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The Effect of Earning Asset Quality and Loan to Deposit Ratio on Non-Performing Loan of Rural Banks: Comparison between before and during the Covid-19 Pandemic

Apriatni Endang Prihatini[1], Ngatno[2], Saryadi[3]
[1,2,3] Departement Administrasi Bisnis, Universitas Diponegoro, Semarang, Indonesia

ABSTRACT: This study aims to analyze the effect of Loan to Deposit Ratio (LDR) and Earning Asset Quality (EAQ) on Non-Performing Loan (NPL) before and during the Covid-19 pandemic. The data used in this study are the quarterly reports of rural banks in Central Java from 174 banks. Data analysis was carried out by comparing multiple linear regressions before and during the Covid-19 pandemic. The results show that the Covid-19 pandemic can strengthen the negative relationship between LDR and NPL, as well as strengthen the positive relationship between EAQ and NPL. LDR before the Covid1-19 pandemic had an insignificant negative effect, but during the pandemic it had a negative and significant effect. Whereas EAQ had a positive effect on NPL both before and during the Covid-19 pandemic.

KEY WORDS: Covid-19, EAQ, LDR, NPL, Rural Bank.

INTRODUCTION

Since the beginning of 2020, the world has experienced drastic changes, where interactions between humans in various aspects of life are limited to social distancing and physical distancing. This happened with the outbreak of the Covid-19 virus in Wuhan, Republic of China, on December 31 2019. This virus was detected in Indonesia on March 3 2020. Since then, activities and patterns of interaction in Indonesia have begun to be limited by following health protocol recommendations. The government responded by implementing a policy called Large-Scale Social Restrictions. These restrictions certainly have an impact on economic activity in almost all sectors. According to a release from the supervisory body for financial services activities, in this case the Financial Services Authority (FSA), that the profits of commercial banks after Covid-19 have decreased compared to previous periods. Likewise net interest income, interest income and interest expense fell. While bank deposits recorded higher growth, the credit to deposit ratio (LDR) and net interest margin decreased.

The good or bad of a bank can be seen from the performance of the bank which is assessed through the profitability achieved. Meanwhile, according to the Deposit Insurance Corporation, many BPRs have been affected by Covid-19 so they are feared to go bankrupt. In 2018 there were 1,597 BPRs spread throughout Indonesia, while the number of conventional BPRs in Central Java registered in 2018 (before Covid-19) was 252 and decreased in 2021 (after Covid-19) to as many as 234 .

The purpose of this study is to analyze the comparison of the effect of LDR and EAQ on NPL before and during the Covid-19 pandemic. As we know, social and physical restrictions have affected economic and corporate activities. The Covid-19 pandemic has had an impact on BPR consumers, requiring credit restructuring which will affect BPR performance indicators. There are concerns that BPRs will not be able to continue their operations due to the COVID-19 pandemic. Thus it is necessary to compare the effect of LDR and EAQ on NPL between before and during the Covid-19 pandemic. This analysis is useful for companies as input and additional information regarding the influence and comparison of BPR financial performance before and during the Covid-19 pandemic. For academics, the results of this research can be useful as a source or reference material that can help add insight and knowledge about the impact of the Covid-19 pandemic on the influence between LDR and EAQ and NPLs from rural banks. Hopefully this can be used as reference material for future researchers as additional information in conducting further research, especially regarding the influence of the COVID-19 pandemic on BPR financial performance and comparisons of BPR financial performance before and during the COVID-19 pandemic.

1. LITERATURE REVIEW AND HYPOTHESIS

The success of commercial banks depends on profitability. Credit is the main component of earning assets of commercial banks. However, the profitability will be greater if the bank has fewer non-performing loans. On the other hand, if the number of non-performing loans is high, the bank may not be able to make a profit, instead it will make a loss because the bank needs to set aside a number of non-performing loans (Farhan, Sattar, Hussain, & Fareeha, 2012). The ratio of non-performing loans is an indicator of economic performance. Low NPL, so poor economic financial health. If problem loans are more, there will be poor financial health and a crisis can result in a bad economy. Several studies have used asset quality variables to identify the factors that affect non-performing loans in several countries. Rajha, (2017 examines the determinants of the banking sector in Jordan. This study was conducted because the increase in non-performing loans (NPL) in Jordan since the global financial crisis put strong pressure on bank balance sheets. The results of the study show that banks that have high NPLs in the previous year will have high NPLs in the current year. In addition, NPL is affected by the Loan Total Assets ratio, the global financial crisis, economic growth, and inflation. Meanwhile, bank size and interest rates did not show a significant effect on NPL.

The COVID-19 pandemic is affecting the global economy in two ways. Firstly, the spread of the virus prompted social distancing which led to the closure of financial markets, corporate offices, businesses and events. Two, the rate at which the virus is spreading, and the growing uncertainty about how bad the situation could get, is causing consumption and investment flight to consumers and investors alike (Ozili & Arun, 2020). It goes even further that the coronavirus pandemic will plunge the world into a global recession. In financial markets, global stock markets reduce corporate wealth. Due to fear and uncertainty among investors about how the pandemic will affect company profits (Ozili & Arun, 2020). The travel restrictions imposed on the movement of people in many countries are causing huge losses to businesses in the events industry, the airline industry, the entertainment industry, the hospitality industry and the sports industry. The corona virus that shook every country had an impact on the economic decline in these countries. The strong link between political events and health and financial markets has driven the expansion of research bodies over the years and in different regions of the world (Yusuf, 2022).

Moral hazard in the banking sector is a concept with various principal-agent problems. Therefore, bank managers have an incentive to take risky decisions as they will get most of the upside risk (profit, bonus, market share) and a small portion of downside risk on their part, but high downside risk for depositors and shareholders. Jensen & Meckling (1976) stated that in theory, high-risk loans result in higher NPL levels, because high interest rates may have similar detrimental incentives for borrowers. Moral hazard is usually associated with bank management behavior through balance sheet items such as bank size, loan growth, asset growth, deposit growth and capital adequacy ratio because, changes in all these items are related to the decisions taken by bank management. Therefore both LDR and EAQ will affect NPL.

1.1. The effect of the covid -19 pandemic on the relationship between LDR and NPL.

LDR is the ratio to measure the amount of credit given compared to the amount of public funds and own capital used. LDR is used to measure the ratio of credit to third party funds at BPRs where credit is total credit extended to third parties (excluding loans with other banks), and third party funds include savings and deposits (excluding interbanks) (OJK, 2021). This ratio measures how much a bank's ability to meet short-term obligations (liquidity) by dividing the total loan amount by the total third party funds. The decline in economic activity due to Covid-19, the amount of savings from credit bank customers will decrease and the amount lent to customers will also decrease. Therefore the LDR ratio will decrease during the Covid-19 pandemic compared to before. As conveyed by the Financial Services Authority/Financial Services Authority (FSA) in online media reports, it is stated that the COVID-19 pandemic has had a major impact on bank credit growth (Sitinjak, Y., & Ginting, 2020). Besides that, previous research showed that Covid-19 had a significant negative impact on rural bank performance, namely reducing LDR (Ngatno & Apriatni, 2022). Therefore it can be proposed hypothesis:

H1: There is an influence of LDR on NPL before and during Covid 19.

1.2. The effect of the covid -19 pandemic on the relationship between PAI and NPL

Moral hazard in the banking sector is a concept with various principal-agent problems. Therefore, bank managers have an incentive to take risky decisions because they will get most of the upside risk (profit, bonus, market share) and a small amount of downside risk on their part, but high downside risk for depositors and shareholders. High-risk loans result in higher NPL levels, because high interest rates may have similar detrimental incentives for borrowers (Jensen & Meckling, 1976). Moral hazard is usually associated

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with bank management behavior through balance sheet items such as bank size, loan growth, asset growth, deposit growth and capital adequacy ratio because, changes in all these items are related to the decisions taken by bank management. Earning Asset Quality (EAQ). This ratio is used to measure the probability of receiving the invested funds back. The smaller the EAQ ratio, the greater the probability of receiving the invested funds back.

Regarding the impact of Covid-19 on "banking asset quality", there is no general definition at the same level. The adverse effects of the COVID-19 shock on banks are much more pronounced and long-lasting than those on companies and other non-bank financial institutions (Demirguc-kunt & Ruiz-ortega, 2020). The systemic impact of the COVID-19 outbreak also had an impact on bank credit performance. The COVID-19 pandemic has caused a slowdown in the economic cycle, which has had an impact on credit growth. This can be seen from the decline in banking performance indicators such as a decrease in CAR and an increase in NPL. This banking crisis had a significant effect on the economic downturn (Kenny, Lennard, & Turner, 2021). Therefore the COVID-19 pandemic presents major challenges in all aspects of life (Asmoro, 2020). The Financial Services Authority (FSA) stated that the COVID-19 pandemic had a major impact on bank credit growth (Demirguc-kunt & Ruiz-ortega, 2020). Several studies have shown that during the COVID-19 pandemic, loan quality decreased, NPLs increased, bank capital worsened and the operations of large banks were affected as was the case in several countries such as emerging economy countries. (Barua & Barua, 2021). Therefore in this study the hypothesis is proposed:

H2 : There was an effect of EAQ on NPL before and during the Covid-19 pandemic.

2. METHOD

This research involved 174 people's credit banks in Central Java, Indonesia, which were registered with the Financial Services Authority (FSA). The type of data used is secondary data, namely data obtained indirectly and published. Data sources for conventional people's pre-credit bank financial reports are obtained from the FSA website or the bank's official website. Data prior to the Covid-19 pandemic is the average data from reports from people's credit banks in quarters I, II, III and IV of 2018 and quarters I, II, III and IV of 2019. While the data during the pandemic is the average data from quarterly reports I, II, II, IV 2020 and quarters I, II, III, and IV of 2021. From the rural banks in Central Java, there are 174 conventional rural banks owned by private companies and have complete reports. The data were analyzed using multiple regression and compared between the periods before and during the Covid-19 pandemic.

Loan to Deposit Ratio (LDR) and Earning Assets Quality (EAQ) independent variables. LDR is the ratio of the total loan value to the total deposit plus equity. Based on FSA circular letter (OJK, 2021) the quality of the LDR ratio can be classified into: (1) very adequate if 50% < LDR < 75%; (2) adequate if 75% < LDR < 85%; (3) sufficient if 85% < LDR < 100%; (4) inadequate if 100% < LDR <120%; and inadequate if LDR > 120%. The rasio of LDR of a bank can be expressed by the following equation:

Loan to Deposit Ratio (LDR) = (Total Loan)/(Total Deposit + Equity) x 100 %

The Earning Assets Quality (EAQ) is used to measure the probability of receiving the invested funds back. Based on circular letter of OJK, (2021) EAQ ratio can be classified into: (1) healthy if EAQ ≤ 10.3%; (2) quite healthy if 10.3% < EAQ ≤ 12.6%; (3) unhealthy if 12.6% < EAQ ≤ 14.5%; (4) unhealthy if EAQ > 14.5%. EAQ is calculated from the ratio of total Classified Earning Assets (APYD) divided by total credit.

Earning Asset Quality (EAQ) = Classified Earning Assets /Total credit x 100%

Furthermore, the dependent variable is NPL. NPL is calculated from non-performing/bad loans divided by the total loans disbursed. There are several criteria for the NPL ratio, namely: if the NPL <2% then the health of the bank is considered very healthy, if 2%≤ NPL<5% the health of the bank is considered healthy, 5% ≤ NPL <8% is considered quite healthy and if 8% ≤ NPL 12% considered unhealthy. NPL is calculated from the ratio of net bad loans divided by total loans.

Non-Performing Loan (NPL) = Net non-performing loans/total credit x 100%

3. RESULT

3.1. Description of LDR, EAQ and NPL of people's credit banks before and during the Covid-19 pandemic.

Table 1 shows the LDR, EAQ, and NPL of rural banks in Central Java, Indonesia before and after the COVID-19 pandemic. The credit to savings ratio proxied by LDR both before and during the pandemic can be classified as adequate where the LDR is between >75% - <85%. LDR shows a significant decrease during the pandemic. The ratio of earning asset quality proxied by EAQ both

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before and during the pandemic can be categorized as healthy because the EAQ ratio is less than 10.3%. The EAQ ratio also experienced a significant decline during the Covid-19 pandemic. Furthermore, the NPL ratio of people's credit banks before Covid -19 was included in the healthy category, 5% ≤ NPL <8% and during the pandemic increased to unhealthy where 8% ≤ NPL 12%.

Table 1 : Description of LDR, EAQ and NPL of rural banks before and during the Covid-19 pandemic

Variabel	Period	N	Min.	Max.	Mean	Std. Deviation	Notes
LDR	Before Pandemic	174	61,90	112,14	81,6343	7,78516	decrease
	During pandemic	174	49,93	115,08	78,3998	9,64030	
EAQ	Before Pandemic	174	2,12	21,27	8,8036	4,35637	decrease
	During pandemic	174	,35	25,72	6,5176	4,18751	
NPL	Before Pandemic	174	,30	28,62	7,1559	5,06134	increase
	During pandemic	174	,16	29,82	8,0913	5,38837	

Conversely, non-performing loans proxied by NPL both before and during the pandemic can be categorized as unhealthy because the NPL value is more than 5%. BPR NPLs experienced a significant increase during the pandemic. Restrictions on economic activity to prevent a surge in cases of exposure to COVID-19 have made rural credit banks in Indonesia experience significant obstacles. Various efforts have been made so that banks in Indonesia do not experience a significant decline in performance. Several banks were able to maintain their credit quality, but most banks experienced a significant increase in non-performing loans.

3.2. Hypothesis testing.

The results of hypothesis testing are presented in Table 2. Table 2 shows that only the LDR before the pandemic did not significantly determine NPL with an alpha value greater than 0.05. Conversely, during a pandemic, LDR had a significant negative effect on NPL with an alpha value of less than 0.05. Likewise, overall LDR has a significant negative effect on NPL. Conversely, EAQ has a significant positive effect on NPL both before and during with an alpha value of less than 0.05. When compared to the coefficient values between before and during the pandemic, it shows that the Covid-19 pandemic can strengthen the negative relationship between LDR and NPL. On the other hand, this pandemic can weaken the positive relationship between EAQ and NPL.

Table 2 : The effect of LDR and EAQ on NPL before and during the pandemic

Independent variables	Coefficients	t-value	Sig.	Decision
Before the pandemic analysis				
LDR	-,068	-1,705	,090	Rejected
EAQ	,852	21,531	,000	Accepted
During the pandemic analysis				
LDR	-,128	-2,290	,023	Accepted
EAQ	,662	11,819	,000	Accepted
Overall analysis				
LDR	-,181	-6,617	,000	Accepted
EAQ	,844	30,879	,000	Accepted

4. DISCUSION

Theoretically, the liquidity ratio in the form of the ratio between loans and total deposits obtained (total loans/total deposits) is negative for non-performing loans (NPL). So it can be interpreted that the higher the LDR, the higher the NPL ratio. However, the research results show that LDR can affect NPL during the pandemic period. Likewise, overall before and during the pandemic is also significant. On the other hand, before the pandemic, it did not significantly affect NPL. The effect of LDR on NPL is negative, which means that the higher the BPR's liquidity, the lower the NPL. This finding does not support the theory that the higher the

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LDR, the higher the NPL (Jensen & Meckling, 1976). On the other hand, these findings support previous research that asset quality can also significantly determine bank performance (Zarrouk et al., 2016). Banks with high liquidity ratios actually have a lower NPL degree. This finding illustrates that the existence of the Covid-19 pandemic has made BPRs, especially those with a low liquidity ratio, more able to suppress their NPLs. The findings of this study are not in line with previous findings which show that LDR has a positive effect on NPL (Klein, 2013 dan Peyavali & Sheefeni, 2016). Furthermore, during the Covid-19 pandemic, the negative relationship between LDR and NPL was getting stronger. This shows that rural credit banks, especially those with high ID ratios, have succeeded in suppressing NPLs. On the other hand, for BPRs with low LDR ratios they are unable to reduce the severity of the NPL ratio.

Assessment of asset quality is intended to assess the condition of a bank's assets, including the anticipation of default risks from financing (credit risk) that will arise. Earning Asset Quality (EAQ) rasio classified to earning assets. This ratio is used to measure the probability of receiving the invested funds back. The smaller the EAQ ratio, the greater the probability of receiving the invested funds back. Therefore, the effect of EAQ on non-performing loans (NPL) is expected to be positive. The smaller the EAQ, the smaller the number of non-performing loans. EAQ has had a significant positive impact on NPL both based on data before the pandemic, during the pandemic and as a whole. These results support the moral hazard theory, which argues that, under pressure, bank managers respond to moral hazard behavior by taking on more risks in the form of excessive lending. They lowered their lending standards and extended credit to qualified borrowers, who were then able to repay their loans. A possible explanation for this is that due to the small nature of the banking market, coupled with the highly competitive consisting of a small number of borrowers, banks tend to extend large loans to a few existing borrowers; corporate customers. They have a good track record, and therefore reduce the likelihood of an increase in default rates. This result is in line with Ngatno's findings Klein, (2013) dan Peyavali & Sheefeni, (2016) yang menemukan rasio pinjaman terhadap aset berhubungan positif dengan terjadinya NPL.

5. CONCLUSION

This study aims to analyze LDR and EAQ on NPLs of rural banks in Central Java, Indonesia before and during the COVID-19 pandemic. The results show that before the Covid-19 pandemic LDR had a negative effect that was not significant on NPL, whereas during the Covid 19 pandemic LDR had a significant negative effect on NPL. Thus the Covid-19 factor can strengthen the negative effect of LDR on NPL. In contrast, EAQ on NPL had a positive and significant effect both before and during Covid-19. The effect of EAQ on NPL was stronger during compared to before Covid-19. Thus the Covid-19 factor can strengthen the relationship between EAQ and NPL in the case of people's credit banks in Central Java, Indonesia. These results need to be considered by the people's credit bank managers that Covid-19 has had an impact on an increasingly large NPL caused by an increase in EAQ and a decrease in LDR. Based on these findings, it is necessary for further research to examine factors other than LDR and EAQ as determinants of NPL so that the factors that can determine the magnitude of NPL both before and during Covid-19 will be more complete.

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