

Beyond the Crisis: Tracking SME Non-Performing Loan in Indonesia Before and After the COVID-19 Stimulus

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This study evaluates the impact of two Indonesian government economic stimulus packages on the performance of Non-Performing Loans (NPLs) in the Small and Medium Enterprises (SME) financing sector. It compares the NPLs in conventional and rural banks with Non-Performing Financing (NPF) in Islamic commercial and rural banks, before and after the stimulus, during the COVID-19 crisis period. The two policies are in the form of interest/margin subsidies and credit/financing restructuring for debtors in the SMEs sector. The approach used is a quantitative approach with three analytical methods consisting of ANOVA, MANOVA and DiD (Difference in Difference). The secondary data in this study were sourced from official publications of government institutions such as the Financial Services Authority and the Ministry of Finance. The results showed that there were significant differences in the performance of NPL/F of Conventional banks, Islamic Commercial Banks, Conventional Rural banks, and Islamic Rural banks before and after the government's economic stimulus policy was determined.

OPEN ACCESS

ISSN 2985-3265 (Online)

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Received: 2 February 2024

Accepted: 5 April 2024

Published: 17 April 2024

Citation:

(2024) Beyond the Crisis: Tracking SME Non-Performing Loan in Indonesia Before and After the COVID-19 Stimulus. Review on Islamic Accounting. 4.1.

Keywords: NPL; NPF; Indonesia; Economic Stimulus Policy; Interest Subsidy; Credit/financing Restructuration

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INTRODUCTION

Micro, small and medium enterprises (MSMEs) are one of the important pillars of the Indonesian economy (Jaswadi et al., 2015). The MSME sector in Indonesia significantly contributes to the country's economy. (Surahman & Sya'ban, 2021) reported that MSMEs make up approximately 99.62% of total business units in Indonesia and employ nearly 97% of the country's workforce. Moreover, (Fitrawaty & Maipita, 2022) highlighted that the MSME sector accounts for 14.37% of Indonesia's total exports, showcasing its importance in international trade. Surahman and Sya'Ban (2021) also noted that out of 59.2 million business units in Indonesia, 98.72% are Micro Enterprises. However, despite their dominance, a significant portion of Micro Enterprises still lack access to banking funding, indicating areas for potential growth within the sector. Challenges faced by MSMEs in Indonesia, as indicated by (Lestari, 2022), primarily revolve around capital and marketing. Addressing these challenges could enhance the performance and growth of MSMEs in the country. Additionally, Fitrawaty and Maipita (2022) aimed to analyze the impact of the MSME sector on Indonesia's GDP and the effects of national economic recovery policies on GDP, emphasizing the role of MSMEs in driving economic growth and recovery.

The COVID-19 was a turbulent episode in the globe. However, the emergence of the COVID-19 pandemic has not only caused the global economy but severely affected to the MSME sector in Indonesia (Ahmad & Sahabuddin, 2023; Shafi et al., 2020; Sahabuddin & Ahmad, 2023). The Indonesian Central Statistics Agency (BPS) survey conducted in July 2020 stated that as many as 82.85% of entrepreneurs experienced decreased income due to the Covid-19 pandemic. The most significant decrease in income was experienced by small and medium enterprises (SMEs), which reached 84%, compared to large and medium enterprises, which reached 82%. As a consequence of the reduction in income, as many as 33.23% of the MSE sector made staff reductions. A survey from Bank Indonesia further revealed that 87.5% were negatively affected by the Covid-19 pandemic. Of this amount, 93.2% were affected from the sales side. A total of 16.2% of the affected MSMEs experienced a decline in sales of up to 25%. Then, 40% of MSMEs experienced a 25-50% decline in sales, 28.2% MSMEs experienced a 51-75% decline in sales, and 15.6% of MSME sales fell above 75%. The decline in sales was reflected in the

increase of the NPL (Non-Performing Loan) of Indonesian's banks in the MSME sector which increased to 3.8% in 2020 from 3.4% in 2019 and 3.3% in 2018 (OJK Statistics, 2020). The negative performance of MSMEs is reflected in Indonesia's GDP. Indonesia's economy narrowed by 2.19% on a year-on-year basis in the fourth quarter of the year (BPS, 2021). This situation is an irony amid the role of MSMEs as the pillars of the Indonesian economy

The decline in the performance of the MSME sector can also be seen from the number of MSME credit accounts. In March 2020, credit accounts for the MSME sector were seen at 16.12 million accounts or 33.49% of the total bank credit accounts. When compared to March 2019, this number increased by 8.09% from 14.91 million accounts. However, unfortunately, since the COVID-19 pandemic, the number of MSME credit accounts has experienced a sharp decline from 16.12 million accounts to 15.44 million accounts in July 2020, down by 4.20% (OJK, 2020).

In response to the above problems, the government has taken several policies to help alleviate the impact of the COVID-19 pandemic. One of them is through the Ministry of Finance, namely Regulation of The Minister of Finance No.65/PMK.05/2020 of 2020, which contains the Interest subsidy policy for MSMEs. The MSME subsidies for the National Economic Recovery (**PEN** or *Program Pemulihan Ekonomi Nasional*) program are intended for MSMEs that meet the following criteria: 1) Have an active Credit/Financing debit balance as of February 29, 2020; 2) Not listed in the National Black List; 3) Has a current performing loan category with collectability of 1 or 2 as of February 29, 2020; 4) Have a tax ID number or register for a tax ID number; 5) Must obtain restructuring facility from Credit/Financing Channels for Debtors having a cumulative Credit/Financing ceiling above Rp. 500,000,000 (five hundred million rupiahs) up to Rp. 10,000,000,000 (ten billion rupiahs); 6) Cooperative Debtors in addition to the criteria as above, Debtors must meet the criteria regulated by the Ministry of Cooperatives and Small and Medium Enterprises.

The MSES subsidy for the PEN program is in the form of interest/margin subsidy for Credit/Financing, which is valid for a maximum period of 6 (six) months starting from May 1, 2020. For Credit/Financing from Banking and Financing Companies, the amount of subsidy received are: 1)

Loans with an accumulated ceiling of up to IDR 500 million, will be given interest subsidy/margin subsidy of 6% for the first three months, and 3% for the second three months; 2) Loans with accumulated ceilings above IDR 500 million up to IDR 10 billion, will be given interest subsidy/margin subsidy of 3% for the first three months, and 2% for the second three months.

Furthermore, through the Indonesian Financial Services Authority (OJK or *Otoritas Jasa Keuangan*), the government issued a policy package with the issuance of Financial Services Authority Regulation Number 11/POJK.03/2020 regarding the credit relaxation policy. The policies contained in POJK No. 11 include the following policies: 1) relaxation of credit quality determination (Credit or other financing and/or provision of funds with a ceiling of up to Rp 10 billion can only be based on the accuracy of payment of principal and/or interest/margin/ profit sharing/*ujrah* until March 31, 2021); 2) Provision of restructuring facilities to debtors affected by COVID-19, both individuals, MSMEs and corporations who have historically performed well, regardless of the ceiling amount without any additional allowance for impairment losses (CKPN); 3) Banks can still provide new credit/financing to debtors affected by COVID-19. The determination of the quality of the new credit can be separated from the previous credit quality assessment (the uniform classification principle does not apply).

The government hopes that these policies can help MSMEs in terms of the cost of financing. The reduction in the cost of financing due to interest subsidies and credit relaxation is expected to reduce the overall burden on the MSME sector and is expected to have a positive impact on Indonesia's Economy. It is in line with research conducted by Peter et al. (2018) that showed that the financial assistance program launched by the government could significantly improve the performance of SMEs.

Non-performing loans or financing of the MSMEs sector could serve as a proxy for the probability of default of the MSMEs banking sector's overall loan exposure. It is a proxy that could be used to indicate the credits risk of an overall or particular economic sector. Thus, we use NPL/F of MSMEs sector to capture the differences of credit risk and the performance of MSMEs sector in the presence of economic stimulus policies provided by Indonesian governments. It is an interesting topic as government intervention on the cost of financing will not necessarily decrease the non-performing loan or financing of the MSME sector. Because, in times of crisis, despite the presence of

economic stimulus given by governments, banks will increase their level of prudence in extending credit due to increased credit risk, while on the side of MSME entrepreneurs, they will undoubtedly be significantly affected by a decline in income which will reduce the level of banking confidence in lending to the MSME sector and a decrease in creditworthiness. Therefore, it is essential to be further analyzed on the impact of government intervention policy on the development of banking credit in the MSME sector, specifically by looking at the ratio of non-performing financing to total loans/financing.

In this study, we also compared the NPL of conventional bank with Islamic Bank, and the NPL of conventional rural bank and Islamic Rural bank. Theoretically, Islamic banks and Islamic rural bank can share their losses with the depositors through the PLS mode of finance on the liabilities side, an option not available to their counterparts with their depositors (How et al., 2005), hence will decrease Islamic bank and Islamic rural bank's exposure to risk which leads to higher stability.

Research that investigated the effects of government's intervention on MSMEs NPL/F during the COVID-19 pandemic in Indonesia is lacking. We found case studies in Senegal by Koloma (2021), who investigated the determinants of access to credit, the decline in sales, and the business growth prospect in the 12 months following the COVID 19 pandemic and assess the impact of credit on the MSMEs sales decline. This study highlighted that the greater the access to credit, the greater the difference in sales decline between MSMEs with credit and their counterparts without credit in the COVID 19 pandemic era. He explains that the continued repayment of credit is an important expense (fixed cost) for MSMEs that can prevent them from investing in their business, in which, therefore, he suggested that the government should encourage the banks to extend their loans of maturity and to provide direct investment financial support to MSMEs.

In Brazil, Santos et al. (2020) simulated the economic impact of the withdrawal of informal workers from the labour market due to the social isolation policy implemented during the COVID-19 and the effect of government income compensation policy to make up part of their income. Interestingly, they found that the government income policy mitigates the negative impacts of lockdown by about 50%. In Indonesia, Hardiyanti and Aziz (2021) examined the impact of COVID-19 on the increase in bad credits at conventional commercial banks in Indonesia. Using

simple regression analysis, they found that the COVID 19 cases significantly affect non-performing loans for conventional commercial banks in Indonesia.

This study aims to test the differences in the financing and credit performance of NPL/F of Conventional banks, Islamic Commercial Banks, Conventional Rural banks, and Islamic Rural banks and two (2) packages of government economic stimulus in the MSMEs sector. Moreover, this study proposes to examine the differences in the performance of bad loans from the conventional banking sector (total NPL Conventional Banks and NPL Conventional Rural Banks) and the performance of non-performing financing in the Islamic banking sector (total NPL Islamic Banks, Islamic Business Units of Conventional Bank and Islamic Rural Banks) before the implementation of the government's economic stimulus policies (margin/interest subsidies and credit restructuring) and after the implementation of policies. However, this study further investigates the differences in the performance of bad loans from the commercial banking sector (total NPL Conventional Banks and NPL Islamic Banks), and the performance of non-performing financing in the micro banking sector (total NPL Rural Banks and Islamic Rural Banks) before and after the implementation of the government's economic stimulus policy (e.g. margin, interest subsidies, and credit restructuring).

To the best of our knowledge, none of the previous researches have examined the differences of the NPL/F of Conventional and Islamic banks, both commercial and rural banks, in the presence of Economic stimulus programs conducted by governments in Indonesia. The motivation of this study lies in understanding the dimensions of Government Economic Stimulus and other macroeconomic factors on NPL/F of Conventional and Islamic banks, both commercial and rural banks, in Indonesia. The novelty of this research is on the use of the Government Economic Stimulus factor as a variable included in our study and the time frame of our study since we seek to address the impact of the Government Economic Stimulus factor during the COVID 19 pandemic.

In light of the study gap, this research analyses the difference of NPL/F of Conventional and Islamic banks, both commercial and rural banks, in the presence of the government's stimulus policies, particularly interest subsidy and credit relaxation during COVID 19 pandemics. This research is expected to contribute to

the current existing literature on the credit sector of MSMEs during the COVID19 pandemics by adding the variable of government stimulus policies into equation – which is rarely discussed but is excessively important – onto the discussion. To test robustness, we use three different analytical methods, namely ANOVA, MANOVA and Difference in Difference (DiD) so that the estimation results are expected to be more accurate.

RESEARCH METHODOLOGY

Data

The data is sorted from June 2019 to May 2020, then the before and after categories are made. This category was chosen based on the implementation of the economic stimulus policy in June 2020. So, the data obtained before June 2020 is in the 'Before' category and data after June 2020 is in the 'After' category. These data are based on the publication of Statistics Bank Indonesia and Statistics the banking Sharia of Authority Services Financial and document releases press Ministry of Finance of the Republic Indonesia.

The data used in this study

1. Islamic Commercial Bank SMEs NPL
2. Islamic Banking Unit of Conventional Bank SMEs NPL
3. Islamic Commercial Bank SMEs NPL and Islamic Banking Unit SMEs NPL
4. Islamic Rural Bank SMEs NPL
5. Commercial Conventional Bank SMEs NPL
6. Rural Bank SMEs NPL

The method used is the statistical test method of multivariate analysis of variance or MANOVA. Data processed using SPSS

Assumption Test

The assumption test is a prerequisite that must be met before testing the hypothesis. There are two assumption tests in the MANOVA test, namely the multivariate normality test and the homogeneity test.

Multivariate Normality Test

The assumption that must be met is that the data must have a multivariate normal distribution. A random variable X is said to be normally distributed with mean $= \mu$, and variance $= \sigma$, with a probability density function of specific X as follows:

$$f(X) = \frac{1}{\sqrt{2\pi}\sigma} e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}, -\infty < X < \infty \quad (1)$$

The graph of $y = f(x)$ is a curve or curved line, which is commonly called a bell-shaped (bell-shaped wedge). In multivariate data, more than one variable is involved. A group of variables is said to be normally distributed p-variate with mean vector and variance-covariance matrix if the joint distribution function of p variables is determined by the following formula:

$$f(X_1, X_2, \dots, X_p) = \frac{1}{\sigma} e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}, -\infty \quad (2)$$

If X_1, X_2, \dots, X_p normally distributed multivariate then $(X - \mu)' \Sigma^{-1} (X - \mu)$ distributed χ_p^2 . Based on these properties, the examination of the multivariate normal distribution can be done by making a qq plot of the values:

$$d_i^2 = (X_i - \bar{X})' S^{-1} (X_i - \bar{X}), i = 1, 2, \dots, n \quad (3)$$

To test for multivariate normality, it is necessary to test the following hypotheses:

H_0 : Data is normally distributed multivariate

H_1 : Data is not normally distributed multivariate

With test statistics:

$$d_i^2 = (X_i - \bar{X})' S^{-1} (X_i - \bar{X}) \leq c = \sqrt{\chi_{p,0.5}} \quad (4)$$

Reject H_0 if the value is more than 50 %. That is, more than 50% of the mahalanobis distance is within the multivariate normal contour [2]

Homogeneity Test

MANOVA analysis requires a homogeneous variance-covariance matrix. This homogeneity test can use the Box's M test statistic [3]. The hypothesis and statistics of Box's M test are as follows.

$$H_0 : \Sigma_1 = \Sigma_2 = \dots = \Sigma_k$$

$$H_1 : \Sigma_i \neq \Sigma_j \text{ for } i \neq j$$

Test statistics:

$$\chi_{count}^2 = -2(1 - c_1) \left[\frac{1}{2} \sum_{i=1}^k v_i \ln |S_i| - \frac{1}{2} \ln |S_{pool}| \sum_{i=1}^k v_i \right]$$

Accept the null hypothesis which means that the covariance variance matrix is homogeneous if

$$\chi_{count}^2 \leq \chi_{\frac{1}{2}(k-1)p(p+1)}^2$$

MANOVA test

MANOVA (Multivariate Analysis of Variance) is used to check whether the mean vectors of the population are the same, if not, the mean components are significantly different. MANOVA uses one or more categorical independent variables as predictors and uses more than one dependent variable. The MANOVA test examines the difference in the mean of several dependent variables. In the MANOVA test there are 4 statistical tests that can be used as follows:

1. *Wilks Lambda* test statistics
2. *Lawley Hotelling* test statistics
3. *Roy's Largest Root* test stats
4. *Pillai's Trace* test stats

With the decision-making criteria is to reject H_0 if the P-Value value is less than 0.05.

Post Hoc

If there is a difference in the results of the MANOVA test, it can be continued with the *Post Hoc* test. The *Post Hoc* test is to find out which of my variables has a specific difference. The use of the post hoc test is seen from the results of the homogeneity test, if the data is homogeneous then the Bonferroni test can be used, or if the data is heterogeneous, the Games-Howell test can be used.

Steps

The following are the stages of data analysis using the MANOVA statistical test:

1. Categorize data according to 'Before' and 'After' criteria.
2. Testing the normality of multivariate data through SPSS by:
 - a. Getting the value of mahalanobis (d_i)
 - b. Sorting the value of mahalanobis from smallest to largest
 - c. Create new data containing the numbers 1 to N ($N=72$) named Obs
 - d. Calculating odds by $\frac{(Obs-0.5)}{N}$
 - e. Get the Chisquare value based on the probability value at no (d)
 - f. Testing the Pearson correlation between the Chisquare value and the mahalanobis value (d_i)
3. Testing the homogeneity of the data through SPSS through the *Homogeneity Test* option on the MANOVA test
4. MANOVA test through SPSS by: Click Analyze → General Linear Model → Multivariate → OK

Performing *Post Hoc* follow-up test via *Post Hoc* option: *Gamess-Howell* on MANOVA test.

Research Hypothesis

Table 1 shows four hypothetical frameworks in this study, namely:

Table 1. Research Hypothesis

Hypothesis 1	<p>H_0 : It is suspected that there is no difference in the performance of the NPF of ICB and IBUCB and IRB before the implementation of the government's economic stimulus policy (margin subsidies and credit restructuring) and after the policy</p> <p>H_1 : It is suspected that there are differences in the performance of the NPF of ICB and IBUCB and IRB before the implementation of the government's economic stimulus policy (margin subsidies and credit restructuring) and after the policy</p>
Hypothesis 2	<p>H_0 : It is suspected that there is no difference in the performance of NPL of CB and RB before the implementation of the government's economic stimulus policy (margin subsidies and credit restructuring) because these policies have proven effective in reducing the risk of increasing NPF.</p> <p>H_1 : It is suspected that there are differences in the performance of NPL of CB and RB NPL before the implementation of the government's economic stimulus policy (margin subsidies and credit restructuring) and after the policy due to the impact of the COVID-19 pandemic in Indonesia</p>
Hypothesis 3	<p>H_0 : It is suspected that there is no difference in the performance of non-performing loans from the conventional banking sector (total NPL of CB and CRB) and the performance of non-performing financing in the Islamic banking sector (total NPF of ICB, IBUCB and IRB) before the implementation of the government's economic stimulus policy (margin/interest subsidies and restructuring credit) and after the policy.</p> <p>H_1 : It is suspected that there are differences in the performance of bad loans from the conventional banking sector (total NPL of CB and CRB) and the performance of non-performing financing in the Islamic banking sector (total NPF ICB, IBUCB and IRB) prior to the implementation of the government's economic stimulus policy (margin/interest subsidies and credit restructuring)) and after the policy</p>
Hypothesis 4	<p>H_0 : It is assumed that there is no difference in the performance of non-performing loans from the commercial banking sector (total NPL CB and NPF ICB) and the performance of non-performing financing in the micro banking sector (total NPL of RB and NPF of IRB) prior to the implementation of the government's economic stimulus policy (margin/interest subsidies and credit restructuring) and after the policy because of MSME loans</p> <p>H_1 : It is suspected that there are differences in the performance of non-performing loans from the commercial banking sector (total NPL CN AND NPF ICB) and the performance of non-performing financing in the micro banking sector (total NPL of RB and NPF of IRB) before the implementation of the government's economic stimulus policy (margin/interest subsidies and credit restructuring) and after the policy.</p>

RESULTS

In the intricate landscape of financial analysis, the evaluation of how economic stimulus policies impact non-performing financing (NPF) and non-performing loans (NPL) across various banking sectors offers crucial insights into the resilience and vulnerability of financial institutions in times of economic stress. This comprehensive study meticulously adopts a structured methodology, initially ensuring the validity of the statistical approach through rigorous assumption testing, followed by an in-depth examination of the sector-specific effects of these policies. Each step, underscored by detailed statistical evidence, unfolds a

narrative of differential impacts and nuanced responses within the banking sector.

MANOVA Test Result

Preliminary Assumption Checks

Ensuring Multivariate Normality and Homogeneity

Our analytical journey commences with the foundational step of validating the assumptions for Multivariate Analysis of Variance (MANOVA). This validation is crucial for the integrity of subsequent analyses. The multivariate normality test, as depicted in Table 2, utilizes Pearson correlation coefficients to assess if the dataset—encompassing the effects of economic stimulus policies on non-performing loan

performance—conforms to a multivariate normal distribution. The significance of this test lies in its ability to determine the appropriateness of MANOVA for our dataset. Remarkably, the Pearson correlation values for both examined hypotheses significantly exceed the

critical value, affirming the dataset's adherence to the multivariate normality assumption. This compliance not only greenlights the use of MANOVA test but also instills confidence in the reliability of the findings that follow.

Table 2. Pearson Correlation Decision-Making Criteria

	Pearson correlation	P-value
Hypothesis 1	0.912	0.000
Hypothesis 2	0.957	0.000

The investigation into the homogeneity of covariance matrices, as illuminated by the results in Table 3, presents another layer of analytical rigor. The Box's M test, revealing p-values significantly beneath the 0.05 benchmark, indicates a heterogeneity in the

covariance matrices among the groups under comparison. This revelation, while indicating variability within the data, necessitates a nuanced interpretation of the MANOVA outcomes, reinforcing the complexity of the financial data we navigate.

Table 3. Decision-Making Criteria for Box's M Test

Test	Box's M	F	P-value
Hypothesis 1	103.546	10.556	0.000
Hypothesis 2	17.283	5.193	0.001

Diving Deep into Sector-Specific Impacts

Hypothesis 1: Islamic Banking Sector Under the Microscope

The exploration into the Islamic banking sector, spearheaded by Hypothesis 1, delves into the performance of NPF among various Islamic banking

categories prior to the implementation of economic stimulus policies. The significance of the MANOVA test results, detailed in Table 4, cannot be overstated. These results illuminate significant performance disparities across Islamic banking categories, hinting at the varied impacts economic policies might wield across these segments.

Table 4. MANOVA Test Results for Hypothesis 1

Effect	Value	F	Sig.
Pillai's trace	1.408	34.847	.000
Wilks' lambda	.006	169.647	.000
Hotelling's trace	95.607	669.251	.000
Roy's largest root	94.889	1.391.706	.000

The further dissection of these findings through F statistics and bank category comparisons, as outlined in Tables 5 and 6, enriches our understanding. This layered analysis uncovers subtle yet significant differences in Non-performing financing performance

within the Islamic banking sector, offering a granular view that is invaluable for policymakers aiming to tailor interventions and policy to the unique dynamics of this sector.

Table 5. F Statistic Test for Hypothesis 1

Effect	F	Sig.
Before	10.851	.000
After	1.325.726	.000

Table 6. P Value Test Results with Several Bank Categories Criteria

Bank Category	P-value Before	P-value After	Description
Non-performing financing of Islamic commercial bank vs. Islamic business unit of conventional bank	1.000	0.000	There is a difference
Non-performing financing of Islamic commercial bank & Islamic business unit of conventional bank	0.007	0.000	No difference
Non-performing financing of Islamic rural bank	0.579	0.000	There is a difference
Non-performing financing of Islamic commercial bank & Islamic business unit of conventional bank SMEs vs. Islamic business unit of conventional bank	0.000	0.000	No difference
Non-performing financing of Islamic rural bank	0.000	0.000	No difference
Non-performing financing of Islamic business unit of conventional bank SMEs vs. Islamic rural bank	1.000	0.000	There is a difference

Hypothesis 2: Conventional Banking Sector's Response

Shifting focus to the conventional banking sector, Hypothesis 2 uncovers the differential impact of economic stimulus policies on NPL performance

between conventional commercial banks and rural banks. The revelations in table 7, showcasing significant performance differences, spotlight the nuanced response of these bank types to economic stimuli.

Table 7. MANOVA Test Results for Hypothesis 2

Effect	Value	F	Sig.
Pillai's trace	0.994	1.758.113	.000
Wilks' lambda	0.006	1.758.113	.000
Hotelling's trace	167.439	1.758.113	.000
Roy's largest root	167.439	1.758.113	.000

The subsequent consistency of these differences, as highlighted in Table 8, underscores the profound influence of operational scales, risk exposure, and clientele profiles in shaping financial outcomes. This

segment of our analysis sheds light on the conventional banking sector's complexity, offering insights into the mechanisms through which economic policies permeate these institutions.

Table 8. Significance Test Results of MANOVA for

Bank Category	Sig.
Non-performing financing of conventional commercial bank SMEs vs. Non-performing financing of conventional rural bank SMEs	.000

Hypothesis 3: Conventional vs. Islamic Banks

Table 9 presents the differential response of conventional and Islamic banks to economic stimulus policies, as measured by the changes in non-performing loans. The aggregate impact on both banking types is significant, with a colossal negative T value of -5.581 and a p-value of 0.000, indicating a substantial collective response to the stimulus. However, when disaggregating the data, conventional banks showed a smaller mean increase in non-performing loans, with a T value of -2.075 and a p-value that approaches the threshold of statistical significance at 0.062. This suggests a marginal

but not statistically significant change at the conventional 5% alpha level, pointing towards a more modest impact of the stimulus policies on conventional banks.

In contrast, Islamic banks exhibited a much larger mean increase in non-performing loans, with a T value of -9.726 and a p-value of 0.000, a clear indication of the stimulus policies' significant effect on this sector. The magnitude of this impact reflects the distinct operational and risk principles that underpin Islamic banking, which may make them more susceptible to the variances induced by such economic policies. The

results from Table 9 demonstrate that the economic stimulus policies had a profound and statistically significant impact on the Islamic banking sector,

potentially warranting a targeted policy approach to mitigate the risk of increased non-performing loans.

Table 9. Difference Test Results for Hypothesis 3

Variable	Difference	T	P-value
Conventional & Islamic banks	305.140.125	-5.581	0.000
Conventional	1.062.667	-2.075	0.062
Islamic	5.040.136	-9.726	0.000

Hypothesis 4: Commercial vs. Micro Banks

Moving to the microscale of the banking industry, Table 9 examines the effect of economic stimulus policies on commercial and microbanks. The combined impact on both bank types is statistically significant, with a T value of -2.354 and a p-value of 0.000, suggesting that as a group, these institutions are significantly affected by the stimulus policies. However, when considering the sectors individually, the commercial banks present a T value of -7.945 with a p-value of 0.038*. This p-value indicates a significant change at the conventional 5% level but notes that the result would not be significant if a more stringent alpha of 1% was adopted, implying that while there is an impact, it's on the cusp of conventional statistical significance.

Microbanks, with a T value of -5.093 and a p-value of 0.000, experienced a notably significant increase in non-performing loans post-stimulus policy

implementation. This heightened sensitivity to economic changes underscores the inherent challenges faced by smaller banking institutions, which often operate with tighter margins and less diversified risk portfolios. The microbanking sector's substantial response to economic stimulus policies, as shown in Table 9, highlights the need for more granular and perhaps more supportive policy measures to ensure the stability and sustainability of these smaller financial entities within the broader economic landscape.

Difference in Difference Test Result

The difference-in-difference analysis offers a nuanced view into the banking sector's response to the government's economic stimulus policies, specifically evaluating the adverse effects of such policies as reflected in the increases in non-performing loans (NPL) and financing (NPF).

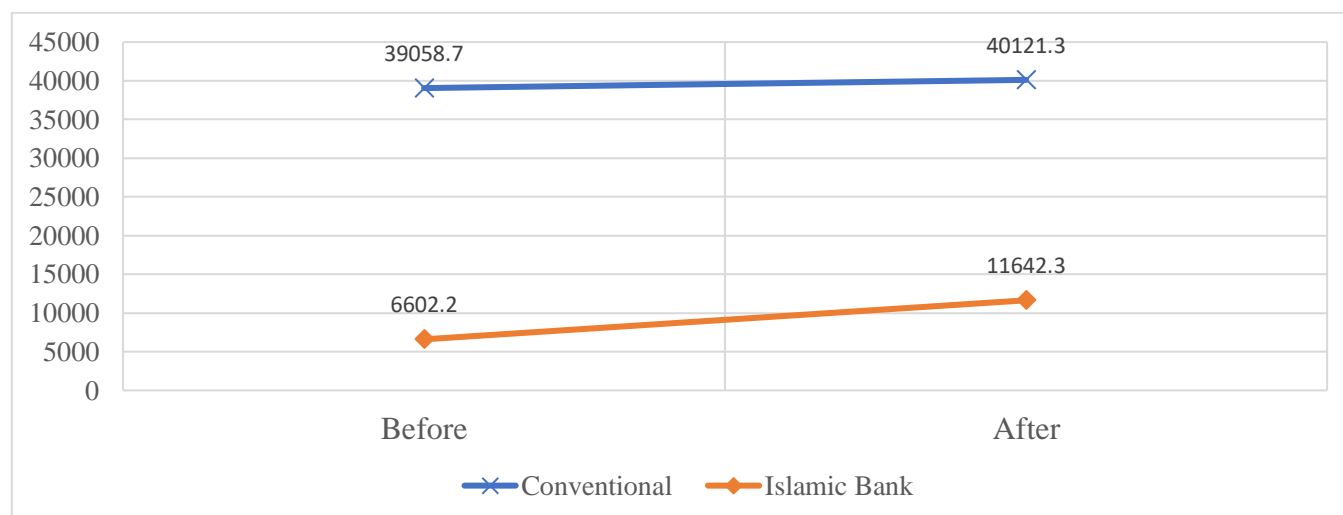


Figure 1. Difference between conventional and Islamic banks before and after policy (in billion rupiah)

In Figure 1, the analysis draws a stark comparison between the conventional and Islamic banking sectors. Post-implementation of the economic stimulus, Islamic banks experienced a substantial increase of 5040.1 billion rupiah in NPL, signaling a

considerable burden on their ability to collect receivables from borrowers. This significant rise indicates that Islamic banks, which follow different financial and lending principles, may face more challenges in loan recovery in the aftermath of economic stimulus

measures. This surge in NPL could suggest that these institutions are more vulnerable to policy-induced economic fluctuations or that their borrowers are more affected by the underlying economic conditions that necessitated the stimulus.

Figure 2 illustrates the differential impact on commercial banks and microbanks, with the latter experiencing a more dramatic rise in NPL, increasing by 4999.62 billion rupiah compared to the former's increase

of 726.2 billion rupiah. The sharper rise for microbanks highlights their fragile position and suggests that these institutions may lack the financial resilience or diversification to weather the effects of stimulus policies effectively. Microbanks' clientele, often more sensitive to economic downturns, may struggle to meet loan obligations, leading to a more pronounced increase in NPL.

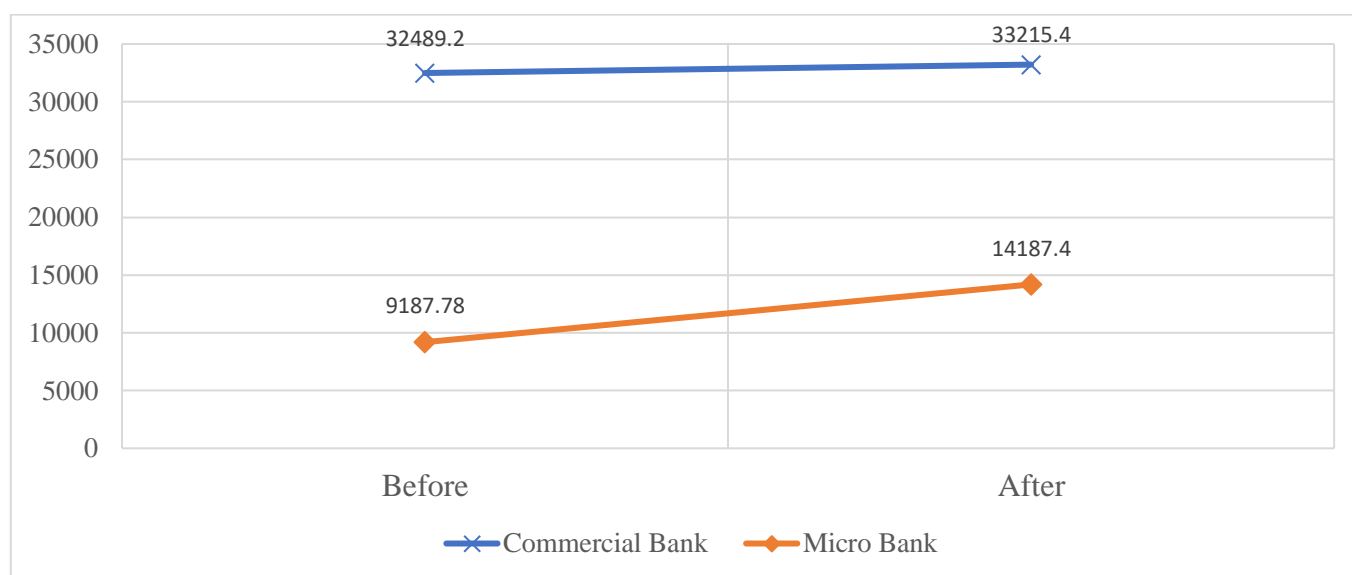


Figure 2. Difference between commercial and micro banks before and after policy (in billion rupiah)

Aligning Findings with Research Objectives

Our findings emphasize the adverse effects of increased NPL and NPF across different banking sectors following economic stimulus policies:

1. **Islamic Banking Sector:** The performance changes in NPF post-stimulus reflect that Islamic banks are bearing a heavier load of non-performing financing. This underscores a need for policies that consider the unique credit risk and recovery processes intrinsic to Islamic banking, which may be more susceptible to economic downturns.
2. **Conventional Banking Sector:** Despite the government's economic stimulus policies, conventional commercial banks and rural banks still experienced an increase in NPL, pointing to the pervasive nature of financial distress during economic uncertainty. While the rise in NPL was relatively smaller for conventional banks, it nevertheless indicates that borrowers across the board are facing difficulties.
3. **Comparison Between Conventional and Islamic Banking Sectors:** The comparison of bad loans'

performance reveals that economic stimulus policies may have exacerbated the challenges in NPL recovery for both sectors. Islamic banks, in particular, seem to have been hit harder, reflecting a need for policy measures that can address the unique challenges faced by these banks and their customers.

4. **Commercial Banking versus Microbanking Sectors:** The microbanking sector's significant increase in NPF post-policy implementation paints a troubling picture of their capacity to manage credit risk under the strain of economic stimulus measures. This sector likely requires more focused support to mitigate the risk of rising NPF and to assist borrowers in meeting their financial obligations.

The increase in NPL and NPF across all banking sectors is a worrying trend, as it signals a growing inability of borrowers to fulfill their financial commitments, which can have long-term repercussions on the health and stability of the banking sector. Tailored and responsive policy measures are essential to address these issues, taking into account the unique

characteristics of each banking sector to alleviate the financial strain on banks and their clients.

Calculation Difference Approach

Table 10 provides a comprehensive snapshot of the banking sector's performance in terms of non-

performing financing (NPF) and non-performing loans (NPL) before and after the government's implementation of economic stimulus policies. The average nominal values recorded offer a quantitative perspective on the shifts experienced across various banking institutions, highlighting the differential impacts of these policies.

Table 10. Average nominal achieved both before and after the economic stimulus policy

Bank	Mean		Difference
	Before	After	
Non-Performing Financing of Islamic Commercial Bank	1600.50	1753.67	+153.17
NPF of Islamic Business Unit of Conventional Bank	1191.67	1303.67	112
Non-Performing Financing of Islamic Commercial Bank and Islamic Business Unit of Conventional Bank	2792.25	3057.17	+264.92
Non-Performing Financing of Conventional Rural Bank	1017.78	5527.83	+4510.05
Non-Performing Loans of Conventional Commercial Bank	3.09E4	3.15E4	+600
Non-Performing Loans of Conventional Rural Banks	8170.00	8659.58	+489.58

Islamic Banking Sector

For the Islamic banking sector, the figures before and after the implementation of stimulus policies show an increase in NPF across all categories. The Islamic Commercial Bank experienced a moderate rise (+153.17), while the combined increase of Islamic Commercial Banks and Islamic Business Units of Conventional Banks indicated a slightly larger cumulative impact (+264.92). However, the most significant jump was observed in the NPF of the Islamic Business Unit of Conventional Bank (+112) and the Conventional Rural Bank, which saw a dramatic rise (+4510.05). These changes suggest that the economic stimulus, while aimed at providing relief, may have led to unintended consequences where the accumulation of NPF has become more pronounced, especially within rural areas where the economic conditions might have been more challenging. This outcome aligns with our first research objective, revealing a need for more nuanced policy tools that take into account the distinct operational models and customer bases of Islamic financial institutions.

Conventional Banking Sector

Turning to the conventional banking sector, the increment in NPL post-stimulus was less severe than in the Islamic sector but still notable. Conventional Commercial Banks saw an increase (+600), which was comparatively less than that of the Conventional Rural

Banks (+489.58). These numbers, although indicating a negative trend, demonstrate a relatively contained impact on commercial banks, perhaps due to their broader risk distribution and more robust credit recovery systems. However, the increase in rural areas points to the vulnerabilities of smaller institutions and their clients to economic downturns, emphasizing the need for targeted assistance to this subset of the conventional sector, as suggested by our second and third research objectives.

Comparative Analysis Across Sectors

In comparing the conventional and Islamic banking sectors, it becomes evident that the rise in non-performing financial metrics was more significant in the Islamic sector, particularly within rural institutions. This observation underscores the fourth research objective, which seeks to compare the performance changes across commercial and microbanking sectors. The data reveals that microbanking, often representative of rural banking activities, bears a heavier burden post-stimulus, highlighting the sector's fragility and the necessity for more finely calibrated economic interventions.

The juxtaposition of conventional and Islamic banks through Hypothesis 3, vividly captured in Figure 3, provides a stark visualization of the differential trajectories of NPL increases following policy implementation. This comparative analysis not only quantifies the disparities but also sparks a conversation on the underlying factors driving these differences. The pronounced increase in NPL within Islamic banks, in

contrast to their conventional counterparts, paints a picture of varied susceptibility to economic stimuli,

rooted perhaps in fundamental operational and financial principles distinct to each banking model.

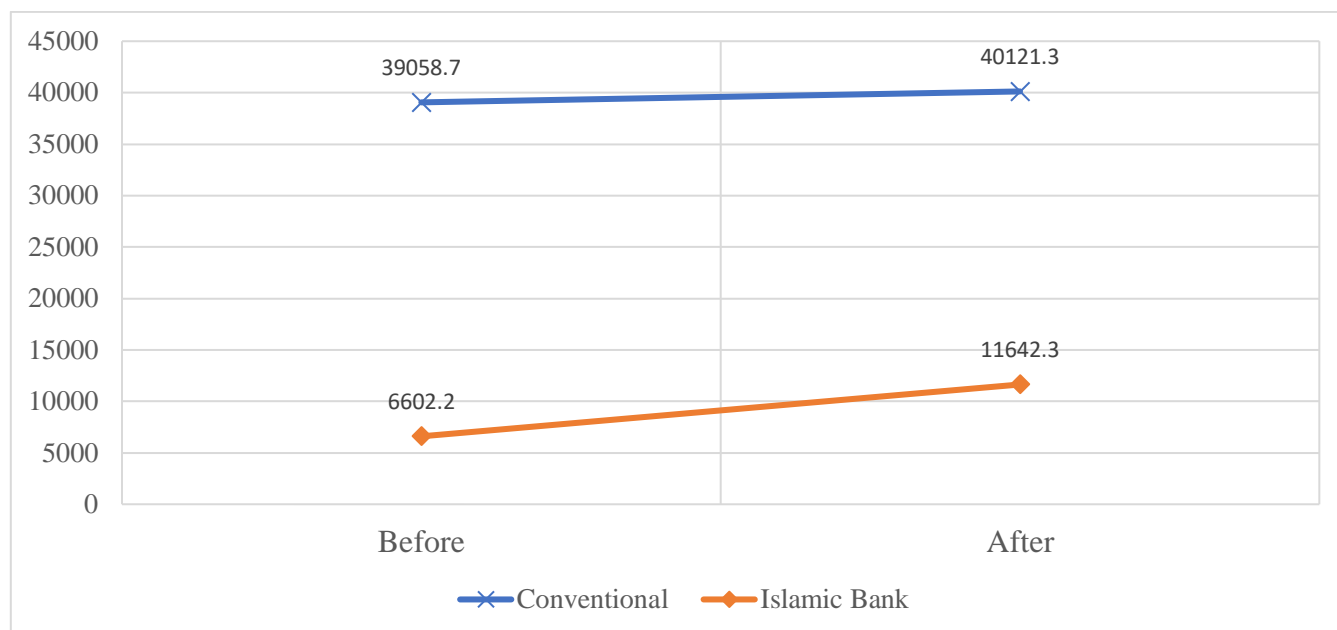


Figure 3. Difference between conventional and Islamic banks before and after policy (in billion rupiah)

Hypothesis 4: Commercial vs. Microbanking Sector Dynamics

Further enriching our analysis, Hypothesis 4 examines the commercial versus microbanking sectors, as illustrated in Figure 4. This segment of the study uncovers the significant increase in NPL for microbanks compared to commercial banks in the post-policy

period, highlighting the varying degrees of impact economic policies have across different banking models. This distinction not only underscores the heterogeneity within the banking sector but also emphasizes the critical need for economic policies that are finely tuned to the unique challenges and characteristics of different banking institutions.

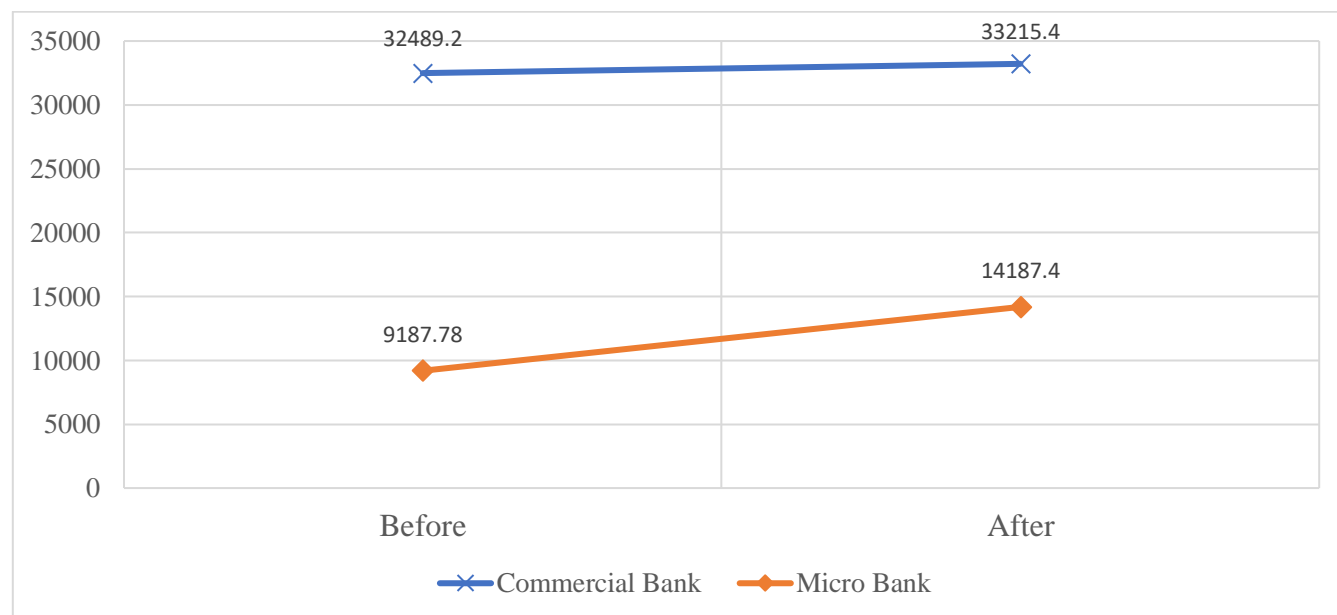


Figure 4. Difference between commercial and micro banks before and after policy (in billion rupiah)

Research Findings Synthesis Based on Three Method Analysis

Table 10 provides a meticulous record of the financial well-being of different banking sectors before and after the introduction of the government's economic stimulus policies. It reveals the variations in the performance of non-performing financing (NPF) and loans (NPL) that have critical implications for the effectiveness of these policies.

Within the Islamic banking sector, a rise in NPF post-policy reflects a growing challenge in collecting receivables. The Islamic Commercial Bank's moderate increase (+153.17) contrasts with the Conventional Rural Bank's substantial jump (+4510.05), suggesting that the economic relief intended by the stimulus policies may not have been universally beneficial across the sector. Such a significant rise, especially in rural institutions, may point to a mismatch between the policy measures and the unique financial mechanisms of Islamic banking.

The conventional banking sector also experienced an escalation in non-performing metrics. The rise in NPL for Conventional Commercial Banks (+600) and Conventional Rural Banks (+489.58) indicates that the measures, such as interest subsidies and credit restructuring, were insufficient to prevent the deterioration in loan performance. This observation resonates with the research objectives, showing that despite the intention to stabilize the financial sector during economic hardship, both rural and commercial banks continue to face difficulties.

The comparison of Islamic and conventional banking sectors' post-policy performance highlights a notable variance. Islamic banks, adhering to specific financial principles, seem to have been more adversely affected by the stimulus policies compared to their conventional counterparts. This differentiation reveals that a one-size-fits-all approach to economic stimulus may not be suitable, especially considering the distinct operational models that govern Islamic banks.

Furthermore, the stark contrast in the microbanking sector's performance compared to commercial banks emphasizes the former's vulnerability. The significant rise in NPF for microbanks signals a distressing increase in financial strain within this sector, which often serves a clientele that is inherently more vulnerable to economic downturns.

When synthesizing the research findings through the lens of the MANOVA test results, the difference-in-difference analysis, and the calculated

differences post-policy implementation, a coherent narrative emerges. It is apparent that while the stimulus policies were designed to provide economic support, their impact was uneven across the banking sectors. Islamic and rural banking institutions, along with microbanks, have witnessed a substantial increase in non-performing metrics, suggesting that these sectors might require a more nuanced approach to policy support. These findings highlight the importance of customizing economic policies to the operational realities and risk profiles of different banking models to effectively address the challenges posed by non-performing financing and loans.

The findings of our study suggest that the government's economic stimulus packages, aimed at supporting MSMEs through interest/margin subsidies and credit/financing restructuring, may not have been entirely effective in maintaining the health of the banking sector.

1. The increase in non-performing financing (NPF) within the Islamic banking sector, despite these policies, indicates that the support measures might not have sufficiently addressed the specific needs or operational challenges of these banks, thereby not contributing positively to the sector's financial stability.
2. The rise in non-performing loans (NPL) in both commercial and rural conventional banks, especially the greater vulnerability shown by rural banks, suggests that while the stimulus might have provided temporary relief, it was not robust enough to prevent the deterioration in credit performance, thus not supporting the overall health of the banks.
3. The comparative analysis revealing a higher increase in non-performing metrics among Islamic banks implies that the stimulus measures may have been less compatible with or effective for the unique compliance and risk-sharing frameworks of Islamic finance, thereby not supporting the assumption that the policy would bolster financial health.
4. The significant surge in non-performing financing within the microbanking sector indicates that these policies were perhaps not tailored to the particular risks and operational scales of smaller banks serving Micro Small and Medium Enterprises/MSMEs, leading to increased financial strain rather than improved health in this sector.

DISCUSSION

The increase in non-performing financing post-stimulus in the Islamic banking sector, despite government-provided margin fee subsidies, can be attributed to the broader economic downturn caused by the COVID-19 pandemic. This economic downturn significantly impacted the financial health of individuals and businesses, leading to increased financial distress despite the subsidies. Islamic banking customers, similar to those in the conventional banking sector, faced challenges such as job losses, decreased income, and business disruptions, affecting their ability to fulfill financial obligations (Anto et al., 2022) (SISWANTORO, 2022) (Sutrisno et al., 2020). The pandemic-related factors, including economic shutdowns and restrictions, have had a profound impact on various business sectors, influencing the financial stability of banks and their customers (Widarjono et al., 2020) (Candera & Indah, 2021). The COVID-19 crisis triggered the need for financial assistance to support those affected by the pandemic, highlighting the importance of targeted interventions to address the challenges faced by Islamic banks and their (Yudaruddin, 2023) (Shawtari et al., 2019). Furthermore, the pandemic has affected the performance of Islamic banks, with implications for their margins, profitability, and overall soundness (Fakhrunnas & Hasanah, 2022) (Khan et al., 2021) (Ashraf et al., 2022). The determinants of non-performing financing in Islamic banks, particularly in the Small-Medium Enterprises (SMEs) sector, have been analyzed to understand the impact of the pandemic on bank operations and financial health (Malim & Normalini, 2018) (Albaity et al., 2022) (Fakhri & Darmawan, 2021). Measures of profitability levels, customer satisfaction, and the interaction of digital services in Islamic banking have been studied to assess the resilience and performance of Islamic banks amidst the pandemic (Fakhrunnas & Hasanah, 2022) (Ghosh, 2023). Comparative studies on financial performance between Islamic and conventional banking during the COVID-19 pandemic have provided insights into the unique challenges and opportunities faced by Islamic financial institutions.

The increase in non-performing financing post-stimulus in the Islamic banking sector, despite government-provided margin fee subsidies, can be attributed to the vulnerabilities associated with asset-backed financing during the COVID-19 pandemic. Islamic banks typically engage in asset-backed or sales-based financing, and the economic downturn resulting from reduced consumer spending and business activity

likely diminished the value of assets and the profitability of financed ventures. This situation impacted the repayment capacity of borrowers, leading to an increase in non-performing financing levels (Rahmah & Armina, 2020) (Suzuki et al., 2020). The pandemic-related economic challenges have affected the financial performance of Islamic banks, emphasizing the need to address vulnerabilities in asset quality and operational efficiency to ensure financial stability (SISWANTORO, 2022) (Saleem, 2023) (Widarjono & Rudatin, 2021). Studies have explored the impact of financing diversification and the determinants of non-performing financing in Islamic banks, highlighting the importance of efficient operations and risk management practices ((Lantara et al., 2022) (Mansour et al., 2021) (Ariani et al., 2022). Furthermore, the COVID-19 pandemic has underscored the importance of sound asset quality and operational efficiency in Islamic banking, particularly in the context of supporting Small-Medium Enterprises (SMEs) and navigating economic shocks ((Alzoubi & Obeidat, 2020) (Pratiwi, 2023) (Fakhrunnas & Hasanah, 2022). The pandemic has also influenced the financial performance of Islamic banks, necessitating a comprehensive understanding of the factors affecting non-performing financing and the stability of banking operations (Canggih et al., 2022).

Operational and Regulatory Constraints

Despite margin fee subsidies, Islamic banks operate under specific Sharia-compliant frameworks that may limit their flexibility in restructuring financing or pursuing aggressive recovery actions, compared to their conventional counterparts. These constraints could have hindered the effectiveness of the subsidies in mitigating the impact of the pandemic (Hamza, 2013) (Moosa, 2023) (Prasojo et al., 2022). Islamic banks' adherence to Sharia principles and governance structures, overseen by Sharia Supervisory Boards, can influence their operational decisions and risk management practices (Hamza, 2013; Prasojo et al., 2022). The regulatory framework governing Islamic banking, including compliance with Islamic law and ethical standards, may impose constraints on the banks' operational strategies and response to economic challenges (Moosa, 2023) (Zaini & Shuib, 2021). Moreover, the unique characteristics of Islamic financial products, such as profit-sharing arrangements and asset-backed financing, require compliance with Sharia principles, which can affect the banks' operational flexibility during times of economic stress (Moosa, 2023; Zaini & Shuib, 2021). The application of Sharia

principles in Islamic banking, including the issuance of Sharia-compliant securities and social reporting practices, adds another layer of complexity to the operational environment (Zaini & Shuibz) (Devi et al., 2022). The effectiveness of margin fee subsidies provided by the government to Islamic banks may be influenced by the banks' ability to navigate these operational and regulatory constraints while maintaining financial stability and managing non-performing financing levels (Hamza, 2013; Prasajo et al., 2022; Moosa, 2023). Addressing these challenges requires a nuanced understanding of the Sharia governance framework, operational dynamics, and regulatory environment in which Islamic banks operate.

Uptick in Non-Performing Loans in the Conventional Banking Sector

The surge in non-performing loans in the conventional banking sector, despite interest subsidies and credit restructuring, highlights the significant impact of the pandemic. It indicates that the economic repercussions of COVID-19, including widespread business disruptions, job losses, and a decline in consumer spending, were profound enough that government interventions could not entirely offset their effects on borrowers' loan repayment capabilities ((Ozili, 2019)(Podpiera & Weill, 2008). Various macroeconomic factors, such as real GDP growth, share prices, exchange rates, and lending interest rates, play a crucial role in determining the levels of non-performing loans in the banking sector (Ozili, 2019). The bad management hypothesis suggests that declines in cost efficiency may precede increases in non-performing loans, emphasizing the importance of effective management practices in averting the deterioration of loan quality (Podpiera & Weill, 2008). Additionally, corporate governance aspects and country-specific governance factors can impact the prevalence of non-performing loans in traditional banks. Examining the relationship between non-performing loans and macroeconomic performance offers insights into the systemic risks and economic conditions contributing to the accumulation of non-performing assets in the banking sector (Radivojević & Jovovic, 2017). The influence of non-performing loans on banks' profitability and financial performance underscores the necessity for robust risk management practices and regulatory oversight to uphold the stability of the banking system (Lafuente et al., 2019)(Adamanti et al., 2022).

Greater Negative Impact on Islamic Banks Compared to Conventional Banks

The observation that Islamic banks suffered a greater negative impact, despite receiving margin fee subsidies, suggests a complex interplay of factors. This disparity may reflect the unique operational challenges and constraints faced by Islamic banks during the pandemic, including the strict adherence to Sharia principles, which could limit their ability to engage in certain types of financial relief and restructuring strategies available to conventional banks. Additionally, the sectors financed by Islamic banks may have been disproportionately affected by the pandemic, exacerbating the impact on non-performing financing (Khoirotunnisa & Zulfikar, 2022). Islamic banks' operational risk, including legal and Sharia compliance risks, may pose additional challenges compared to conventional banks, impacting their ability to navigate economic shocks effectively (Bilgin et al., 2020). The study by (Rashid et al., 2017) suggests that Islamic banks have performed better than conventional banks in contributing to financial stability, indicating a potential resilience in the face of crises (Rashid et al., 2017). However, the unique operational dynamics of Islamic banking, such as profit-sharing arrangements and asset-backed financing, may have influenced the sector's response to the economic downturn caused by the pandemic (Khoirotunnisa & Zulfikar, 2022). Moreover, the study by (Fakhri & Darmawan, 2021) highlights that Islamic banks faced more management difficulties during the pandemic, including issues with liquidity, market risk, and non-performing financing ratios, which could have contributed to the sector's challenges (Khoirotunnisa & Zulfikar, 2022). The comparison between Islamic and conventional banking performance during the COVID-19 period underscores the need to consider the specific operational and regulatory environments in which Islamic banks operate (Fakhri & Darmawan, 2021).

Significant Increase in Non-Performing Financing Among Microbanking Entities

Microbanking entities, crucial for supporting SMEs and microenterprises, encountered a significant increase in non-performing financing. This trend indicates that, despite stimulus efforts, the unique challenges and vulnerabilities of small businesses to the pandemic's economic fallout were not fully addressed. The operational nuances of microbanking, including their focus on serving high-risk, low-margin clients, might have made it particularly challenging to mitigate

the pandemic's impact, highlighting the need for more targeted and nuanced support measures (Mulyasana & Yustika, 2022). The challenges faced by microbanking entities during the pandemic, such as disruptions in business operations and reduced cash flows for small businesses, have likely contributed to the rise in non-performing financing levels (Mulyasana & Yustika, 2022). The study by Mulyasana & Yustika (2022) emphasizes the importance of developing tailored strategies to address the specific needs of microenterprises and SMEs, which form the backbone of many economies (Mulyasana & Yustika, 2022). The vulnerability of small businesses to economic shocks, coupled with limited access to financial resources, underscores the importance of targeted financial assistance and support mechanisms (Mulyasana & Yustika, 2022). Furthermore, the study by Mulyasana & Yustika (2022) highlights the significance of quality management practices in enhancing the resilience and sustainability of micro, small, and medium enterprises (MSMEs) during challenging times (Mulyasana & Yustika, 2022). The impact of the COVID-19 pandemic on the financial health of entities, particularly in the microbanking sector, underscores the need for comprehensive strategies to address the unique challenges faced by small businesses (Mulyasana & Yustika, 2022). The study by Mulyasana & Yustika (2022) suggests that a holistic approach to supporting MSMEs, including quality management initiatives, can contribute to the long-term viability of these entities.

CONCLUSION AND RECOMMENDATION

In conclusion, while the stimulus policies aimed to provide economic support, especially to MSMEs, the observed increases in non-performing financing and loans across all sectors post-policy signal that the measures may not have been entirely effective. Particularly, the Islamic and microbanking sectors' heightened negative response implies a need for policy recalibration to better cater to the specific challenges these sectors face. The findings suggest that the economic stimulus packages, though well-intentioned, were not as conducive to maintaining the health of the banking sector as hypothesized, indicating a pressing need for more nuanced policy interventions.

Limitations of the Study

While our study provides comprehensive insights into the effectiveness of government economic stimulus policies within the banking sector, it's

important to recognize the limitations that frame these findings. Firstly, the analysis methods utilized—MANOVA, difference-in-difference, and difference calculation approaches—offer significant insights but are unable to encompass all external variables that may have influenced banking performance, including broader economic trends and specific challenges within the banking sector that are unrelated to the stimulus efforts.

Another critical aspect to consider is the powerful impact of the COVID-19 pandemic on the global economy and the banking sector specifically. The increase in non-performing financing (NPF) and loans (NPL) observed across the banking sector may not solely be a reflection of the stimulus policies' efficacy but also the pandemic's unprecedented economic disruptions. Without the stimulus packages, it's conceivable that the situation regarding NPL and NPF could have been markedly worse, suggesting that while the policies may not have fully mitigated the pandemic's impact, they potentially prevented more severe financial deterioration within the banking sector.

Additionally, the study's focus on immediate pre- and post-policy implementation periods may not capture the long-term effects of the stimulus measures or account for delayed responses within the banking sector. The unique operational models of the Islamic banking sector and the specific challenges faced by microbanking institutions serving a vulnerable client base also necessitate a more in-depth examination to fully understand the stimulus policies' impact, an area that was beyond this study's scope.

Finally, assuming a uniform effect of the stimulus across various banking models may oversimplify the complex reality of such economic interventions. The COVID-19 pandemic's overarching influence, coupled with the varied nature of banking operations, suggests that future research could benefit from incorporating a longitudinal perspective, a broader dataset, and integrating qualitative insights from affected banking sectors to provide a more nuanced understanding of the stimulus policies' long-term effectiveness and impact.

Future Study Recommendation

Given the limitations identified in our study, there are several avenues for future research that could provide deeper insights into the factors influencing non-performing loans (NPL) and financing (NPF) within the banking sector, particularly in the context of government stimulus measures and the economic fallout

from the COVID-19 pandemic. Here are some recommendations for future studies:

1. **Incorporation of Additional Variables:**

Future research should consider a broader set of variables that could influence NPL and NPF outcomes. This includes macroeconomic indicators such as GDP growth rate, unemployment rate, inflation rate, and specific sectoral impacts of the pandemic. Analyzing the correlation between these variables and NPL/NPF rates could offer a more comprehensive understanding of the dynamics at play.

2. **Advanced Econometric Methods:**

Employing advanced econometric methods such as panel data analysis, vector autoregression (VAR), or dynamic stochastic general equilibrium (DSGE) models could provide more nuanced insights into the causal relationships between economic stimulus policies and banking sector performance. For example, panel data analysis could help control for unobserved heterogeneity across banks and over time, allowing for a more detailed examination of the stimulus policies' effects.

3. **Longitudinal Studies:** Conducting longitudinal studies that track the performance of the banking sector over a more extended period post-stimulus implementation could shed light on the longer-term effects of such policies. This approach would be valuable in understanding the delayed impacts of stimulus measures on NPL and NPF rates, offering insights into the sustainability of their effects.

4. **Comparative Cross-Country Analysis:** A comparative study across countries that implemented varying types and degrees of economic stimulus in response to the COVID-19 pandemic could offer valuable insights. Such research could highlight best practices and lessons learned, providing a global perspective on effective strategies to mitigate the impact of economic downturns on the banking sector.

Recommendation for Government

Based on the conclusions drawn from our study regarding the impact of government economic stimulus policies on the banking sector during the COVID-19 pandemic, we propose the following recommendations for government action:

1. **Tailored Stimulus Measures:** Governments should consider developing more tailored economic stimulus measures that account for the unique characteristics and needs of different banking sectors, including Islamic banking, conventional banking, and microbanking sectors. This approach could ensure that stimulus efforts are more effectively aligned with the operational models and risk profiles of various banking institutions.
2. **Enhanced Support for Vulnerable Sectors:** Recognizing the heightened sensitivity of the microbanking sector and Islamic banking institutions to economic downturns, targeted support measures are necessary. These could include specialized funding programs, risk-sharing mechanisms, or direct subsidies aimed at bolstering the resilience of these institutions and their clients, particularly those serving the MSMEs sector.
3. **Long-term Financial Health Strategies:** Beyond immediate stimulus measures, governments should develop long-term strategies aimed at enhancing the overall financial health of the banking sector. This may involve regulatory reforms, capacity building for risk management, and initiatives to improve financial literacy among borrowers to reduce the likelihood of non-performing loans and financing.

Monitoring and Evaluation Mechanisms:

Implementing robust monitoring and evaluation mechanisms to assess the effectiveness of stimulus measures in real-time is crucial. This would enable timely adjustments to policies based on observed impacts and emerging challenges, ensuring that support remains relevant and effective as economic conditions evolve.

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