Jurnal ASET
(Akuntansi Riset)

Factors Affecting the Measurement of Intermediation Margin in Islamic Banks in Indonesia

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A B S T R A C T

The purpose of this study is to empirically assess the main factors that affect the bank margin of Islamic operations in Indonesia. Hypothesis testing and data analysis used the Structural Equation Model - Partial Least Square (SEM-PLS. The research sample was conducted on 10 Islamic banks that have a dual banking system in Indonesia. The results of the study proved that the Capital Adequacy Ratio (CAR) had a positive and significant effect on the Net Intermediation Margin (NIM) and the size of the bank had a positive and significant effect on the Net Intermediation Margin (NIM). Meanwhile, Non-Performing Financing (NPF) and Operating Expenses of Operating Income (BOPO) had no effect on the net intermediation margin (NIM) in Islamic Banks. The significant impact of the CAR and the size of the bank showed that there was an analysis of capital policy and product diversification on the bank. The high level of margin in Islamic banks can be an obstacle for Islamic banks to pursue the development process, therefore, there is a need for improvement in terms of liability, asset side, and operational side of the Bank in order to reduce NIM in Sharia Banks. This research used BI rate and inflation as control variables in contrast to other studies that included BI Rate and inflation as independent variables.

A R T I C L E   I N F O

1. INTRODUCTION

The banking sector has a fundamental role in economic development because an important function of banking is to channel funds. Banks distribute funds from parties who have excess funds to those who need funds. Therefore, banks have a role as intermediation institutions. The performances of banks as intermediation institutions are seen by how big the difference between the interest income generated by the bank and the interest expense paid to the lender, otherwise known as Net Interest Margin (NIM) (Barik et al, 2019), and in Islamic banking is called Net Intermediation Margin (NIM). NIM in Islamic banking is based on ethical standards that originate from Islamic beliefs and teachings (Bougatef & Korbi, 2018). NIM indicates how well Islamic banking performs in managing its productive assets. Net Intermediation Margin is related to the measurement of a bank's income and interest expense, which is part of a bank's financial statements presented for external purposes. NIM is used as a key financial performance indicator for banks and is used by bank management, investors, and financial analysts to measure the efficiency of bank credit management, predict profitability and risk of the bank in the future, as well as to monitor the financial performance of the bank in general. Therefore, NIM is one of the important topics in the study of financial accounting, especially in the context of banks and other financial institutions. In addition, this topic is also related to the accounting of Islamic entities because of the interrelation of its object which is an Islamic bank.

In Southeast Asia, the bank is the main source of financing (Doliente, 2005). Based on research by the Financial Services Authority and Singapore DBS, it shows that Indonesia has a high intermediation margin or interest margin. In 2018 Indonesia's interest margin was 5.14%, followed by the Philippines and Thailand at 3.17%, Malaysia at 2.20%, and Singapore at 1.80%. This indicates that a high average NIM in the banking industry shows signs of inefficient financial intermediaries (Hoang Trung & Vu Thi Dan, 2015). This means that the smaller the NIM, the better the intermediation performance of a Bank. Currently, the NIM of Sharia Banks in Indonesia is still high from the NIM policy set by the Financial Services Authority. This can be seen in **Figure 1** as follows:
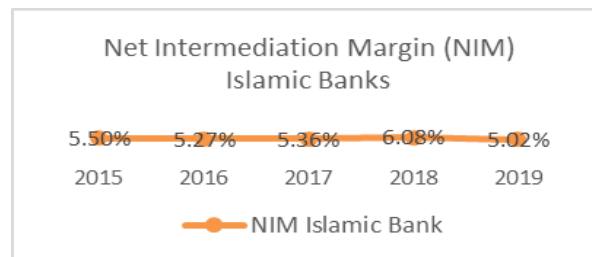
Source: Islamic Bank Financial Statements (2020)
Figure 1. Average development of Sharia Bank NIM in Indonesia

In April 2016 through Circular Letter number 14 / SEOJK.03 / 2016, as well as in 2017 and 2020, the Financial Services Authority determined the policy by providing incentives if banks could reduce NIM below 4.5%. This is done to stimulate bank efficiency and support the development of the expansion of financing or loan disbursements (Sitanggang, 2020). On average, Islamic banks have not been able to reduce NIM to 4.5% as expected by the Financial Services Authority (OJK). This makes it difficult for Islamic banks to compete in the industry because intermediation costs tend to be greater, and this can reduce the public's allure to Islamic banks which results in slowing bank growth (Gusman, 2018).

Previous research has proven that the capital ratio has an influence on increasing the Bank's intermediation margin (Talbi & Bougatef, 2018), on the contrary, financing risk, bank size, and efficiency have an influence on reducing the value of the intermediation margin in the Bank

(Caporale et al., 2017; Dewi & Triaryati, 2017; Hoang Trung & Vu Thi Dan, 2015; Olson & Zoubi, 2011). In addition, it is different from the research studied (Hamadi & Awdeh, 2012; Raharjo et al., 2014) which proved that capital ratios could reduce bank intermediation margins. Conversely, intermediation margins will increase due to financing risk, bank size, and efficiency (Lee & Isa, 2017; Raharjo et al., 2014). This research used BI rate and inflation as control variables in contrast to other studies that included BI Rate and inflation as independent variables, the inclusion of this control variable was to reduce habituation in the study (Detthamrong et al., 2017). In addition, this research focused on Islamic Banks, which most of the previous researchers had studied in Conventional Banks.

The reason behind the determination of Indonesia to be the object of study on the intermediation margin in Sharia Banks is that Indonesia as the country with the highest Muslim population in the world has the ability and potential to advance the Islamic economy, even based on the Global Islamic Finance Report (GIFR) 2019 shows that Indonesia occupies the first position that has the potential to grow the development of Islamic Banking (Masyarakat Ekonomi Syariah, 2019). so, this is interesting to study. From the accounting point of Islamic entities, there are concerns about different interpretations of sharia principles. With the limited standard Islamic accounting standards, it can cause variations in interpretation in applying sharia principles, which can lead to differences in their recognition, measurement, presentation. The results of this study are expected to provide an overview of the measurement of bank income and margin, especially in Islamic banking, so that Islamic banking can determine factors in increasing margin income and also improve the efficiency of financing management.

2. METHODS

This type of research was quantifiable research that examined data in the form of numbers and analyzed them using statistical processing. Quantitative research methods are studies using an empirical approach to collect, analyze and display data in numerical rather than narrative form (Salkind, 2008). The reason for choosing quantitative methods was because this study tested and proved the relationship between variables, variables were measured and operationalized using instruments and analyzed using statistics. Sourced at its explanatory level, this study was included in causal associative research. Causal associative research is research that intends to look at the influence of two or more variables.

The population consisted of all Sharia Commercial Banks in Indonesia operating from 2015 to 2019. Of the 96 Sharia Commercial Banks, only 10 banks were used for the sample, namely banks that had a dual system, including Bank Victoria Syariah, BRI Syariah, BJB Syariah, BNI Syariah, Bank Syariah Mandiri, Bank Mega Syariah, Bank Panin Syariah, BCA Syariah and Bank Maybank Syariah.

The data collection technique in this study was electronic documentation. Researchers used secondary data sourced from the official websites of Sharia Commercial Banks, the Websites of the Financial Services Authority (OJK), and Bank Indonesia regarding annual financial statements from 2015 to 2019 in the form of Net intermediation margin (NIM) data, Capital adequacy ratio (CAR), Net performing financing (NPF), Operating expenses and operating income (BOPO), Bank Size, BI Rate, and Inflation.

Hypothesis testing and data analysis used the Structural Equation Model - Partial Least Square (SEM-PLS) method. SEM-PLS is a relevant analytical tool to use for various reasons, namely that the use of SEM-PLS does not require a large number of samples, and there is no necessity for the assumption of normality (Hair et al., 2011). The tool used in the research was in the form of WarpPLS 7.0 Software.

The study model studied has a formative construct, namely: The relationship of the second order with the first order used as an indicator. The equation in the study is formulated as follows:

$$Yit = \propto + \beta 1 X 1 it + \beta 2 X 2 it + \beta 3 X 3 it + \beta 4 X 4 it + \beta 5 X 5 it + \beta 6 X 6 it + eit$$

Information:

Y = Sharia NIM
∝ = Constant
β = Coefficient
X1 = CAR
X2 = NPF
X4 = Bank Size
X5 = BI Rate
X6 = Inflation

3. RESULTS AND DISCUSSION

The results of the first analysis of the data are shown in **Table 1** and **Table 2**. Table 1 shows the goodness of fit achieved by this research model. **Table 1** presents a summary of the influence of independent variables and control variables on dependent variables.

Table 1. Model Fit and Quality Indices

Description	Cut off Value	Results of the Model	Infor-mation
Average block VIF (AVIF)	Acceptable if <= 5, Ideally <= 3.3	1.727	Fit
Average full collinearity VIF (AFVIF)	Acceptable if <= 5, Ideally <= 3.3	1.942	Fit
Tenenhaus GoF (GoF)	Small >= 0.1, Medium >= 0.25, Large >= 0.36	0.841	Fit
Sympson's paradox ratio (SPR)	Acceptable if >= 0.7, Ideally = 1	0.833	Fit
R-squared contribution ratio (RSCR)	Acceptable if >= 0.9, Ideally = 1	0.993	Fit
Statistical suppression ratio (SSR)	Acceptable If >= 0.7	0.833	Fit
Nonlinear bivariate causality direction ratio (NLBCDR)	Acceptable If >= 0.7	0.833	Fit
Average path coefficient (APC)= 0.210, P=0.028			Fit
Average R-squared (ARS)= 0.707, P<0.001			Fit
Average adjusted R-squared (AARS)= 0.666, P<0.001			Fit

Source: Output model fit and quality indices WarpPLS 7.0 (2022)

The model shows a GoF worth 0.841 greater than 0.36, meaning the fit model is in a large category. Sympson's paradox ratio (SPR) index resulted in 0.833 greater than the specified 0.7; The resulting R-squared contribution ratio (RSCR) index of 0.993 is greater than the specified 0.9; The resulting Statistical suppression ratio (SSR) index was 0.833 greater than the specified 0.7; The resulting Nonlinear bivariate causality direction ratio (NLBCDR) index of 0.833, greater than the required 0.7, means that there is no causality problem in the built model.
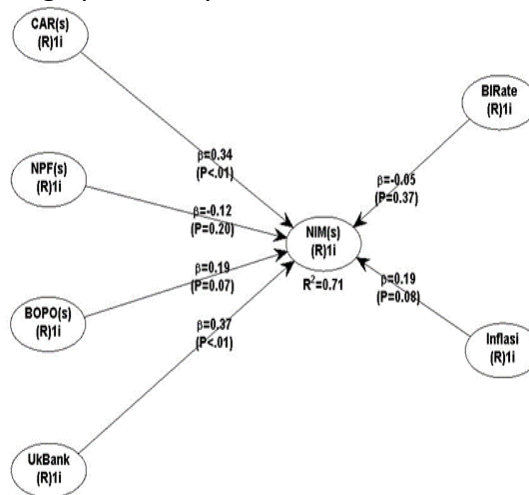
Table 2. Hypothesis Analysis and Testing Results

Variabel Independen dan Variabel Kontrol	Variabel Independen: NIM	
	Path Coeff.	P-Value
Variabel Independen		
CAR	0.339	0.004*
NPF	-0.116	0.197
BOPO	0.194	0.073
Ukuran Bank	0.373	0.002*
Variabel Kontrol		
BI Rate	-0.047	0.368
Inflasi	0.191	0.077

Description: * statistically significant at 5%.
Source: Output model WarpPLS 7.0 (2022)

Then the results of a thorough path analysis are shown with an outline of the **Figure 2**.

Source: Output model WarpPLS 7.0 (2022)
Figure 2. Hypothesis Test Results

Table 2 above shows the results of WarpPLS analysis on path coefficients and p values.1) CAR on NIM has a coefficient value of 0.339 with a P-value of 0.004 this means that the effect of CAR on NIM is positive and significant; 2) the effect of NPF on NIM has a coefficient value of -0.116 with a P-value of 0.197 which means that the influence of NPF on NIM is negative and insignificant; 3) the effect of BOPO on NIM has a coefficient value of 0.194 with a P-value of 0.073, this means that BOPO has a positive and insignificant effect on NIM; 4) the effect of the Bank's size on NIM has a value of 0.373 with a P-value of 0.002, meaning that the Bank Size is positive and significant. Furthermore, it can be known that: a). The effect of the BI Rate control variable on NIM has a coefficient value of -0.047 with a P-value of 0.368. These results indicate that the BI Rate has a negative and insignificant influence on NIM; b). The effect of the Inflation control variable on NIM has a coefficient value of 0.191 with a P-value of 0. 077. These results proved that Inflation has a positive and insignificant effect on NIM.

3.1. Capital Adequacy Ratio

The results of the analysis showed that CAR had a positive and significant effect on the NIM of Islamic Banks, meaning that hypothesis 1 was rejected. This research was in line with a number of previous researchers who had revealed there was a significant positive effect on NIM as results of CAR. A positive relationship signified that the greater the ratio of capital deposited by the Bank, making the Islamic Banking NIM increased (Hoang Trung &; Vu Thi Dan, 2015; Nasserinia et al., 2015). The greater the ratio of capital or funds held by Islamic Banks was, the greater the value of NIM was.

CAR is often used by investors to see if the bank has enough capital to cover the various risks of losing its business. A large capital ratio indicates that the bank can reserve large funds for large financing disbursements as well. Thus, the bank will get a higher profit share. Therefore, banks that have a high CAR will have an impact on high NIM as well. In addition, a high CAR indicates that an Islamic bank has a stronger financial position and allows the bank to overcome various risks of loss of its business, which can lead to higher returns on its assets. A high CAR can give depositors and investors greater confidence in the security and stability of the bank in question. This can reduce the cost of funds of banks because depositors and investors tend to choose banks that are considered safer and more stable. Lower cost of funds can increase NIM because banks can offer lower fees on funds raised and still generate sufficient margins. The results of this research were in line with the research carried out Valverde & Fernández (2007); Nasserinia et al. (2015); and Addai et al., (2023), which stated that CAR had a positive and significant effect on NIM.

3.2. Net Performing Financing

The negative and insignificant influence of NPF on Islamic banks, then caused hypothesis 2 to be rejected, shows that the greater the NPF value, the more the NIM decreases. The negative result indicates that the higher the problematic financing, the bank's income will decrease. Non-performing financing indicates that there is a debtor who has failed to pay off his responsibilities. The failure of the debtor will have an impact on the decrease in profits obtained by the Bank. The decrease in margin obtained by the Bank has an impact on the decline in the NIM of a Bank, conversely, if the NPF is getting smaller, the NIM is getting bigger due to small problematic financing, then the margin gain will become larger. The bank must seek to recover the losses it faces through the establishment of higher margins. The insignificant NPF in NIM in Islamic Banks was caused by extreme data, where the NPF value in 2016-2018 had a very low value of 0%, so this was very likely that the NPF was not significant to the NIM in Islamic Banks. The results of this research were supported by research conducted (Williams, 2007) which stated that NPF had a negative and insignificant effect on NIM. In contrast to the research results of Brock & Rojas (2000) and Maudos & Solis (2009) which showed significant results.

3.3. Operating Expenses and Operating Income

Related to the effect of BOPO on NIM, the results of this study could not prove that the presence of BOPO has a function in increasing NIM, this was evidenced by the presence of positive and insignificant influences on NIM. The results of this study were in line with (Iloska, 2014), this positive impact indicated that the higher the operating costs, the greater the NIM owned by the Islamic Bank. When a Bank bears greater operating costs, it rationally sets the margin size at a high rate as well, because high margins require the Bank to cover operating costs.

According to Lee &; Isa (2017) in the absence of market forces and all risks, a Bank needs to cover operational costs and is a function of deposits taken and loans given. Therefore, banks operating at higher BOPO levels need to charge higher NIM as well. BOPO did not have a significant impact on NIM, this was due to extreme data in 2016, namely low NIM while the BOPO

ratio was very high. This was very likely to cause BOPO not to have a significant impact. Although the research results do not show a significant relationship, BOPO, which shows efficiency is important for Islamic banks because it can reduce costs and reduce margins, so that it can benefit consumers (Maudos & Solis, 2009; Angori et al, 2019).

3.4. Bank Size

The influence of the size of the bank on NIM showed results that had a positive and significant effect meaning that hypothesis 4 was rejected. This indicates that the larger the size of the bank, which can be seen from the total assets used for its operational activities, will have an impact on increasing its operating costs. Larger banks have larger operations that are more vulnerable to risk, they need additional margin to compensate (Abdeljawad & Bahlaq, 2023). Banks can also create a much more diverse product diversification compared to banks that have a small scale. The diversification of these products can potentially cause operational costs in it. This causes the bank to have to be able to generate a larger margin value to be able to cover its high operating costs.

Similar to the findings Shawtari et al. (2019), which states that a large bank size indicates a position of dominance in the market, therefore, a large bank size indicates a higher monopoly ability. The higher level of dominance will have an impact on increasing the cost burden. Therefore, the bank's margin will increase to reduce or cover the possibility of greater costs. In addition, the positive direction of the bank size indicates the higher the level of company size then able to increase NIM, this is due to the diversification of diverse products. In addition, large banks also have the ability to attract larger customers and obtain funds at a lower cost, because of the trust and better image of the bank. This can increase the bank's margin and can ultimately increase NIM. Large banks also have the ability to offer more complete financial products and services, such as Islamic banking, wealth management, and investment banking. This can expand the bank's revenue sources and increase its profitability. The results of this study were in line with the research conducted by (Dewi & Triaryati, 2017) which stated that the Size of the Bank had a positive and significant effect on NIM in Islamic Banks.

3.5. BI Rate and Inflation Control Variables

The BI rate-controlled variable had a negative and insignificant influence on the net intermediation margin. This negative direction indicates that the decline and increase in the BI rate does not affect the margins of Islamic banks. This is because Islamic banks do not refer to interest rates (Talbi &; Bougatef, 2018). This research is similar to research (Hidayati, 2014; Setiawan et al., 2019) who stated that interest rates have a negative insignificant effect on the NIM of Islamic Banks. This increase in the BI rate does not directly affect Islamic banks, because the implementation of Islamic Bank business operations is not based on interest rates. Furthermore, Islamic Bank has implemented an internal strategy, namely increasing the profit-sharing ratio it offers in anticipation of an increase in interest rates. This indicates that the higher the BI Rate will reduce the bank's margin level. The BI rate is still used by banks as a benchmark in determining their margins. When interest rates rise, people tend to be reluctant to borrow business capital or funds from banks. The low interest of people borrowing bank funds will have an impact on low NIM.

Inflation-controlled variables had a positive and insignificant influence on net intermediation margins. The high inflation rate causes the value of various commodities to increase and will also have an impact on financing products in Islamic banks experiencing an increase in margins. Thus, the increase in inflation had an impact on increasing the NIM. Inflation generally has a higher impact on the revenue share than on the cost part, thus improving the Bank's (NIM) performance.

The impact of changes in inflation depends on the Bank's ability to anticipate or not (Pasiouras &; Kosmidou, 2007) if the full inflation rate can be anticipated, then the interest rate and profit-sharing rate charged by the Bank will increase to cover the risk due to inflation.

In this study, the effect was insignificant. This was because the inflation rate could be predicted by the Bank properly so that the Bank could adjust the profit-sharing rate appropriately, however, the increase did not occur significantly.

4. CONCLUSION

The results show that CAR, BOPO, bank size, and inflation had a positive influence on NIM, while NPF and interest rates had a negative influence on NIM. The higher value of CAR allows banks to have high reserves of funds and high financing distribution as well. Thus, the obtained NIM will be higher. Likewise, with BOPO, the higher BOPO has an impact on high NIM. When a bank bears greater operating costs, it will rationally establish a high margin size as well. With high margins, it allows banks to cover their operating costs. The high NIM is also influenced by the size of the bank. The larger the size of the bank, judging from its total assets, will have an impact on high operating costs, the more productive the bank's assets are. This will trigger a high NIM value as well. Likewise, a high inflation rate will trigger an increase in NIM due to the rising value of commodities as well. NPF and a high BI interest rate will lower the NIM value. The higher the problematic financing will cause a decrease in NIM in Islamic banks, similarly, high-interest rates will cause people to be reluctant to apply for financing at Islamic banks, so the NIM in Islamic banks will decrease.

Solutions to reduce margin intermediation costs can be through the liability side, asset side and operational side. In terms of liabilities, it can be done by increasing delivery channels (ATMs, E-banking, internet banking) which are all based on savings and current accounts. On the assets side, it can carry out recovery and restructuring strategies related to problematic financing to reduce margin intermediation costs. In addition, banks can increase fee-based income (ujrah). In difficult situations to reduce bank margin intermediation costs, efforts to increase fee-based income can be an alternative to cost-saving efforts and finally, the operational side, namely banks need to suppress the value of BOPO.

This study has the limitation of using only a few variables to be tested in looking at margin determinants and two macroeconomic variables. In addition, the sample taken was only banks that had a dual banking system. Therefore, it is expected that there will be many other researchers who carry out deeper research on the determinants of bank margins, especially Islamic banking, either by increasing the number of samples or certain factors such as Risk Factor, Market Share, overhead cost efficiency, FDR, LDR, GDP, and others.

For the development of accounting science, this research makes a major contribution in calculating the appropriate and competitive margin percentage by considering the factor of the capital adequacy, NPF, BOPO, Bank Size, BI rate and Inflation. This will have an impact on the presentation of more reliable financial performance reports and the growth of Islamic banking business.

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