization of partnership contracts such as *mudharabah* and *musharakah* financing.
2. Optimization of projects on comprehensive education of Islamic economics and finance and the information distribution about the fatwa on impermissibility of bank interest by the National Ulema Council (MUI). This is due to many Muslim depositors in Indonesia, both individual and

corporate depositors, are still driven by bank interest in their deposit behavior.

Islamic banking is not a business per se. It is a combination between Islamic da'wah and business. In fact, da'wah portion should dominate the establishment of Islamic banking. Because the main spirit of establishing Islamic economic and finance is to free Muslims from riba and to bring back stabilization of the world economy. Therefore, Islamic banking stakeholders should not emphasize only on benefits of dealing with Islamic banks in their advertisements, but also should not slowdown the anti-riba campaign throughout the country.

3. Government should give supports through positive appreciations as well as rules and regulations towards the development of Islamic banking and finance. These supports can be in the form of tax incentives, equal opportunity of bankability of every individuals in the country, and annual awards for individuals as well as firms which have contributed towards the development of the industry.

CONCLUSION

This paper is aimed at investigating the impact of macroeconomic variables and financial crisis towards the volatility of total deposit in Indonesia Islamic banking within the year of 2000 to 2011. Particularly, it focuses to answer whether or not the global financial crisis could significantly affect the overall performance of Islamic banking in Indonesia. Afterwards, it provides some implications and policy recommendations based upon the results of the analysis.

The results show that both in the short run and in the long run, variables of income, inflation and interest rate are significantly influence the volatility of total deposit in Indonesia Islamic banks while other variables i.e. crisis and islamic rate are not. While variable of income has appeared to be positively influence the total deposit, the variables of inflation and interest rate provide a viceversa evidence of

relationship towards the total deposit. These confirm the general economics theory of income and saving behavior and the consumer rational behavior. For the latter, it also confirms that more educations are needed towards the individuals and companies about the prohibition of riba and its impacts on the local and global socio-economic problems. With regard to crisis, the result implies that depositors have a strong confidence towards the resilience of Islamic banking.

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