THE ROLE OF MACRO-MONETARY POLICY ON ISLAMIC BANKING STABILITY IN THE BUSINESS CYCLE IN INDONESIA: STUDY OF KEYNES'S THEORY AND IBN KHALDUN'S THEORY

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ABSTRACT

According to the theory of Keynes and Ibn Khaldun, the government must be in control of the national economy with active policies to influence the movement of the economy. The macro-monetary policy can reduce output imbalances through macro-monetary instruments to influence credit growth, affecting aggregate demand. The purpose of this research is to study the role of macro-monetary policy on Islamic banking stability in the business cycle in Indonesia. The Vector Error Correction Model (VECM) simultaneous equation approach was employed in this study, along with the Eviews-12 application. This study used secondary data on Islamic banks from various institutions such as the Financial Services Authority, Bank Indonesia and the Central Bureau of Statistics. The secondary data in this research are Islamic banks from 2008 to 2021. This research found that Statutory Reserves positively influence Islamic banking financing in the long-term business cycle. Buffer capital or Capital Buffer and Non-Performing Financing negatively influence sharia banking financing. Meanwhile, economic growth or Gross Domestic Product does not affect sharia banking financing. Meanwhile, in the short term, none affects sharia banking financing. The Impulse Response Function (IRF) and Forecast Error Variance Decompositions (FEVD) outcomes show that the shock of the Statutory Reserves and Buffer Capital makes the most significant contribution to sharia banking financing in the long-term business cycle. This study's findings may promote Islamic banks to use macro-monetary instruments in controlling Islamic funding as a proxy for the stability of Islamic banking in Indonesia to control the distribution of financing in a balanced, prudent and quality manner in the business cycle. Then it can anticipate losses and not disrupt the stability of Islamic Banks.

Keywords : Reserve Requirement; Capital Buffer; Non-Performing Financing; Gross Domestic Product

ABSTRAK

Pemerintah harus ada dalam pengendalian ekonomi nasional dengan peraturan secara aktif yang mana berpengaruh gerak perekonomian menurut teori Keynes dan Ibnu Khaldun. Kebijakan makro moneter dapat mengurangi ketidakseimbangan output melalui instrumen makro moneter dalam mempengaruhi pertumbuhan kredit yang pada akhirnya mempengaruhi agregat permintaan. Penelitian ini bertujuan untuk menganalisis peran kebijakan makro moneter terhadap stabilitas perbankan syariah dalam siklus bisnis di Indonesia. Persamaan simultan Vector Error Correction Model (VECM) dengan program Eviews-12 adalah metode yang digunakan dalam penelitian ini. Pada penelitian ini digunakan data sekunder bank syariah dari berbagai lembaga seperti Otoritas Jasa Keuangan, Bank Indonesia dan Badan Pusat Statistik. Data sekunder yang dipakai dalam penelitian ini yaitu bank syariah dari tahun 2008 sampai

tahun 2021. Penelitian ini menghasilkan penemuan diantaranya, dalam siklus bisnis jangka panjang Giro Wajib Minumum berpengaruh positif terhadap pembiayaan perbankan syariah. Modal penyangga atau Capital Buffer dan Non-Performing Financing berpengaruh negatif terhadap pembiayaan perbankan syariah. Sementara Pertumbuhan ekonomi atau Gross Domestic Product tidak ada pengaruhnya pada pembiayaan perbankan syariah. Adapun dalam jangka pendek tidak ada satu pun yang berpengaruh terhadap pembiayaan perbankan syariah. Hasil Impulse Response Function (IRF) dan Forecast Error Variance Decompisitions (FEVD) menunjukkan shock Giro Wajib Minimum dan Modal Penyangga memberikan kontribusi terbesar terhadap pembiayaan perbankan syariah dalam siklus bisnis jangka waktu Panjang. Hasil penelitian ini dapat mendorong bank syariah untuk menggunakan instrumen makro moneter dalam pengendalian pembiayaan syariah sebagai proksi stablilitas perbankan syariah di Indonesia sehingga mengendalikan penyaluran pembiayaan secara seimbang, kehatihatian dan berkualitas dalam siklus bisnis. Kemudian dapat mengantisipasi kerugian dan tidak mengganggu stabilitas Bank Syariah.

Kata Kunci : Giro Wajib Minimum; Modal Penyangga; Non-Performing Financing; Pertumbuhan Ekonomi

INTRODUCTION

Financial institutions, especially banks, act as agents of development in a country. Banks occupy a strategic position in bridging the needs of working capital financing and investment in the economy. Banks can help the real sector produce output to support economic growth by carrying out the function of banking as an intermediation institution. Law Number 23 of 1999 explains that Indonesia implements a dual banking system, consisting of conventional and Islamic banking systems Bank Muamalat was Indonesia's first Islamic bank, founded in 1991.

Ibn Khaldun (1332-1406) was a prominent Muslim intellectual who produced many thoughts on economics. According to Ibn Khaldun, the state must also guarantee the rights of the people and be responsible for realizing the welfare of the people so that the community is prosperous through fair development. If those variables did not met, power would wait for the time of collapse (Rusydiana, 2018). Jean David C Boulakia, in his article entitled "Ibn Khaldun*: A Fourteenth Century Economist*", explains Ibn Khaldun formulated the concept of the role of government in stabilization policies to generate excess demand in the economy long five centuries before the British economist John Maynard Keynes. Keynes developed his theory in the early 20th century, eventually becoming a role model for the world.

In 1936, John Maynard Keynes answered the question of the causes of the Great Depression in his book entitled “The General Theory of Employment, Interest, and

Money". Keynes elaborated that the government must intervene in controlling the national economy with policies actively to affect the economy's movement. Keynes also stated that it is not only aggregate supply that determines national income but aggregate demand, for example, by lowering taxes and increasing *government spending* (Rahmi, 2018).

Excessive financing growth can threaten the stability of Islamic banking. During financing expansion, Islamic banks tend to have overly optimistic expectations of the ability to pay customers and consequently lack caution in providing customer financing. As a result, there is a risk of lousy funding or non-performing financing when the economy contracts or the economic situation worsens. The same thing, Qudraty & Suriani (2016) state that when there is an economic recession (marked by a decrease in GDP), the demand for products and services decreases so that the need for financing decreases. Meanwhile, at an extended time, GDP growth has increased so that there is an increase in financing. Utari et al. (2012a) explained that there is a thought about the implications of credit growth on financial stability and macro conditions when financial system vulnerabilities will accompany rapid credit growth.

Figure 1 shows the role of monetary and macroprudential policies issued by the government. Bank Indonesia intends to limit the procyclicality of credit/financing during financial and economic cycles. The financial banking system tends to make procyclicality, a condition in which the economy grows more rapidly during the expansion phase and deteriorates during the contraction phase (Yoel, 2016). According to Maghfira (2018), the impact of procyclicality behavior and the experience of financial crises require macroprudential policies to control financing growth and anticipate crisis risks. This statement is supported by Utari et al. (2012a) that to lower systemic risks, macroprudential policies are required., both from inter-time activities and relationships between financial institutions.

In theory, macroprudential policy is a prudential regulatory tool issued by Bank Indonesia to promote overall stability of the financial system. The macroprudential policy prevents a credit supply and liquidity boom-bust cycle, which can result in economic instability. With the role of maintaining the stability of the supply of financial intermediation, macroprudential policy plays a role that supports monetary policy objectives in maintaining price and output stability.

Bank Indonesia, as the monetary authority in Indonesia, issued macroprudential policies in Islamic banking that are included in financing control, including (1) the establishment of reserve requirements (RR) in the form of a minimum reserve requirement (RR) ratio and (2) the accomplishment of the capital adequacy ratio (CAR) to conservation buffer capital (Utari et al., 2012a).

Various international and national studies have been conducted to examine macro-monetary policy's role in banking stability. Montoro & Moreno (2011) explain that implementing reserve requirements in Latin America (Brazil, Colombia, and Peru) has increased the efficacy of monetary control or strengthened monetary policy transmission and he financial imbalances caused by excessive credit growth. Tovar e.t al (2012) show the effect of reserve requirements on credit growth in Latin America which includes five countries: Brazil, Chile, Colombia, Mexico, and Peru. The study found that implementing reserve requirements as a countercyclical policy has a moderate and short-term effect on credit growth. Zulkhibri & Muhammad (2017) showed that macroprudential policy through the Reserve Requirement or Minimum Reserve Requirement effectively controls Islamic bank financing in Indonesia. Meanwhile, Huan & Xiong (2014) found evidence that banking capital buffers in China behave countercyclically to the business cycle. Melnic & Nistor (2018) shows that tightening capital requirements, Capital Conservation Buffer, and Capital Countercyclical buffer affects bank credit in Europe and North America. Prabowo (2017) indicates that Capital Buffer has no significant negative effect on the Non-Performing Financing of Islamic Commercial Banks. Rossy (2017) shows that GWM negatively and significantly affects financing variables. Utami (2017) indicates that GWM partially has a negative effect on NPF and Maulana (2019) found that the Capital Buffer has no significant impact on financing Islamic commercial banks.

The phenomenon of differences in the role of macro-monetary policy on the stability of Islamic banking and the inconsistency of previous *research gaps* have encouraged researchers to re-examine. In addition, this research uses the theory of Keynes and Ibn Khaldun regarding the role of the government through macro-monetary policy in maintaining the stability of Islamic banking.

This study aims to add to the body of knowledge by investigating the causal relationship between Keynes and Ibn Khaldun's theories related to macro-monetary

policy to the stability of Islamic banking. For regulators and banking practitioners, this study is expected to contribute to the literature of empirical studies of the impact of macro-monetary policy on the stability of Islamic banking.

BIBLIOGRAPHY REVIEW

Literature Review

According to Ibn Khaldun (1332-1406), the state must also guarantee the rights of the people and be responsible for realizing the community's welfare so that the community is prosperous through fair development (Rusydiana, 2018). Umar Chapra formulated Ibn Khaldun's thoughts with the image of a circle. Let's call it the circle of justice.

Umar Chapra stated that Muslims could present all the variables in the circle of justice into a great power. But unfortunately, those variables are not driven by the government (*daulah*). The government (G) begins to forget its obligations and responsibilities. They are also negligent in ensuring justice and providing the necessary facilities for the people (N). The impact of development and prosperity has regressed (Rusydiana, 2018).

In line with Ibn Khaldun's opinion, the British economist John Maynard Keynes (1883-1946) said the macro policy was how the government could influence *aggregate* demand (thus, affect the macro situation) to approach its *Full Employment* position. Keynes explained that the government must intervene in controlling the national economy with policies actively to affect the economy's movement (Rahmi, 2018).

The business cycle is a movement pattern that reflects economic circumstances (up or down) in terms of growth conditions and peak conditions of a a country's business economic activity that will have a positive impact on a company's performance (Suparman, 1985). A business cycle is a type of fluctuation in a country's economic activities from all sectors of business. Phases of the business cycle may be traced from such economic activity indicators as actual gross domestic product and industrial production growth. The phases include expansions, peaks, contractions, and troughs and can occur at any moment but vary. The business cycle is also known as the economic cycle (Suparman, 1985).

The macroprudential policy can support monetary policy in reducing output imbalances through macroprudential instruments influencing credit growth which

ultimately affects aggregate demand (Agung et al., 2021). In Indonesia, macroprudential policies in Islamic banking are included in financing control, including (1) the establishment of reserve requirements (RR) in the form of a minimum reserve requirement (RR) ratio and (2) the fulfillment of the capital adequacy ratio (CAR) to conservation buffer capital (Utari et al., 2012a).

The reserve requirement (in the form of reserve requirements) is one of the macroprudential instruments because *reserve requirement* management can be used for various macroprudential policy objectives, including (1) credit cycle control, (2) risk reduction by improving the bank's funding structure, and (3) instruments for credit allocation to reduce liquidity pressures (Tovar et al, 2012). In recent years, the reserve requirement (GWM) has been frequently used as a macroprudential policy instrument by Central Banks in Latin America and Emerging Markets. The reserve requirement is a macroprudential instrument regulating the money supply in the community, directly affecting the inflation index. RR can affect bank liquidity and deepen the financial sector, not limited to only credit/financing. If the RR is raised, it aims to put the brakes on lending/financing. On the other hand, if it is lowered, the goal is to increase credit/financing capacity.

Banks maintain *buffer capital* in general due to several factors, namely (1) following market discipline, (2) complying with supervisory requirements, and (3) guarding against shocks in the economy (Tabak et al., 2011). *Buffer Capital* is a regulation of additional capital reserve requirements where this capital reserve will be utilized as a buffer during an expansion period of the economy and can be utilised during a downturn phase of the economy (Yoel, 2016). Huan & Xiong (2014) analyzed the behavior of banks in deciding on capital buffer levels during business cycle fluctuations and transmission that allowed the *Capital Countercyclical Buffer* (CCB) to influence China's macroeconomics.

Hypothesis Development

Effect of *Reserve Requirement* on Islamic banking financing

The implementation of reserve requirements is used to achieve several objectives, which are regulating capital inflows, improving the efficiency of monetary control or strengthening monetary policy transmission, and overcoming financial imbalances associated with excessive credit growth. Macroprudential policy on reserve

requirements is quite effective in dampening the credit cycle. Montoro & Moreno (2011), and Tovar, e.t al (2012). RR has a negative and significant effect on Islamic bank financing. Rossy (2017), Zulkhibri & Muhammad (2017).

Based on this, the hypothesis I proposed is:

H_1: Minimum Mandatory Current Account (X1) has a positive effect on Islamic banking financing (Y)

Effect of Buffer Capital on Islamic banking financing

Capital buffers are countercyclical and negatively affect credit growth significantly. Tabak, et.al (2011). Buffer capital has a positive and significant effect on credit risk. Huan & Xiong (2014), Ryad & Yuliawati (2017), and Melnic & Nistor (2018). Buffer capital has no significant impact on financing. Maulana (2019). The procyclicality of bank credit being influenced by economic growth is also influenced by the tendency of banks to over-rely on capital conditions. Utari et al. (2012b).

Based on this, Hypothesis II proposed is:

H_2: Buffer capital (X2) positively affects Islamic banking financing (Y)

Effect of *Non-Performing Financing* on Islamic banking financing

The greater the *Non-Performing Financing* (NPF) number, the higher the cost, potentially causing losses. The high level of non-performing financing can make Islamic banks dare not increase financing distribution. NPF has no significant effect on financing. Adzimatinur, et al. (2014), Ryad & Yuliawati (2017), Taufik (2017). NPF has a positive and insignificant impact on financing. Nisa (2014).

Based on this, Hypothesis III proposed is:

H_3: *Non-Performing Financing* (X3) has a positive effect on Islamic banking financing (Y)

Effect of Economic Growth on Islamic banking financing

Islamic banking financing is essential in financing the national economy and is one of the driving forces of Indonesia's economic growth. A high financing growth rate partly drives high economic growth. The same thing according to Qudraty & Suriani (2016), When there is an economic recession (characterized by a decrease in GDP), the demand for products and services decreases so that the demand for financing decreases. Meanwhile, at an extended time, GDP growth has increased so that there is an increase in financing. GDP has a positive and significant effect on *mudharabah* finance. Asriani

(2017), Syahbudi & Ahmad (2018), Zulkhibri & Muhammad (2017), and Zulkhibri (2018).

Based on this, hypothesis IV proposed is:

H_4: Economic Growth (X4) has a positive effect on Islamic banking financing (Y)

RESEARCH METHODS

Method is a method of work that can be used to obtain something. While the research method can be interpreted as a work procedure in the research process, both in searching for data or disclosing existing phenomena (Zulkarnaen, W., et al., 2020). This research is an analysis that aims at hypothesis testing, namely analysis that seeks to test hypotheses derived from previous theories and research that have been available, whereas research that will discuss how macro-monetary policy impacting the stability of Islamic banking. 'This type of causal research looks at the effects, and reciprocal relationships between several variables studied (Sekaran & Bougie, 2016).

Quantitative approach is used as a method. The data analysis unit used is the enterprise unit. The research data used is time series data in the form of population. Data's type used is secondary data that will be processed and sourced from various government agencies, namely the Financial Services Authority (OJK), Bank Indonesia (BI) and the Central Statistics Agency (BPS). The secondary data taken for this study were from Islamic banks from 2008 to 2021.

There are five variables studied regarding the development of the hypothesis of this study, namely the minimum reserve requirement (GWM), capital buffer (capital buffer), non-performing financing (NPF), economic growth, and Islamic banking financing. Statutory Reserves (GWM) are minimum savings that banks must maintain to keep current account balances with Bank Indonesia, the amount determined by Bank Indonesia at a specific proportion of outside funds (DPK). RR is calculated by comparing the balance of current accounts at Bank Indonesia divided by total third-party funds. A *capital buffer* is a supplementary amount of capital that serves as a safety net to protect against losses in the event of excessive credit expansion or banking funding, which could jeopardize the stability of the financial system. The buffer capital is calculated with %CAR actual minus %CAR Target (8%). %CAR is calculated from Total Capital divided by Risk-Weighted Assets (ATMR). The ratio of *non-performing financing* to the total amount of financing provided by Islamic banks is used to calculate

non-performing financing (NPF). The market value of all finished products and services produced in a nation at a particular time is known as economic growth (GDP). GDP counts all commodities and services generated in a nation's borders at any one time, regardless of nationality. Islamic banking financing is the provision of cash or bills equivalent to it based on a contract or deal between the bank and a third party that mandates the funded party to repay the cash or bill in exchange for profit sharing after a specific period of time.

The *Vector Auto Regression* (VAR) approach using the Eviews12 application was employed for the data analysis in this study. The model for this project has been prepared includes several stages.

Figure 4. describes the stages of var method analysis. The equation model used shows the function of financing:

LNFIN={GWM, CB, NPF, GDP}.

The equation of the function of the financing can then be modeled in *Vector Auto Regression* (VAR) as follows:

$$LNFIN_t = \alpha_{1.0} + \sum_{i=1}^{k} \alpha_{1.\ 1}\ GWM\ t\text{-}1 + 1.2\ CB\ t\text{-}1 + 1.3\ NPF\ t\text{-}1 \sum_{i=1}^{k} \alpha\ + {}_{1.4}GDP \sum_{i=1}^{k} \alpha\ {}_{t\text{-}1} \sum_{i=1}^{k} \alpha$$

Information:

LNFIN	= natural logarithm of the financing amount.
RR	= GWM ratio (current account on BI/third party funds).
CB	= *capital buffer* ratio (% CAR actual - %CAR target (8%)).
NPF	= NPF ratio (non-performing financing/total financing disbursed).
GDP	= economic growth ratio.

The analysis of the VAR method is to conduct stationarity tests on the data used, optimum lag testing, cointegration tests, estimate VECM models, analyze impulse *response function* (IRF) results and *forecast error variance decomposition* (FEVD) results.

a. Stationarity Test.

The stationarity test is the first step to ensure that the data used is a stationer. The average value of stationary data will typically be reached and will shift within that range (Gujarati, 2003). If the data is not stationary, then researchers can only study the "behavior" of the data at a certain period based on various considerations (which will certainly be subjective) (Tanjung & Devi, 2018). How to test data stationarity using a

formal test is often called a *unit root* test using *the Augmented Dickey-Fuller* (ADF) and *Phillips-Perron* (PP) test.

b. VAR Stability Test.

In order to incorporate the variables and multiply them by the number of lags of each VAR, the estimation results of the established VAR equation system must first be evaluated for stability. It is necessary to test VAR stability because if the findings of the assessment of VAR stability are unreliable, then the *Impulse Response Function* (IRF) analysis and Forecast *Error Variance Decomposition* results (FEVD) become invalid. When each root of a VAR system has a modulus that is less than one, the system is considered to be stable (Gujarati, 2003).

c. Optimum Lag Determination.

This determination of the optimum lag length aims to eliminate the problem of autocorrelation in the VAR system. If the optimal lag entered is too short, it is feared that it will not be able to explain the model's dynamism thoroughly. However, a prolonged optimum latency leads to diminished degrees of freedom and ineffective estimate (especially in models with small samples). The *Akaike Information Criterion* (AIC) and Schwarz Information Criterion (SC) criteria can be used to determine the lag length to be used in the VAR model.

d. Cointegration Test.

Testing is required to determine whether cointegration is possible given the first-degree level stationarity phenomenon. Cointegration fundamentally involves looking at the long-term equilibrium between the observable variables. Individually non-stationary data can occasionally become stationary when joined linearly. This result meant that the data was cointegrated (Rusydiana, 2018). The cointegration used in the VAR method is Johansen's approach.

e. *Vector Error Correction Model* (VECM)

The Vector Error Correction Model (VECM) is a method for restoring short-term imbalances to long-term equilibrium (Nachrowi, 2006). Vector Autoregression has a more constrained version called VECM. The model parameters of VECM then take advantage of this information about cointegration constraint. It is for this reason that VECM is frequently referred to as a VAR design for non-stationary series with a cointegration relationship (Tanjung & Devi, 2018).

f. Vector Error Correction Model Instrument.

In VAR analysis, VAR has instruments that have a particular role in describing how the model's variables interact. These tools include the *Forecast Error Variance Decomposition* (FEVD) and the *Impulse Response Function* (IRF). The IRF seeks to determine how long a shock to one variable has an impact on another. Meanwhile, FEVD aims to understand how much shock from a variable affects other variables (Rusydiana, 2018).

RESULTS AND DISCUSSION

Data Stationaryity Test Results

Data Stationaryity Test Results used to conduct the data stationariness test in this study is the ADF (*Augmented Dickey Fuller*) test using an actual level of five percent. If the t-ADF value is smaller than the critical value of MacKinnon, then the results show that the data is stationary (it does not contain unit roots). Table 1 displays the outcomes of the unit root test. At a level up to the first difference, the roots of this unit are tested. Some of the variables utilized in this analysis are stationary at the level, whereas others are not. Every piece of data is stationary at a level of 5% once the *first difference* is created. The Minimum Mandatory Giro is the variable that is stationary at the level (GWM). At the same time, others are only stationary on the *first difference*.

VAR Stability Test Results

The results of the VAR stability test indicate that the entire roots have a modulus smaller than one. A summary of the VAR stability test is displayed in table 2 to conclude that the formed VAR model is stable at its optimal lag.

Optimum Lag Determination Results

The *Schwarz Information Criterion* (SC) was used to determine the ideal latency, which was based on the smallest lag. Table 3's findings demonstrate that the model had optimal lag at lag 1, leading to the conclusion that there is no autocorrelation issue.

Cointegration Test Results

This test is used to determine a long-term association between variables that have complied with the integration process' criteria and have all attained degree 1 stationary behavior. Table 4 displays the findings of cointegration testing using trace statistics. The appendix demonstrates that for each equation, there is at least one cointegration rank at an actual level of five percent.

***Vector Error Correction Model* (VECM)** Results

The Vector Error Correction Model (VECM) hypothesis can show that if *the VECM Estimate* t-statistic > 1.96, then H_0 is rejected and H_1 is accepted, meaning that the results of short-term and long-term estimates of one variable have a significant effect on other variables. Conversely, if the $VECM\ Estimate_{d\text{-}statistic} < 1.96$, then H_0 is accepted and H_1 is rejected, meaning that the results of short-term and long-term estimates of one variable have no significant effect on other variables.

A summary of the *Vector Error Correction Model* (VECM) analysis can be read in table 5 below. VECM results show that in the short term, there is not a single variable of GWM, CB, NPF, and GDP that affects Islamic banking financing. However, in the long run, the reserve requirement variable positively affects Islamic banking financing, according to research by Montoro & Moreno (2011) and Tovar, e.t al (2012). The CB variable negatively affects Islamic banking financing in contrast to the research of Tabak, et.al (2011), Huan & Xiong (2014), Ryad & Yuliawati (2017), Melnic & Nistor (2018). NPF negatively affects Islamic banking financing in contrast to the research of Adzimatinur, et al. (2014), Ryad & Yuliawati (2017), Taufik (2017), and Nisa (2014). GDP does not affect Islamic banking financing in contrast to the research of Asriani (2017), Syahbudi & Ahmad (2018), Zulkhibri & Muhammad (2017), and Zulkhibri (2018).

***Impulse Response Function* (IRF)** Results

The IRF analysis with minimum reserve requirements (GWM) as a response concluded that in the next 48 years, the highest response is the minimum reserve requirement response to Islamic banking financing, which is expected to stabilize at a standard deviation of 10. The IRF analysis with *capital* buffer (CB) as a response concluded that in the next 48 years, the highest response is the capital buffer (CB) response to Islamic banking financing which is expected to stabilize at a standard deviation of 30. The IRF's analysis with non-performing financing (NPF) as a response concluded that in the next 48 years, the highest response is the non-performing financing (NPF) response to Islamic banking financing which is expected to stabilize at a standard deviation of 15. The IRF analysis with the *gross* domestic product (GDP) as a response concluded that in the next 48 years, the highest response is the gross *domestic product* (GDP) response to Islamic banking financing which is expected to

stabilize at a standard deviation 5. An overview of the *Impulse Response Function*'s findings (IRF) analysis can be read in table 6.

***Forecast Error Variance Decomposition* (FEVD)** Results

Analysis of Forecast Error Variance Decompisitions (FEVD) of Islamic banking financing variables in figure 7 illustrates the variable that is anticipated to contribute the most to Islamic banking financing in the next forty-eight years is Islamic banking financing itself with an average annual contribution of 57.28%, followed by the contribution of *capital buffer* (CB) at 19.75%, minimum reserve requirement (RR) at 11.44%, non-performing financing (NPF) at 9.29% and *domestic product* (GDP) demand deposit at 2.24%

CONCLUSION

Several conclusions were drawn from the findings of the research that was conducted, namely:

1. Ibn Khaldun had a good theory that formulated the concept of the role of government in stabilization policies to generate excess demand in the economy five centuries before the British economist John Maynard Keynes. In line with Ibn Khaldun, Keynes explained that the government must intervene in controlling the national economy with policies actively to influence the economy's movement. The macroprudential policy can support monetary policy in reducing output imbalances through macroprudential instruments influencing credit growth, ultimately affecting aggregate demand.
2. The Giro Wajib Minumum (RR) positively influences the control of Islamic banking financing in Indonesia. Reserve Requirement (RR) is one of the macroprudential instruments to control the credit cycle. If the reserve requirement is raised, it aims to reduce excessive lending/financing. On the other hand, if it is lowered, the goal is to increase credit/financing capacity. The Mandatory Minimum Deposit (RR) instrument controls financing disbursements and risks in a balanced, prudent, and quality manner to control the risk of non-performing financing.
3. Capital Buffer (CB) negatively influences the control of Islamic banking financing in Indonesia. A capital Buffer (CB) is an instrument for controlling lending/financing. Excessive financing growth can have a risky impact (disrupting financial stability), so

buffer capital is needed to anticipate absorbing excessive financing losses that have the potential to disrupt financial stability.

4. *Non-Performing Financing* (NPF) negatively affects the control of Islamic banking financing in Indonesia. The higher the *Non-Performing Financing* (NPF) number, the higher the cost, potentially causing losses. The high level of funding non-performing can make Islamic banks dare not increase financing distribution.
5. Economic growth or Gross Domestic Product (GDP) does not affect controlling Islamic banking financing in Indonesia. The increase in Islamic bank financing growth is supported by public awareness of usury-free financing. Islamic banks continue to respond to macroeconomic phenomena such as economic growth, although it is proven that they can survive when macroeconomic conditions are deteriorating.

RESEARCH IMPLICATIONS

Two implications were discovered as a result of the research that was conducted, namely:

1. Theoretical Implications

   This study examined four variables that affect Islamic bank financing. In the long run, the minimum reserve requirement variable positively affects Islamic banking financing. This result supports the research of Montoro & Moreno (2011) and Tovar, e.t al (2012). Macroprudential policy on reserve requirements is quite effective in dampening the credit cycle, supporting its theory (Montoro & Moreno, 2011; Tovar, e.t al, 2012). The *capital buffer* (CB) variable negatively affects Islamic banking financing in contrast to the research of Tabak, et.al (2011), Huan & Xiong (2014), Ryad & Yuliawati (2017), and Melnic & Nistor (2018). NPF negatively affects Islamic banking financing in contrast to the research of Adzimatinur, et al. (2014), Ryad & Yuliawati (2017), Taufik (2017), and Nisa (2014). GDP does not affect Islamic banking financing in contrast to the research of Asriani (2017), Syahbudi & Ahmad (2018), Zulkhibri & Muhammad (2017), and Zulkhibri (2018).
2. Managerial Implications

   In this study, the Giro Wajib Minumum (RR) positively influences Islamic bank financing, so Islamic banks can prepare a reserve requirement ratio policy that can control the growth of excessive Islamic bank financing. Capital Buffer (CB)

negatively affects financing but is expected to manage the fulfillment of buffer capital in anticipation of absorbing excessive financing losses that have the potential to disrupt financial stability. *Non-Performing* Financing (NPF) negatively affects financing, but Islamic banks are expected to continue to manage non-performing financing because the higher the Non-Performing Financing (NPF) rate will increase costs, potentially causing losses. Economic growth does not affect funding due to public awareness of usury-free financing.

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FIGURES AND TABLES

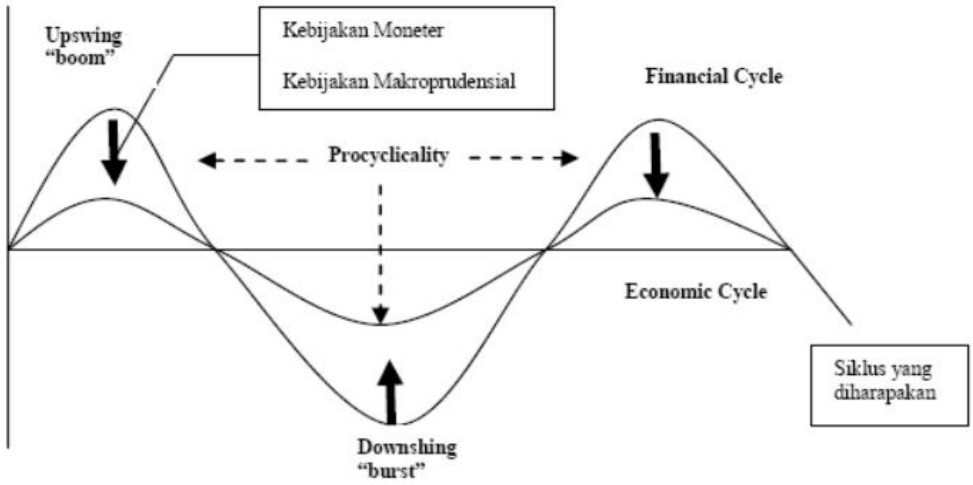

Figure 1. Monetary and Macroprudential Policy in the Financial and Economic Cycle.
Source: Agung (2010)

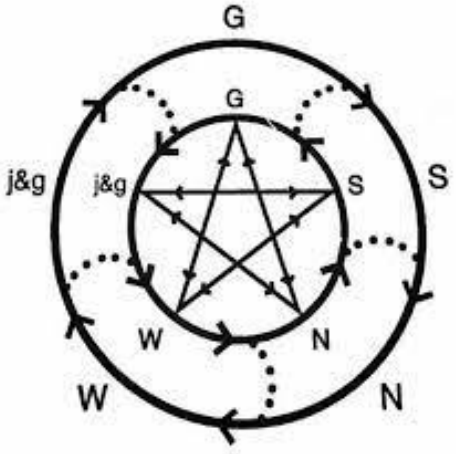

Figure 2. Thoughts of Ibn Khaldun

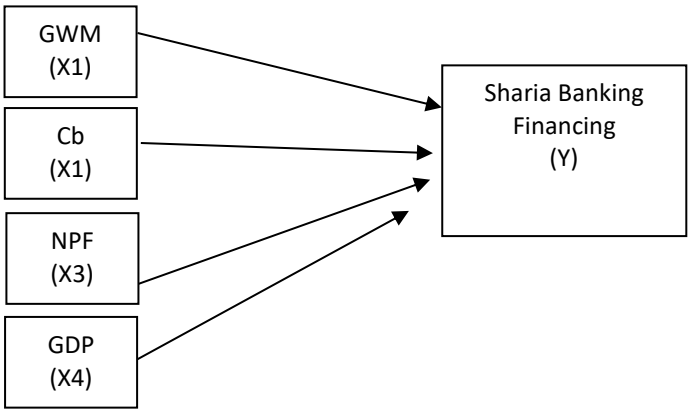

Figure 3. Framework for Thinking about the Role of Macro-Monetary Policy on Islamic Banking Stability in the Business Cycle in Indonesia

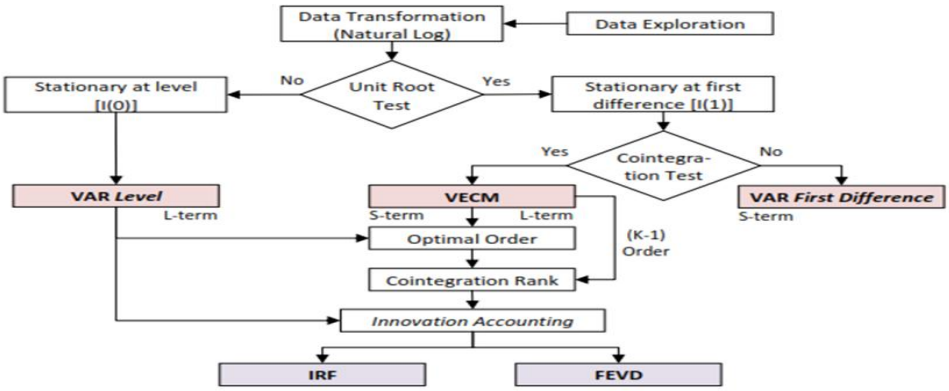

Figure 4. *Vector Auto Regression* (VAR) Method Analysis Stages

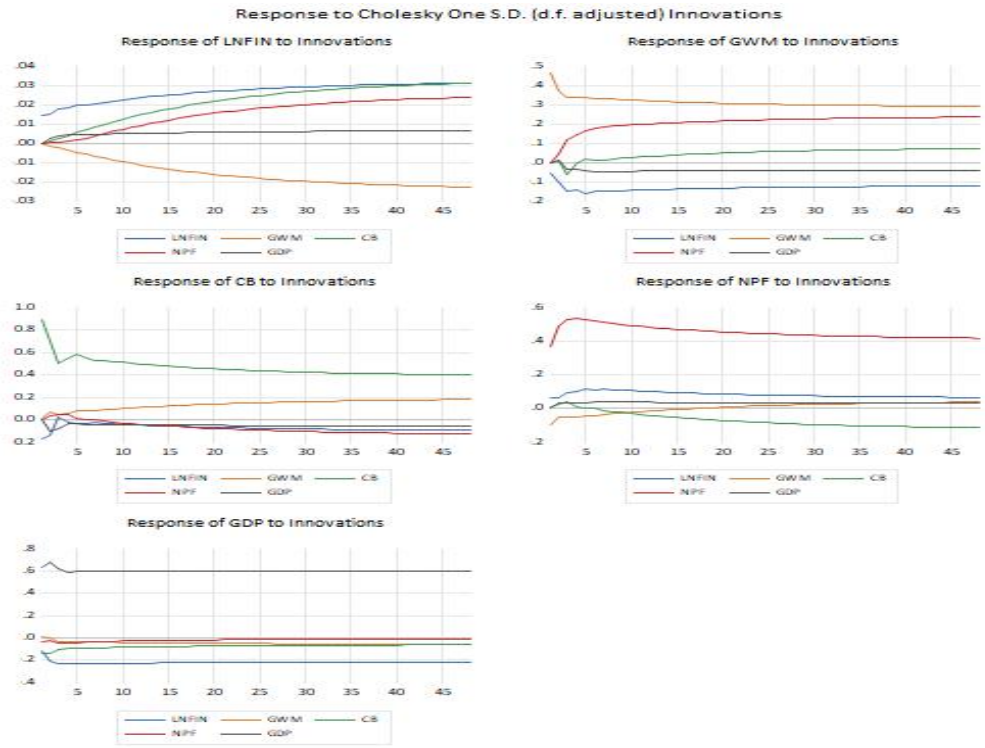

Figure 5. *Impulse Response Function* (IRF) Results

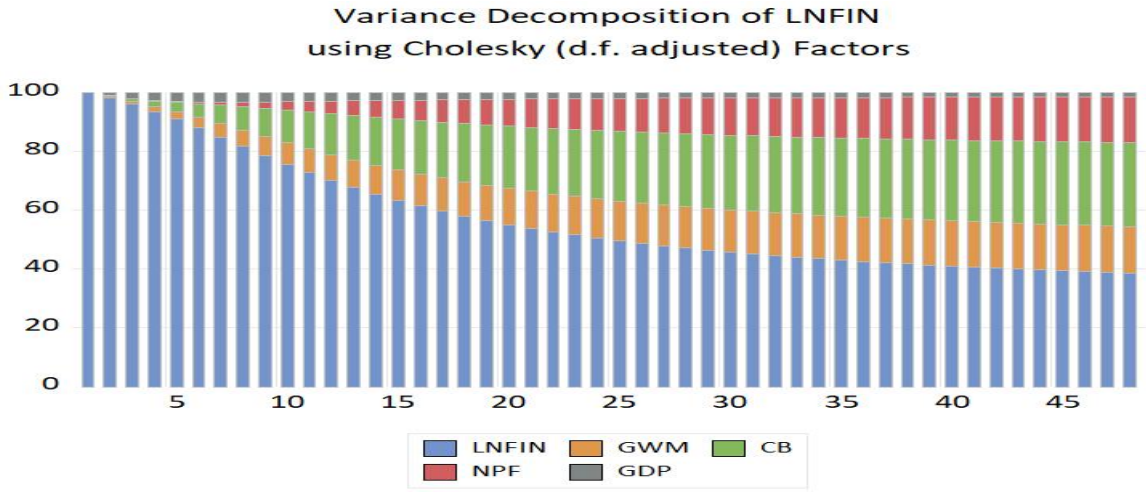

Figure 6. Forecast *Error Variance Decompisitions* (FEVD) Results

Table 1. Unit Root Test Results

Variable	ADF values		McKinnon Critical Value 5%	
	Level	*1st difference*	Level	*1st difference*
LNFIN	-0.959741	-4.347145	-1.297146	-12.51969
GWM	**-4.859242**	**-14.47898**	**-4.826612**	**-14.81697**
Cb	-1.813903	-12.72975	-2.957784	-15.45763
NPF	-2.421612	-9.635990	-2.192662	-9.413922
GDP	-3.024008	-11.63237	-3.087245	-12.10643

Note: Bold indicates that the data is stationary at a level of 5%

Table 2. VAR Stability Test Results

Type	Modulus Range	Modulus Range	Modulus Range	Modulus Range
Lag 8	0.908497	0.865025	0.806751	0.761574
	0.908497	0.826269	0.799282	0.752061
	0.895481	0.826269	0.799282	0.752061
	0.895481	0.820090	0.794112	0.718216
	0.893436	0.820090	0.794112	0.718216
	0.893436	0.814350	0.790049	0.713686
	0.880400	0.814350	0.790049	0.713686
	0.880400	0.812213	0.786054	0.607704
	0.880367	0.812213	0.786054	0.607704
	0.865025	0.806751	0.761574	0.223494
	0.908497	0.865025	0.806751	0.761574
				0.752061

Table 3. Optimum Lag Determination Results

Lag	LogL	Lr	FPE	AIC	Sc	Hq
0	-129.3679	Na	3.73E-06	1.690163	**1.786669***	1.729353*
1	-103.0679	50.61510	3.67E-06	1.673810	2.252849	1.908952
2	-77.55751	47.49107	3.65E-06	1.667390	2.728961	2.098483
3	-42.84017	62.44754*	3.24E-06*	1.545159*	3.089262	2.172203
4	-31.93476	18.93015	3.88E-06	1.722450	3.749085	2.545445
5	-23.34625	14.36820	4.81E-06	1.928884	4.438051	2.947830
6	-13.78576	15.39299	5.90E-06	2.123091	5.114790	3.337988

Note: The asteric sign (*) indicates the smallest SC

Table 4. Cointegration Test Results

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistics	0.05 Critical Value	Prob.**
None *	0.216924	77.65254	69.81889	0.0104
At most 1	0.099414	38.77301	47.85613	0.2694
At most 2	0.079291	22.12409	29.79707	0.2917
At most 3	0.052062	8.988975	15.49471	0.3664
At most 4	0.003064	0.487856	3.841465	0.4849

Table 5. *Vector Error Correction Model* (VECM) Results

SHORT-TERM		
VARIABLE	**COEFFICIENT**	**T- STATISTICS**
CointEq1	-0.00183	[-4.05390]
D(LNFIN(-1))	-0.08086	[0.78318]
D(LNFIN(-2))	-0.08062	[3.12660]
D(GWM(-1))	-0.00250	[-0.32884]
D(GWM(-2))	-0.00246	[-0.04959]
D(CB(-1))	-0.00134	[-0.34227]
D(CB(-2))	-0.00133	[0.33933]
D(NPF(-1))	-0.00322	[-0.19169]
D(NPF(-2))	-0.00325	[-1.20925]
D(GDP(-1))	-0.00184	[1.89588]
D(GDP(-2))	-0.00185	[1.15010]
LONG-TERM		
GWM(-1)	-0.13294	**[2.28773]**
CB(-1)	-0.04625	**[-5.45109]**
NPF(-1)	-0.07853	**[-4.17771]**
GDP(-1)	-0.08429	[0.03772]
Cs	-8.153866	