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# BANK RUN AND STABILITY OF ISLAMIC BANKING IN INDONESIA

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## Abstract

Bank run is an important economic phenomenon which increasingly occurred in in modern banking system and potentially threatened banking stability as it could trigger a banking crisis. However, most studies related to bank run focus on the occurrence of bank run in conventional banking system. Very few of them discuss the bank run phenomenon under Islamic banking system or dual banking system where Islamic banks jointly operating with conventional banks. Therefore, this study attempts to analyze the determinants of bank run in the Indonesian Islamic banking industry by employing primary data from 256 customers of Indonesia Islamic banks in 2015 and by utilizing factor analysis and descriptive statistics. In theory, Islamic banks tend to be more resilient towards any macroeconomic or financial shocks as compared to conventional banks due to the nature of its asset-based and risk-sharing arrangement. However, the result exhibits that both psychological and fundamental factors (i.e. macro-economics and bank fundamentals) strongly influence the behaviors of Islamic banking depositors to withdraw their funds, which might trigger the occurrence of bank runs in the country. Insider information, macroeconomic condition and bank fundamental factors are also shown to have the highest impacts among all variables. Hence, in the context of banking stability, the finding implies that Islamic banks are not completely immune to the impacts of macroeconomic shocks or financial crisis. As a country with a dual banking system, Indonesia had experienced several bank runs since 1990s. Therefore, the findings of the study should provide the policy makers important insight into research based-policy in order to attain financial stability as one of the main economic goals of the country.

*Keywords: Bank run, Islamic bank, Factor analysis, Indonesia*

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## I. INTRODUCTION

Bank runs is an important economic phenomenon which increasingly occured in in modern banking system. The US has experienced at least 12 bank runs in the 19th century, one of which is the most striking 1932-1933 bank runs. More recently, the banking system in Mexico, Asia, Argentina, Russia, and the UK have also experienced a partial bank run or temporary bank closure (Deng, Yu, & Li, 2010). In Indonesia, several bank runs had happened since 1990s. For example, in 1992, few national banks experienced liquidity shocsk and bank runs as a result of the liquidation of Bank Summa. During the 1997-1998 banking crisis, following the closure of 16 banks, bank runs also occured in the country. The collapse of the banking system triggerred a bigger economic instability and resulted in the biggest economic crisis in the history of the country (Kasri, 2011). Not surprisingly that nowadays bank runs and financial stability become one of the main economic goals in many countries. Getting better insights into the determinant of bank runs have also become a new direction in research-based policy making in many contemporary economies (see for instance, De Jonghe, 2010; Chakravarty, Fonseca, & Kaplan, 2012; Goedde-Menke, Langer, & Pfingsten, 2014).

In general, there are two classical theories related to the determinant of bank runs, namely fundamentalist theory and self-fulfilling theory[3]. The fundamentalist theory, which was proposed by Kindleberger (1978), states that macroeconomic conditions are the main determinant of bank runs. A number of empirical studies have supported the hypothesis (see, for instance, Calomiris & Gorton, 1991; Allen & Gale, 2000; Canova, 1994; Goldstein & Pauzner, 2005; Zhu, 2001; Gariga & Sekeris, 2009 as well as Goedde-Menke *et al.*, 2014) and suggested that various macroeconomics conditions such as high inflation, low economic growth and low interest rate are strongly related to the occurrence of bank runs. On the other hand, the self-fulfilling theory believes that bank run occurs because the depositors feel insecure with the ability of the bank to provide sufficient liquidity when depositors withdraw their saving. Relevant studies include, among others, studies conducted by Diamond and

3 More recently, some empirical studies exerted to combine both theories in order to analyze the causes of the bank in the contemporary era (see, for example, Simorangkir, 2011 and Chakravarty *et al.* 2012). However, the results tend to support one of the classsical theories of the bank runs determinants.

Dybvig (1983), Gorton (1985), Cooper and Ross (2002), Chang and Velasco (2000a, 2000b), Jeitschko and Taylor (2001), Samartin (2003), Schotter and Yorulmazer (2009), Deng *et al.* (2010) and Kiss, Rodriguez-Lara and Rosa-Garcia (2014).

Nevertheless, almost all of the studies above focus on the occurrence of bank runs in conventional banking system. None of them discuss the bank runs phenomenon under 'special' banking system such as Islamic banking system or dual banking system where conventional banks and Islamic banks are jointly operating. This happens despite the common beliefs that Islamic banking system tends to be more stable than its conventional counterpart particularly due to the nature of asset-based and risk-sharing which safeguard the banks from the effect of crises (Hasan & Dridi, 2010; Parashar & Venkantesh, 2010).

Indeed, in relation to Islamic banking and finance related research, a large part of the literature contains comparisons of the instruments used in Islamic and commercial banking as well as discusses the regulatory and supervisory challenges related to Islamic banking (e.g., Sundararajan & Errico, 2002; Sole, 2007). A number of theoretical papers discuses risks in Islamic financial institutions, while empirical papers on Islamic banks focus on issues related to efficiency (see, for example, Yudistira, 2004; Mokhtar, Abdullah, & Alhabshi, 2008). Although several international financial institutions (such as IMF, World Bank and IDB) have missions in countries with a substantial presence of Islamic banks and therefore have included those banks in the overall financial stability assessments, the role of Islamic banks in financial stability has not yet been analyzed in a consistent empirical fashion (Cihak & Hesse, 2008). However, some studies have tried to focus on withdrawal behavior in Islamic banking which is indirectly related to the occurrence of bank runs (see, among others, Haron & Ahmad 2000; Sukmana & Yusoff 2005; Kasri & Kassim 2009; Abduh, 2014).

In view of the above, this study attempts to fill in the gap and contributes in the empirical literature by analyzing the determinant of bank runs in the Indonesian Islamic banking industry. To achieve the objective, the research collected primary data regarding the determinants of bank runs from the perspective of Islamic banking customers in Indonesia. The data is analyzed by using factor analysis

and descriptive statistics. The results are subsequently analyzed in the context of financial stability and the dual-banking system environment in Indonesia.

The structure of this paper is as follow. Section 2 review a number of literature related to the determinants of bank runs and briefly explains the development of Islamic banking in Indonesia. Section 3 discusses the research methods and introduces the data used in the paper. Section 4 presents and analyzes the empirical findings. The last section summarizes the conclusions and recommendations of the study.

## II. LITERATURE REVIEW

### 2.1 Banking Stability and Phenomenon of Bank Run

As an intermediary financial institution which connects surplus and deficit unit, banking institution always face problems of mismatch between assets and liabilities. Since banks have to manage a mix of illiquid assets and liquid liabilities, there is a probability of a liquidity mismatch risk which in turn could lead to the occurrence of bank runs or bank panics (Deng *et al.*, 2010). Specifically, bank run or bank panic refers to an event where many depositors withdraw their massive funds in bank simultaneously. The massive withdrawal takes place because the depositors believe that the bank is in the insolvent position or will be insolvent in the near future (Zhu, 2001). However, such conditions can actually test the resilience and stability of the banking systems during liquidity crises due to the potential of bank runs for being contagious. Hence, in a longer term, it may trigger a banking crisis (Kaufman, 1994).

Theoretically, Islamic banks tend to be more resilient towards any macroeconomic shocks or financial crises as compared to conventional banks. This is primarily due to the nature of asset-based and risk-sharing arragement embedded within the Islamic banks which safeguard them from the negative effects of such crises (Hasan & Dridi, 2010; Parashar & Venkantesh, 2010). Moreover, Islamic banks tend to be more conservative because of the difficulties in accessing liquidity, which eventually resulted in less moral hazard and risk taking attitude (Cihak & Hesse, 2008).

However, empirical studies from various countries show different result pertaining to Islamic banks resilience compared to conventional banks during macroeconomic shocks and financial crises. In Malaysia case, for example, Kassim and Majid (2010) found that Islamic financing responded significantly towards macroeconomic shocks in global financial crisis in 2007 while Islamic deposit responded significantly to 1997 crisis. Thus, the finding of this study indicates that Islamic banks were vulnerable to macroeconomic shocks. The study further suggests that the dual banking system is one of the reasons behind the vulnerability of Islamic banks towards macroeconomic and financial shocks. This system serves opportunity to conduct arbitrage for conventional banks while Islamic banks have to limit their financing in the Islamic money market only. Nevertheless, by using cross countries data from 120 Islamic and conventional banks in eight countries, Hasan and Dridi (2010) revealed that in general Islamic banks were more stable than conventional banks during the global financial crisis in 2007/2008. Despite that, in terms of profitability, Islamic banks have been affected differently. The initial impact, which came from financial crisis, towards Islamic banks was limited. Nevertheless, when the impact shifted to the real economy, Islamic banks in some countries suffered from greater losses compared to conventional banks. This finding is in line with the study of Karim, Al-Habshi and Abduh (2016) which found that Islamic banks in Indonesia is not merely affected by macroeconomic variables but also affected by real economic variables.

In the context of banking stability and bank runs during the 2007/2008 global financial crisis, Massoud (2015) suggests that Islamic banks tend to be more stable than the conventional counterparts and almost none of Islamic banks experienced bank runs during the period. Moreover, a study by Farooq and Zaheer (2015) found that Islamic banks were more stable and even able to attract higher deposits during the financial panics. In particular, by using data from all banks' balance sheet in Pakistan between July 2008 and January 2009, the study attempted to examine the impact of financial panic on the deposit and financing sides of Islamic and conventional banks in Pakistan. In September 2008, Pakistan suffered from excessive deposit withdrawals due to rumors about potential failure of several financial institution. Indeed, within three weeks, demand deposits decreased by 4%. The study concluded that on average Islamic

subsidiaries attracted more deposits during the financial panic compared to their conventional parents. On the financing side, Islamic banks were also more likely to give new financing during the liquidity crises. This is because their financing decisions were less sensitive to deposit change. Moreover, this study suggested that financial inclusion of faith-based groups might enhance banking stability. Therefore, the empirical studies generally indicate that Islamic banks tend to be more stable than conventional banks during the occurrence of bank runs and macroeconomic shocks.

## 2.2 Determinants of Bank Run

In general, there are two classical theories which define the cause of bank run namely fundamentalist theory and self-fulfilling theory. The fundamentalist theory, which was proposed by Kindleberger (1978), states that macroeconomic condition is the main factor which causes the occurrence of bank run. On the other hand, the self-fulfilling theory believes that bank run occurs because the depositors feel insecure with the ability of the bank to provide sufficient liquidity when depositors withdraw their saving. More explanations of the theories are as follow.

### 2.2.1 Fundamentalist Theory

The fundamentalist theory believes that the fundamental condition of the bank and the macroeconomic condition of the country induces the occurrence of bank run and bank panic. Canova (1994) concluded that macroeconomic variables, such as high inflation, low economic growth, and low interest rate, significantly determine the incidence of bank run. Furthermore, Allen and Gale (2000) presumed a bank run as a phenomenon that is closely related to the fundamental state of the bank and to a business cycle in a country. This finding is supported by the findings of Zhu (2001). By conducting two-stage model, the author found that bank run occurs when the depositors discovered that the bank has a low return on the asset side. Moreover, Goldstein and Pauzner (2005) showed that bank run occurs massively when depositors detect negative signal of fundamental macroeconomic conditions in a country.

These findings were supported by the study of Demirguc-Kunt and Detragiache (1998). By using cross countries cases from developing countries during 1980–1994, the study came to the conclusion that the bank run tended to occur in unfavorable macroeconomic conditions which is characterized by weakening economic growth, higher inflation, and high real interest rate. In addition, the increase in bank credit growth to the private sector, which is marked by the existence of a guarantee or insurance against the savings, could increase the probability of a bank run. It also indicates that the moral hazard plays an important role in the creation of a bank run. Furthermore, in terms of banking fundamentals, related studies found that factors such as the liquidity of banks, non-performing loan, and quality of bank asset were found to have a correlation with the occurrence of the bank run phenomenon (Gorton, 1988; Caprio & Klingebiel, 1997).

Other studies by Jacklin and Bhattacharya (1988), Alonso (1996) and Allen and Gale (2000) emphasized that concerns of investors over the level of solvency of a country could also lead to a crisis. These studies concluded that capital inflows may increase the potential of banking crisis, especially if the return from domestic investment is lower than foreign interest rates. Takeda (2001), which analyzed the probability of bank run with open economy model from Chang and Velasco (2000b), confirmed this result with the argument of previous studies which claimed that the adverse economic situation, which is a banking crisis, could trigger a bank run. Apart from the problem of macroeconomic fundamentals in the domestic country, the external fundamental factors such as the interaction of banks to foreign capital markets and the exchange rate may also increase the risk of a bank run. This was unprecedented on the financial crisis that struck East Asia, Indonesia, Thailand, Malaysia, and South Korea (Nakata, 2010).

With regard to Islamic banking, some studies have tried to focus on withdrawal behaviour of Islamic banking depositors. Although the withdrawal of these funds may not directly affect the occurrence of bank run, there is an indication that the behavior of the customers could result in financial instability in countries that have a dual banking system (Ascarya, Achsani, & Yumanita, 2007). Various studies have found that the withdrawal of funds from Islamic

banking in Malaysia was strongly influenced by technical factors, namely the level of revenue sharing offered by individual banks, in which greater return positively related to smaller probability of depositors to withdraw and transfer their funds to other banks (Haron & Ahmad, 2000; Sukmana & Yusoff, 2005). A similar phenomenon was discovered by Kasri and Kassim (2009) and Abduh (2014) for the case of Islamic banking in Indonesia. Specifically, Abduh (2014) concluded that the withdrawal made by depositor of Islamic banks in Indonesia is not only influenced by the yields offered by the banks, but also influenced by other factors such as the issue of non-shariah compliance and rumors (expectations) about financial crisis.

Overall, from the perspective of the fundamentalist theory, it can be concluded that there are several key factors that influence the occurrence of a bank run related to economic fundamentals, namely inflation, depreciation of domestic currency, and increase in foreign interest rates or decrease in domestic interest rates. In relation to this, Zhu (2005) suggested that economic policies such as suspension of convertibility deposit, tax on short-term deposits, reserve requirement and deposit insurance schemes are believed to be able to prevent a bank run. Additionally, in terms of banking fundamentals, factors such as the liquidity of banks, non-performing loan, and quality of bank asset were found to have a correlation with the occurrence of the bank run phenomenon.

### 2.2.2 Self-Fulfilling Theory

The self-fulfilling theory believes that bank run takes place due to random events which are triggered by depositors' panic. Bank run is regarded as a rational response from customer as a result of asymmetric information between bank and its customers (Diamond & Dybvig, 1983). Furthermore, according to Gorton (1985), asymmetric information is one of the causes of the bank panic. Due to asymmetric information, depositors will receive imperfect signal about the return from the bank. As a result, they are not sure about the security of their deposits and subsequently withdraw their deposits. This is the event which can potentially cause a bank run. Calomiris and Kahn (1991) added that the depositors who have lack of information tend to follow the decision of another depositors,

including the withdrawal decision. The importance of asymmetric information variable is also pointed out by Schotter and Yorulmazer (2009). By conducting experimental method with timing game approach, they concluded that bank run occurs because of the insufficient information about the quality and reputation of the respected bank. This finding was in line with the study of Park and Smith (2008) which found that a depositor who has more information about the quality of a bank tend to hold his deposit longer than a depositor who has incomplete information.

Furthermore, the presence of deposit insurance is found to have a significant role to retain the depositors from withdrawing their money. On the other hand, high return does not necessarily affect the depositors to hold their deposit longer (Zhu, 2005; Goedde-Menke *et al.*, 2014). Therefore, Zhu (2005) proposed that interest-cap deposit insurance scheme might be an effective regulation to prevent bank run and capital requirements policy might lessen the welfare loss which was caused by bank run occasion. However, depositors' knowledge about the presence of deposit insurance is still limited.

For the case of Germany, the study of Goedde-Menke *et al.* (2014) found that before the 2007/2008 financial crisis 52% of respondents did not know that there was an institution that provides deposit insurance. At the times of crisis, the respondents who were not aware of the existence of this institutions was reduced to 38%. They also highlighted that depositors get information about deposit insurance if the coverage of the information campaign is broad. Thus, the role of media in the information dissemination is crucial.

Other study by Starr and Yilmaz (2007) aimed to see whether the bank run in Special Finance House (SPF) in Turkey during 2001 occurred due to informational or self-fulfilling element. To detect the self-fulfilling element, they divided depositor into three groups: small, medium-size, and large account depositors[4]. The study found that fundamental factor was the initial trigger of bank run in the SFH Turkey. Ihlas, one of Islamic bank incorporated in the SFH Turkey, was experiencing liquidity problems during the crisis period.

4 The small, medium-size and large account depositors are consecutively defined as those with saving amount under USD 5,000, between USD 5,000 - USD 49,999, above USD 50,000.

However, the withdrawal pattern indicated an overreaction of the depositors. This was reflected by the occurrence of bank run which took place in other Islamic banks that did not have liquidity problems during that crisis period. It is therefore concluded that the two factors, namely informational factor and self-fulfilling tendencies, have effects in the dynamic bank run on SFH Turkey in 2001. Moreover, the increase in deposit withdrawals by depositors from medium income group will also raise the withdrawal by depositors from lowest income group (small depositors account). This was because the latter considered that the massive withdrawals made by the former as a signal or information regarding the financial condition of SFH.

In India, bank run was prevailed in 2009 due to financial crisis. By splitting depositors into two groups i.e. the runners and the stayers[5] and employing administrative data from the Indian banks during the period of January 2000-December 2005 and April 2007-June 2009, this study uncovered several enticing findings. First, the runners tend to have balance above the deposit insurance limit and tend to be more active in terms of the frequency and number of transactions. Depositors who have saving over the insurance limit will increase the possibility of becoming the runners by 20 percentage points compared to the depositors with accounts under INR1,000. Second, depositors who have loan linkages had tendencies to become a runner by 4.4 percentage points. Third, if the depositor is an employee of the bank, its likelihood to be a runner will be increased by 2 percentage points due to their access to the information related to financial condition of the bank.

The strong influence of information on public expectations encourage recent studies to look at the influence of media on customer behavior. Kiss *et al.* (2014), for example, examined the influence of social media against the tendency of the depositors to withdraw their savings based on the withdrawal behavior of other depositors. By using an experimental method, they found that the probability of a bank run increased when the depositor can directly observe the withdrawal actions by other customers. These observa-

5 The runners are defined as the depositors who withdraw more than 50% of their fund during the period of bank run, while the stayers are defined as those who withdraw less than 50% of their fund during the bank run.

tions were strongly influenced by the existence of rumors circulating through social media[6].

For Indonesia context, Simorangkir (2011) also attempted to analyze the determinants of bank run in the country during the period of 1997-1998[7]. By utilizing Generalized Method and Moment (GMM) estimation, this study concluded that bank panic was triggered by asymmetric information. Moreover, liquidity to deposit ratio and loan to deposit ratio appeared to have significant roles in it. It indicated that the banks actually have the capacity to provide sufficient liquidity to their depositors. Nevertheless, due to incomplete information possessed by the depositors, bank run persisted. However, in addition to bank panic, the study also pointed out that macroeconomic variables remained an important deter-minant of a bank run. Meanwhile, for the case of Islamic banking in Indonesia, Abduh (2014) found that the withdrawal behavior in Indonesia was strongly influenced by rumors of impending financial and banking crisis in Indonesia, where these rumors could have been influenced by information in social media. The conclusion is shared by Farooq and Zaheer (2015), who dosumented that during the 2008 global financial crisis Pakistan suffered from excessive deposit withdrawals due to rumors about potential failure of several financial institutions in the country.

To summarize, from the perspective of self-fulfilling theory, there are several factors that can trigger a bank run either directly or indirectly, such as insider information from the parties involved with the bank about the condition of banks that could affect customer deposits, negative rumors in the media (especially social media) and ability to observe other depositors' withdrawal behaviour.

6 Something similar transpired in the case of bank of Northern Rock, one of the major banks in the north of England, which experienced a bank run primarily not because of the fundamental problem but because of the panic and contagion effect from the visibility of many depositors who attempted to withdraw their funds from the bank (Shin, 2009).

7 According to Simorangkir (2011), bank run was assumed to occur as a result of the business cycle. However, the fundamental approach could not identify the role of excessive panic by the depositors due to asymmetric information on the quality of the banks. No matter how good their performance was, the banks would not be able to provide sufficient liquidity to their customers when the money is withdrawn simultaneously.

## 2.3 Islamic Banking Industry in Indonesia

Prior to analyzing the determinant of bank runs and stability of Islamic banking in Indonesia, it is necessary to understand about the history and recent development of the Islamic banking industry in the country in order to provide background of the research area. As one of the fastest growing segments in the country's financial sector, Islamic banking industry in Indonesia has experienced a rapid growth since its establishment in 1992. Ten years later, there were two Islamic commercial banks, six Islamic windows of conventional banks and 83 Islamic rural banks in the country. After the enactment of the Islamic Banking Act No.21/2008 concerning Islamic Banking Legal Foundations, spin-off and conversion of rural banks into Islamic rural banks occurred rapidly (Abduh & Omar, 2012). To date, there are 12 Islamic commercial banks, 22 Islamic windows of conventional banks and 165 Islamic rural banks[8]. According to Ismal (2011), four factors which significantly endorse the development of Islamic banks in Indonesia are: (a) the major portion of muslim in Indonesia as potential demand; (b) proficient support from banking regulator, government, parliament and sharia scholars to provide necessary acts in developing the industry; (c) robust performance of Islamic banks in the last two decades which attract deposit from public and business partners; (d) robust performance of Indonesian economy.

Concerning Islamic banking performance, Islamic banking industry in Indonesia has exhibited an expectant achievement in terms of banking operation (Table 1). With regard to its intermediary function, total deposit and total financing of the Islamic banks shown increasing trends overtime. The Financing to Deposit Ratio (FDR) has also consistently showed a high ratio albeit it slightly decreased in the last three years. The high FDR of Islamic banking industry indicates its strong commitment to provide financing for the expansion of real sector and therefore - as pointed out by Abduh and Omar (2012) - the Islamic financial development has contributed positively towards long term economic growth and capital accumulation in Indonesia. However, on the Non Performing Financing (NPF)

8 Islamic banking in Indonesia firstly established in 1992 with the formation of Bank Muamalat Indonesia as the only Islamic commercial banking until Asian financial crisis in 1997 (Abduh & Omar, 2012). Islamic banks experienced rapid development after Asian financial crisis occurred which conventional banks experienced greater negative impact than Islamic bank (Sari, Bahari, & Hamat, 2016).

side, the industry shown an increasing trend. The increasing in NPF may erode the Capital Adequacy Ratio (CAR) of the Islamic banks.

**Table 1.**
**Selected Islamic Banking Performance Indicators of Indonesia**

| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|
| Islamic Banks | 11 | 11 | 11 | 11 | 12 | 12 | 12 |
| Islamic Bank Units | 23 | 23 | 24 | 23 | 22 | 22 | 22 |
| Islamic Rural Banks | 150 | 155 | 158 | 163 | 163 | 163 | 165 |
| Total Deposit | 76,036 | 115,415 | 147,512 | 183,534 | 217,858 | 231,175 | 243,184 |
| Total Financing | 68,181 | 102,655 | 147,505 | 184,122 | 199,330 | 212,996 | 220,143 |
| FDR | 89.67% | 88.94% | 100.00% | 100.32% | 91.50% | 92.13% | 90.53% |
| NPF | 3.02% | 2.52% | 2.22% | 2.62% | 4.33% | 4.34% | 4.80% |

Note: Until July 2016; Source: Islamic banking statistics, OJK

Aside from the Islamic banking performance, general macroeconomic performance of the country in the last few years have been fluctuating (see Table 2). This is primarily shown by the slight decrease in economic growth, private consumption, and investment. Exchange rate and international reserves were also deteriorating. Despite that, inflation rate and interest rate have been relatively stable in the last three years. The performance is consistent with the current trend in the global economy. These factors, together with the fundamentals or performance of Islamic banking in the country, potentially influence and determine the incidence of bank runs in Indonesia.

**Table 2.**
**Selected Macroeconomic Indicators of Indonesia**

| | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| Population (million) | 241 | 244 | 248 | 251 | 255 |
| GDP per capita (USD) | 3,708 | 3,764 | 3,685 | 3,541 | 3,379 |
| GDP (USD bn) | 894 | 920 | 914 | 890 | 862 |
| Economic Growth (GDP, annual variation in %) | 6.2 | 6.0 | 5.6 | 5.0 | 4.8 |
| Consumption (annual variation in %) | 5.1 | 5.5 | 5.4 | 5.2 | 5.0 |
| Investment (annual variation in %) | 8.9 | 9.1 | 5.0 | 4.6 | 5.1 |
| Manufacturing (annual variation in %) | 6.3 | 5.6 | 4.4 | 4.6 | 4.2 |
| Retail Sales (annual variation in %) | 9.0 | 14.5 | 12.9 | 14.5 | 13.3 |
| Unemployment Rate | 7.5 | 6.1 | 6.2 | 5.9 | 6.2 |
| Fiscal Balance (% of GDP) | -1.1 | -1.8 | -2.2 | -2.1 | -1.9 |
| Public Debt (% of GDP) | 21.3 | 21.4 | 22.0 | 24.3 | 27.5 |
| Money (annual variation in %) | 16.4 | 15.0 | 12.8 | 11.9 | 8.9 |
| Inflation Rate (CPI, annual variation in %, eop) | 3.8 | 3.7 | 8.1 | 8.4 | 3.4 |
| Inflation Rate (CPI, annual variation in %) | 5.3 | 4.0 | 6.4 | 6.4 | 6.4 |
| Inflation (WPI, annual variation in %) | 7.5 | 5.1 | 6.0 | 9.3 | 4.4 |
| Policy Interest Rate (%) | 6.00 | 5.75 | 7.50 | 7.75 | 7.50 |
| Stock Market (annual variation in %) | 3.2 | 12.9 | -1.0 | 22.3 | -12.1 |
| Exchange Rate (vs USD) | 9,068 | 9,638 | 12,170 | 12,385 | 13,788 |
| Exchange Rate (vs USD, aop) | 8,763 | 9,362 | 10,449 | 11,866 | 13,392 |
| Current Account (% of GDP) | 0.2 | -2.7 | -3.2 | -3.1 | -2.1 |
| Current Account Balance (USD bn) | 1.7 | -24.4 | -29.1 | -27.5 | -17.8 |
| Trade Balance (USD billion) | 26.1 | -1.7 | -4.1 | -2.2 | 7.6 |
| Exports (USD billion) | 203 | 190 | 183 | 176 | 150 |
| Imports (USD billion) | 177 | 192 | 187 | 178 | 143 |
| Exports (annual variation in %) | 29.0 | -6.6 | -3.9 | -3.6 | -14.6 |
| Imports (annual variation in %) | 30.8 | 8.0 | -2.6 | -4.5 | -19.9 |
| International Reserves (USD) | 110 | 113 | 99.4 | 112 | 106 |
| External Debt (% of GDP) | 25.2 | 27.4 | 29.1 | 33.0 | 36.0 |

Source: http://www.focus-economics.com/countries/indonesia

## III. METHODOLOGY

In order to achieve the research objective described in the earliest chapter, the study collected primary data from customers of Islamic banks in Indonesia. The primary data is regarded suitable because, as far as the authors' concern, very few public information is available

regarding the perception of Islamic banking customers on the factors influencing their withdrawal behaviours, which provide indications for the determinants of bank runs amongst the Islamic banking customers in Indonesia. The primary data is collected through a questionnaire distributed in mid-2015 and managed to collect valid information from 256 customers of Indonesia Islamic banks.

The questionnaire was primarily developed based on the literature review discussed in the earlier section, in which Fundamentalist and Self-fulfilling theories are considered as the classical theories to explain the bank runs phenomenon. Additionally, some of the questions are derived from the understanding regarding the current domestic and international political-economic conditions. In relation to this, and for the purpose of this study, the questionnaire consists of three main sections which ask information related to the profile of respondents, their perception regarding the fundamental economic factors which potentially influence their withdrawal behaviors (i.e. inflation rate, exchange rate, interest rate, international reserves, capital outflow, banking liquidity, banking assets, credit default, and government policies), and their perception related to the psychological variables that might influence their behaviors (i.e. news/rumours about financial and political instability either in domestic or international context, a particular bank has credit/liquidity problem, problems in banking industry, fund withdrawal by certain parties and observations of fund withdrawal). In total, there are 40 variables included in the questionnaire[9].

In analysing the determinant of bank runs, the study uses Factor Analysis (FA) and descriptive statistics as the main analytical method. Factor analysis is an interdependence technique whose main purpose is to find the underlying structure of various existing variable. In contrast to other multivariate statistical techniques, the technique provides tools to analyze or cluster the structure of the relationship between many variables. Thus, the main purpose of the method is maximizing explanation or information that can be extracted from a number of variables in the analysis (Hair, 2013). This method is regarded suitable to determine the main factors determining the occurrence of bank runs amongst the customers of islamic

9 Detail of the questionnaire is available from the authors upon request.

banking in Indonesia due to its ability to structure or cluster the factors into several key factors, which potentially affect the overall stability of the islamic banks.

In a Factor Analysis method, one of the important issues that must be considered is the determination of the threshold of the loading factor that may be significant to describe the relationship between each variable. According to Hair (2013), loading factor indicates the level of correlation between variables in with each factor is formed while the quadratic form of the loading factor will show the total variance of variables that can be explained by factors. As a rule of thumb, it is generally agreed that the greater the loading factor, the greater the similarity between variables with factors formed[10].

**Table 3.**
**Loading Factor**

| Factor Loading | Minimum Sample Required |
|---|---|
| 0.3 | 350 |
| 0.35 | 250 |
| 0.40 | 200 |
| 0.45 | 150 |
| 0.50 | 120 |
| 0.55 | 100 |
| 0.60 | 85 |
| 0.65 | 70 |
| 0.70 | 60 |
| 0.75 | 50 |

Source: Hair (2013)

Furthermore, Hair (2013) gives the following guidance:

- Loading factor in the interval 0.3 - 0.4 can be considered as a minimum level or lower limits that can be used to measure the significance of variable factors.
- Loading factor of 0.5 or greater should be considered significant points to the link between variable factors.

10 By way of illustration, if the loading factor of 0.3, then the total variance can be explained by the factors are as much as 10%. Loading factor of 0.5 indicates as many as 25% of the total variance of a variable can be explained by factors and loading factor of 0.7 indicates as many as 50% of the total variance can be explained by factors.

- Loading factor greater than 0.7 may be the indicator of an established or solid structure between factors with variable constituent.

In practice, many studies using Factor Analysis method set limits on different loading factor. One way to choose the threshold of the loading factor is to look at the number of samples used in the study, as can be seen in the following table[11]. In this study, the number of samples used is 256. Hence, it can use the minimal loading factor of 0.30. However, to have robust result, this study applies loading factor of 0.5.

## IV. RESULT AND ANALYSIS

### 4.1 Profiles of Respondents

The descriptive statistics for the respondents' profiles are presented in the next few figures. The majority age of the respondent (48%) are between 25-35 years old. However, there are some respondents aged between 26-45 years old. The composition between male and female is almost equal in this study. The percentage of male respondent ais slightly higher than that of the female respondent. This is consistent with the data from Indonesian sensus that finds male are slightly out number as compared to female citizen in Indonesia. Furthermore, the study found that out of 256 respondents with Islamic bank accounts, 253 of them are moslem and the rest are non-moslem. Thus, there is an indication that islamic banks in Indonesia does not only serve the Muslim population but also the non-Muslims.

11 For example, if the number of samples used is 50, then the limit minimal loading factor becomes very high 0.75. In that case, 0.75 was considered significant variable that form the set of factor. If the number of samples is 100, then the limit is the loading factor of 0.55.

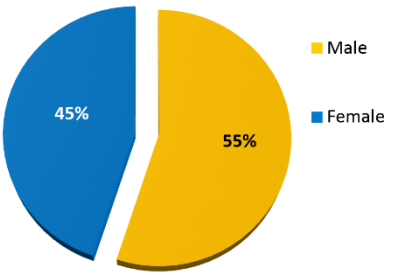


**Figure 1.**
**Respondent Gender Composition**

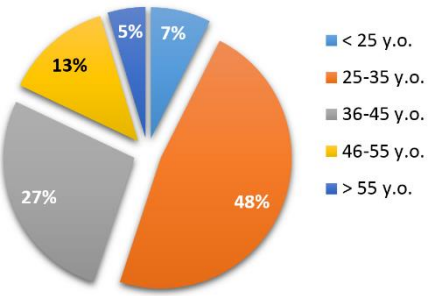


**Figure 2.**
**Respondent Age Composition**

**Table 4.**
**Respondent Religion**

| Religion | Frequency |
|---|---|
| Hindu | 1 |
| Islam | 253 |
| Catholic | 1 |
| Protestant | 1 |
| Total | 256 |

In terms of education, Table 5 shows that most of the respondents surveyed have relatively higher education (i.e. bachelor and master degrees). However, few of them are just graduated from elementary or senior high school. While for occupation (see Figure 3), 40% of the respondents is working with government as government employee, BUMN employee, or government soldier. Meanwhile, 27% of the respondent is working in private institutions.

**Table 5.**
**Respondent Education**

| Education | Total | % |
|---|---|---|
| SD/ Elementary | 2 | 1% |
| SMA/SMK/Senior High School | 3 | 1% |
| D3/ Diploma | 4 | 2% |
| S1/ First Degree | 100 | 39% |
| S2/Master Degree | 124 | 48% |
| S3/ Doctoral | 23 | 9% |
| TOTAL | 256 | 100% |

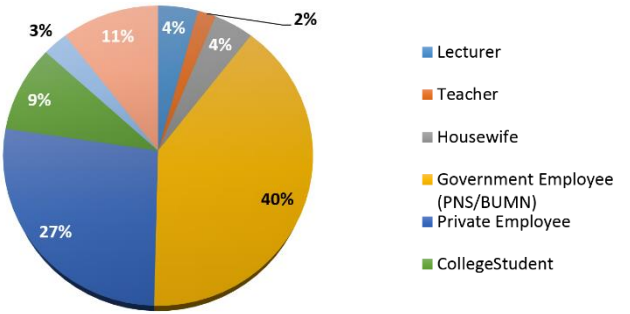


**Figure 3.**
**Respondent Occupation**

Beside education and occupation of respondents, this study also highlights the respondents' monthly income in Figure 4. From the figure, it is shown that the majority of the respondents belong to the middle class which generate an average of Rp5-10 million per month. However, very few people has income more than Rp50 million per month.

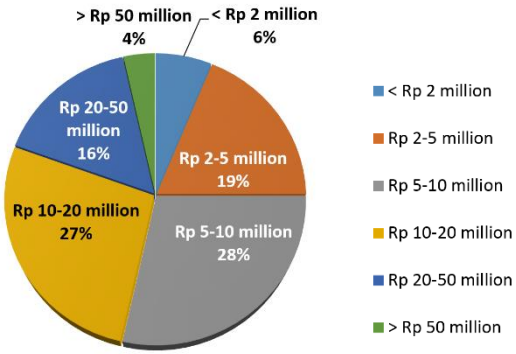


**Figure 4.**
**Respondent Income**

In summary, most of the respondents of this study are productive-age respondents (i.e. mostly aged between 25-35 years old), muslims, have relatively higher education and constitute the middle class income group of society. While in terms of gender and occupations, relatively balanced proportions between man and woman as well as between government and non-government employees characterize the Islamic banks account holders investigated in this study.

## 4.2 Factor Analysis

Results of the Factor Analysis suggests that there are six main factors that determine the occurrence of bank runs in Indonesia, namely insider information, macroeconomic condition, fundamental bank, bank reputation, industrial/economic issue, and respondent observation. The factors consist of 26 variables (out of 40 variables) that found to be significantly correlated one another. Detail classifications and loading factors for each of the variables are summarized in Table 6.

In general, the results show that insider information factor (F1) found to be the main factor affecting the possibility of bank runs in Indonesia. This is indicated by the highest variable number associated with this factor, as compared to other factors. This result is consistent with the findings of Simorangkir (2011) and Abduh (2014), which support the self-fulfilling theory of bank run appli-cation in Indonesia, as well as other studies in foreign countries such as Diamond and Dybvig (1983), Chang and Velasco (2000a, 2000b), Samartin (2003), Deng *et al.* (2010), and Kiss *et al.* (2014).

**Table 6.**
**Factor Analysis Result**

| Insider Information (F1) | Macro-economic Condition (F2) | Fundamental Bank (F3) | Bank Reputation (F4) | Economic Issue (F5) | Observation (F6) |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| b8 (0.79) [3.91] | a7 (0.66) [3.27] | a9 (0.78) [4.22] | b5 (0.56) [4.01] | b1 (0.85) [3.2] | b14 (0.62) [3.82] |
| b9 (0.87) [3.74] | a16 (0.65) [3] | a10 (0.8) [4.3] | b6 (0.66) [3.69] | b2 (0.8) [3.04] | b15 (0.74) [3.63] |
| b10 (0.84) [3.9] | a17 (0.63) [3.11] | a12 (0.69) [3.9] | b7 (0.82) [3.88] | b3 (0.74) [3.01] | b16 (0.82) [3.72] |
| b11 (0.82) [3.72] | a18 (0.71) [3.46] | a13 (0.75) [4.46] | | | |
| b12 (0.77) [3.89] | a19 (0.77) [3.06] | | | | |
| b13 (0.7) [3.83] | a20 (0.74) [3.27] | | | | |
| b14 (0.55) [3.82] | | | | | |

* The numbers ( ) are the loading factor and numbers [ ] are the average answer of the respondent.
** The results have been validated by using Cronbach's alpha reliability test with a value of 0.95.

On the other hand, the other factors only have two to four forming variables. Insider Information (F1) and Bank Fundamentals (F3) have many similarities, but actually different from side view points. Fundamental factors of the bank is formed from several variables related to the health condition of a particular Islamic bank associated with the respondents, while the insider information factor is constructed from several variables representing issues related to the health condition of the banking system. Those issues are found to be sensitive in influencing respondents' behaviors in withdrawing their funds from the banking system. Despite that, healthy macro-economic conditions and banking fundamentals are also important to ensure and strengthen the financial stability. Further discussions related to the factors are elaborated in the following sub-sections.

## Psychological Variables

In general, the results of this study indicate that psychological factors that has the highest influence in the deposit withdrawals of the Islamic banking customers in Indonesia are the psychological factors associated with the bad information/conditions in the respondent's bank, as also found in some other prior studies (see, for instance, Calomiris & Kahn, 1991; Park & Smith, 2008). The impacts is higher when the information comes from the bank's internal party, such as the bank's employees. While the influence of other factors tend to vary and not directly affects the behavior of respondents' deposit withdrawals.

Table 7a and 7b shows in details the psychological factors that are derived from related information in the respondent's bank. The findings show that the respondents tend to be more sensitive when bad things happened to banks where they deposit funds. This information can be received from media, relatives or friends, employees of the bank, employees who work at other financial institutions, as well as fellow customers of the bank. A total of 68.7% of the respondents agreed to withdraw deposits from their bank when the news was heard from the bank's employee, particularly when it is related to the problems of bad credit and liquidity issues. The same condition also occurs if information about the credit and liquidity problems comes from fellow customers and employees who work at other financial institutions. This result is supported by the

study from Lakstutiene, Krusinskas, and Rumsaite (2011) which found that the panic of depositors in Swedbank was raised by messages which were sent by mobile phones or email. Those deposit loss were greatly influenced by negative information, rumors and panic.

**Table 7a.**
**Insider Information-1**

| F1. Insider Information | B8 Issue from the worker that the particular bank is facing financial distress | B9 Issue from other financial institution that particular bank is facing financial distress | B10 Issue from other financial institution that particular bank is facing financial distress |
|---|---|---|---|
| | (%) | (%) | (%) |
| Strongly disagree | 4.3 | 4.3 | 3.1 |
| Disagree | 6.3 | 9.4 | 6.6 |
| Neutral | 18.8 | 23.0 | 18.4 |
| Agree | 35.5 | 34.4 | 40.6 |
| Strongly Agree | 35.2 | 28.9 | 31.3 |
| Total | 100.0 | 100.0 | 100.0 |

**Table 7b.**
**Insider Information-2**

| F1. Insider Information | B11 Issue from other financial institution that particular bank is facing financial distress | B12 Issue that the bank's employee withdraw their money from your bank | B13 Knows employee from other fin institution withdraw the money from your bank | B14 Knows the depositor from your bank withdraw their money |
|---|---|---|---|---|
| | (%) | (%) | (%) | (%) |
| Strongly disagree | 2.3 | 3.9 | 2.7 | 2.3 |
| Disagree | 12.9 | 7.8 | 8.2 | 10.9 |
| Neutral | 21.9 | 19.5 | 22.3 | 19.9 |
| Agree | 35.9 | 33.2 | 37.1 | 35.9 |
| Strongly Agree | 27.0 | 35.5 | 29.7 | 30.9 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |

### Macroeconomic and Banking Fundamental Variables

Fundamental economic indicators such as decreasing foreign exchange, exchange rate depreciation, decreasing value in stock market index (i.e. IHSG), and selling asset by banking sector are found to be significantly influence the withdrawal behavior of respondents (see Table 8). For example, depreciation of rupiah (the domestic currency) affects 50.4% of respondent to withdraw their money in the Islamic bank, while impairment of IHSG (stock market index) affects 45.5% of respondent to take their bank deposits. Such results have been found by other studies such as Canova (1994) and Simorangkir (2011).

**Table 8.**
**Macroeconomic Conditions**

| F2. Macro-economic Conditions | A7 Decreasing Foreign Exchange | A16 Capital Outflow | A17 Government Established Floating Exchange Rate | A18 Rupiah Depreciation | A19 IHSG Value Fall | A20 Bank Sell Asset |
|---|---|---|---|---|---|---|
| | (%) | (%) | (%) | (%) | (%) | (%) |
| Strongly disagree | 10.5 | 8.2 | 6.6 | 7.4 | 10.2 | 7.0 |
| Disagree | 20.7 | 22.3 | 18.0 | 12.5 | 20.7 | 15.2 |
| Neutral | 20.3 | 38.3 | 44.1 | 29.7 | 33.6 | 34.8 |
| Agree | 28.1 | 23.8 | 20.7 | 27.7 | 23.8 | 29.7 |
| Strongly Agree | 20.3 | 7.4 | 10.5 | 22.7 | 11.7 | 13.3 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

However, it is also interesting to highlight that that some respondents do not response the volatility of macroeconomic conditions to their withdrawal behavior. One of the possible reason is the positive perception about the Indonesian economy and its banking system, hence some (temporary) fluctuations in the economy did not automatically increase the probability of banking rush. Although this seems to be slightly contradict with the Indonesian macroeconomic data shown in the earlier section, the positive expectations about the Indonesian economy is presumably related to the relatively stable domestic political situation which could trigger higher consumption, investment and subsequently higher economic growth in the future.

**Table 9.**
**Bank Fundamental**

| F3. Fundamental Bank | A9 Number of Non Performing Financing Increase | A10 Liquidity Problem | A13 Government Announce that LPS Will Taking Over Bank | A13 Government Announce Bank's Liquidation |
|---|---|---|---|---|
| | (%) | (%) | (%) | (%) |
| Strongly disagree | 3.9 | 3.9 | 2.7 | 2.7 |
| Disagree | 5.5 | 3.9 | 8.6 | 2.3 |
| Neutral | 9.8 | 9.0 | 21.5 | 8.2 |
| Agree | 26.6 | 24.2 | 30.5 | 19.9 |
| Strongly Agree | 54.3 | 59.0 | 36.7 | 66.8 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |

Furthermore, extreme condition might happen in the case of problem related to fundamental banking condition. Table 9 reveals that majority of the respondent are strongly agree to take away their money in the bank in case some fundamental problems appear in their banks, such as liquidity problem, increasing the number of NPF, and announcement from government that the bank has financial issues. The survey data shows that more than 80% of the respondents agreed to withdraw their savings from the Islamic bank once the bank experienced bad credit problems, liquidity problems, or having severe financial problems which is announced by government. The increasing NPF serves a signal to the depositors that the banks' third party funds retained in non-performing financing. Hence, it deteriorates the earning asset quality and further increase the vulnerability a bank run (Simorangkir, 2011). Moreover, the findings are consistent with the findings of other earlier studies (see, for example, Gorton, 1988 and Caprio & Klingebiel, 1997).

Despite that, study by Kasri, Arundina, Prasetyo, and Indraswari (2015) found interesting result regarding with this variable. The study found low sensitivity of society to the phenomenon of "too big to fail" and "too many to fail". The majority of respondents in that particular study decided not to withdraw deposits (32.61%) or neutral (41.30%) if a large bank (non-bank of respondents) experienced significant financial problems. In addition, the majority of respondents also decided not to withdraw deposits

(40.37%) or neutral (42.24%) when several small banks experiencing significant financial difficulties problem. This is in contrast with the findings of this study and Calomiris and Gorton (1991) which found systemic risk as a result from the failure of high-asset banks will affects the withdrawal behavior in massive manner. One of the probable explanation is that these two studies used different method where Calomiris and Gorton (1991) used theore-tical approach and Kasri *et al.* (2015) used empirical approach. Therefore, it implies that the effect of "too big to fail" or "too many to fail" towards withdrawal decision should be elaborated more by using empirical studies with different case of studies.

### Other Factors: Bank's Reputation, Economic Issue and Observation

The findings of the study also indicate that information related to the issues of banks' reputation, which might come from various sources, will have a major impact on people's behavior in taking their deposits from the bank. The impact is particularly significant when the additional information is information related to bank officials. A total of 60.1% of the total respondents agree to withdraw their funds from the islamic banks if the banks' officials has legal issues that have an impact on the bank's financial performance. As many as 69.5% of them also decided to withdraw their savings from the islamic bank if the banks' officers violate the rules of sharia or common law because they see this as something impeding the banks' reputation. This perception is consistent with the finding of Abduh (2014) regarding the importance of the issue of non-shariah compliance in triggering the occurrence of bank runs in Indonesia.

**Table 10.**
**Bank Reputation**

| F4. Bank Reputation | B5 Issue about Bank's NPF | B6 Issue that the bank involve in the law case that affect the bank's reputation | B7 Issue that the bank break the sharia law that affect the bank's reputation |
|---|---|---|---|
| | (%) | (%) | (%) |
| Strongly disagree | 1.6 | 2.7 | 2.7 |
| Disagree | 6.3 | 14.1 | 9.4 |
| Neutral | 18.4 | 23.0 | 18.4 |
| Agree | 37.1 | 32.0 | 35.9 |
| Strongly Agree | 36.7 | 28.1 | 33.6 |
| Total | 100.0 | 100.0 | 100.0 |

The other psychological factors are derived from the information regarding the national economic condition as well as the national and global political conditions. However, unlike the previous factors, these factors do not necessarily attract respondents to withdraw their deposits from banks. It can be seen from the dominance of respondents who chose to be neutral (see Table 11). For example, as much as 35.2% of the respondents expressed neutral perception when they learned that the economies (both regional and global) are unstable. Relatively the same conditions also happens to information related to national political-economic conditions. The survey results show that the majority of Indonesian people still trust the banking system even though the economic condition is slightly unstable.

**Table 11.**
**Economic Issue**

| F5. Economics Issue | B1 Unstable National Economic Condition | B2 Unstable Regional and Global Economic Condition | B3 Unstable Political Condition |
|---|---|---|---|
| | (%) | (%) | (%) |
| Strongly disagree | 5.5 | 6.6 | 6.6 |
| Disagree | 19.9 | 24.6 | 25.4 |
| Neutral | 34.4 | 35.2 | 35.5 |
| Agree | 29.7 | 25.0 | 25.0 |
| Strongly Agree | 10.5 | 8.6 | 7.4 |
| Total | 100.0 | 100.0 | 100.0 |

Another interesting factor that affects the psychology of respondents to withdraw funds from bank deposits is a direct experience/observation that are experienced by the respondents related to the condition of the bank, as presented in Table 12. A total of 76.8% of the total respondents would withdraw their funds from the bank if they see a long-queue of customers who want to withdraw money from an ATM or the bank counter in the office. The existence of long queues at ATMs or bank counters will affect the psychological conditions of respondents, as this is strongly related to the confidence level of the respondents to the security of funds in the Islamic banks. This imply that the majority of respondents might decide to withdraw their savings from the banks in the event of long queues at ATMs and bank counters. This phenomena tells that majority of Indonesian people are very easy to be influenced by the act of other people. Yet, they are not alone, as other studies have also documented such event in the past (see, for example, Shin, 2009 for the case of bank of Northern Rock of England).

**Table 12.**
**Respondent Observation**

| F6. Observation | B14 Knows the depositor from your bank withdraw their money | B15 Hear an Issue of long queue in ATM/Bank Counter | B16 See a long queue in ATM/Bank Counter |
|---|---|---|---|
| | (%) | (%) | (%) |
| Strongly disagree | 2.3 | 3.5 | 2.7 |
| Disagree | 10.9 | 14.8 | 12.1 |
| Neutral | 19.9 | 23.8 | 23.8 |
| Agree | 35.9 | 30.9 | 33.2 |
| Strongly Agree | 30.9 | 27.0 | 28.1 |
| Total | 100.0 | 100.0 | 100.0 |

Taken together, the overall findings of the study suggest that six key factors significantly influence the possibility of bank runs in Indonesia, namely insider information, macroeconomic condition, fundamental bank, bank reputation, industrial/economic issue, and respondent observation. Amongst the factors, insider information is shown to have the highest impacts followed by macroeconomic conditions and bank fundamental factors. These results suggest that,

despite the importance of macroeconomic and bank fundametal factors, the self-fulfilling hypothesis is increasingly consistent for the context of Indonesia. It is shown that the problem of depositor panic becomes especially relevant when the society starts distrusting the financial system of the country; banks face not only liquidity but also confidence problems. The deposit loss was greatly influenced by negative information and rumor. In the case of bank sector in Lithuania, the mass media announced different careless statements of economist from its bank, caused a bank depositor panic in a second wave (Lakstutiene *et al.*, 2011). Therefore, from policy perspective, the main result implies that different types of negative issues related to the banking system will be potentially responded by the Islamic banking customers by withdrawing their funds from the public savings. This might subsequently trigger occurrence of a bank run. Therefore, it is important to manage the information related to the banking conditions as well as the expectations of the Islamic banking customers in order to create banking and financial stability in the Indonesian dual-banking system environment.

Lacker (2008) proposed a simple rule to guide decision about government intervention during bank panic. His study mentioned that different policy implication desired to prevent both non-fundamental and fundamental runs. The intervention may be useful when bank panics are self-fulfilling in nature, caused by shifts in investor's expectation. In the classic paper of Diamond and Dybvig (1983), it is stated that the intervention in the form of deposit insurance is required to ensure that bank run does not occur. This idea also supported by Chang and Velasco (2000a), Cooper and Kempf (2013), and Keister and Narasiman (2014).

In contrast, in the case of runs motivated by bank fundamentals problem, restricting policy makers from intervening is claimed to lead to better outcomes. It is argued that when banks and depositors anticipate that policy makers will intervene in the event of crisis, they have less incentive to provision for bad outcomes (Lacker, 2008). In response, banks increase their short-term liabilities, which distort the allocation of resources and tend to make the financial system more susceptible to a run. At the same time, however, intervention can offer an important source of risk sharing in the economy. Thus, while the incentives distortion associated with

intervention tends to make the financial system more fragile, the insurance effect tends to promote stability.

It is also notable that whether or not policy makers should be allowed to intervene largely depends on which of these two effects dominates. If policy makers are able to remove the incentive distortion through effective regulation and supervision of banks, then permitting intervention is always optimal. If regulation is imperfect and the insurance benefit from intervention is small, in contrast, it is suggested to prohibit interventions (Lacker, 2008).

Furthermore, in the context of financial stability, although most studies believe that Islamic banks tend to be more resilient conditions as well as the expectations of the Islamic banking towards any macroeconomic/financial shocks due to the nature of asset-based and risk-sharing arragement embedded within the Islamic banks, the results of this study suggest that the banks are not entirely immune to the impacts of macroeconomic shocks or financial crisis. This happens because the perception of the Islamic bank customers are still influenced not only by their expectations (i.e. the self-fulfilling hypothesis) but also by the macroeconomic conditions surrounding their banking environment, as the Indonesian islamic banks are operating side by side with the conventional banking system and currently the Indonesian economy is experiencing slight difficulty due to the global economic conditions. Additionally, when one consider the Islamic bank's reputation and shariah compliance, the risk of bank withdrawal behaviours become higher amongst the islamic banking customers. These should be of concerns of the market players and the relevant policy makers.

## V. CONCLUSION AND RECOMMENDATION

Bank runs is an important economic phenomenon which increasingly occured in in modern banking system, including in the economies with a dual banking system (i.e. Islamic banks operating in parallel with conventional banks) such as in Indonesia, and might threatened the stability of such banking system. Despite that, researches relating the bank runs phenomenon with islamic banking stability are relatively limited. Therefore, this study attempts to fill in the gap by

analyzing the determinant of bank runs in the Indonesian Islamic banking industry.

To achieve the objective, the research collected primary data regarding the determinants of bank runs from the perspective of Islamic banking customers in Indonesia. The data is subsequently analyzed by using factor analysis and descriptive statistics. In general, the findings suggest that the both psychological and fundamental factors (i.e. macroeconomics and bank fundamentals) are strongly influence the behaviors of Islamic banking customers to withdrawn their funds, which might trigger the occurrence of bank runs in the country. These results and some recommendations highlighted earlier in the paper need to be of concerns of the market players and the relevant policy makers.

## REFERENCES

Abduh, M. (2014). Withdrawal behavior of Malaysian Islamic bank customers: Empirical evidence from three major issues. *Journal of Islamic Banking and Finance*, *31*(4), 43-54.

Abduh, M., & Omar, M. A. (2012). Islamic banking and economic growth: The Indonesian experience. *International Journal of Islamic and Middle Eastern Finance and Management*, *5*(1), 35-47.

Allen, F., & Gale, D. (2000). Financial contagion. *Journal of Political Economy*, *108*(1), 1-33.

Alonso, I. (1996). On avoiding bank runs. *Journal of Monetary Economics*, *37*(1), 73-87.

Ascarya, Achsani, N. A., & Yumanita, D. (2007). *Toward integrated monetary policy under dual financial system: Interest system vs. profit-and-loss sharing system* (Bank Indonesia Working Paper).

Calomiris, C. W., & Gorton, G. (1991). The origins of banking panics, models, facts, and bank regulation. In R. G. Hubbard (Ed.), *Financial markets and financial crises*. Chicago: University of Chicago Press.

Calomiris, C. W., & Kahn, C. M. (1991). The role of demandable debt in structuring optimal banking arrangements. *American Economic Review*, *81*(3), 497-513.

Canova, F. (1994). Were financial crises predictable?. *Journal of Money, Credit, and Banking*, *26*(1), 102–124.

Caprio, G., Jr., & Klingebiel, D. (1997). Bank insolvency: Bad luck, bad policy, or bad banking. *Annual World Bank Conference on Development Economics 1996*.

Chakravarty, S., Fonseca, M. A., & Kaplan, T. R. (2012). An experiment on the causes of bank run contagions (Economics Department Discussion Paper Series). University of Exeter.

Chang, R., & Velasco, A. (2000a). Banks, debt maturity, and financial crises. *Journal of International Economics*, *51*(1), 169-194.

Chang, R., & Velasco, A. (2000b). Financial fragility and the exchange rate regime. *Journal of Economic Theory*, *92*(1), 1-34.

Cihak, M., & Hesse, H. (2008). *Islamic banks and financial stability: An empirical analysis* (IMF Working Paper WP/08/16).

Cooper, R., & Kempf, H. (2013). *Deposit insurance and orderly liquidation without commitment: Can we sleep well?* (NBER Working Paper No. 19132)

Cooper, R., & Ross, T. W. (2002). Bank runs: Deposit insurance and capital requirements. *International Economic Review*, *43*(1), 55-72.

De Jonghe, O. (2010). Back to the basics in banking? A micro-analysis of banking system stability. *Journal of Financial Intermediation*, *19*(3), 387-417.

Demirguc-Kunt, A., & Detragiache, E. (1998). The determinants of banking crises in developing and developed countries. *IMF Staff Papers*, *45*(1), 81-109.

Deng, J., Yu, T., & Li, H. (2010). Bank runs in a local interaction model. *Physics Procedia*, *3*(5), 1687-1697.

Diamond, D. W., & Dybvig, P. H. (1983). Bank runs: Deposit insurance, and liquidity. *Journal of Political Economy*, *91*(3), 401-419.

Farooq, M., & Zaheer, S. (2015). *Are Islamic banks more resilient during financial panics?* (IMF Working Paper WP/15/41).

Focus Economics. (2016). *Indonesia Economic Data*. Retrieved from http://www.focus-economics.com/countries/indonesia

Gariga, J. M., & Sekeris, E. (2009). *A question of liquidity: The great banking run of 2008?* (Federal Reserve Bank of Boston Working Paper No. QAU09-4)

Goedde-Menke, M., Langer, T., & Pfingsten, A. (2014). Impact of the financial crisis on bank run risk – Danger of the days after. *Journal of Banking and Finance*, *40*, 522-533.

Goldstein, I., & Pauzner, A. (2005). Demand-deposit contracts and the probability of bank runs. *Journal of Finance*, *60*(3), 1293-1327.

Gorton, G. (1985). Bank Suspension of convertibility. *Journal of Monetary Economics*, *15*(2), 177-193.

Gorton, G. (1988). Banking panics and business cycles. *Oxford Economic Papers*, *40*(4), 751-781.

Hair, J. F. (2013). *Multivariate data analysis.* Upper Saddle River, N.J.: Prentice Hall.

Haron, S., & Ahmad, N. (2000). The effects of conventional interest rates and rate of profit on funds deposited with Islamic banking system in Malaysia. *International Journal of Islamic Financial Services*, *1*(4), 1-7.

Hasan, M., & Dridi, J. (2010). *The effects of the global crisis on islamic and conventional banks: A comparative study* (IMF Working Paper WP/10/201).

Ismal, R. (2011, April). *Islamic banking in Indonesia: Lesson learned.* Paper prepared for the Annual Meeting on Trade and Development, United Nations of Conferences on Trade and Development, Geneva, Switzerland, 6-8 April 2011.

Jacklin, C. J., & Bhattacharya, S. (1988). Distinguishing panics and information-based bank runs: Welfare and policy implications. *Journal of Political Economy*, *96*(3), 568-592.

Jeitschko, T. D., & Taylor, C. R. (2001). Local discouragement and global collapse: A theory of information avalanches. *The American Economic Review*, 91(1), 208-224.

Karim, N. A., Al-Habshi, S. M. S. J., & Abduh, M. (2016). Macroeconomics indicators and bank stability: A case of banking in Indonesia. *Buletin Ekonomi Moneter dan Perbankan*,*18*(4), 431-448.

Kasri, R. A. (2011). Explaining the twin crises in Indonesia. *Working Paper in Economics and Business*, *1*(2).

Kasri, R. A., & Kassim, S. H. (2009). Empirical determinants of saving in the Islamic banks: Evidence from Indonesia. *Journal of King Abdulaziz University - Islamic Economics*, *22*(2), 181-201.

Kasri, R. A., Arundina, T., Prasetyo, M. B., & Indraswari, K. D. (2015). Kajian penyusunan banking confidence index dan determinan bank run di Indonesia (LPS Working Paper).

Kassim, S. H., & Majid, M. S. A. (2010). Impact on financial shocks on Islamic banks: Malaysian evidence during 1997 and 2007 financial crises. *International Journal of Islamic and Middle Eastern Finance and Management*, *3*(4), 291-305.

Kaufman, G. G. (1994). Bank contagion: A review of the theory and evidence. *Journal of Financial Service Research*, *8*(2), 123 -150.

Keister, T., & Narasiman, V. (2014). *Expectations and fundamentals in banking panics: When do bailouts improve financial stability?* (Working Paper).

Kindleberger, C. P. (1978). *Manias, panics, and crashes*. New York: Basic Books.

Kiss, H. J., Rodriguez-Lara, I., & Rosa-Garcia, A. (2014). Do social networks prevent or promote bank runs?. *Journal of Economic Behavior & Organization*, *101*, 87-99.

Lacker, J. M. (2008, June). *Financial stability and central banks*. Speech at the Seminar organized by European Economics and Financial Centre, London, England, 5 June 2008.

Lakstutiene, A., Krusinskas, R., & Rumsaite, D. (2011). Effect of depositor panic on the financial stability of banks. *Economics and Management*, *16*, 1154-1163.

Massoud, A. (2015). Islamic vs. conventional banking in financial intermediation: What does the case of Egypt show?. *Applied Economics and Finance*, *2*(3), 1-11.

Mokhtar, H. S. A., Abdullah, N., & Alhabshi, S. M. (2008). Efficiency and competition of Islamic banking in Malaysia. *Humanomics*, *24*(1), 28-48.

Nakata, T. (2010). Interdependent bank runs under a collapsing fixed exchange rate. *Journal of the Japanese and International Economies*, *24*(4), 603-623.

Otoritas Jasa Keuangan [OJK]. (2016). *Statistik perbankan syariah Juli 2016*. Retrieved from http://www.ojk.go.id/id/kanal/

syariah/data-dan-statistik/statis tik-perbankan-syariah/Pages/Statistik-Perbankan-Syariah---Juli-2016.aspx

Parashar, S. P., & Venkatesh, J. (2010). How did Islamic banks do during global financial crisis?. *Banks and Bank Systems*, *5*(4), 54-62.

Park, A., & Smith, L. (2008). Caller number five and related timing games. *Theoretical Economics*, *3*(2), 231-256.

Samartin, M. (2003). Should bank runs be prevented?. *Journal of Banking & Finance*, *27(5)*, 977-1000.

Sari, M. D., Bahari, Z., & Hamat, Z. (2016). History of Islamic bank in Indonesia: Issues behind its establishment. *International Journal of Finance and Banking Research*, *2*(5), 178-184.

Schotter, A., & Yorulmazer, T. (2009). On the dynamics and severity of bank runs: An experimental study. *Journal of Financial Intermediation*, *18*(2), 217-241.

Shin, H. S. (2009). Reflections on Northern Rock: The bank run that heralded the global financial crisis. *Journal of Economic Perspective*, *23*(1), 101-119.

Simorangkir, I. (2011). Penyebab bank runs di Indonesia: Bad luck atau fundamental?. *Buletin Ekonomi Moneter dan Perbankan*, *14*(1), 51-78.

Sole, J. (2007). *Introducing Islamic banks into conventional banking system* (IMF Working Paper WP/07/175).

Starr, M. A., & Yilmaz, R. (2007). Bank runs in emerging-market economies: Evidence from Turkey's special finance houses. *Southern Economic Journal*, *73*(4), 1112-1132.

Sukmana, R., & Yusoff, R. M. (2005, June). *Are funds deposited in Islamic banks guided by profit motive? An empirical analysis on Malaysia*. Paper prepared for the 4th Global Conference on Business and Economics, Oxford University, June 2005.

Sundararajan, V., & Errico, L. (2002). *Islamic financial institutions and products in the global financial system: Key issues in risk management and challenges ahead* (IMF Working Paper WP/02/192).

Takeda, F. (2001). Bank runs and international financial stability. *Economics Letters*, *73*(2), 187-194.

Yudistira, D. (2004). Efficiency in Islamic banking: An empirical analysis of eighteen banks. *Islamic Economic Studies*, *12*(1), 1-19.

Zhu, H. (2001). *Bank runs, welfare and policy implications* (BIS Working Papers No.107).

Zhu, H. (2005). Bank runs, welfare and policy implications. *Journal of Financial Stability*, *1*(3), 279-307.