Risk and Return Analysis in Indonesian Banking Industries

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Abstract

The bank, like any other business entity, is an entity established for profit. There are risks involved to increase profit. The higher the yield to be obtained, the consequence is more increased the risk is borne. However, the banking industry is different from other sectors because banks are an industry whose survival is based on trust. Banks need to maintain the level of risk to avoid disruptions to the failure of their business operations. This study focuses on linking the operational risks borne by banks and bank profitability. Operational risk is seen from short-term operational risk, long-term operational risk, operational risk related to the bank's upper line, operational risk related to its bottom line, and operational risk associated with business scale. The research method used is quantitative research methods using statistics. The statistical method chosen is multiple linear regression because there are several independent variables with a dependent variable. The outcome of the multiple linear regression shows that risk management has a significant positive relationship with profitability. These findings indicate that bank operational risk management is not a burden that reduces profitability but instead increases profitability by reducing risk.

Keywords: profitability, operational risk, trade off

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1. INTRODUCTION

1.1. Banking Industry Risk

Every industry has risks in carrying out its operations. However, in the banking industry, the risks faced are more and more varied. This variety is due to the characteristics of the banking industry. Banking is different from the manufacturing industry because banks do not produce tangible goods. On the other

hand, banking is also different from service companies because banking companies sell financial products. Therefore, banking has characteristics that are not found in other industries.

The first characteristic is that banking is a company that has very high leverage compared to companies in other industries. This high leverage or level of debt arises because of bank operations (Martynova, Ratnovski & Vlahu, 2020). Banks as an intermediary for channeling funds need to provide competitive funds to borrowers. If the bank's interest rate is too high, it will have several consequences both for the bank itself and for the economy. For the bank itself, an interest rate that is too high will make it difficult for banks to find customers.

Meanwhile, for the economy as a whole, business actors' high interest rates will be transferred to consumers through increases in prices for goods and services. This chain, in turn, will cause inflation. The higher the bank's interest rate, the more it will encourage an increase in the inflation rate.

The second characteristic is closely related to the first character of the banking industry. Due to the banking industry's nature, which is vital to the economy, the government strictly regulates the banking industry. The consequence is that the bank's space is limited. However, on the other hand, this will protect consumers because banks are forced to implement strict governance.

1.2. Research Background

From various points of view, banking can be seen, including a macroeconomic point of view, an industry point of view, or a specific bank point of view. Also, banking can be seen from the bank's behavior, starting from bank operations, how banks compete, and the relationship between banks and customers. This research looks at how the bank is operationally looking for profit and relates it to its risks. Risk is seen from the operational side because banks have different operations, so that research on operational banking risk becomes an industry-specific study (Sudarsono, 2020).

In the banking industry, two risks affect the sustainability of the industry. The first risk is systematic, and the second risk is the non-systemic risk which tends to depend on each bank's conditions in the banking industry (Yang et al., 2020). Bank-specific risk is the risk that can be managed by bank management or in reach risk. Therefore, this study focuses on operational risk factors that affect banks (Chernobai, Ozdagli & Wang, 2020). The hope is that this research's findings can contribute from the world of education for banking management to inform what factors influence banking risk.



Graph 1. Research Framework

Source: Author, 2021

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Operational risk factors that affect bank profitability are illustrated using the conceptual framework in diagram 1. Operational risk is divided into five types of operational risk: short-term operational risk, long-term operational risk, and upper line operational risk, bottom-line operational risk, and risk—economies of scale. Therefore, the hypothesis developed in this study is that operational risk affects bank profitability. This central hypothesis will then be divided into derivative hypotheses representing each of the banking operational risks, as illustrated in diagram 1.

In addition to enriching the banking literature, this research can also be practical for management and investors. A contradiction in the banking industry is bank management and investors' desire to increase profitability by increasing bank interest income. Meanwhile, banks face a trade-off in which an increase in banks' risk often accompanies high interest income. Therefore, this study links the risk factors of banking operations with bank profitability. It is hoped that the findings of this study, namely operational risk factors that have a significant effect on bank profitability, can be used as a reference for bank management in its efforts to increase profitability.

2. LITERATURE REVIEW

The main business of banking is as an intermediary for asset transformation. Banks can transform assets based on size, based on time, and based on risk. Size-based transformation is when banks raise funds from a relatively small number of retail clients and pool them to provide loans to corporations. The transformation based on size is that the bank accepts short-term loans that customers can take out at any time and lend them for the long term to debtors. Risk-based transformation is that banks channel third-party funds to various borrowers with various risk profiles. Thus, the bank diversifies by allocating assets to various borrowers at various amounts.



Graph 2. Type of Risk in Banking Industry

Source: (Putra, F.A., Hakim, D.B., & Tambunanm M.E., 2020)

Banks' risks are divided into three, namely significant risks, other significant risks, and unrelated risks. This risk level is categorized based on its direct effect on bank survival (Putra, F.A., Hakim, D.B., & Tambunanm M.E., 2020). So it does not

mean that unrelated risk does not affect banks. It is just that the effect is not as fast as a significant risk. The significant risk is the risk that most affects the bank's survival because when the bank does not manage this risk well, the bank can stop operating. The significant risk is divided into three-first, credit risk, how banks allocate their assets to borrowers. The second is market risk, which is how market interest rates affect bank interest rates. For public banks, market risk also includes risks that affect the value of the company's shares. Meanwhile, the third is operational risk, namely the risk that affects the banking system's core operations.

In this research, specifically, the risk studied is operational risk. Operational risk can be seen from several sides. The first point of view is short-term operational risk, or what is sometimes referred to as liquidity risk (Abbas, Iqbal & Azis, 2020). Liquidity is an essential factor, mainly because the banking business is a business based on trust. When the bank cannot fulfil its obligations to the funder, the funder will worry about his funds' safety and withdraw the funds. As a result, this will raise concerns that will spread to other customers, causing panic and a bank rush. To overcome this, the government requires banks to set aside a certain percentage of the third-party funds it receives. This bank reserve is called capital adequacy, and one of the ratios that can be used to measure capital adequacy is the capital adequacy ratio.

The second operational risk faced by banks is long-term operational risk. This long-term operational risk is also called solvency risk, which is why the bank cannot fulfil its long-term obligations. In contrast to liquidity risk, a bank can use interest income to pay interest costs in the current period. Long-term liabilities represent the ability of the bank to meet payments on the principal of the loan. The amount of long-term liabilities is usually large or at least several times the total interest expense. To fulfil this obligation, the bank should ideally set aside a portion of its cash flow and accumulate it to pay for maturing long-term loans. If the bank does not provide an allowance, even though the liquidity is good, the bank will not meet its long-term maturing obligations, which are several times the interest cost.

The two risks above are bank operational risks, as seen from the side of the bank's balance sheet. Another point of view is to view bank risk is to use the profit and loss perspective. At least two risks can be used to determine the health of a bank's profit and loss. The third risk faced by banks is the risk in asset management. Asset management risk is talking about how a bank can manage third-party funds and allocate them to the assets that provide the highest return. When viewed from operations, this is the upper line operational risk because it connects the interest income, the bank's upper line component, and the interest costs to get the interest income.

In contrast to other industries, the interest rate's determination is determined by how much interest costs are borne by the bank (Beutler, Palvia & Stulz, 2020). The higher the bank interest cost, the higher the interest that the bank will pay to borrowers. The lower the interest cost is given to consumers, the more attractive it will be. In this case, the bank sells semi-commodities products in which the product is in the form of money, which the borrower has the same value. One form of differentiation is the price of these commodities, namely the interest rate. Therefore, the lower the interest cost, the cheaper the funds that banks can provide to borrowers. The cheaper the funds provided to borrowers, the higher the potential for banks to earn interest income.

The bank's fourth operational risk is the bottom-line operational risk (Hossain, Galbreath, Hasan & Randoy, 2020). The bank's net operating profit will decrease if the borrower cannot return the credit, which is returned either partially or wholly. An indicator usually measures this risk called a Non-Performing Loan. When the bank is not well diversified and over-invested in one of the borrowers, the Non-Performing Loan value will increase significantly when the borrower is unable to pay. The high non-performing loan value will further reduce bank profits from lending interest (Khan et al., 2020). The net profit that should be obtained is used to pay interest expenses that should be the borrower's responsibility and recover assets that cannot be withdrawn from the borrower.

The fifth risk is the risk related to the bank's economies of scale. The bank size can become bigger because there is an increase in third-party funds or accumulated profits that are reinvested into bank assets. When a bank gets bigger, it will have economies of scale that can make its operations more efficient. However, on the other hand, the large size of third-party funds will provide a challenge for banks to allocate their assets. When the bank cannot find a place to allocate third-party funds, third-party funds will not be distributed. As a result, these funds will become idle funds which increase bank interest costs (Lesmana et al., 2020). On the other hand, when banks force themselves to allocate third-party funds optimally, they can force themselves to finance riskier projects. This additional project financing will increase bank income, but an increase in risk level can increase the rate of uncollectible loans, which will again burden both interest and bank operational costs.

The selection of this indicator is based on the bank's business process. The step in analyzing the bank business starts from analyzing the bank balance sheet. The analysis starts from the balance sheet because, in operations, a bank starts its business by collecting third-party funds. After getting the funds, the bank will channel them to the borrower to earn interest income. So, the bank's business process starts from the approach of liabilities and assets in the balance sheet, then the effectiveness of managing these assets can be seen in the bank's income statement. Based on this approach, the first and second indicators in this study are on the balance sheet. Then, the third and fourth indicators are indicators that come from profit and loss. Meanwhile, the fifth indicator is an indicator that connects the balance sheet and profit and loss.

The dependent variable in this study is profitability. Profitability is chosen because the purpose of the company is to create profit. Thus, the hope is that

selecting significant independent factors will affect profitability to achieve an optimum value. Profitability in the banking industry is different from other industries. The banking industry is highly regulated. A bank faces a trade-off between increasing interest income and the risk level from an increase in interest costs. Regulators do not want banks to take excessive risks because it will endanger third parties who put funds in the bank. So, it is not easy for banks to increase profitability without managing the risks properly. Therefore, this study examines risk factors that can be managed to optimize profitability.

The risk management mindset is how to manage risk without sacrificing the level of benefits obtained. The risk management mindset is a traditional management mindset in which management tries to maximize revenue and sees an increase in income as its benchmark. When income increases, it will be considered a management achievement. This tendency will make management focus on increasing short-term profits by ignoring risk factors that will hurt long-term profits.

The risk management mindset has a different starting point. The idea is with the same income level, the risk can be minimized. As a result, investors will benefit more because investors bear less risk with the same return amount. Investors who can assume greater risk can take additional risks when their asset investment risk decreases because a risk slot is now empty.

3. METHODOLOGY

3.1. Statistical Methods

This research is a quantitative study using statistical measurements. The statistical method used is multiple linear regressions. The output of multiple linear regressions is the relationship between the independent variable and the dependent variable. This study's independent variables consist of five variables: short-term liquidity operational risk variables, long-term liquidity operational risk variables, bottom-line operational risk variables, and economies of scale. In comparison, the dependent variable is bank profitability.

The output of multiple linear regressions will show two things. First, in a model, it will be seen whether together the variables selected in this study will have a significant effect. The second is each independent variable's effect on the dependent variable (Sekaran & Bougie, 2016).

3.2. Research Data

The data taken is secondary data from bank financial reports. The sampling method used was the purposive stratified sampling method. The sample selection process is carried out in stages with predetermined criteria. In this study, there are several sampling criteria (Srivastasa et al., 2020). First, the selected bank is a bank listed on the Indonesia Stock Exchange. Banks listed on the stock exchange are

required to report in full on their operational activities. Thus, an open bank will provide complete material for financial ratio analysis. Second, the selected bank is a bank included in Commercial Banks with Business Adequacy Level Four or BUKU 4 (Listiawati & Kurniasari, 2020). The basis for this selection is that the banks being compared are relatively the same size, and there is no significant imbalance in size. Apart from that, banks of the same size tend to compete for the same target market, so there is not much difference in their business operations.

The data taken is data from accounts in the balance sheet and income statement, which are then processed into ratios. The data taken period is data from 2017 to 2020. The data is taken quarterly for each variable. So, the total data collected consisted of 14 periods with as many as eight cross-section data. The total panel data observed was 112 data.

3.3. Financial Statement Analysis Methods

The outcome of the regression analysis will then be analyzed using the financial statement analysis approach. Significant results from the regression analysis output will be meaningful for management if it has economic consequences. Financial statement analysis helps analyze whether there are economic consequences of the relationship between the independent and dependent variables.

The analysis of financial statements used in this study is a top-down analysis. The top-down analysis uses an approach from macroeconomic conditions, then narrows it down to industry analysis, and then analyzes its entities (Yhip & Alagheband, 2020).

The approach specifically used to perform the analysis is to use the comparative method using financial ratios. The advantage of using financial ratios is that this approach is straight forward capable of providing an indicator of the financial statements. Another advantage is that by using financial ratios, comparisons with other entities can be compared without being affected by the actual numbers in the financial statements or, in other words, not distorted by the size of the entity.



Graph 3. Research Steps



Diagram 3 shows the steps taken in this study. They are starting with taking data in the form of numbers from the accounts in the financial statements. This data is then converted into financial ratios. These financial ratios are then analyzed using statistical methods, namely by using multiple linear regressions. The output of the research is an analysis of economic relationships that can be used for management.

4. **RESULT AND DISCUSSION**

4.1. Descriptive Statistics

The first stage of statistical analysis is to perform descriptive statistical analysis. Descriptive statistics function to see how the overall data picture is without intervention. The benefit of descriptive statistics is to show the data's distribution pattern to see the data's characteristics per variable quickly. Apart from seeing an overview of descriptive statistics, it can also show when data is not normally distributed, namely when the data is too skewed or has high volatility (Mieg, 2020). Table 1 shows the results of the descriptive statistics. Table 1 shows that the data is not normally distributed, so steps need to be taken to normalize the data.

(Pandu Adi Cakranegara)

	ROA	CAR	LDR	NIM	NPL	SIZE
Mean	2,46	20,92	93,52	5,50	1,25	33,76
Median	2,55	21,05	92,95	5,45	1,05	34,05
Maximum	4,00	26,70	114,20	8,10	3,00	34,81
Minimum	0,10	16,10	73,30	3,10	0,10	32,60
Standard Deviation	0,86	2,33	9,14	1,09	0,70	0,75
Skewness	-0,21	-0,10	0,26	0,35	0,53	-0,08
Kurtosis	2,44	1,94	3,18	2,93	2,11	1,35

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Source: Author, 2021

4.2. Inferential Statistics

After the data goes through the normalization process, the next step is to use normalized data as input for multiple linear regressions. The data used in this research is panel data. The first thing to do is choose a suitable multiple linear regression model between the Pooled Least Square regression model, the Random Effect Model, and the Fixed Effect Model. The first step is to compare the regression models using the Pooled Least Square using the Random Effect Model using the Hausman test. The second step is to compare multiple linear regressions between the Random Effect Model and the Fixed Effect Model using the Chow Test.

From the results of the Chow Test, it was found that the suitable regression model is the Fixed Effect Model. There are two outputs from the regression results: the overall model analysis shown by the R-Square value and the analysis of individual variables. R-Square analysis in this study resulted in the number 0.6882. This figure shows that the independent variables in the model used in this study can explain 68.82% of the dependent variable's variation. This model can then be said to be a model with a reasonably strong explanation because it can explain more than fifty per cent of the variation in the dependent variable (Anderson et.al. 2020).

Dependent Variables	Coefficient Standard Error		t-Statistic	Probabilities	
С	-10,83	1,77	-6,13	0,00 ***	
CAR	0,04	0,02	2,31	0,16 **	
LDR	0,00	0,01	-0,22	5,76	
NIM	0,46	0,09	4,91	0,00 ***	
NPL	-0,30	0,12	-2,57	0,08 ***	
SIZE	0,31	0,04	8,62	0,00 ***	

Table 2. Multiple Regression Output

*** significant at 1% ** significant at 5%

Source: Author, 2021

Individually, the regression results can be seen in table 2. Four independent variables have a significant relationship with the dependent variable. The four variables are Capital Adequacy Ratio, Net Interest Margin, Non-Performing Loan, and Size.

4.3. Managerial Interpretation

From the statistical results, a regression equation can be made as below:

ROA = -10,83 +0,04CAR +0,46NIM -0,30NPL +0,31SIZE

Capital adequacy, which is the ratio derived from the level of capital adequacy required by the regulator, has a significant positive relationship with profitability. This finding means that by fulfilling the regulator's request, the bank can increase its profit rate. In the banking industry, any capital put in by third parties will be a cost for the bank. Therefore, if possible, the bank will use all third-party funds to have no useless funds or idle funds. Therefore, the capital required by the government to be deposited seems to be useless funds. This research shows that depositing funds for capital adequacy will increase profitability. Several things might explain this relationship. One of them is a bank with a sufficient capital level that will have a buffer against the risk of liquidity volatility (Jiang et al., 2020). Therefore, a bank with a sufficient level of capital will be considered safer by consumers.

The second independent variable that has a significant relationship is the Net Interest Margin. The Net Interest Margin ratio connects between bank interest income and bank interest costs. This relation means that when the bank's upper line is profitable, this advantage will be translated into profits at its bottom line (Putra, Hakim & Tambunan, 2020). From the regression figures, it can be interpreted that every 1 per cent increase in Net Interest Margin will increase the bank's profitability by 0.46 per cent. These results also indicate that banks need to pay attention to interest income. Banks cannot just focus on operational efficiency and ignore interest income.

The third independent variable that has a significant effect on profitability is Non-Performing Loans. This variable has a significant negative relationship with profitability, which means that the higher the Non-Performing Loan, the higher the profitability. This relationship follows the theory in which non-performing loans will increase interest costs and reduce the bank's net flows. However, the regression figures show that every 1 per cent increase in Non-Performing Loans will reduce profitability by 0.30 per cent. The consequence for managers is that nonperforming loans need to be minimized because they have a relatively significant profitability effect. This finding also shows that bank conservatism is vital to increase profitability compared to aggressive risk-taking. Based on these findings, conservatism is a rewarding thing (Masciadaro, 2020). This approach is different from other industries where aggressiveness to increase sales or take market share is a positive thing (Jiang, Zhang & Sun, 2020).

The fourth independent variable that has a significant effect is bank size. Bank size affects profitability. In this study, the selected bank is a bank that comes from the same size stratification based on government regulations, namely BUKU Bank 4. So, there is no significant difference between each bank in this study. What is meant by increasing the size of a bank is when a bank can increase its assets by collecting more significant third-party funds (Anggari & Dana, 2020).

This study's operational risk point of view shows that banks need to manage their operational risks to increase profitability. In the business process, the bank starts by collecting third-party funds and allocating third-party funds to profit. One thing that can be contributed to this research is that operationally banks can increase profitability if they manage risk well at each stage. The first stage is that the collection of third-party funds needs to be a priority for the bank because the size of third-party funds will directly affect the size of the assets, which significantly affects bank profitability. The second stage is the composition of third-party funds collected by banks. When a bank collects a third fund with a high fee, the high fee will force the bank to lend funds at a high cost to the borrower. High borrowing will be increasingly risky based on the theory of adverse risk-taking behavior from borrowers (Ben-David, Palvia & Stulz, 2020) The higher the bank interest, the more borrowers who have good borrowing skills will stop borrowing because they can access other loans.

Meanwhile, borrowers who are more at risk will take these loans because more risky borrowers do not have other loan alternatives. Consequently, the borrower will be prone to be in arrears or, even in the worst-case scenario, not to return the loan. When this happens, the bank's Non-Performing Loan will increase, and its profitability will decrease.

5. CONCLUSION

Bank conservatism is an issue in the banking industry. Conservatism is considered a good thing for depositors in banks. Regulators want public trust in banking so that they strictly regulate how banks operate. On the other hand, investors want banks to have high profitability so that they can provide returns. The desire of investors encourages bank management to increase profitability. This research finds that profitability in banking cannot be separated from its operational risk management. Therefore, there is no contradiction between bank conservatism and the pursuit of bank profits.

This study focuses on BUKU 4 banks. The reason for choosing one type of book and not all banks is that banks in one type of stratification have comparable operations due to regulatory influences. In Indonesia, the higher the bank's assets, the bank will be permitted by the government to carry out increasingly complex transactions. On the other hand, the smaller the bank's size, the more basic transactions can be made. Using bank with the same stratifications will allow direct comparison because of the same operational scope. In the future, if comparisons between bank stratifications are to be carried out, it is necessary to include proxies that represent differences in the scope of bank operations.

REFERENCE

Abbas, F., Iqbal, S., Azis, B. (2020). The Role of Bank Liquidity and Bank Risk in Determining Bank Capital: Empirical Analysis of Asian Banking Industry. Review of Political Basin Financial Markets and Policies, 23.

Anderson, D.R., Sweeney, D.J., Villiam, T.A., Camm, J.D., & Cochranm J.J. (2020). Modern Business Statistics with Microsoft Excel. New Jersey: Cengage Learning.

Anggari, N.L.S, & Dana, I.M. (2020). The Effect of Capital Adequacy Ratio, Third Party Funds, Loan to Deposit Ratio, Bank Size on Profitability in Banking Companies on IDZ. American Journal of Humanities and Social Sciences Research, 334-338.

Ben-David, I., Palvia, A.A.M & Stulz, R.M,. (2020). How Important is Moral Hazard for Distressed Banks?. Fisher College of Business Working Paper, 9.

Beutler, T., Palvia, A.A, & Stulz, R.M. (2020). The Impact of Interest Rate Risk on Bank Lending. Journal of Banking and Finance, 115.

Boughton, J. M. (2002). The Bretton Woods Proposal: A Brief Look. Political Science Quarterly, 564.

Chernobai, A., Ozdagli, A & Wang, J. (2020). Business Complexity and Risk Management: Evidence from Operational Risk Events in US Bank Holding Companies. Journal of Monetary Economics.

Hossain, S, Galbreath, J., Hasan, M.M., & Randoy, T. (2020). Does Competition Enhance the Double Bottom Line Performance of Microfinance Institusions? Journal of Banking and Finance, 113.

Ion, B., Malar Kumaranm R., Larissam B., Anca, N., Lucian, G., Gheorge, F. & Mircea-Iosif, R. (2020). A Panel Data Analysis of Sustainable Economic Growth in India, Brazil and Romania. Journal of Risk and Financial Management, 170.

Jiang, H., Zhang., J, & Sun, C. (2020). How Does Capital Buffer Affect Bank Risk-Taking? New Evidence from China using Quantile Regression. China Economic Review, 60.

Khan, M.A, Siddique, A., & Sarwar, Z. (2021). Determinant of Non-Performing Loans in The Banking Industry. PalArch's Journal of Archaelogy of Egypt/Egyptology, 582-594.

Listiawati, L., & Kurniasari, E. (2020). Analisis Kinerja Keuangan dengan Menggunakan Metode Camel pada Bank BUKU 4. Jurnal Ema, 5.

Martynova, N., Ratnovski, L. & Vlahu, R. (2020). Journal of Financial Intermediation. Bank Profitability, Leverage, Constraint and Risk Taking, 44.

Masciadaro, D. (2020). Independence, Conservatism and Beyond: Central Banker Preferences in Monetary Policy Economics. BAFFI CAREFIN Centre Research Paper, 44.

Mieg, H. (2020). Volatility as a Transmitter of Systemic Risk: Is There a Structural Risk in Finance? Risk Analysis Journal.

Putra, F.A., Hakim, D.B., & Tambunanm M.E. (2020). Determinant Analysis of Net Interest Margin and Banking Profitability in Indonesia. International Journal of Science and Research, 174-180.

Sekaran, U., & Bougie, R. (2016). Research Method for Business: A Skill Building Approach. New York: John Wiley & Sons.

Srivastava, S., Singh, S., & Dhir, S. (2020). Culture An Internartional Business Research: A Review and Research Agenda. International Business Review, 101.

Sudarsono, H. (2020). Analisis Keaktifan Manajemen Risiko dalam Menentukan Kebijakan Struktur Modal, Keputusan Pemberian Kredit, Tingkat Risiko dan Profitablis Bank Umum. Derivatif: Jurnal Manajemen.

Yang, H. F, Liu, C.L. & Chou, R.Y. (2020). Bank Diversification and Systemic Risk. The Quarterly Review of Economics and Finance, 311-326.

Yhip, T.M, & Alagheband, B. M. (2020). Financial Statement Analysis, In the Practice of Lending. Michigan: Palgrave Macmilan.