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The Priority of Microprudential Indicators in Indonesia

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Financial system stability is an important prerequisite for sustainable economic growth. Within the framework of financial stability policies, microprudential policies play a role in maintaining the health of individual financial institutions through the supervision of various key indicators. This study aims to determine the priority of microprudential indicators that are relevant to Indonesia based on the views of experts. The method used is the Delphi method by involving nine respondents consisting of academics and practitioners in the fields of economics and finance. The data was analyzed using statistical measures in the form of mean values, standard deviations, and interquartile range (IR) to assess the consensus level. The results showed that out of the 19 microprudential indicators analyzed, 13 indicators reached expert consensus. The three main priority indicators are non-performing loans, exchange rate risk, and liquid liability. These findings confirm the importance of credit risk indicators, market risk, and liquidity in maintaining the stability of Indonesia's financial sector.

Keywords: Microprudential Indicators; Financial Stability; Delphi Method; Indonesia

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INTRODUCTION

The 2008 global financial crisis showed that weak risk supervision at the financial institution level could trigger widespread financial system instability. Since then, attention to prudential policies, both macroprudential and microprudential, has increased (Gorton, 2010; Claessens, Ghosh, & Mihet, 2013). Microprudential policies are specifically focused on efforts to maintain the health and individual resilience of financial institutions through monitoring capital ratios, asset quality, liquidity, and market risk (Freixas & Rochet, 2008).

Microprudential indicators focus on the soundness of individual financial institutions (banks, Islamic banks, insurance companies), rather than the financial system as a whole. In Indonesia, these indicators are mainly used for supervision, early warning, and risk assessment at the institution level. In Indonesia, strengthening the microprudential supervisory framework is becoming increasingly important as the complexity of the financial system increases and the integration with global financial markets. The Financial Services Authority and Bank Indonesia use various microprudential indicators to assess the condition of banks and other financial institutions. However, limited resources and complexity of information require the prioritization of the most relevant indicators and agreed upon by experts (Bank Indonesia, 2020). Indonesia learned that strong microprudential indicators alone are not sufficient; they must be complemented by macroprudential policies (e.g., countercyclical capital buffers, LTV ratios).

Unlike macroprudential policy, which targets systemic risk and procyclicality, the microprudential approach emphasizes balance-sheet resilience at the institutional level. In the banking sector, microprudential indicators serve as key diagnostic tools for assessing capital strength, asset quality, profitability, liquidity, and sensitivity to market risk. Weaknesses in these indicators often precede banking distress and may act as early warning signals of financial crises. In Indonesia, the monitoring and regulation of microprudential indicators are primarily conducted by Bank Indonesia (BI) and the Financial Services Authority (Otoritas Jasa Keuangan, OJK), particularly after the post-Asian Financial Crisis (AFC) institutional reforms.

Various previous studies have identified a number of important microprudential indicators, such as non-performing loans (NPLs), capital adequacy ratios, liquidity ratios, and market risk indicators (IMF, 2019; BIS, 2018). However, there has not been much research that has systematically prioritized these indicators based on expert consensus in the Indonesian context. Therefore, this study aims to fill this gap by using the Delphi method to obtain expert agreement on the most important microprudential indicators for Indonesia.

LITERATURE REVIEW

The literature study on microprudential indicators departs from the concept of financial stability and the role of financial institutions in the economy. Financial system stability is generally defined as a condition in which the financial system is able to effectively carry out the functions of intersectoral, risk management, and payment systems, even when facing economic shocks (Schinasi, 2004). Within this framework, prudential policy is the main instrument to prevent excessive accumulation of risk in the financial sector.

The literature distinguishes prudential policy into two main approaches, namely macroprudential and microprudential. Microprudential policies focus on the health and resilience of individual financial institutions, with the aim of protecting depositors and investors and minimizing the probability of financial institution failure (Freixas & Rochet, 2008). This approach emphasizes the importance of monitoring financial indicators that reflect capital, asset quality, profitability, liquidity, and market risk exposure.

The Basel Committee on Banking Supervision (BCBS) develops various key indicators within the framework of banking supervision, such as the Capital Adequacy Ratio (CAR), the asset quality ratio including non-performing loans, as well as liquidity indicators such as the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR) (BCBS, 2012). These indicators are widely used as early warning indicators to detect potential vulnerabilities at the individual bank level.

A number of empirical studies show that non-performing loans are the most consistent microprudential indicator in explaining banking vulnerability. Berger and DeYoung (1997) and Ghosh (2015) found that an increase in NPLs is negatively correlated with the profitability and resilience of a bank's capital. These findings confirm that credit quality is a major source of risk in the banking system, particularly in developing countries.

In addition to credit risk, the literature also emphasizes the importance of liquidity indicators in

microprudential policy. Gorton and Metrick (2012) show that financial crises are often triggered by short-term liquidity pressures that quickly develop into systemic crises. Therefore, indicators such as liquid liabilities, third-party fund ratios, and reliance on short-term funding are the main focus in microprudential supervision.

Market risk indicators, including exchange rate risk and interest rate risk, have also received great attention in the literature, especially in countries with high financial openness. Allen and Gale (2007) and the IMF (2019) emphasized that exchange rate volatility can worsen bank balance sheets through increased foreign exchange liability burdens and decreased asset quality. In the Indonesian context, exchange rate risk becomes relevant given the role of foreign capital flows and the use of financing in foreign exchange.

Although many microprudential indicators have been proposed in the literature, not all indicators have the same level of relevance within every country. Therefore, some studies use an expert-based approach to determine priority indicators. The Delphi method is often used in this context because of its ability to systematically accommodate the subjective judgments of experts and generate measurable consensus (Linstone & Turoff, 2002). This approach is considered appropriate to determine the priority of contextual and applicable microprudential indicators.

METHODOLOGY

This study aims to find the priority of Microprudential Indicators in Indonesia. The data used are the results of interviews with academics, practitioners and experts in economic policy in general. The total number of expert respondents was 9 experts. The application *Software* used as a tool is Microsoft Excel. The method used is the Delphi technique which is a qualitative method based on interviews with experts.

The Delphi method is a group process that involves interaction between researchers and a group of experts related to a specific topic, and through the help of questionnaires. This method is used to get a common point about future trends using a structured information collection process. This method is useful when the opinions and judgments of experts and practitioners are needed in solving problems.

This study will use the 3 most widely used statistical indicators in the application of the Delphi method, namely *mean* values, standard deviation values, and *interquartile range* or IR values. The first measure of convergence assessment is when the answers or assessments of all respondents have a standard deviation value of less than 1.5 (<1.5). The formula for standard deviation notation as already known is as follows.

$$s = \sqrt{\frac{\Sigma(x_i - \bar{x}).^2}{n-1}} \quad \text{or} \quad \sqrt{\frac{\Sigma x_i^2 - \frac{(\Sigma x_i)^2}{n}}{n-1}}$$

Where:

x = respondent A's answer to instrument n

$\bar{x}$ = average respondents' answers to instrument n

The next measure is the consensus assessment or convergence where the answers or assessments of all respondents have an *Interquartile Range* value or IR of less than 2.5 (<2.5). The calculation of the IR value is the difference between the upper and lower quartiles (IR = Q3 – Q1), where the quartile value formula is as follows.

$$Q_1 = \frac{x_{(\frac{n-1}{4})} + x_{(\frac{n+3}{4})}}{2}$$

$$Q_2 = x_{(\frac{2(n+1)}{4})}$$

$$Q_3 = \frac{x_{(\frac{3n+1}{4})} + x_{(\frac{3n+5}{4})}}{2}$$

The measurement to express the convergence or consensus level of all variables is when the standard values of the deviation <1.5 and the *value of the interquartile range* <2.5. If one of the indicators does not meet the requirements, then the variable is declared non-convergent or not agreed (divergent). Meanwhile, for variables that have met the requirements, the next step is to rank with the highest average value for each variable that reaches consensus (convergent).

RESULTS AND DISCUSSION

Based on literature studies, there are at least 19 microprudential Indicators problems in Indonesia, namely: (1) Aggregate capital ratio, (2) Number of banking loans, (3) Financial assets, (4) Non-Performing Loans, (5) Debt Equity Loans, (6) Foreign exchange loans, (7) ROAs, (8) ROE, (9) BOPO, (10) LDR, (11) Central Bank loans to financial institutions, (12) Liquid Liability, (13) Number of deposits, (14) Exchange Rate Risk, (15) Interest rate risk, (16) Stock price risk, (17)

Market price of financial instruments, (18) Credit rating and (19) Sovereign yield spread.

From the 19 elements of the microprudential Indicators problem in Indonesia above, the following is a complete answer in the form of weights given by the 9 expert respondents.

Table 1. Expert Respondent Answer Results

MICROPRUDENTIAL INDICATORS	R1	R2	R3	R4	R5	R6	R7	R8	R9
1a. Aggregate Capital Ratio	8	7	6	9	8	7	9	7	7
1b. Amount of Banking Credit	6	6	6	8	7	6	8	9	7
1c. Financial Assets	7	6	7	7	6	6	9	9	8
2a. Non-Performing Loan	8	8	7	9	8	9	9	9	8
2b. Debt Equity Ratio	7	7	7	8	7	8	9	9	7
2c. Loans in Foreign exchange	6	6	4	7	6	7	8	9	7
3a. LENGTH	7	7	3	7	7	7	9	8	7
3b. ROE	8	9	3	9	7	9	9	8	8
3c. BOPO	6	6	7	8	8	8	8	9	9
4a. LDR	8	7	3	9	8	7	8	9	8
4b. Central Bank Credit to Financial Institutions	5	7	5	6	6	7	8	9	7
4c. Liquid Liability	7	9	7	8	7	9	8	8	8
4d. Number of deposits	6	6	7	7	7	6	9	9	7
5a. Exchange Rate Risk	7	8	7	9	7	8	9	9	8
5b. Interest Rate Risk	8	8	3	8	8	8	9	9	8
5c. Stock Price Risk	6	8	5	7	6	8	9	9	7
6a. Market price of financial instruments	8	7	3	7	7	7	9	9	7
6b. Credit rating	6	3	5	9	7	9	8	8	8
6c. Sovereign yield spread	7	6	5	8	6	8	9	7	7

In the application of the Delphi method, there are 3 most widely used statistical indicators, namely *mean* values, standard deviation values, and *interquartile range* or IR values. Based on the results of the data processing that has been carried out, the priority calculation of Microprudential Indicators in Indonesia is as attached in the following table.

Based on table 2, in general of the 19 Microprudential Indicators variables in Indonesia, 13 variables have been agreed upon by experts and only 6 variables have not been agreed. Meanwhile, the order of the most important variables in microprudential indicators in Indonesia are: (1) Non-performing loans, (2) Exchange rate risk, (3) Liquid liability, (5) Debt equity ratio, (5) BOPO, (8) Aggregate capital ratio, (10) Financial assets, (10) Stock price risk, (12) Number of deposits, (14) Number of bank loans, (14) Sovereign yield spread, (18) Loans in foreign exchange, and (18) Central Bank loans to financial institutions.

Based on a literature study and preliminary discussions with experts, this study identified 19 microprudential indicators that reflect aspects of capital, asset quality, profitability, liquidity, and market risk. This approach is in line with the microprudential supervision framework recommended by the Basel Committee on Banking Supervision (BCBS, 2012) and the International Monetary Fund (IMF, 2019).

The results of data processing using the Delphi method showed that 13 out of 19 indicators reached the set consensus level, namely the standard deviation value was less than 1.5 and the interquartile range value was less than 2.5. These indicators include non-performing loans, exchange rate risk, liquid liability, debt equity ratio, BOPO, aggregate capital ratio, as well as several other liquidity and market risk indicators.

Non-performing loan indicators rank first as the most important indicator. These findings are consistent with the literature that states that credit quality is a major source of banking risk, especially in developing countries with financing structures dominated by banks (Ghosh, 2015; Berger & DeYoung, 1997). High NPLs reflect the increasing risk of default that can erode banks' capital and disrupt the stability of the financial system.

Table 2. Delphi Microprudential Indicators Calculation Results

MICROPRUDENTIAL INDICATORS	Q1	Q2	Q3	IR	STDEV	CONSENSUS		MEAN	RANK
						IR	STDEV		
1a. Aggregate Capital Ratio	7	7	8	1	0,956	Convergent	Convergent	8	8
1b. Amount of Banking Credit	6	7	8	2	1,054	Convergent	Convergent	7	14
1c. Financial Assets	6	7	8	2	1,133	Convergent	Convergent	7	10
2a. Non-Performing Loan	8	8	9	1	0,667	Convergent	Convergent	8	1
2b. Debt Equity Ratio	7	7	8	1	0,816	Convergent	Convergent	8	5
2c. Loans in Foreign exchange	6	7	7	1	1,333	Convergent	Convergent	7	18
3a. LENGTH	7	7	7	0	1,523	Convergent	Divergent	7	17
3b. ROE	8	8	9	1	1,812	Convergent	Divergent	8	4
3c. BOPO	7	8	8	1	1,054	Convergent	Convergent	8	5
4a. LDR	7	8	8	1	1,707	Convergent	Divergent	7	9
4b. CB Credit to Financial Inst.	6	7	7	1	1,247	Convergent	Convergent	7	18
4c. Liquid Liability	7	8	8	1	0,737	Convergent	Convergent	8	3
4d. Number of deposits	6	7	7	1	1,1	Convergent	Convergent	7	12
5a. Exchange Rate Risk	7	8	9	2	0,816	Convergent	Convergent	8	2
5b. Interest Rate Risk	8	8	8	0	1,7	Convergent	Divergent	8	5
5c. Stock Price Risk	6	7	8	2	1,315	Convergent	Convergent	7	10
6a.Market price of financial instrumen	7	7	8	1	1,663	Convergent	Divergent	7	12
6b. Credit rating	6	8	8	2	1,886	Convergent	Divergent	7	14
6c. Sovereign yield spread	6	7	8	2	1,155	Convergent	Convergent	7	14

Exchange rate risk ranks second, reflecting the high exposure of Indonesia's financial sector to exchange rate fluctuations, particularly through foreign exchange lending and international capital flows. Previous research has shown that exchange rate volatility can worsen financial institutions' balance sheets and increase systemic risk (Allen & Gale, 2007; IMF, 2019).

The liquid liability indicator ranks third, emphasizing the importance of the liquidity aspect in maintaining the resilience of financial institutions. A bank's inability to meet its short-term obligations can quickly trigger a crisis of confidence and a bank run (Gorton & Metrick, 2012). Therefore, monitoring liquidity indicators is a key element in microprudential policy.

Meanwhile, six indicators did not reach expert consensus, such as ROA, ROE, interest rate risk, and credit ratings. This shows that there are different views on the relevance of these indicators as the main tool of microprudential supervision. This difference can be caused by the characteristics of the Indonesian financial system as well as the policy preferences of each expert.

Overall, the results of this study reinforce the view that microprudential policies in Indonesia need to prioritize indicators that directly reflect credit risk, market risk, and liquidity. This prioritization is expected to help supervisory authorities in improving the effectiveness of supervision and prevention of financial crises.

CONCLUSION

Based on the calculation results, in general, of the 19 microprudential indicators in Indonesia, 13 variables have been agreed upon by experts and only 6 variables have not been agreed. From the results of the calculation using the Delphi method, the 3 main priorities in the Microprudential Indicators in Indonesia are (1) Non-performing loans, (2) Exchange rate risk, and (3) Liquid liability. These findings confirm that credit risk, market risk, and liquidity are the most crucial aspects in maintaining the stability of financial institutions. The results of this study can be a reference for supervisory authorities in formulating policies and focusing on more effective microprudential supervision in Indonesia.

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