


MODERATION OF INTEREST RATE POLICY TOWARDS BANKING PROFITABILITY

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ARTICLE INFO	ABSTRACT
<p>Article history:</p> <p>Received 20 February 2023</p> <p>Accepted 04 May 2023</p>	<p>Purpose: The study aims to analyze the factors that affect the profitability of the banking industry, by making interest rate policy a moderation.</p>
<p>Keywords:</p> <p>Profitability; Capitalization; Liquidity Risk; Credit Risk; Interest Rate Policy.</p>	<p>Design/methodology/approach: This study uses <i>Structural Equation Modeling (SEM)</i> analysis with panel data from 31 conventional banks in Indonesia during the period 2017-2021 and groups banks based on their core capital into 3 bank groups, namely small banks, medium banks and large banks.</p>
	<p>Findings: The results showed that capitalization had a significant negative effect on profitability for small banks and medium banks, significantly positive for large banks. Liquidity risk has a significant negative effect on the profitability of large banks. Credit risk has a negative direction towards profitability, significant for small banks and large banks. The interest rate policy is significantly positive for profitability for small banks and mediating banks, negative for large banks. Interest rate policy is only able to moderate capital and credit risk to profitability for small banks. The results of the study explained that small banks are more sensitive and quick to react to changes in interest rate policy than large banks.</p> <p>Research, Practical & Social implications: The research period includes the pandemic period of 2020 - 2021 where the banking industry is impacted by it, so it is possible that there are several anomalous research results. The research implications suggest that banks as fundraisers and dealers are highly dependent on interest rate policy to generate profitability.</p> <p>Originality/value: This study examines banks based on the core capital group owned, which is one of the first studies to include interest rate policy as a moderation variable that affects profitability.</p>
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MODERAÇÃO DA POLÍTICA DE TAXAS DE JURO PARA A RENTABILIDADE BANCÁRIA

RESUMO

Objetivo: O estudo visa analisar os fatores que afetam a rentabilidade do setor bancário, tornando a política de juros uma moderação.

Design/metodologia/abordagem: Este estudo usa a análise de Modelagem de Equações Estruturais (SEM) com dados de painel de 31 bancos convencionais na Indonésia durante o período de 2017-2021 e agrupa os bancos com base em seu capital principal em 3 grupos de bancos, ou seja, pequenos bancos, bancos médios e grandes bancos.

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Resultados: Os resultados mostraram que a capitalização teve um efeito negativo significativo na lucratividade para bancos pequenos e bancos médios, significativamente positivo para bancos grandes. O risco de liquidez tem um efeito negativo significativo na rentabilidade dos grandes bancos. O risco de crédito tem uma direção negativa para a rentabilidade, significativa para pequenos bancos e grandes bancos. A política de taxa de juros é significativamente positiva para a rentabilidade dos bancos pequenos e bancos intermediários, negativa para os grandes bancos. A política de taxas de juros só é capaz de moderar o risco de capital e crédito à lucratividade dos pequenos bancos. Os resultados do estudo explicaram que os pequenos bancos são mais sensíveis e rápidos para reagir a mudanças na política de taxas de juros do que os grandes bancos.

Pesquisa, implicações práticas e sociais: O período de pesquisa inclui o período pandêmico de 2020 - 2021 em que o setor bancário é afetado por ele, portanto, é possível que haja vários resultados de pesquisa anômalos. As implicações da pesquisa sugerem que os bancos, como captadores de recursos e negociantes, são altamente dependentes da política de taxas de juros para gerar lucratividade.

Originalidade/valor: Este estudo examina os bancos com base no núcleo do grupo de capital possuído, que é um dos primeiros estudos a incluir a política de taxa de juros como uma variável de moderação que afeta a lucratividade.

Palavras-chave: Rentabilidade, Capitalização, Risco de Liquidez, Risco de Crédito, Política de Taxas de Juros.

MODERACIÓN DE LA POLÍTICA DE TIPOS DE INTERÉS HACIA LA RENTABILIDAD BANCARIA

RESUMEN

Propósito: El estudio tiene como objetivo analizar los factores que afectan la rentabilidad de la industria bancaria, al hacer de la política de tasas de interés una moderación.

Diseño/metodología/enfoque: este estudio utiliza el análisis Structural Equation Modeling (SEM) con datos de panel de 31 bancos convencionales en Indonesia durante el período 2017-2021 y agrupa a los bancos en función de su capital básico en 3 grupos de bancos, a saber, bancos pequeños, bancos medianos, y grandes bancos.

Hallazgos: Los resultados mostraron que la capitalización tuvo un efecto negativo significativo en la rentabilidad para los bancos pequeños y medianos, y significativamente positivo para los bancos grandes. El riesgo de liquidez tiene un efecto negativo significativo en la rentabilidad de los grandes bancos. El riesgo de crédito tiene una dirección negativa hacia la rentabilidad, significativa para bancos pequeños y bancos grandes. La política de tasas de interés es significativamente positiva para la rentabilidad de los bancos pequeños y los bancos intermediarios, y negativa para los bancos grandes. La política de tasas de interés solo puede moderar el riesgo de capital y crédito a la rentabilidad de los bancos pequeños. Los resultados del estudio explicaron que los bancos pequeños son más sensibles y reaccionan más rápido a los cambios en la política de tasas de interés que los bancos grandes.

Implicaciones de investigación, prácticas y sociales: el período de investigación incluye la período pandémico de 2020 - 2021 donde la industria bancaria se ve afectada por ella, por lo que es posible que haya varios resultados de investigación anômalos. Las implicaciones de la investigación sugieren que los bancos, como recaudadores de fondos y distribuidores, dependen en gran medida de la política de tasas de interés para generar rentabilidad.

Originalidad/valor: Este estudio examina los bancos en función del core capital que posee el grupo, que es uno de los primeros estudios en incluir la política de tasas de interés como una variable de moderación que afecta la rentabilidad.

Palabras clave: Rentabilidad, Capitalización, Riesgo de Liquidez, Riesgo Crediticio, Política de Tipos de Interés.

INTRODUCTION

Banking is a financial institution that functions to collect and distribute public funds. Both microeconomic activities and macroeconomic activities of an economy are highly dependent on the banking sector (Rahman et al., 2015). Banks are provider of funds, where their stability is relevant and important for the financial system (Menicucci & Paolucci, 2016). The main role of the banking system is to help the flow of funds from savers to borrowers

(Rahman *et al.*, 2015), (Ali & Puah, 2019).

Banks with their main activities collect and distribute data, inseparable from interest rate policies, both interest on deposits and interest on loans. The interest rate set by the bank refers to the Bank of Indonesia interest rate (BI rate). Interest rate is the income from banks obtained from the difference in credit interest and interest on savings or deposits. The greater the credit interest, the greater the income earned by the bank from the funds it lends to the credit recipient. On the other hand, with savings interest, the greater the interest on deposits or savings given by the bank, it means that the greater the cost or expenditure that the bank must give to the saver. Bank performance has been a very interesting topic for at least thirty years because it is closely related to the overall health of the economy (Veeramoothoo & Hammoudeh, 2022). One of the indicators for assessing the financial performance of a bank is to look at the level of profitability achieved. The profitability of banks in financial institutions is a growing concern for regulators and bank supervisors (Ali & Puah, 2019). Because the level of profitability is a reflection of the extent to which a company or bank can run its business efficiently. According to Alhassan, (2015) the higher the profitability of the bank, the better the financial performance of the bank. Bank profitability is a key factor shaping financial development and economic growth (Ongore & Kusa, 2013) (Osuagwu, 2014) Alshatti, (2016) interprets bank profitability as the ability to generate profits in excess of the necessary costs, in this case relying on the bank's own capital

Internal or microeconomic factors that affect banking profitability are among others determined by capital. Capital adequacy is an important determinant of profitability because banks with high capital adequacy ratios are more likely to borrow less capital and have lower risk and higher creditworthiness than other banks, thereby reducing the costs associated with funding, thereby increasing their profitability. Theoretically, there is a positive relationship between the ratio of capital adequacy and profitability. The strength of modal (both regulatory and equity capital) has a positive and significant effect on bank profitability (Öhman & Yazdanfar, 2018). Banks with high capital adequacy ratios tend to use their capital more efficiently than other banks (Chiaramonte & Casu, 2017). For economies of scale in the banking sector suggests that small and medium-sized banks will face certain challenges in an environment characterized by reduced profitability and increased competition (Blatter & Fuster, 2022).

Bank bag profitability will be related to a management approach to risk (Menicucci & Paolucci, 2016). Bank risk is closely related to credit risk and liquidity risk. Credit risk is one

of the main variables affecting the performance of banks, as it indicates the probability of loss due to the failure of the debtor in fulfilling his obligations to the bank. Credit risk is an important factor in the banking industry. Some researchers found a significant relationship between credit risk and banking profitability (Rahman *et al.*, 2015), (Million *et al.*, 2015), (Tan, Y., Floros, C., & Anchor, 2017). However, some studies also report an insignificant relationship between bank profitability and credit risk (Ali & Puah, 2019), (Trad *et al.*, 2017), (Aburime, 2011).

Banks with a good level of liquidity will have the possibility of being able to fulfill their obligations (Petria *et al.*, 2015). Liquidity risk refers to the failure of a company to meet its short-term obligations. High liquidity lowers bank profitability due to lower returns on liquid assets. Empirically, research (Petria *et al.*, 2015), (Tan, Y., Floros, C., & Anchor, 2017), (Jaber & Al-khawaldeh, 2014) states a significant influence between liquidity risk and banking profitability. In contrast to (Ali & Puah, 2019) which states that it has no significant effect

This study aims to analyze the effect of capital, liquidity risk and credit risk on the profitability of banking by using interest rate policy as a moderation variable. The author examines the financial condition of banks comparing banks based on the level of banking capital, namely small banks, medium banks and large banks. The positioning of the study in compared to previous studies is in the addition of interest rate policy moderation variables in the research model.

LITERATURE REVIEW

This research is based on the Paton entity theory (1962) where companies (banks) are considered their own entities that need to always improve their performance. In addition signalling theory was developed by Ros in 1997. The relationship between *signaling theory* and profitability is that good company profitability can be a positive signal and vice versa if profitability is low it can be a negative signal. This is because the motivation of investors to invest is to make a profit or profit, so companies that have poor performance tend to be given away from investors.

Profitability

The bank's profitability performance indicates the success of management and is one of the most important performance indicators for investors. Changes in profitability contribute to economic progress, since profits influence the investment and savings decisions of companies (Menicucci & Paolucci, 2016). Baresa *et al.*, (2016), stated that profitability has an important

meaning in its efforts to maintain the long-term survival of the company, because profitability indicates whether a company has good prospects in the future.

Menicucci & Paolucci, (2016) define profitability as the ability to execute performance within a bank to make a profit year after year. Lartey *et al.* , (2013) says that profitability has a meaning as a bank's ability to generate more revenue than costs, including for its survival. Kumbirai & Webb, (2010), Alshatti, (2016) say that a bank's profitability can be interpreted as the ability to make a profit in excess of the necessary costs, in this case it depends on the bank's own capital. The higher the profitability of the bank indicates the better the financial performance owned by the bank (Alhassan, 2015). Bansal *et al.* ,(2018) says that bank profitability can be measured by Return *on Assets* (ROA) ratio, while (Fidasoski *et al.*, 2016) use ROA and NIM as measures of banking profitability.

Capital

Capital is one aspect of assessing the health of a bank. Bank capital is a fund invested by the owner with the aim of financing the bank's business activities with a predetermined amount. Like other companies, bank also has capital that is used to finance the sharing of things, which is divided into core capital and complementary capital. Core capital is capital on the equity side, while complementary capital is capital sourced from loans and asset revaluation reserves as well as allowance reserves for the write-off of productive assets (Sudarmanto *et al.*, 2021). The greater the core capital owned by the bank, the greater the level of security of customer funds managed by the bank (Putri Hariani, 2021)

A high level of capital can protect savers and increase public confidence in the bank which can ultimately increase the bank's income (Fathimatu *et al.*, 2019). With increasingly large capital, it can allow banks to increase the distribution of loans provided so that it will generate income from the interest on these loans, which in turn can increase profits or profitability. In addition, with the ability of large capital, banks are free to use their funds to generate productive assets other than credit and can carry out profitable investment activities. The increase in productive assets and profitable investments will certainly have the potential for additional income for banks which will later increase banking profits so that profitability is higher.

Liquidity Risk

Liquidity is the ability of a bank to meet its financial obligations in the short term or the

ability of a bank to meet its financial obligations at the time it is billed (Hery, 2019). Liquidity risk arises from the fundamental role of banks in the transformation of short-term deposit maturity into short-term and long-term loans (Deléchat *et al.*, 2012). Liquidity risk is an important source of risk for commercial banks (Chen *et al.* , 2021). Liquidity risk is a risk that occurs due to the bank's inability to fulfill its maturing obligations from sources of funding cash flows and or liquid assets that can be used, without disturbing the bank's activities, and financial condition (Winanti, 2019).

Liquidity risk is also often interpreted as a potential loss obtained as a result of the bank's inability to meet its obligations, either funding existing assets or funding the growth of bank assets without incurring costs or experiencing losses that exceed the bank's tolerance. According to Hery, (2019) liquidity risk indicates how far the bank's ability to repay withdrawals made by depositors by relying on the credit provided as a source of liquidity.

Credit Risk

One of the main activities of banks to increase profitability is the provision of credit. In addition to being a source of bank income, lending activities are vulnerable to risks which can be one of the main causes of banks facing problems and struggling with bankruptcy (Darmayanti & Prasetyo, 2015). A common problem in lending activities is the customer's inability to perform their obligations to the creditor.

Credit risk is an important factor in the bank industry, usually measuring credit risk through the provision of loan losses (Ali & Puah, 2019). Credit risk is a reasonable risk considering that one of the bank's core businesses itself is the provision of credit. In other words, credit risk is one of the core risks associated with a bank's main income-generating activity (Stanley Isanzu, 2017). Credit risk occurs due to the failure of the customer or other parties to fulfill obligations to the bank in accordance with the agreed agreement.

Interest Rate Policy

The government's monetary policy in controlling the amount of money in circulation is through an increase in bank interest rates. The government regulates interest rate policy through the determination of the Bank Indonesia interest rate (BI rate) which is reference for banks in setting their interest rates. The main income of banks is from interest earned from the interest rate on credit and interest on savings or deposits. The greater the interest on the loan, the greater the income earned by the bank from the funds it lends to the credit recipient. On the other hand,

with deposit interest, the greater the interest on deposits or savings provided by the bank, it means that the greater the costs or expenses that the bank must give to the depositor (Hery, 2019).

The determination of interest rates is an operational policy that must be issued by banks in creating profits that can then affect the level of profitability of a bank (Fathimatu *et al.*, 2019). According to Crowley (2007), interest rates are a bridge or link between income and capital, the price that borrowers pay for the use of money borrowed from financial institutions.

Effect of Capital on Profitability

A solid capital structure is essential for financial institutions, as it provides additional strength to deal with financial crises and to consolidate security for depositors during unstable macro conditions. Banks with a weak capital structure can hardly survive in dangerous situations, so it is very important for financial institutions to maintain the strength of higher capital structures to bear losses and to eliminate the risk of bankruptcy during difficult times (Menicucci & Paolucci, 2016). The high level of capital shows the bank's ability in capital so that it can certainly protect savers and increase public confidence in the bank which in turn can increase the bank's income (Fathimatu *et al.*, 2019). The greater the level of capital adequacy, the ability of banks to obtain profits will be greater, on the contrary, the smaller the level of capital adequacy, the lower the laba obtained (Malik, 2021). With increasingly large capital, banks have the possibility to increase lending so that they are able to earn income from credit interest which will increase profits. A high level of capital aversion can increase profitability (Rahman *et al.*, 2015). In addition, with a large capital, banks will be more free to use their funds that can be allocated to generate productive assets other than credit and carry out profitable investment activities. The increase in productive assets and profitable investments can potentially provide additional income for banks which will later increase banking profits so that profitability is higher. The results of the study (Bansal *et al.*, 2018) stated that the capital ratio has a significant effect on profitability, and the findings (Zarrouk *et al.*, 2016) show that profitability is positively influenced by the level of capital, as well as (Fidanoski *et al.*, 2016) found a positive influence on the ratio of capital adequacy to bank profitability.

H1: Capital has a significant effect on banking profitability.

Effect of Liquidity Risk on Profitability

Liquidity risk is the ability of banks to meet their short-term obligations by having adequate sources of liquidity. If the bank does not have adequate sources of liquidity, then the bank may have difficulty in fulfilling its obligations and this can affect the bank's image and public trust. This can affect the profitability of banks because it can reduce the level of deposits and financing, thereby reducing bank income. In addition, if the bank has to use more expensive sources of liquidity to fulfill its obligations, then this can increase bank costs and reduce profitability. Therefore, liquidity risk must be taken into account and action taken to minimize this risk.

The liquidity of the company is important to investors, creditors, and other stakeholders, as it demonstrates the ability of banks to provide liquid funds to support the company's activities especially to meet short-term obligations. In relation to profitability according to Karim *et al.*, (2021) liquidity affects profitability positively so it is very important for a company to have a good liquidity ratio. Liquidity Risk arises due to the Bank's inability to meet obligations that fall from high-quality sources of cash flow funding and/or liquid assets that can be collateralize, without disrupting the Bank's activities and financial condition. Research on this risk, among others, was conducted by (Ali & Puah, 2019), (Tan, Y., Floros, C., & Anchor, 2017) which stated that liquidity risk has a significant effect on profitability.

H2: Liquidity risk has a significant negative effect on banking profitability

Effect of Credit Risk on Profitability

Based on the theory of revenue anticipation, banks can disburse long-term loans whose repayment is scheduled according to a predetermined time. Credit payments will be a source of cash flow for banks and liquidity needs will be met. However, in disbursing their credit, banks often face various problems, such as non-payment of the credit that has been disbursed.

Credit risk is one of the core risks associated with a bank's main income activity. Risk management is essential for banks to maintain their profitability. Because the core activity of a bank is the creation of credit, so this makes credit risk unavoidable. Credit risk is expected to arise when the borrower is unable to meet his obligations regarding future cash flows (Siddique *et al.*, 2022). The negative impact of credit risk on bank profitability is that if the number of non-performing loans is large, it will increase banking costs and can further result in a decrease in bank profitability (Tan, Y., Floros, C., & Anchor, (2017). Therefore, it is clear why banks need to manage credit risk because it is important for the survival and profitability of banks

(Stanley Isanzu, 2017). According to Javaid (2016) credit risk is the main factor that decreases in bank profitability. Effective credit risk management in the banking sector improves profitability (Siddique *et al.*, 2022).

Research on this risk, among others, conducted by (Million *et al.*, 2015), (Tan, Y., Floros, C., & Anchor, 2017) states that credit risk has a significant effect on profitability, on the contrary (Ali & Puah, 2019), (Aburime, 2011) states credit risk has no significant effect.

H3: Credit risk has a significant effect on banking profitability

Effect of Interest Rate Policy on Profitability

In macroeconomic theory, interest rates are one of the factors that can affect the level of profitability of banks. The interest rate is percentage of the capital borrowed from outside parties or the level of profit earned by the depositor in the bank or the level of costs incurred by the investor who invested his funds in the stock. Interest rate adjustments increase income and increase bank profitability (Tan, Y., Floros, C., & Anchor, 2017).

Low interest rates and intense competition between banks put pressure on bank interest margins and therefore negatively affect bank profitability (Trujillo-Ponce 2013). Banks with riskier loans and higher interest rates to achieve profitability show a positive relationship, regional banks are more negatively affected by interest rate risk (Javaid, 2016).

Interest income has contributed positively to the rate of profit, most banks rely on the performance of borrowed assets as a source of income and profit (Das & Uppal, 2021). When the economy is doing poorly, the central bank may decide to lower the interest rates, affect the bank's ability to provide loans in the end, affect the profitability of the bank, the main determining factor for ensuring financial stability (Campmas, 2020)

Based on previous research, interest rates are more likely to influence profitability than other macro factors (Junaedi, 2017). High real interest rates are associated with higher interest margins and profitability (Fidanoski *et al.*, 2016). This is supported by research conducted by the report (Fathimatu *et al.*, 2019), (Almaqtari *et al.*, 2019), (Boahene *et al.*, 2012), (Borio *et al.*, 2015) stating that interest rates have a positive effect on banking profitability. On the contrary (Campmas, 2020) states the negative impact of interest rates on profitability.

H4: Interest rate policy has a significant positive effect on the profitability of banking bags

The Effect of Capital on Profitability Moderated by Interest Rate Policy

When the bank as a company has a large capital, it will be easier for the bank to develop its business more optimally both in operational and expansion activities so that the bank's performance will increase and will have an impact on increasing bank profitability. When there is an increase in interest rates, this will have an impact on bank profitability, where if the difference in opinion n interest on loans (credit) is greater than the interest on deposits (savings) it will be able to increase banking profitability and vice versa. However, in relation to bank capital, it needs to be seen in terms of the source of capital of the bank itself, where when the modal bank is sourced a lot from foreign capital, the increase in interest rates will increase the burden on the bank company to pay its debts where there is an increase in the interest rate on loans paid or an increase in the cost of capital, then the bank's income allocated to me The interest rate on the loan will increase, which will reduce the bank's profitability level. In general, the ratio of capital and nominal interest rates is positively related to profitability (Fidasoski *et al.*, 2016).

H5: Interest rates are able to moderate the effect of capital on banking profitability

The Effect of Liquidity Risk on Profitability Moderated by Interest Rate Policy

In ensuring banking operations in accordance with its function as a financial institution that collects and distributes funds, banks must ensure the availability of liquid funds that will be distributed to customers either in the form of loans or loans or availability when customers withdraw their savings. The interest rate on savings and loans will have an impact on the level of liquidity in the banking industry, where when the interest rate on savings increases, people will be more interested in keeping their funds in the bank, as a result of which the bank's cash inflow increases or the level of liquidity increases, thus having an impact on increasing profitability.

Next, when the loan interest rate increases, customers will experience an increase in credit or loan interest payments, so that it becomes an additional burden for customers and can cause problems in credit payments from the customer or can cause bad or non-performing loans. If there are many non-performing loans, the bank's cash inflow will be disrupted, so that likuid funds will decrease and bad loans will increase, and in the end will reduce the level of profitability.

H6: Interest rates are able to moderate the effect of liquidity risk on banking profitability

The Effect of Credit Risk on Profitability Moderated by Interest Rate Policy

Risk management is very important for banks to maintain profitability. Since the bank's core activity is credit creation, this makes credit risk unavoidable. As a result, credit risk is one of the core risks associated with the bank's main income activity. Much of the banking literature states that most bank losses are the result of non-performing loans. (Stanley Isanzu, 2017). Therefore, banks manage credit risk primarily because they are critical to the bank's survival and profitability. Bank management in addition to having to emphasize on maintaining a higher capital base also needs to reduce bad loans (Ghosh & Saima, 2021). Therefore, banks should concentrate on maintaining not only a high capital base but also a low NPL.

Monetary policy that stimulates interest rates automatically helps to lower the high NPL ratio (Siddique *et al.*, 2022), there by boosting the level of banking profitability. Higher interest rates negatively impact the company's balance sheet, raise agency costs, and lower credit allocation efficiency (Mahrous *et al.* , 2020) Low interest rates on loans can affect more loans, while high interest rates have a negative impact on the borrower's balance sheet (Bonfi & Soares, 2014). Rahman *et al.*, (2015) stated that long-term interest rates are an important factor of bank profitability The decrease in interest rates has a positive impact on macroeconomic conditions that will support banks by reducing funding costs and improving borrowers' creditworthiness, thus impacting profitability (Das & Uppal, 2021b)

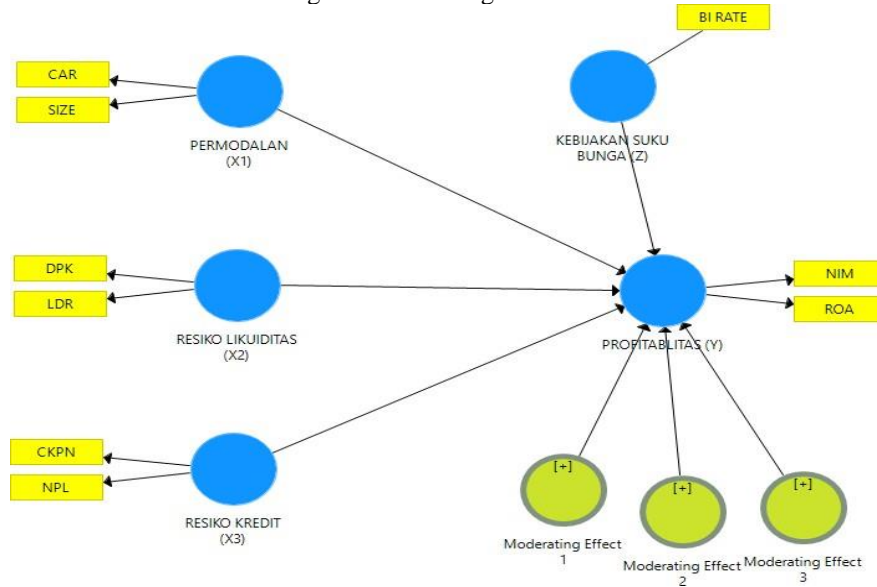
H7: Interest rates are able to moderate the impact of credit risk on banking profitability

DATA AND METHODOLOGY

This study uses commercial banks as a sample, by grouping banks based on core capital owned Where the number of bank groups with core capital owned is small banks with a core capital of 1 - 5 trillion as many as 14 banks, medium-sized banks with a core capital of 5 - 30 trillion as many as 12 banks and large banks with their core capital ≥ 30 Trillion as many as 5 banks. This study uses monthly financial statements from 2017 to 2021, on the basis of the average accumulation of each group of banks. The analysis technique uses *Structural Equation Modeling (SEM)* with the Smart PLS 3.0 *software* analysis tool.

The model built in this study uses five latent variables whose indicators are formative, consisting of 3 exogenous variables, namely capital, liquidity risk and credit risk. And one variable is profitability and 1 variable moderation, namely interest rate policy. In figure.1, you can see the shape of a path diagram that depicts the path of the relationship between variables and their indicators, and also the relationship between variables.

Figure 1: Path Diagram Model



RESULTS AND DISCUSSION

The results of the statistical test show the effect of variable testing of each bank group summarized in the following table:

Table 1. Hypothesis Testing Results

Hypothesis	Variable Relationships	Small bank		Medium-sized banks		Large banks	
		Line Coefficient	P Values	Line Coefficient	P Values	Line Coefficient	P Values
1	Capitalization --> Profitability	-0.819	0.004	-0.633	0.001	0.451	0.016
2	Liquidity Risk --> Profitability	0.266	0.115	0.227	0.367	-1.126	0.004
3	Credit Risk --> Profitability	-0.346	0.000	-0.018	0.897	-1.220	0.003
4	Interest Rate Policy --> Profitability	0.342	0.003	0.189	0.046	-0.730	0.000
5	Capitalization --> Interest Rate Policy --> Profitability	-0.460	0.018	-0.128	0.510	-0.267	0.222
6	Liquidity Risk --> Interest Rate Policy --> Profitability	-0.004	0.980	0.086	0.701	-0.365	0.331
7	Credit Risk --> Interest Rate Policy --> Profitability	0.538	0.002	0.200	0.155	-0.150	0.733

Effect of Capital on Profitability

The results of the analysis show that small banks and middle-sized banks have a significant negative effect on profitability, while large banks have a significant positive. The negative influence between capital and profitability can be caused by high capital costs that can affect the profitability of banks. This is in accordance with agency theory which claims that capital has a detrimental effect on profits. Banks with larger capital ratios incur higher agency costs and operate more cautiously, and can lead to lost growth opportunities (Singhal *et al.*, 2022). This gives confidence to the agency's hypothesis, which argues that capitalization has a great negative impact on profitability. Higher capitalization can undermine the profitability of the banking sector in some circumstances. Therefore, before imposing regulated capital criteria, it should take into account that the amount of capital at a certain level may interfere with the profitability of the banking industry. This finding is also supported by Blatter & Fuster, (2022) who state that small and medium-sized banks will face certain challenges in an environment characterized by reduced profitability and increased competition.

The existence of a positive relationship between capital and bank profitability can be explained that a higher volume of loans made by banks increases income and further increases bank profitability (Tan, Y., Floros, C., & Anchor, 2017). High capitalization leads to higher profit capabilities because the cost of financial risk will be lower. Lower financial risks can attract higher deposits and improve the banking business, thus leading to higher levels of profits (Das & Uppal, 2021b).

According to signaling theory, increasing bank capital is profitable information about market prospects that ultimately improves the bank's business and leads to better profitability. Therefore, more affluent companies can maintain revenues to finance investment prospects by generating better capital ratios (Singhal *et al.*, 2022).

If a bank continues to make a profit, then the bank can allocate its profits to increase capital. A higher level of equity will reduce the cost of capital thus positively impacting profitability. In addition, it is expected that a higher equity to asset ratio will reduce the need for external funding. Therefore, banks with high capitalization are able to achieve greater profitability as lower risks increase the bank's credibility feasibility and reduce funding costs. Conversely, a lower capital ratio in banking entails a higher risk of leverage leading to higher borrowing costs. A high capital ratio can be considered an indicator of low leverage and

therefore low risk.

Thus, banks with large capital are estimated to be less risky and profits tend to be higher, since these banks should be relatively safer in case of losses or liquidation (Menicucci & Paolucci, 2016). This according to Tan, Y., Floros, C., & Anchor, (2017) can be explained by the fact that 1) funding costs can be reduced for banks with higher levels of capital; 2) banks with higher levels of capital are more likely to make prudent loans, resulting in higher profitability; 3) banks with higher capital levels need to borrow less; 4) a reduction in the volume of loans increases the profitability of the bank.

The results of empirical research explain that capital adequacy has a significant positive effect on profitability (Stanley Isanzu, 2017), (Zarrouk et al., 2016), (Menicucci & Paolucci, 2016), (Das & Uppal, 2021a), (Ali & Puah, 2019), (Fathimatu et al., 2019), (Fida noski et al., 2016), (Rahman *et al.*, 2015). On the contrary, research (Yahya *et al.*, 2017) which states that capital adequacy negatively affects profitability.

Effect of Liquidity Risk on Profitability

The results of the analysis show that for small bank groups and banks mediating liquidity risk does not have a significant effect on profitability, with a positive relationship direction, while in large banks liquidity risk has a significant negative effect on profitability.

The negative link between liquidity risk and profitability at large banks shows that this group of banks with the most capitalized capital has funds that are able to provide large liquid funds to meet their short-term obligations, but the funds are said to be not fully absorbed because they are not proportional to the amount of credit disbursed. When banks increase their loan portfolios, it can be assumed that they will have to pay higher fees for their funding provisioning. In this case, a very high loan ratio may imply that banks have grown their loan portfolios quickly, paying higher fees for their funding needs, and this circumstance can lead to a negative effect on profitability (Menicucci & Paolucci, 2016), (Ali & Puah, 2019).

However Bordeleau & Graham, (2010) found that higher liquidity initially leads to higher profitability, but by passing certain levels of liquidity that is more associated with lower profitability. The negative impact of liquidity risk on bank performance will be more severe for banks with lower capital. Liquidity risk will reduce bank interest margins because banks with higher risk of liquidity will have to pay higher interest expense and receive lower interest income to increase their liquidity (Chen *et al.*, 2021).

Increased liquidity risk reduces the probability of bank survival, net interest margin, and

increases the cost of setting aside loan losses. Poor management through increased liquidity worsens profitability because too much money is stored in bank vaults. However, profitability will increase if there is optimal liquidity or if there is good management (Kanapiyanova *et al.*, 2022). Banks with better liquidity have greater incentives to reduce credit risk. This effect will be more significant for banks with higher modal ratios or lower credit risk

The results of empirical studies found a negative relationship between liquidity and profitability (Kanapiyanova *et al.*, 2022). In contrast (Petria *et al.*, 2015), (Jaber & Al-khawaldeh, 2014), (Tan, Y., Floros, C., & Anchor, 2017) there is a significant positive relationship between liquidity risk and profitability. Meanwhile, (Ali & Puah, 2019) imposes insignificant liquidity risks to profitability.

Effect of Credit Risk on Profitability

The results of hypothesis testing show that credit risk has a significant negative effect on profitability for small banks and large banks, but in medium-sized banks credit risk does not have a significant effect on profitability. It can be explained that when credit risk increases, it can cause a decrease in the profit generated because the loan is certified, causing a decrease in bank profits. Increased credit risk is usually associated with a decrease in the company's profitability (Menicuci, 2016),

The amount of credit distribution provided makes banks obtain large loan interest income, thereby increasing the profit achieved. Effective credit risk management in the banking sector will be able to increase profitability (Siddique *et al.*, 2022). Menicucci & Paolucci (2016) explain that banks with higher loan volume growth rates, will be more profitable as a consequence of the additional business created. However, high loan volume growth can also lead to a decline in credit quality and thus decrease profitability. Further, if the bank increases the volume of loans through a lower margin, it can be considered a negative impact on profitability.

The results of empirical research found a significant negative influence between credit risk on profitability (Siddique *et al.*, 2022), (Das & Uppal, 2021b), (Tan, Y., Floros, C., & Anchor, 2017), (Petria *et al.*, 2015), (2015), (Rahman *et al.*, 2015), (Million *et al.*, 2015). Sementara (Ali & Puah, 2019), (Trad *et al.*, 2017), (Aburime, 2011) states that credit risk has no significant effect on profitability.

Effect of Interest Rate Policy on Profitability

The test results showed that interest rate policy had a significant positive effect on banking profitability for small and medium-sized banks, while large banks' interest rate policy had a significant negative effect on profitability. This negative influence can be assumed that the group of large banks that do have the highest capitalization with transactions that are nominally also higher, if there is a decrease in interest, then the cost of banking capital will be lower, thus increasing profitability and vice versa a. This is supported by the development of research data which shows that when there was a decrease in interest rates during the 2020 pandemic, the interest income of large banks continued to increase. Low interest rates can affect the profitability of banks and affect the level of income from banking activities.

Kumar *et al.*, 2020 stated that an increase in short-term interest rates leads to an increase in banking profitability, while an increase in long-term interest rates leads to a decrease in banking profitability. Campmas, (2020) revealed that interest rate policy negatively affects bank profitability. When the interest rate policy is low, it shows that the bank managed to improve its overall profit capability despite a decline in net interest income.

The interest rate policy indicator is proxies by the BI rate. When viewed from the development of the BI rate, it has decreased, especially since entering the pandemic outbreak. Monetary policy is an important factor that shapes banking profitability (Das & Uppal, 2021b), Banks use monetary policy rates to measure the prices of their loans and deposits to obtain spreads in the process and function of inter mediation. However, in the lending market, banks settle their loan prices above monetary interest rate policy to obtain the difference between the loan price and the monetary price. The practice of setting and adjusting the prices of loans and deposits using monetary policy rates as a reference allows banks to benefit from the financial intermediation process. Therefore, this theory shows a positive relationship between monetary policy and banking profitability (Dzaha et al., 2022). However, lower interest rates that undermine expansive monetary policy positively affect net interest margins while negatively impacting asset and equity returns.

Aydemir & Ovenc, (2016) investigated the effect of short-term interest rates and yields on the profitability of the banking system, their findings suggest that for a while short-term interest rates had a significant effect on short-term earnings, but the influence of these monetary policy variables turned out to be positive in the long term. They concluded that the profitability of banks in emerging markets is more sensitive to monetary policy rates. (Borio *et al.*, 2015) b argue when interest rates rise, the ability of banks to make a profit from the net interest margin

between loans and applications increases and, when interest rates fall the need for banks to make profits from non-interest income increases. Fathimatu et al., (2019), (Almaqtari *et al.*, 2019), (Boahene *et al.*, 2012) stated that interest rates have a positive effect on banking profitability.

There is evidence of a possible link between monetary policy and banking profitability. The decision to loosen monetary policy which is a policy of cutting or lowering interest rates causes higher banking profitability but if it is continuous for the long term it causes a decrease in banking profitability (Dzaha *et al.*, 2022). The existence of a positive relationship between monetary policy measures banking profitability following previous studies (Das & Uppal, 2021b), (Borio *et al.*, 2015), (Aydemir & Ovenc, 2016).

The Effect of Capital on Profitability with Interest Rate Policy as a Moderation Variable

Based on statistical calculations show for small bank groups, interest rate policy is able to moderate the influence of capital on profitability. with a negative direction., but unable to moderate small banks and large banks. This shows that for small banks, the level of profitability achieved is highly dependent on income from interest rate policy through deposit interest and interest on loans or loans, so the bank needs to pay attention to the interest rate policy set, so that the capital allocated for banking activities can generate a favorable interest difference.

Bichsel *et al.*, (2021) argue, higher capital requirements result in higher interest rates on loans in response to decreased margin gains due to higher funding costs or reductions in high-risk loans. The channels or sources used to increase the capital ratio and the relative magnitude of different sources can also influence how banks respond to the increase in capital ratios in terms of raising interest rate spreads. The effect of the capitalization ratio to the interest rate spread is positive and stronger for banks with higher capital ratio increases, higher capital contributions, or higher risk-weighted asset contributions to increased capital ratios. The effect of constellation or capital on interest rate spreads is positive and stronger for banks with higher capital ratio increases, higher capital contributions, or higher risk-weighted asset contributions to increased capital ratios (Golbabaei & Botshekan, 2022).

Effect of Liquidity Risk on Profitability with Interest Rate Policy as a Moderation Variable

Based on statistical calculations, it shows that for the group of small banks, medium banks and large banks, interest rates are unable to moderate liquidity risk to banking

profitability. This shows that interest rate policy is not able to attract increased liquidity risk in increasing the profit achieved. When the BI interest rate policy increases, the bank will adjust to the savings interest policy and interest on credit or loans. The increase in savings rates caused people to be attracted and fled their funds to banks, so the liquidity of banks increased but banks endured high costs of capital and ultimately had no effect on increasing profitability.

Liquidity risk by having sufficient cash resources reduces liquidity gaps thereby reducing dependence on markets that affect interest rates (Tumwine *et al.*, 2018). Liquidity risk acts more as a reinforcement of the impact of interest rates and the spread component of credit (Gubareva & Borges, 2017). According to (Zhang & Deng, 2020), (Chatterjee, 2015) monetary policy undermines the creation of liquidity only for small banks in normal times.

The Effect of Credit Risk on Profitability with Interest Rate Policy as a Moderation Variable

Based on statistical calculations show that for small bank groups, interest rate policy is able to moderate the effect of credit risk on profitability. with a positive direction, but unable to moderate in medium banks and large banks. The positive influence on the group of small banks shows that the policy of interest rates related to lending rates is decisive in terms of credit risk. Where when the loan interest rate rises, it will increase banking income from loan interest income, but the increase in interest rate will also have an impact on increasing customer expenses in paying their credit, so that it can have an impact on increasing credit risk or the occurrence of bad debts, which in turn will affect the level of bank profitability. In medium-sized banks and large banks the policy of interest rate is not able to moderate credit risk to profitability. When viewed from the level of bank capital, these two bank groups are included in the group of banks with medium and high capital, with a wider range of business activities. So that a bank's income is not entirely from net interest margin interest income, but also comes from non-interest income, so it does not interfere with the profitability generated. Non-banking income reduces profitability sensitivity to interest rates (Aydemir & Ovenc, 2016).

The amount of credit distribution provided makes banks obtain large loan interest income, thereby increasing the profit achieved. Effective credit risk management in the banking sector will be able to increases profitability (Siddique *et al.*, 2022). But higher interest rates increase loan losses, consistent with their impact on debt service costs and the probability of default, and depress non-interest income, (Borio *et al.* , 2015), changes in interest rates affects the probability of default (Gubareva & Borges, 2017). (Mahrous *et al.*, 2020) states the

relationship between monetary policy and credit risk is positive and significant to some extent.

CONCLUSION

Based on the results of the analysis, it can be concluded that banking profitability for small banks and medium banks and large banks is significantly affected by capital, liquidity risk, credit risk and interest rate policy. The result of the conclusion to answer the hypothesis can be explained as follows;

1. Based on the analysis above, it can be stated that large banks have a significant effect on increasing profitability in a positive direction, on the contrary, banks with lower capitalization, namely small banks and medium-sized banks, affect profitability in a negative direction. The negative relationship is caused by the capital owned by banks not fully able to be absorbed in lending, thus causing the large cost of capital that must be met to pay interest to customers on the funds deposited in the bank, which ultimately results in a decrease in the profitability achieved.
2. The liquidity risk of large banks can affect profitability in a negative direction. This shows that as liquidity risk increases, the company's ability to provide liquid funds to pay its obligations increases, thus reducing profitability. Liquidity risk will reduce bank interest margins because banks with higher liquidity risks will have to pay higher interest expense and receive lower interest income to increase their liquidity
3. Credit risk negatively affects profitability, significant for small banks and large banks. The amount of credit distribution provided makes banks earn large loan interest income, thereby increasing the profit achieved. Banks with higher loan volume growth rates will be more profitable, however, high loan volume growth can also lead to a decline in credit quality so as to lower profitability.
4. The interest rate policy has a significant positive effect on the profitability of the entire bank group. A positive relationship suggests that the bank's income is highly dependent on credit activity and deposits. When there is a change in interest rate policy, the bank has the opportunity to adjust the interest rate on loans and deposits given to customers, and therefore has a positive impact.
5. Interest rate policy is able to moderate capital against the profitability of banks in small banks. This shows that small bank is very dependent on the set interest rate policy, when there is a change in interest rates then small banks will be more sensitive and react faster.

6. Interest rate policy is unable to moderate liquidity risk to probability all groups of banks.
7. Interest rate policy is able to moderate credit risk to banking profitability in small banks in a positive direction. In small banks with lower capital, the main source of income is from the difference in credit rates and savings savings, so that when changes in interest rate policies occur, it will affect profitability. If the loan interest rate is higher, it will increase credit risk in the banking sector, because the increase in lending rates burdens borrowers, so bad loans and non-performing loans are more likely, which ultimately has an impact on reducing profitability.

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