

Analysis Impact of Covid-19 Outbreak on Performance of Commercial Conventional Banks: Evidence from Indonesia

Elmira Siska^{1*}, Awadh Ahmed Mohammed Gamal², Ali Ameen³, Mekar Meilisa Amalia⁴

^{1,3} Lincoln University College - Malaysia

² Sultan Idris Education University - Malaysia

⁴ Universitas Dharmawangsa - Indonesia

Corresponding Author : elmira.asril@gmail.com

Abstract — *The banking industry serves a crucial role in the economy. Unpredictable conditions, such as the Covid-19 outbreak, have had a widespread effect on global health as well as banking. This study is to analyze the impact of the Covid-19 outbreak on solvency (CAR), profitability (ROA and NIM), and efficiency (OEOI), liquidity (LDR), and risk profile (NPL) of Commercial Conventional Banks in Indonesian. This study is a quantitative research with a descriptive approach. Secondary data from Indonesian Banking Statistics were used in this study. Data was collected 8 months before the pandemic Covid-19 (July 2019 - February 2020) and 8 months (April 2020 - November 2020) after the first case of Covid-19 was recorded in Indonesia on March 2, 2020. The finding of this study revealed that there was a significant difference in term of profitability, efficiency, liquidity, and credit risk of Commercial Conventional Banks before and after Covid 19. Meanwhile the level of solvency was not significantly different. However, the overall performance of Commercial Conventional Banks remains at a healthy level. As the pandemic is ongoing and continues to affect on the economy, our suggestion that banking resilience should be strictly monitored in the coming years.*

Keywords : *Commercial Conventional Banks, Efficiency, Liquidity, Profitability, Risk Profile, Covid-19*

I. INTRODUCTION

Coronavirus disease or known as Covid-19 is an infectious disease caused by a Corona virus (Ramasamy, 2020). Covid-19 or coronavirus 2 Severe Acute Respiratory Syndrome (SARS-CoV-2) is a virus that attacks the respiratory system (Conti & Younes, 2020). The disease was first discovered in Wuhan, the capital of China's Hubei Province at the end of December 2019, and has spread to numerous other provinces in China, Thailand, Japan, and South Korea in less than a month (Bin et al., 2021). Covid-19 has spread quickly to Europe, then to North America, and Asia (Mao & Jin, 2020). The World Health Organization (WHO) declared that the Covid-19 as a public health emergency on January 30, 2020. Then, WHO escalates this status to be a global pandemic on March 11, 2020. The number of cases of coronavirus infection in the world continues to increase. WHO has reported as of 31st March 2020, more than 190 countries have confirmed contracting the coronavirus. The number of coronavirus cases worldwide has reached 781,485 cases. From this number, there were 164,726 recovered patients. Meanwhile, 37,578 people died (WHO, 2020).

The first Covid-19 case in Indonesia was announced directly by President Joko Widodo at the Presidential Palace on March 2, 2020, in as many as two cases. According to data from the Ministry of Health Republic Indonesia, at the end of March 2020, there were 1,528 confirmed cases and 136 deaths. Indonesia's Covid-19 mortality rate is 8.9 percent, which is the highest in Southeast Asia.

Along with its health effects, the pandemic of Covid-19 is highly influencing business and human activity in affected areas and their surroundings. The epidemic of Covid-19 is currently causing global concern and economic distress for customers, companies, and societies around the world (Mersha & Worku, 2020). The Covid-19 pandemic has shaken the regular daily lives of many people, slowing down the global economy and business. The pandemic has a lot of influence in various sectors (Sumarni, 2020). Many sectors have been severely affected, such as travel and tourism, transportation, manufacturing, oil and gas, trade, construction, banking, and many more (Anwar et al., 2020)

Concerning Indonesian economy, Covid-19 pandemic has weakened economic activity in the real sector triggering a contraction of 5,32 percent year-on-year in the second quarter of 2020. Inline with a slowing of activity in the real sector, the Indonesian banking industry also experienced a decline in credit growth in the first

half of 2020. Data from the Financial Services Authority (OJK) shown that bank loans only grew 1.5 percent year-on-year (YoY) to IDR5,549.2 trillion in the first half of the year. This figure is lower than the realization at the end of 2019 as of 6.1% YoY (Pepinfo Credit Rating Agency, 2020).

Some of the studies addressing the effect of Covid-19 on the banking sector in Indonesia have been carried out in several banks using a qualitative research design (Supeno & Hendarsih, 2020b);(Effendi & Hariani, 2020); (Sirait & Pardede, 2020); (Ferdinandus, 2020a). The study of Supeno & Hendarsih (2020) revealed that there is a decrease in loan growth, a rise in non-performing loans (NPL), and a decrease in return on assets (ROA) at Rural Credit Bank during the Covid-19. The research of Effendi & Hariani (2020) shown that the ROA of Islamic Banks shown tend to decrease, while the non-performing financing (NPF) and Finance to Deposit Ratio (FDR) were still within safe limits. A study by Sirait & Pardede (2020) indicated that the financial performance of PT Bank Rakyat Indonesia Tbk. (Persero), which includes return on Assets (ROA), return on equity (ROE), net interest margin (NIM), operating expenses to operations revenue (OEOI) continues to show a downward trend. Further, the research of Ferdinandus (2020) confirmed that the financial performance of Bank Permata is measured by capital adequacy ratio (CAR), net profit margin (NPM), and from Q4:2019 to Q3: 2020 was not healthy. Based on previous research, it was known that the pandemic of Covid-19 has an impact on lowering bank performance. The statistical significance of the declining banking performance especially in Commercial Conventional Banks in Indonesia as the impact of Covid-19 needs to be evaluated. Therefore, this study aims to analyze whether there are differences in the performance of Commercial Conventional Banks before and after the Covid-19 case.

II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

A. Capital Adequacy Ratio (CAR)

Capital is one of the main factors for banks to grow their business (Ichsan et al., 2021). The bank needs capital to manage the risk (Chou & Buchdadi, 2016). Capital is not only important as a source of funds to meet the bank's needs, but the capital of the bank can also influence management decisions to generate a profit rate and manage potential risks (Buchory, 2014). The capital owned by a bank must be adequate to cover all the business risks faced by the bank (Sari & Endri, 2019). Pierret (2015) the capital adequacy ratio is one of the indicators used to evaluate a bank's solvency. It refers to the bank's ability to meet long-term obligations (Rahman, 2017). Furthermore, Javaid & Alalawi (2010) stated that the capital adequacy ratio also indicates the bank's ability to withstand shocks from loss issues. The higher the ratio is, the bank is more stable and safe. Based on Bank Indonesia's Circular Letter number 13/24/DPNP/2011, the CAR can be determined as follows:

$$CAR = \frac{\text{Bank Capital}}{\text{Risk Weighted Asset}} \times 100\%$$

Table 1: Assessment Criteria for CAR

Ratio	Description
CAR > 12%	very healthy
9% < CAR < 12%	healthy
8% < CAR < 9%	healthy enough
6% < CAR < 8%	less healthy
CAR < 6%	unhealthy

Source: Bank Indonesia (2011)

The previous study by Ferdinandus (2020) revealed that the CAR of Pertama Bank is at an unhealthy level from the fourth quarter of 2019 until the 3rd quarter of 2020. Moreover, by conducting stress tests, the study of Ali et al., (2020) concluded that CAR of Silk Bank, SME Bank, and Summit Bank are in critical condition as their CAR is lower than standards set by the regulator during the outbreak of Covid-19. Hence, we developed our first hypothesis to validate these finding as follows:

H1: There is a significant difference on CAR in Commercial Conventional Banks before and after Covid-19

B. Return on Assets (ROA)

The ability of the company to make a profit in concerning revenue, total assets, and own capital is called profitability. According to Ongore & Kusa (2013); Yusuf & Suherman (2021) profitability measure the capability of bank management to generate profit through the use of company assets at their disposal. Then, Setiawan & Hermanto (2017) argue that profitability shows the company's ability to get profit from all available

resources own by the company. Users of financial statements need to know profitability ratios because it can be informed how much the company's ability to generate earnings. A major ratio to assess the profitability banking industry is ROA (Siraj & Pillai, 2012). The higher the ROA indicates better performance in the bank's management (Ichsan et al., 2021). According to Bank Indonesia's Circular Letter number 13/24/DPNP/2011 dated 25 October 2011, the formula to calculate ROA as follow:

$$\text{ROA} = \frac{\text{Profit Before Tax}}{\text{Total Assets}} \times 100\%$$

Table 2: Assessment Criteria for ROA

Ratio	Description
ROA > 1,5%	very healthy
1,25% < ROA < 1,5%	healthy
0,5% < ROA < 1,25%	healthy enough
0% < ROA < 0,5%	less healthy
ROA < 0%	unhealthy

Source: Bank Indonesia (2011)

The earlier research by Supeno & Hendarsih (2020a) concluded a decrease in the Rural Bank's return on assets during Covid-19. This result in line with the study of (Sirait & Pardede, 2020) who found that the return on assets of Bank Rakyat Indonesia continues to decrease as the impact of Covid-19 from Q4:2019 until Q2:2020. Hence, we develop second hypothesis as follow:

H2: There is a significant difference on ROA in Commercial Conventional Banks before and after Covid-19

C. Net interest margin (NIM)

Net interest margin (NIM) is the most widely used indicator for measuring the profitability of a bank (Hamadi & Awdeh, 2012). The NIM is used to assess the capability of the management of a bank to earn interest income by taking into account banks 'success in disbursing loans (Silaban, 2017). Similarly, Hakim (2017) explains that the NIM ratio is used to assess the ability of bank management to generate net interest income by managing their productive assets. The bigger NIM's percentage, the higher the interest income of the bank's managed productive assets. According to Circular Letter number 13/24/DPNP/2011 of the Bank of Indonesia dated 25 October 2011, NIM is determined by comparing net interest income with total earning assets with the formula below:

$$\text{NIM} = \frac{\text{Net Interest Income}}{\text{Total Earning Assets}} \times 100\%$$

Table 3: Assessment Criteria for NIM

Ratio	Description
NIM > 3%	very healthy
2% < NIM < 3%	healthy
1,5% < NIM < 2%	healthy enough
1% < NIM < 1,5%	less healthy
NIM < 1%	unhealthy

Source: Bank Indonesia (2011)

The study of Ferdinandus (2020) confirmed that Bank Permata's net profit income (NIM) was not healthy during time from Q4:2019 to Q3: 2020. Based on this argument, we construct the third hypothesis as follow:

H3: There is a significant difference on NIM in Commercial Conventional Banks before and after Covid-19.

D. Operating Expenses to Operating Income (OEOI)

The operational expenses to operational income (OEOI) a ratio that measures a bank's efficiency and ability to conduct its operations (Rizal & Rofiqo, 2020). The higher the OEOI ratio, the less efficient a bank is (Wahyudi, 2020). Similarly, (Karamoy & Tulung, 2020) state that the OEOI ratio aims to evaluate the capability of operating income to cover the operating costs of a bank. The higher the OEOI ratio, the greater the operational cost of the bank, so that banking efficiency will be reduced, and eventually banking profitability will be decreased (Riftiasari & Sugiarti, 2020). Refer to Bank Indonesia's Circular Letter number 13/24/DPNP/2011 dated 25 October 2011, the formula to calculate OEOI as follow:

$$\text{OEOI} = \frac{\text{Operating Expenses}}{\text{Operating Income}} \times 100\%$$

Table 4: Assessment Criteria for OEOI

Ratio	Description
OEOI < 94%	very healthy
94% < OEOI < 95%	healthy
95% < OEOI < 96%	healthy enough
96 < OEOI < 97%	less healthy
OEOI > 97%	unhealthy

Source: Bank Indonesia (2011)

The research finding of Sirait & Pardede (2020) indicated that the percentage of OEOI ratio at Bank Rakyat Indonesia's showed an increase from Q4:2019 until Q2:2020. Thus, we established the fourth hypothesis accordingly:

H4: There is a significant difference on OEOI in Commercial Conventional Banks before and after Covid-19.

E. Loan to Deposit Ratio (LDR)

The primary sources of profit of banks are loans. Interest income from the loan is the main source of income for the bank (Buchory, 2015). LDR is a ratio that demonstrates the comparison between loans provided by banks and third-party funds. Hakim (2017) explain that loan to deposit ratio (LDR) is used to measure a bank's liquidity by demonstrating a bank's ability to supply fund to its debtors with bank-owned capital and publicly-collected funds. Similarly, Marwansyah & Setyaningsih (2018) argue that LDR is used to assess the performance of a bank. The higher the LDR level, the less the liquidity of a bank. Conversely, the lower the LDR value, the more liquid a bank is. Refer to Bank Indonesia's Circular Letter number 13/24/DPNP/2011 dated 25 October 2011, the LDR calculate by using the formula as follow:

$$\text{LDR} = \frac{\text{Total Loan to Third Party}}{\text{Total Fund from Third Party}} \times 100\%$$

Table 5: Assessment Criteria for LDR

Ratio	Description
LDR < 75%	very healthy
75% < LDR < 85%	healthy
85% < LDR < 100%	healthy enough
100% < LDR < 120%	less healthy
LDR > 120%	unhealthy

Source: Bank Indonesia (2011)

Implementation of the Large-Scale Social Restriction (PSBB) policy and Regional Quarantine (Lockdown) by government in several regions of Indonesia to prevent the virus' spread has the potential to drive people to withdraw their money from banks and choose to keep it in cash. If this occurs continuously, bank liquidity most likely dry up (Azikin et al., 2020). Based on this argument, we construct the fifth hypothesis as follow:

H5: There is a significant difference on LDR in Commercial Conventional Banks before and after Covid-19.

F. Non Performing Loan (NPL)

Credit is one of the bank products that are widely used by the public to support businesses that are being developed. On other hand, credit risk is recognized as the most serious risk for commercial banks to face (Wood & McConney, 2018). According to Demirgüç-Kunt, Morales, & Ruiz Ortega (2020) the cause of bad credit is debtor's inability to pay principal and interest on the loan. Non-performing loans (NPL) will have an impact on reducing bank capital and disrupt lending for the next period. The non-performing loan (NPL) reflects the credit quality of a bank. The greater the level of NPLs, the greater the bank's credit risk (Jazila et al., 2021). The NPL is calculated using the following formula:

$$\text{NPL} = \frac{\text{Non Performing Loan}}{\text{Total Loan}} \times 100\%$$

Table 6: Assessment Criteria for NPL

Ratio	Description
NPL < 2%	very healthy
2% < NPL < 5%	healthy
5% < NPL < 8%	healthy enough
8% < NPL < 12%	less healthy
NPL > 12%	unhealthy

Source: Bank Indonesia (2011)

The research by Cakranegara (2020) revealed that large and small debtors, as well as retail consumers, experience liquidity problems. They have difficulty paying their debts to banks during the pandemic of Covid-19. This situation has led to an increase in NPLs in banks. A study by (Disemadi & Shaleh, 2020) confirmed that Covid-19 outbreak has weakened the performance and capacity of the debtor In Indonesia. These debtors' reduced performance and capacity can directly increase credit risk, which is certainly disrupting Indonesia's banking performance and financial stability. Furthermore, the study of Supeno & Hendarsih (2020) concluded that there has been an increase in the value of NPLs in Rural Banks from March - August 2020. Thus, we construct a sixth hypothesis as follow:

H6: There is a significant difference on NPL in Commercial Conventional Banks before and after Covid-19.

III. RESEARCH METHODOLOGY

This research adopted a quantitative research design with a descriptive approach. The data used in this study is secondary data on the performance of Commercial Conventional Banks which include CAR, ROA, NIM, OEOI, LDR, and NPL. Data were obtained from Indonesian Banking Statistics that published by the Financial Services Authority (OJK) through its website <https://www.ojk.go.id>.

Monthly time series data for these banking performance indicators are only available on the OJK's website until November 2020. Therefore, data collection was carried out 8 months before the pandemic of Covid-19 (July 2019- February 2020) and 8 Months (April 2020-November 2020) after the pandemic of Covid-19. This study used a cut-off in March 2020 with the reasons that the announcement of the first case of Covid-19 in Indonesia was on March 2, 2020, and the announcement by WHO that the Covid-19 outbreak was a global pandemic on March 11, 2020.

To measure significant differences in the performance of Commercial Conventional Banks before and after Covid-19, a paired sample t-test is used in this study. According to Widiyanto (2013), paired sample t-test statistical methods are used to determine the effectiveness of a treatment characterized by a difference in the mean before and mean after treatment has been given. The Software Statistical Package for Social Science (SPSS) version 22.0 was applied to analyze data.

IV. RESULT AND DISCUSSION

A. Descriptive Statistics

The outcome of paired samples statistics are shown in Table 7.

Table 7. Descriptive Statistics of Commercial Conventional Banks

Pair	Description	Mean	N	Std. Deviation	Std. Error Mean
Pair 1	CAR_Before_Covid_19	23.2837	8	.51514	.18213
	CAR_After_Covid_19	23.1200	8	.78798	.27859
Pair 2	ROA_Before_Covid_19	2.5100	8	.07746	.02739
	ROA_After_Covid_19	1.9050	8	.22290	.07881
Pair 3	NIM_Before_Covid_19	4.8963	8	.04104	.01451
	NIM_After_Covid_19	4.4538	8	.05630	.01990
Pair 4	OEOI_Before_Covid_19	81.1250	8	1.59640	.56441
	OEOI_After_Covid_19	85.4088	8	.62302	.22027
Pair 5	LDR_Before_Covid_19	93.9038	8	.73714	.26062
	LDR_After_Covid_19	86.8188	8	3.78155	1.33698
Pair 6	NPL_Before_Covid_19	7.2788	8	.20794	.07352
	NPL_After_Covid_19	8.2488	8	.25261	.08931

Based on the result of the data analysis presented in Table 7, it can be seen that the performance of Commercial Conventional Banks has generally decreased following the Covid-19 pandemic. The findings of this study are aligned with those of Supeno & Hendarsih (2020); Effendi & Hariani (2020); Sirait & Pardede (2020), and Ferdinandus, (2020). The average capital adequacy ratio (CAR) decreased by 0.1637 points or 0.7 percent from 23.2837 percent to 23.12 percent. Referring to the CAR rating criteria set by the Bank of

Indonesia, the average CAR value after pandemic as of 23.12 percent remains in a very healthy category, which is greater than 12%.

A decrease has also been seen in the degree of bank profitability as measured by the ROA and NIM indicators. The average ROA value has decreased by 0.6050 points or 24 percent from 2.5100 percent to 1.9050 percent since the Covid-19 pandemic, and the average NIM has decreased by 0.4425 points or as much as 9 percent from 4.8963 percent to 4.4538 percent. Even though the level of profitability has declined, but the average ROA and NIM values are still in healthy condition as per Bank Indonesia standards, which is more than 1.5% and more than 3%, respectively.

Then, the level of bank efficiency, as calculated by the OEOI ratio also decreased. The after-pandemic average OEOI ratio increased by 4.2838 points or 5% from 81.1250 percent to 85.4088 percent. Based on the criteria for assessing the level of bank efficiency set by Bank Indonesia, the average OEOI ratio after the pandemic is still at a very healthy level, which is less than 94%.

Credit risk faced by Commercial Conventional Banks has also risen to a less healthy level. After the pandemic, the average NPL score jumped from 7.7288 to 8,2488, a rise of 0.97 points or 13%. We found Commercial Conventional Banks' liquidity is in relatively loose condition from the beginning of the pandemic until November 2020. This finding supports the study of Taujiharrahan et al., (2020) which revealed that since the Covid-19 pandemic, banking liquidity in a loose position. This is due to the slowing down of credit distribution.

B. Paired Sample T-Test

The outcome of Paired Samples T-Test are shown in Table 8.

Table 8. Paired Samples T-Test

Pair	Description	t	df	Sig. (2-tailed)
Pair 1	CAR_Before_Covid_19	.396	7	.704
	CAR_After_Covid_19			
Pair 2	ROA_Before_Covid_19	6.662	7	.000
	ROA_After_Covid_19			
Pair 3	NIM_Before_Covid_19	18.584	7	.000
	NIM_After_Covid_19			
Pair 4	OEOI_Before_Covid_19	-8.817	7	.000
	OEOI_After_Covid_19			
Pair 5	LDR_Before_Covid_19	6.120	7	.000
	LDR_After_Covid_19			
Pair 6	NPL_Before_Covid_19	-8.586	7	.000
	NPL_After_Covid_19			

Source: Ouput of SPSS

The findings of this study as shown in Table 2 indicate that there are significant differences in the performance of Commercial Conventional Banks in Indonesia before and after Covid-19 in terms of profitability as measured by ROA and NIM, efficiency as measured by OEOI, liquidity as measured by LDR, and credit risk as measured by the NPL. The p-value for each performance indicator of 0.000 is less than 0.05, reflecting this. Meanwhile, there is no significant difference in bank solvency as measure by CAR before and after Covid-19, with a p-value of 0.704 greater than 0.05.

Despite major gaps in performance before and after Covid-19, Commercial Conventional Banks' profitability remained healthy in November 2020, with their ROA dropping to 1.64 percent from 2.47 percent in the same period the previous year. This was partially due to a -28.59 percent year on year drop in profit as a result of lower interest income due to the credit slowdown. The decline in ROA correlates with the drop in interest rates and NIM. The net interest margin fell to 4.41 percent from 4.80 percent as net interest income fell by -2.18 percent year-on-year. The contraction of interest income from loans to third parties non-bank was the main cause of the drop in interest income.

Also, bank efficiency appears to have decreased but is still at a stable level. Bank OEOI rose to 86.04 percent from 79.67 percent in the previous year. The rise in OEOI was affected by a slowing operating income, which grew just 18.68 percent year-on-year after growing 29.20 percent in the previous year. This slowdown corresponded to low credit demand, as shown by the drop in interest income from third-party non-bank, which fell -7.76 percent year-on-year from the previous year at 8.42 percent year-on-year. Meanwhile, on the other side, there was an increase in interest expense due to increased growth in deposits.

Furthermore, poor demand and business activities haven't operated normally since the covid-19 have had an impact on credit distribution. According to Bank Indonesia, credit disbursement of Commercial Conventional

Banks reached Rp 5,516.7 trillion by the end of November 2020, a contraction of -1.17% on an annual basis, while third-party funds grew at a high rate of 11.55% year-on-year. As, as a result of this, the LDR of banks was reduced to 86.81 percent. This indicates that the bank's funding side is strong while its lending side is limited, indicating that the bank's liquidity conditions are in a fairly healthy range.

Moreover, Commercial Conventional Banks' credit quality has decreased slightly but is still in a fairly good range. This can be seen from the increased credit risk (NPL) due to the impact of the Covid-19 pandemic. In July 2019, the bank's NPL position was 7.25 percent, up from 7.81 percent in November 2020. This is caused by weakened debtor's performance and capacity since the Covid-19 outbreak (Disemadi & Shaleh, 2020).

Amid the Covid-19 outbreak, in general, banking resilience was sustained supported by the solid condition of bank capital which had a CAR of 23.12 percent. Since the emergence of the Covid-19 pandemic, the Financial Services Authority (OJK) is continuously working to improve risk mitigation by enhancing the standard of oversight and tightening regulations while maintaining the security and quality of services in the financial services sector to consumers. Increasing banking supervision is achieved, among other things, by enhancing and strengthening the OJK BOX application (a program that allows the bank to improve the flow of transactional information to OJK), strengthening off-site monitoring, disseminating surveillance protocols during the prevention and handling of the spread of COVID-19, and optimizing data and information sharing with other organizations.

V. CONCLUSION & SUGGESTION

Based on the finding, the authors can draw several conclusions: there are significant differences in profitability, efficiency, liquidity, and credit risk of Commercial Conventional Banks in Indonesia before and after Covid-19. Meanwhile, the level of bank solvency did not experience a significant difference before and after Covid-19. Although the performance of Commercial Conventional Banks in Indonesia, the country's banking system remains stable. This indicates that Indonesian banking is still able to survive the midst of pandemic Covid-19.

The long-term economic effects of Covid-19 are unclear as the pandemic is still ongoing. As the pandemic continues to affect on the economy, our suggestion that banking resilience should be strictly monitored in the coming years. There are several ways that banks can be done to respond to the risk of a crisis as the impact of Covid-19. (1) Banks must be able to determine the effect of Covid-19 on the real economy, economic growth, debtor performance, and other factors affecting banking health. The banks must then compile various scenarios of Covid 19's effects on the economy and the resulting spillover effect on banking performance. (2). Banks must mitigate credit risk and liquidity adequacy. This can be accomplished by gaining a better understanding of the economy and the debtors who are affected, as well as their performance. Banks must also set up an early warning system and plan for restructuring and debtor rescue scenarios. (3) Banks must conduct Stress tests for capital and liquidity adequacy. As a result, banks must perform scenario analysis to determine the amount of capital required and its availability in the event of increased credit risk. Then the liquidity gap must be identified, and various strategies must be tested. (4) Banks must also improve portfolio management by recognizing portfolios that are at risk of being impacted and those that have already been affected. The banks must then optimize capital allocation and liquidity availability, as well as apply various crisis scenarios

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