

RISK ANALYSES ON SHARIAH BANKING IN INDONESIA

PERIOD 2010 – 2018

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ABSTRACT

This study aims to analyze the risks in Shariah Banking in Indonesia by looking at which risks are significantly dominant among the other risks. This study uses time series data on a monthly basis starting from 2010:M1 to 2018:M8. The type of data used is secondary data obtained from the Financial Services Authority using the Approach Vector Error Correction Model (VECM) Method. The proxy variable of each Risk is Financing to Deposit Ratio (FDR) is a proxy variable of Liquidity Risk, Non Performing Financing (NPF) is a proxy variable of Credit Risk, and The Operational Expenses to Operational Revenue (BOPO) is a proxy of Operational Risk. The findings of this study indicate that Non Performing Financing (NPF) is a risk leader in Shariah Banking in Indonesia. Therefore it can be concluded that credit risk is the most dominant risk in this study. Shariah banking should focus more on credit risk to mitigate the banking sector failure of the Shariah banking system in Indonesia.

Key Word: Liquidity Risk, Credit Risk, Operational Risk, Financing to Deposit Ratio (FDR), Non Performing Financing (NPF), The Operational Expenses to Operational Revenue (BOPO) of Shariah banking

A. Background

In 1997, the financial crisis began in Thailand and has destroyed the joint economies of Asian countries, especially countries that have similar economic typologies. This crisis was triggered by the actions of speculators who launched a barrage of "attacks" on the Thai currency. Given the economic structure of Thailand at that time where the strengthening of the exchange rate was not accompanied by strengthening in the real sector (Sach., 1998).

According to Bello, et al (2017) the efficiency of risk management practices can be sought as the main reason for a banking collapse. The risk such liquidity risk, credit risk and operational risk, will need a special treatment and forcing a bank in critical level to received bailout funds. The main lesson from this situation is when risks are not mitigated properly, maybe not only affect the overall financial system but also cause bank ruin.

In august 2007 a financial crisis started when one of the largest French banks of the BNP announced a freeze of some securities in the United States concerning high-risk housing loans (subprime mortgage). This incident triggered a decline in the level of public confidence in the banking sector and led to bank failures around the world. Liquidity crisis causes 2008 have been declining in the household and corporate sector confidence toward economic conditions. Financial turmoil and declining demand due to the financial crisis can lead to a depreciation of the exchange, strong inflationary pressures and rising interest rates also affect lending in Indonesian banks (Haryanti, 2009).

According to Bank Indonesia (2016), the systemic risk is the instability potential as a result of contagion in some or all financial systems. It is because of the interaction of size, complexity, interconnectedness of institutions and financial markets, and excessive behavioral tendencies from actors or financial institutions to follow the economic cycle (*procyclicality*). In general, systemic risk is interpreted into 3 parts, namely: (a) the magnitude of the source of risk,

for example: the sudden occurrence of shock and the probability of systemic risk; (b) The process of risk formation (transmission) such as interconnectedness between elements in the financial system and contagion / domino effect; (c) The combination of these three perspectives or the impact it has caused, which is linking the impact of systemic risk to the economy and loss of confidence.

Systemic risk mitigation efforts cannot be done only by using a single indicator or 1 (*one*) measurement method. A comprehensive set of systemic risk measurement tools is needed. As an authority in the macro prudential field, Central Bank of Indonesia continues to develop systemic risk mitigation indicators, methods and tools. Hence, that it is expected to be able to create an efficient supervision and develop appropriate policy instruments to support the achievement of financial system stability.

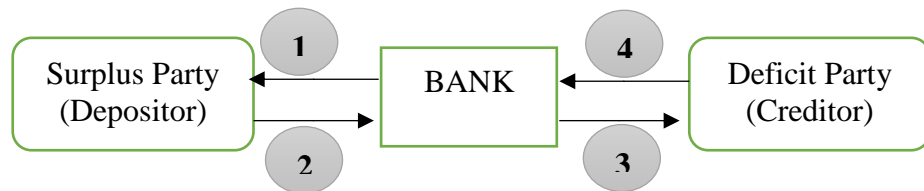
The banking sector itself has an impact on economic growth in a country, which causing uncontrolled banking risks. Several type Risks to banks due to economic instability are including: ***First***, Liquidity Risk. This risk is a risk where banks cannot meet the needs of customers in the short term. According to Banker Association for Risk Management (2015) if a bank was unable to meet the liquidity needs of its customers, (for example from interbank loans), the level of public trust will decrease. Therefore, the liquidity problems in banks will created, which in turn will have an impact on other financial

aspects that could threaten the business continuity of the bank. Liquidity risk is influenced by several factors, including; accuracy of cash flow planning, accuracy in managing funds, availability of assets that are ready to be converted into cash, and the ability to create access to the interbank market. Variables that later support the risk of liquidity are Financing to Deposit Ratio (FDR).

Second, Credit Risk is the risk of loss due to the failure of the counterparty to fulfill obligations. Credit risk can come from a variety of functional bank activities such as credit (financing), treasury activities (placement of funds between banks, buying corporate bonds), and activities related to investment and trade financing. The variables that later support the credit risk is Non Performing Financing (NPF). *Third*, Operational Risk is the risk caused by inadequate or non-functioning internal processes, due to human error or technological system failure and external events that affect the bank's operational performance. Operational risk have one or several causes in each event. Understanding the cause is a major thing that increases the probability of an event occurring. Therefore, in identifying the main cause of an event, the bank must be able to determine the most dominant cause. At Operational risk, The Ratio of Operational Expenses to Operational Revenue (BOPO) variable will be used to support this research.

Risks that significantly affect the overall risk profile of Islamic banks are credit risk and operational risk. The potential credit risk in Islamic banks

can be mitigated, among others, by increasing financing control and monitoring functions, reducing the concentration of fund disbursement to core debtors or certain economic sectors, improving policies and procedures, strengthening information systems technology and fulfilling human resources with adequate competence. In addition, Islamic banks also need to increase their understanding of the Islamic contract.



1. Money Deposited
2. Money withdraw

3. Financing Contract
4. Profit Loss Sharing

Sources: Bank Indonesia

FIGURE 1.1
Shariah Banking as a Financial Intermediary

According to Bank Indonesia (2011), Shariah Banking has two main sides due to its function, namely the right and left side. The left side shows that in the banking sector there is a surplus of money called depositors. Meanwhile, the right side shows that households and employers need money to support their needs by financing in Shariah Banking.

The instability of the economic stability resulted in disruption of the banking function. Shariah Banking has a liability structure that is quite sensitive to interest rates. As a result, it is difficult for Shariah Banking to react directly

and quickly to changes in market interest because of the different structural assets and liabilities (*Mismatch*). The condition of this mismatch makes Shariah Banking experience a displaced commercial risk (transfer of risk associated with deposits to equity holders). This condition causes asset-liability mismatches (Musri & Rama, 2015). Mismatch between assets and liabilities results in the emergence of displaced commercial risk (DCR) risk where there will be risk transfer to equity holders.

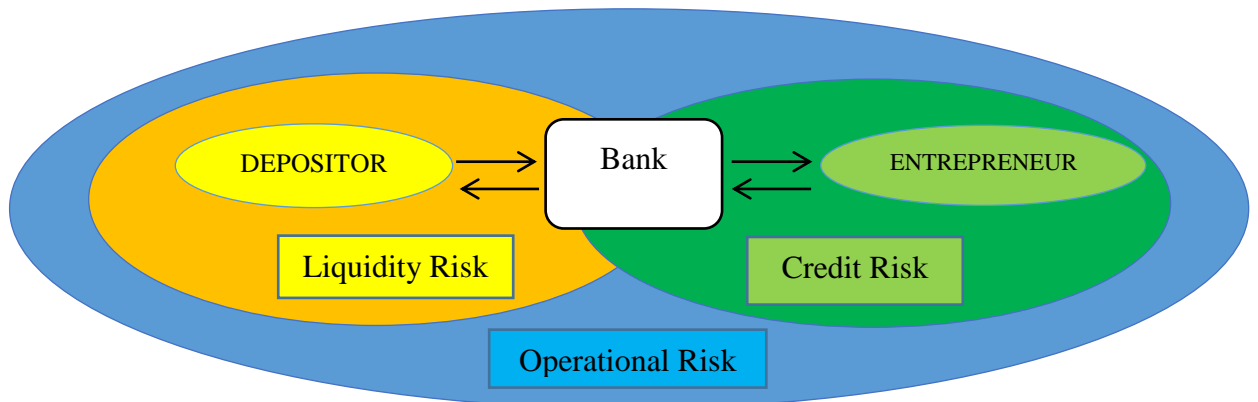
The role of quality management is planning, organizing, implementing and supervising. Good management quality can certainly be measured well or not by the implementation of Good Corporate Governance and risk management at the bank. According to Permana (2014) if we look at the actual business in the bank as well as other businesses. But because banks use funds sourced from the public, the risk level is higher when compared to other businesses. However, having a high level of risk is not to be avoided but must be better managed.

Based on the above discussion, this research aims to determine more about the risks of what will become a Leading Risk and how to mitigate Risk on Shariah Banking in Indonesia. Therefore the researcher conducted a study which entitle "**Risk Analyses on Shariah Banking in Indonesia**"

B. Limitation of The Study

To clarify and limit the problem, avoid problems that widen from what has been mentioned in the background, then limit the problem as follows:

1. Variable FDR, NPF, BOPO



This Research only focus on Financing to Deposit Ratio (FDR), Non Performing Financing (NPF) and The Operational Expenses to Operational Revenue (BOPO) of Shariah Banking in Indonesia, with 9 Years duration of time Monthly data from January 2010 – August 2018.

C. Problem Statement of Study

1. Does Liquidity Risk have significant impact toward overall risk on Shariah Banking in Indonesia?
2. Does Credit Risk have significant impact toward overall risk on Shariah Banking in Indonesia?
3. Does Operational Risk have significant impact toward overall risk on Shariah Banking in Indonesia?

D. Objective of The Study

1. To determine Liquidity Risk has significant impact toward overall risk on Shariah Banking in Indonesia.
2. To determine Credit Risk has significant impact toward overall risk on Shariah Banking in Indonesia.
3. To determine Operational Risk has significant impact toward overall risk on Shariah Banking in Indonesia.

E. Benefits of The Study

1. It is expected to give suggestion for the banker to have deep understanding about as input for Shariah Banking to determine policies in Indonesia
2. As a reference for policy makers
3. It is expected to be references for future researchers.

F. Theoretical Basis and Literature Review

Risk arises when there is an unknown or unclear outcome and the risk when there are possible outcomes. According to Misman (2010) Risk is the volatility of unexpected results or variability. Risk can be divided into two types: systematic risk and unsystematic risk. The risk itself can be measured by standard deviation of historical results.

According to Wiranatakusuma & Duasa (2017) there are two important risks that cover the Shariah Banking Resilience Index (IBRI), which are liquidity risk and credit risk. Credit issues are related to banking operations amidst high

non-performing loans. Banks as a financial intermediaries have to meet short-term obligations. When the value of a bank fails to achieve the value of their obligations, that means the bank is at a risk of bankruptcy. These assets can be influenced by loans to fulfil their current and future obligations. In addition, given that the problem of liquidity risk will emerge due to the loan defaults. In this case, capital will be influenced by the emergency need in operating and mitigating the systematic risks. Therefore, credit risk can trigger liquidity risk. But in this study, not only credit risks were discussed, but also operational risk.

A unique risk for the company industry is an unsystematic risk. Non-systemic risks are such labour strikes, loss of key accounts, consumer preferences, labor difficulties, mismanagement of companies and regulatory actions. All investment or business activities will be exposed to various types of uncertainty.

Shariah Banking Operate are based on Sharia principles. The difference between Islamic banks from conventional banks is the existence of riba variable. As a result of the unique structure of assets and liabilities, Islamic banks must also face new and unique losses. According to them, mandatory to demand sharia is a new consequence. Among the nature of operations in Islamic financial institutions is on the profit to loss sharing. As with general financial institutions, it is necessary to banking institutions, to ensure that they operate efficiently. Risks to banks that will be discussed in this study include: Liquidity Risk, Credit Risk and Operational Risk

a. Liquidity Risk

The definition of liquidity risk can be broadly defined as the ability to meet cash needs immediately and at an appropriate cost. Liquidity is important for banks to carry out their business transactions, address urgent needs, satisfy customer demands for loans and provide flexibility in achieving attractive and profitable investment opportunities.

According to Sholikhah (2018) banking liquidity management is managing how banks can fulfill both current liabilities and future liabilities in the event of an asset liability withdrawal or repayment that is in accordance with the agreement or which has not been agreed (unexpected). Bank liquidity management is also part of liability management. Through good liquidity management, banks can convince the depositors that they can take their funds at any time or at maturity.

The liquidity risk is a risk where banks cannot meet the needs of customers in the short term. According to Ikatan Bankir Indonesia (2015) if a bank is unable to meet the liquidity needs of its customers. Therefore, the level of public trust will decrease. It will cause liquidity problems in banks and give an impact on other financial aspects which can threaten the bank business continuity. Liquidity risk is influenced by several factors, including accuracy of cash flow planning, accuracy in managing funds, availability of assets that are ready to be converted

into cash and the ability to create access to the interbank market. Variables used later on this liquidity risk is Financing to Deposit Ratio (FDR).

b. Credit Risk

Credit risk is a major source of financial systems. According to the Indonesian Bankers Association (2015) credit risk is the risk of losses due to counterparties to fulfil their obligations. Usually this risk comes from several banking functional activities such as credit or commonly referred to as Financing. Today the productive assets of national banks are dominated by loans, while the most important sources of bank funds are from third party funds or DPK so that if there is a significant increase in credit risk to banks, the influence on bank performance will large and can reduce the performance of banking rating.

Credit policy plays an important role as a guide in the implementation of all activities related to performance of credit and bank beneficiaries, therefore with the existing of policies the bank can apply their credit principles in a more consistent and sustainable manner. For this reason on credit risk the author will use the Non Performing Financing (NPF) variable.

c. Operational Risk

According to the Indonesian Bankers Association (2015) Operational risk is the risk about awareness and accountability. The greater the level of human awareness, the stronger a bank is against shocks due to operational risks. Therefore, the operational risk process will later help daily activities, including the responsibility to assess and control risks.

Every incident related to operational risk can have one or several reasons. The point is because a major thing increases the likelihood of an event occurring, therefore, in identifying the main cause of an event is the bank must be able to determine the most dominant cause. Hence, in this study the writer uses The Operational Expenses to Operational Revenue (BOPO).

G. Methodology

Data analysis technique is a technique used to analyze data and at the same time in testing (Febianda, 2016). In this study, the data analysis technique uses parametric inferential statistical techniques using the Vector Error Correction Model (VECM) method, which is to determine the relationship in the short term and the long-term relationship between each variable. In accordance with the design of the study, the steps in the data analysis technique in this study are as follows: Stationary Data Test, Lag Length Criteria, Stability Test of VAR Models,

Co-Integration Test, Vector Error Correction Model (VECM), Impulse Response Function (IRF), Variance Decomposition (VDC), and Granger's Causality Test.

H. Finding

Based on the results of the above research, the discussion the impact of Risks, namely Financing to Deposit Ratio (FDR) is a proxy of Liquidity risk, *Non Performing Financing* (NPF) is a proxy of Credit risk and The Operational Expenses to Operational Revenue (BOPO) is proxy of Operational risk. Therefore, the last 3 Test conducted in this research which are *Impulse Response Function* (IRF) Test, *Variance Decomposition Test* (VCD), and *Granger's Causality Analysis Test* can determine the dominant risk on Shariah Banking:

1. Liquidity Risk

Table 4.12

Result Discussion of Liquidity Risk

IMPULSE RESPONSE FUNCTION		
Variable	Response	
FDR to NPF	Negative	
FDR to BOPO	Negative	
VARIANCE DECOMPOSITION (VCD)		
Variable	Total Average (%) (VCD)	
FDR	1.77	NPF
	7.43	BOPO
GRANGER'S CAUSALITY		
Variable	Prob.	Conclusion
FDR to NPF	0.1927	Not Significant
FDR to BOPO	0.8440	Not Significant

Sources: Author's Calculation

Based on Table 4.12, the results show that the Financing to Deposit Ratio (FDR) variable to the NPF variable has a negative effect on the IRF test by producing an average value in the Variance Decomposition test of 1.77% and in the Granger's Causality test the probability variable is more than 5% so it does not significantly affect the FDR variable towards NPF variables and Financing to Deposit Ratio (FDR) variable to the BOPO variable has a negative effect on the IRF test by producing an average value in the Variance Decomposition test of 7.43% and in the Granger's Causality test the probability variable is more than 5% so it does not significantly affect the FDR variable towards BOPO variables.

2. Credit Risk

Table 4.13

Result Discussion of Credit Risk

IMPULSE RESPONSE FUNCTION		
Variable	Response	
NPF to FDR	Positive	
NPF to BOPO	Positive	
VARIANCE DECOMPOSITION (VCD)		
Variable	Total Average (%) (VCD)	
NPF	0.54	FDR
	10.8	BOPO
GRANGER'S CAUSALITY		
Variable	Prob.	Conclusion
NPF to FDR	0.0057	Significant
NPF to BOPO	0.0092	Significant

Sources: Author's Calculation

Based on Table 4.13, the results show that the Non Performing Financing (NPF) variable on the FDR variable has a positive effect on the IRF test by producing an average value in the Variance Decomposition test of 0.54% and in the Granger's Causality probability variable is less than 5% so that it significantly influences the NPF variable on the variable FDR and Non Performing Financing (NPF) variable on the BOPO variable has a positive effect on the IRF test by producing an average value of 10.8% and in the Granger's Causality probability variable is less than 5% so that it significantly influences the NPF variable on the BOPO variable.

3. Operational Risk

Table 4.14

Result Discussion of Operational Risk

IMPULSE RESPONSE FUNCTION		
Variable	Response	
BOPO to FDR	Negative	
BOPO to NPF	Positive	
VARIANCE DECOMPOSITION (VCD)		
Variable	Total Average (%) (VCD)	
BOPO	0.76	FDR
	26.42	NPF
GRANGER'S CAUSALITY		
Variable	Prob.	Conclusion
BOPO to FDR	0.0006	Significant
BOPO to NPF	0.0959	Not Significant

Sources: Author's Calculation

Based on Table 4.14, the results show that the Operational Expenses to Operational Revenue (BOPO) variable on the FDR variable has a negative effect on the IRF test by producing an average value of 0.76%. The Granger's Causality probability variable is less than 5% so that it significantly influences the BOPO variable on the FDR variable. The Operational Expenses to Operational Revenue (BOPO) variable on the NPF variable has a positive effect on the IRF test by generating an average of 26.42% and in the Granger's Causality test the probability variable is more than 5% so it does not significantly affect the BOPO variable against NPF.

Based on the discussion of this research the *Impulse Response Function Test* or IRF explains that there are 3 positive significant responses, namely NPF variable to FDR variable, NPF variable to BOPO variable and BOPO variable to NPF variable. From the results of the IRF test, there are dominant variables affecting the other variables, the NPF variable is significant positive affecting the FDR variable and the BOPO variable. Therefore the IRF Test the dominant variable is NPF Variable or Credit Risk.

In the discussion we can also see the most dominant variable through the Variance Decomposition or VCD test, this can be seen from the percentage average. The first test, the NPF variable with a total average of 1.77% and BOPO variables with a total average of 7.43%. The second test, the FDR variable with an average total of 0.54% and the BOPO variable with a total average of 10.8%. The third test,

produces the average total in the FDR variable which is 0.76 & and in the NPF variable the total yield is 26.42%. From the results of the Variance Decomposition test we can conclude that the variable that has the highest average is the NPF variable with a total average of 26.42%. Therefore in the Variance Decomposition or VCD test the dominant variable is the NPF variable or Credit Risk.

The last test can be proven through the Granger's causality test, in this test explaining that there are 3 significant variables affecting the other variables with probabilities below 5 percent, namely NPF variable to FDR variable, NPF variable to BOPO variable, and BOPO variable to FDR variable. The Granger's Causality test can be proved that the dominant variable is the NPF variable because the variable significantly affects the FDR variable and the BOPO variable with a probability value below 5%. Therefore, it can be ensured that the dominant from Granger's Causality test is Credit Risk.

Based on the three test above IRF, VCD and Granger's Causality tests, it can be seen that the most significant risk affecting liquidity risk and operational risk is credit risk. This can be supported by previous research, namely research conducted by Amalia (2018) that a significant NPF variable affects the variables FDR, ROA and CAR. The same thing is also supported by Purwanti (2016) that the NPF variable is significant for the BOPO variable. Evidently, in Laucereno (2017) Detik.com, the ratio of problem financing is the percentage of the delay in the return of credit to creditors or the default payment by customers to the lender in this case

the bank that distributes the financing. According to him, the slow lending also occurs because banks are consolidating to reduce credit risk.

According to Setiawan (Setiawan, 2017) the risks faced by banks are due to the ratio of problem financing. Nevertheless, banking resilience is still in good condition. This can be seen from the capital adequacy ratio or capital adequacy ratio (CAR) which reached 23.3 percent. Therefore, from the results of the discussion in this study, the dominant risk among the other risks is credit risk, all of which can be proven from the previous research and some news that said the emergence of the ratio of problem financing to banking in Indonesia.

I. Conclusion and Suggestion

Based on the results obtained from the research conducted in the study entitled Risk Analyses on Shariah Banking in Indonesia Period 2010 - 2018 using the Vector Error Correction Model (VECM) approach, the following conclusions are:

1. Liquidity Risk does not have significant impact toward overall risk on Shariah Banking in Indonesia. Based on Impulse Response Function (IRF) test, the response of liquidity risk influence credit risk and operational risk is negative. Variance Decomposition test (VCD) on liquidity risk has a total average is less than credit risk and operational risk with the total average 0.54% and 0.76%. And in the Granger's Causality test the liquidity risk not significantly

- influence credit risk and operational risk by having a probability more than 5%.
2. Credit Risk has significant impact toward overall risk on Shariah Banking in Indonesia. Based on Impulse Response Function (IRF) test, the response of credit risk influence operational risk and liquidity risk is positive. Variance Decomposition Test (VCD) on credit risk has a total average more than operational risk and liquidity risk with total the average 26.42%. And in the Granger's Causality test the credit risk significantly influence operational risk and liquidity risk by having a probability less than 5%.
 3. Operational Risk does not have significant impact toward overall risk on Shariah Banking in Indonesia. Based on Impulse Response Function (IRF) test, the response of operational risk influence liquidity risk is negative and credit risk is positive. Variance Decomposition test (VCD) on operational risk has a total average more than liquidity risk and less than credit risk with the total average 7.43% and 10.8%. And in the Granger's Causality test the operational risk significantly influences liquidity risk and does not significantly influence credit risk by having a probability more than 5%.

This research concluded that the dominant variable is NPF or Credit Risk. In other words, Credit Risk is a leading risk among Liquidity Risk and Operational Risk. When Shariah bank faces high credit risk, then it will cause liquidity shortage and bank cannot fulfil the obligation towards depositors. This condition increase liquidity risk in Shariah banking. Credit risk that occurs

because of financing default gives impact to imbalance of funding and financing in bank which also causes increasing operational risk. Thus, when credit risk in Shariah banking is high, it can be ascertained that the other risks will follow.

B. Suggestion

The suggestions for several parties to the Liquidity Risk, Credit Risk, and Operational Risk on Shariah Banking in Indonesia, as follow:

1. Shariah Banking is expected to be more focused on credit risk by being more careful in distributing financing to Shariah Banking and paying attention to the Non Performing Financing (NPF) variable.
2. Shariah Banking is suggested to control the Non Performing Financing (NPF) movement with other variables, so that it is between the normal thresholds.
3. Shariah Banking must have minimum initial capital as explained in Bank Indonesia Regulation Number: 7/15/PBI/2015 concerning about Minimum Capital Requirements for Commercial Banks just in case a risk arises in Shariah Banking

C. The Future Research

1. Further research is expected to add variables related to Liquidity Risk, Credit Risk and Operational Risk in Shariah Banking, the purpose is to describe more about the situation that occurs in the condition of Risk in Shariah Banking.
2. For further research, it can be continued in making an Early Warning System or Index that makes Non Performing Financing (NPF) as a leading Indicator.

3. For further research, it is expected to take the current year period when there is an economic shock to see the resilience of each risk at the time of a crisis.
4. Further research should be able to add years, if necessary, years which are the Indonesian economy after experiencing a crisis.

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