

CHAPTER II

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Literature Review

The Indonesian banking system had undergone several transformations. In 1997-1998, the Asian monetary crisis which was caused by the unpegging of Thai Baht from the US dollars, had an insurmountable impact on the neighbouring Asian countries, which include Singapore, Korea, the Philippines, and Indonesia (World Bank, 1999). During this time, the stress of the Indonesian banking institutions was further exacerbated by the rapid expansion of Indonesian Banks, as many of these banks had high Non-Performing Loans (NPLs) (IMF, 1998). As per a report released by the World Bank in 1999, Indonesia experienced a severe financial crisis, with non-performing loans (NPL) surpassing 30% and the Capital Adequacy Ratio (CAR) plummeting to nearly -20%. These figures were notably higher than those of other crisis-affected nations. Furthermore, the International Monetary Fund (IMF) noted in 1998 that the Rupiah's value and equity prices significantly declined during the crisis. To address this issue, the IMF extended financial assistance and recommended that financial institutions undergo restructuring and recapitalization, while insolvent banks should be absorbed by more robust institutions (IMF, 1998). Consequently, approximately 23 banks were shut down, leading to bank runs (Iriana and Sjöholm, 2002). Recognizing the severity of the situation, Indonesian authorities implemented a depositor guarantee and stringent bank liquidity supervision (Iriana and Sjöholm, 2002).

Consequently, one could posit that the financial landscape of the nation was better equipped to confront the challenges posed by the 2008 financial crisis (BI, 2009; Tambunan, 2010; and Lindrianasari, 2014). The researcher found that during the period of financial downturn, the Indonesian Government and Bank Indonesia worked closely in an effort to minimise the impact of the global shock to the economy of the nation, which resulted in the resilience of Indonesian Banks (BI, 2009; Lindrianasari, 2014). Tambunan (2010) shared a similar finding, noting that

the economic repercussions of the 2008-2009 financial crisis was markedly less severe than the impact of the previous economic crisis. Nevertheless, some scholars contended that this economic resilience was attributable to the prompt fiscal policies enacted by BI (BI, 2009; Lindrianasari, 2014).

More recently, in 2019, the financial performance of the nation was also adversely affected by the pandemic. Credit losses, capital adequacy risks, liquidity risks, and impaired assets on Banks worsened, according to PwC (n.d.). Some Indonesian Banks witnessed an increase in Non-Performing Loans (NPL) from 2.77% in March 2020 to 3.22% within a four-month period, accompanied by funding freezes at some Banks (Ikhwan & Riani, 2022; Anshori et al., 2022).

Despite pandemic-related slowdowns, the Indonesian economy recorded a growth of 3.7%, as reported by the World Bank (2021). The introduction of sufficient liquidity into commercial Banks was actively promoted by Bank Indonesia (BI), which promptly implemented Quantitative Easing (QE) and debt monetization initiatives in 2020 (POJK no. 48/POJK.03/2020). These measures resulted in the provision of adequate liquidity measures in the commercial Banks in Indonesia (Habir and Wardana, 2020). Furthermore, Kurniawati and Koesrindartoto (2020) found that on average, the CAR of many Banks in Indonesia were above the minimum required CAR, which imply that the commercial Banks in Indonesia were able to allocate their capital well. Even so, the authors cautioned that the pandemic could lead to a slow economic recovery, exerting further pressure on the performance and capital of the Banking sector in the years ahead (Habir & Wardana, 2020).

Moreover, some research posits that some Indonesian Banks are at the brink of failure, especially among smaller Banks with limited capital adequacy and high NPL (Siregar et al., 2021). The writer also found that one major Bank that is considered domestically significant had failed a stress test, making it imperative to understand whether the KBMI 4 Banks are in good health, or are not in optimum condition (Siregar et al., 2021).

2.1.1. KBMI 4 Banks as Domestic Systemically Important Bank (D-SIB)

As the Banks studied in this research (Bank Mandiri, BRI, BCA, and BNI) are categorised as KBMI 4 (previously BUKU 4), it could be said that these banks could be categorised as domestic systemically important bank (D-SIB) (Ariyani, 2021). According to POJK No. 46/POJK.03/2015, a Systematically Important Bank (SIB) are the financial institutions that possess sizable assets, capital, liabilities, intricate banking transactions, and high interconnectedness with other financial institutions and sectors. Disruptions on SIB may cause operational and/or financial issues that will likely be contagious to other banks or in the financial sectors (Ariyani, 2021). Accordingly, SIB banks must retain significantly higher capital buffers to preserve the Banks from losses and uphold financial and operational resilience (POJK No. 46/POJK.03/2015).

As previously iterated, Banking shock could be defined as a major event that directly causes disruptive outcomes in at least 2 continents (OECD, n.d.). During a time of global shock, as numerous nations are highly interdependent and interconnected, this facilitates global shock to spread faster to other nations (Azis et al., 2013). Azis et al. (2013) added that global shock could spread through capital flows, or through yields or returns on spillovers obtained from financial assets. Boubaker et al. (2023) agreed with the sentiments brought by Azis et al. (2013), highlighting that financial institutions are highly susceptible to shocks and disruptions. To make matters worse, Azis et al. (2013) had found that global shock and financial volatility spillovers from developed countries have a significant effect on emerging Asian countries.

Additionally, Silalahi et al. (2012) found that a period of global shock changes commercial Banking behaviour, as Banks were found to be more risk averse, and Banks faced pressure from changes in monetary policy from the government and the central Bank. Consequently, domestic commercial Banks will tighten their lending. Zainuri and Bawono (2022), Sobarsyah et al. (2022), Dadoukis et al. (2021), concurred that economic shocks hampers Bank performance. The findings of Lafuente et al. (2019) in Zainuri and Bawono was

further confirmed by the writers, as they found that during a period of economic shock, NPF (Non-Performing Financing) negatively affects Bank financing and also the overall Bank performance (Zainuri and Bawono, 2022).

2.1.2. The Changes in Grouping from BUKU to KBMI

From 2012 to 2021, Indonesia had grouped its Banks according to the capital reserve held by the Bank into BUKU I, BUKU II, BUKU III, and BUKU IV (PBI no. 14/26/PBI/2012 enforced since 27 December 2012, and further revised by OJK in POJK no. 6/POJK.03/2016). The grouping of the banks according to their respective capital reserve is used by BI and OJK as an indicator of the safety and strength of the Bank in facing an operational risk (PBI no. 14/26/PBI/2012 and further revised in POJK no. 6/POJK.03/2016). For that reason, it can be said that when the Bank is on the higher end of the BUKU grouping (e.g. BUKU III and BUKU IV), the Bank has higher capital, the Banks can manage the money of the customers better, and conduct more business in Indonesia and abroad (Puspitasari and Dinuka, 2022, in accordance with PBI no. 14/26/PBI/2012 and further revised in POJK no. 6/POJK.03/2016).

Even so, throughout the years, OJK and BI had made changes to several banking policies. Citing POJK 12/POJK.03/2021, Banks are no longer grouped as BUKU 1, 2, 3, and 4, and instead it becomes KBMI 1, 2, 3, 4. Banks with Core Capital up to IDR 6,000,000,000,000.00 (six trillion rupiah) are categorised as KBMI 1, and is comparable for BUKU 1 and 2. For Banks categorised as KBMI 2, the Core Capital has to exceed IDR 6,000,000,000,000.00 (six trillion rupiah) and up to IDR. 14,000,000,000,000.00 (fourteen trillion rupiah) and could be equated to BUKU 3. However, Banks that were previously categorised as BUKU 3 with higher capital (min. IDR. 14,000,000,000,000.00 (fourteen trillion rupiah) up to IDR 70,000,000,000,000.00 (seventy trillion rupiah). Lastly, Banks categorised as BUKU 4 may downgrade into the KBMI 3 category, depending on their capital reserve, while Banks with Core Capital that exceeds IDR 70,000,000,000,000.00 (seventy trillion rupiah) will be categorised as KBMI 4. As of present (2023), only

4 commercial Banks in Indonesia are considered as KBMI 4, which are Bank Mandiri, BRI, BCA, and BNI.

2.1.3. Measuring the health of Banks with the Factors of RGEC with RBBR

Bank health is closely monitored and the policies regarding Bank health had been outlined by the national constitution, in constitution of the republic of Indonesia Number 7 of 1992 concerning Banking as amended by the constitution of the republic of Indonesia Number 10 of 1998. The law states that the Bank is legally required to be able to maintain and carefully monitor the proper level of provisions in terms of the capital adequacy, asset quality, management quality, liquidity, profitability, and solvency and other facets of the day-to-day functioning of the Banking business. Further, Bank Indonesia on Circular Letter Number: 13/23/DPNP of 2011 and Bank Indonesia Regulation 13/1/PBI/ 2011 had applied an assessment approach to measure the performance of the Bank, which includes an assessment of Risk Profile, Good Corporate Governance, Earnings, and Capital (RGEC method). This model is the contemporary of the CAMEL model, offering additional benefits through the weighting of the risks (e.g. credit risk, market risk, liquidity risk, operational risk, legal risk, strategic risk, compliance risk, and reputational risk (Wahasumiah and Watie, 2018). The health of a Bank could be an accurate indicator of the confidence of the customers towards the Bank during times of economic unpredictability (Ariyain, 2021). Hence, it is of paramount importance for the Banks along with Bank Indonesia to evaluate the health of the Banks, as the Banks could perform immediate corrective action, or as an indicator whether Bank Indonesia should carry out supervisory actions, or to create a new policy that is to be achieved in the future (Ariyani, 2021). For this research, the Risk Based Bank Rating will be utilised to assess the variables of RGEC to discern the health of the Banks studied.

2.1.3.1. Risk Profile proxied through NPL and LDR

Apostolik and Donohue (2015) and Anam et al. (2022) categorised NPL as a type of loan in which the borrowers fail to repay, borrowers delay their payment,

or reduce interest payments and the principal loans. Anam et al. (2022) further added that NPL might stem from either the failure in data analysis by the Bank, or from customers that whether intentionally or unintentionally do not meet the payment obligation as agreed. As previously discussed, it is imperative to measure the NPL of Banks, as stakeholders could assess the health of the Bank and to measure whether the Bank could absorb losses through their capital (Anam et al., 2022; Gultom, 2022).

Table 2.1. Composite Rating of NPL

Composite Rating	Percentage	Predicate
1	$0\% < \text{NPL} < 2\%$	Very Healthy
2	$2\% \leq \text{NPL} < 5\%$	Healthy
3	$5\% \leq \text{NPL} < 8\%$	Fairly Healthy
4	$8\% < \text{NPL} < 11\%$	Unhealthy
5	$\text{NPL} > 11\%$	Very Unhealthy

Source: Based on Bank Indonesia Circular Letter (*Surat Edaran Bank Indonesia/ SE BI*) No. 13/23/ DPNP in 2011

Additionally, the assessment of the liquidity ratio of a Bank is important, as Bank customers expect that they are able to withdraw their deposits at their disposal (Apostolik and Donohue, 2015). Measuring liquidity ratio could be done by calculating the loan to deposit ratio (LDR) (Yonando, 2013; Wahasumiah and Watie, 2018; Choudhry, 2018). The data taken is a good indicator of the relationship between lending and customer deposit, denoting the ability of the Bank to meet its obligations to fulfil the request of depositors that wish to withdraw the money that had been deposited to the Bank to provide credit.

Table 2.2. Composite Rating of LDR

Composite Rating	Percentage	Predicate
1	$50\% < \text{LDR} \leq 75\%$	Very Healthy

2	$75\% < \text{LDR} \leq 85\%$	Healthy
3	$85\% < \text{LDR} \leq 100\%$	Fairly Healthy
4	$100\% < \text{LDR} \leq 120\%$	Unhealthy
5	$\text{LDR} > 120\%$	Very Unhealthy

Source: Based on Bank Indonesia Circular Letter (*Surat Edaran Bank Indonesia/ SE BI*) No. 13/23/ DPNP, 2011

2.1.3.2. Good Corporate Governance

As stipulated in Bank Indonesia Regulation (*Peraturan Bank Indonesia/ PBI*) number 8/4/PBI/2006, with further update in SEBI no. 15/15/DPNP, Good Corporate Governance (GCG) refers to the structure of Bank governance applied in public Banking companies that implement the principles of transparency, accountability, responsibility, independence and fairness. According to Wahasumiah and Watie (2018) quoting the findings of Effendi (2009) elucidated that GCG is a set of requirements that must be followed that can support the performance of corporate resources to work well to provide long-term, sustainable economic benefit for shareholders and the local community at large. In turn, these principles should be exercised through the enactment of the duties and responsibilities of the Board of Commissioners and Directors; the completion and implementation of the work units that carry out the internal control function of the Bank; enforcement of the compliance function, internal auditors and external auditors; implementation of risk management, including the internal control system; provision of funds to related parties and provision of large funds; the strategic plan of the Bank; transparency of the financial and non-financial conditions of the Bank (PBI no. 8/4/PBI/2006; SEBI no. 15/15/DPNP in 2013). Good Corporate Governance of Banks is normally reported by the Banks itself, and this assessment is normally conducted with self-assessment (Puspitasari and Dinuka, 2022; OJK Regulation No. 55/ POJK.03/2016). Furthermore, according to OJK Regulation No. 55/ POJK.03/2016, the self-assessment of GCG that is conducted by the Banks will be measured (proxied) using 3 aspects, which are

governance structure, governance process, and governance outcome. Based on Bank Indonesia Circular Letter (*Surat Edaran Bank Indonesia/ SE BI*) No. 13/23/DPNP on 2011, matrix of criteria for determining the rating of Good Corporate Governance (GCG) was outlined as follows:

Table 2.3. Composite Rating of GCG

Composite Rating	Percentage	Predicate
1	$NK < 1.5$	Very Healthy
2	$NK 1.5 \leq NK < 2.5$	Healthy
3	$NK 2.5 \leq NK < 3.5$	Fairly Healthy
4	$NK 3.5 \leq NK < 4.5$	Unhealthy
5	$NK 4.5 \leq NK < 5$	Very Unhealthy

Source: Based on Bank Indonesia Circular Letter
(*Surat Edaran Bank Indonesia/ SE BI*) No. 13/23/ DPNP, 2011

2.1.3.3. Earnings

The overall earnings of the Bank, taken from the balance sheet of the Bank will also be measured, with the intention to evaluate whether the Bank could support its operational activities and manage its capital (Wahasusmiah and Watie, 2018). The earnings of a Bank could be gleaned from the ROA, NIM, and ROE of the Bank (Wahasusmiah and Watie, 2018; Choudhry, 2018; and Yonando, 2013). Anam et al. (2022) quoted their understanding of ROA from the findings of Halim (2007), stating that ROA is a ratio to determine the capability of a Bank to generate profit from utilising the total assets owned by the Bank.

Table 2.4. Composite Rating of ROA

Composite Rating	Percentage	Predicate
1	$ROA > 1.5\%$	Very Healthy
2	$1.25\% < ROA \leq 1.5\%$	Healthy
3	$0.5\% < ROA \leq 1.25\%$	Fairly Healthy

4	$0\% < ROA < 0.5\%$	Unhealthy
5	$ROA \leq 0\%$	Very Unhealthy

Source: Based on Bank Indonesia Circular Letter (*Surat Edaran Bank Indonesia/ SE BI*) No. 13/23/ DPNP, 2011

Along with ROA, NIM could also be utilised. NIM (Net Interest Margin) is a measure of the ability of the Bank to utilise its assets and generate positive net interest income (Choudhry, 2018). Yonando (2013) found that the greater the NIM, it would be a positive indicator of Bank performance, hinting that the Bank is not in trouble. Wahasumiah and Watie (2018) supported the findings of Yonando (2013), stating that if NIM of a Bank is high, the overall performance of a Bank could be considered good, and the Bank amasses a large profit from interest, with relatively small principal expense.

Table 2.5. Composite Rating of NIM

Composite Rating	Percentage	Predicate
1	$NIM > 3\%$	Very Healthy
2	$2\% < NIM \leq 3\%$	Healthy
3	$1.5\% < NIM \leq 2\%$	Fairly Healthy
4	$1\% < NIM \leq 1.5\%$	Unhealthy
5	$NIM \leq 0\%$	Very Unhealthy

Source: Based on Bank Indonesia Circular Letter (*Surat Edaran Bank Indonesia/ SE BI*) No. 13/23/ DPNP, 2011

Another proxy used to discern the earnings of the bank is the Operational Efficiency Ratio. Operational Efficiency Ratio (OER or BOPO) is also utilised in analysing the earnings of the bank (Anam et al., 2022). This calculation is important as increases in spending for operational reasons may impart the profitability of the bank (Anam et al., 2022).

Table 2.6. Composite Rating of Operational Efficiency Ratio (OER)

Composite Rating	Percentage	Predicate
1	$OER \leq 88\%$	Very Healthy
2	$89\% < OER \leq 93\%$	Healthy
3	$94\% < OER \leq 96\%$	Fairly Healthy
4	$97\% < OER \leq 100\%$	Unhealthy
5	$100\% \leq OER$	Very Unhealthy

Source: Based on Bank Indonesia Circular Letter (*Surat Edaran Bank Indonesia/ SE BI*) No. 13/23/ DPNP, 2011

2.1.3.4. Bank Capital

Lastly, the capital of the Banks will also be appraised, which will be measured by measuring the ratio of the capital of the Bank to its risk weighted assets (HKIB, 2018). Bank Indonesia stipulated a minimum capital adequacy requirement for commercial Bank in PBI number 15/12/PBI/2013. The regulation outlined that it is imperative that Banks could perform its intended function, and also be capable of developing and competing nationally and internationally. The regulation also highlighted that Banks should increase their capability to absorb risks induced by systematic risks, credit risk by increasing their capital in accordance with the applicable international standards (Basel III), which is a minimum of 8% (PBI, 2013).

Yonando (2013) added that Banks should also be mindful about their capital, weighting it to the risk profile of the Bank itself. To measure capital, CAR (Capital Adequacy Ratio) could be used as a proxy. CAR measures the ability of the Bank to maintain sufficient capital for its day-to-day process and in times of stress (Wahasusmiah and Watie, 2018). The writers (Wahasusmiah and Watie, 2018) quoted the Bank Indonesia Circular Letter No. 13/23/DPNP from October 2011, which further divided the matrix of CAR measurements as follows:

Table 2.7. Composite Rating of Capital Adequacy Ratio (CAR)

Composite Rating	Percentage	Predicate
1	$CAR \geq 11\%$	Very Healthy
2	$9,5\% \leq CAR < 11\%$	Healthy
3	$8\% \leq CAR < 9,5\%$	Fairly Healthy
4	$6,5\% \leq CAR < 8\%$	Unhealthy
5	$CAR < 6,5\%$	Very Unhealthy

Source: Based on Bank Indonesia Circular Letter (*Surat Edaran Bank Indonesia/* SE BI) No. 13/23/ DPNP, 2011

2.1.4. Bank Health Rating

In succession to the CAMEL method, the RGEC method had been in use since 2011. The retirement of the CAMEL method came about since the global financial crisis of 2008, as it was found that CAMEL was lacking in the implementation of adequate risk management in the Banks. Furthermore, the composite rating of the RGEC factors is utilised to analyse the Risk Based Bank Rating (RBBR) of the Banks, as Banks are exposed to numerous risks (Damayanti et al., 2020). Banks with low risk and good performance that can execute their day-to-day business are deemed healthy (Damayanti, 2020). Additionally, the Banks studied are KBMI 4, categorising the Banks as SIB (Ariyani, 2021). Disruptions on SIB may spread to other banks or financial sectors, making it imperative for KBMI 4 banks to protect the Banks from significant losses from economic downswing and maintain operational resilience as outlined in POJK No. 46/POJK.03/2015. For that reason, OJK and BI require Banks to regularly assess their performance, as individual assessment or a consolidated assessment (Damayanti, 2020; Bank Indonesia Regulation Number 13/1/PBI/2011). As mandated by Bank Indonesia Regulation Number 13/1/PBI/2011 on the soundness rating of commercial banks, Bank health rating is divided into 5 categories, which are:

Table 2.8. Composite Rating of Overall Bank Health

Composite Rating	Percentage	Predicate
1	86%-100%	Very Healthy
2	71%-85%	Healthy
3	61%-70%	Fairly Healthy
4	41%-60%	Unhealthy
5	<40%	Very Unhealthy

Source: Based on Bank Indonesia Circular Letter (*Surat Edaran Bank Indonesia/* SE BI) No. 13/23/ DPNP, 2011

2.1.6. Impact of the pandemic on the Indonesian Banking system

The economic growth of Indonesia and subsequently the health and performance of the commercial Banks was indeed challenged by the financial downturn caused by the pandemic. According to the findings of Siregar et al. (2021); Puspitasari and Dinuka (2022); and Ariyani (2021), the balance sheets of Banks saw significant weakening, yet it was revealed that the liquidity of the commercial Banks improved. Siregar et al. (2021), Kurnawati and Koesrindartoto (2020) also found that the capital reserved by the Indonesian commercial Banks are above the minimum requirement, and would be able to weather through difficult economic condition that is brought about by the pandemic. Nonetheless, Kurnawati and Koesrindartoto (2020) and Ikhwan and Riani warned that Indonesian commercial Banking Institutions should remain vigilant in assessing the quality of loans and the ability of the Banks to restructure loans, if necessary. Ikhwan and Riani (2022) shared a similar opinion with Siregar et al. (2021), noting that the Indonesian Banking institutions should be wary of the possibility of loan quality deterioration, instead of the liquidity issues that was the initial assumption of BI.

2.1.7. 2022 onwards: Russian-Ukraine War posing as a global shock

More recently, as the Russia-Ukraine war continued, some researchers predicted that this event could trigger global recession, with a grim prediction of

worse global economic performance (Rogoff, 2022; Kammer, 2022; Guenette et al., 2022). Boubaker (2023) quoted the findings of Batten et al., (2022); Choudhury et al., (2022); Hassan et al., (2022b); Karim et al., (2022) stated that Banking institutions are very susceptible to economic spillover effect from the global financial and commodity market. According to Chowdhury (2018, p. 8) Banks support the economy by cushioning for economic growth through lending activities to both households and business. Boubaker et al. (2023) complies with Chowdhury (2018) highlighting that as commercial Banks facilitate transaction among institutions, with instability in the Banking institution resulting in risk-induced adverse impact on the financial system of the nation, Banks should be able to weather the economic stress from uncertain conditions.

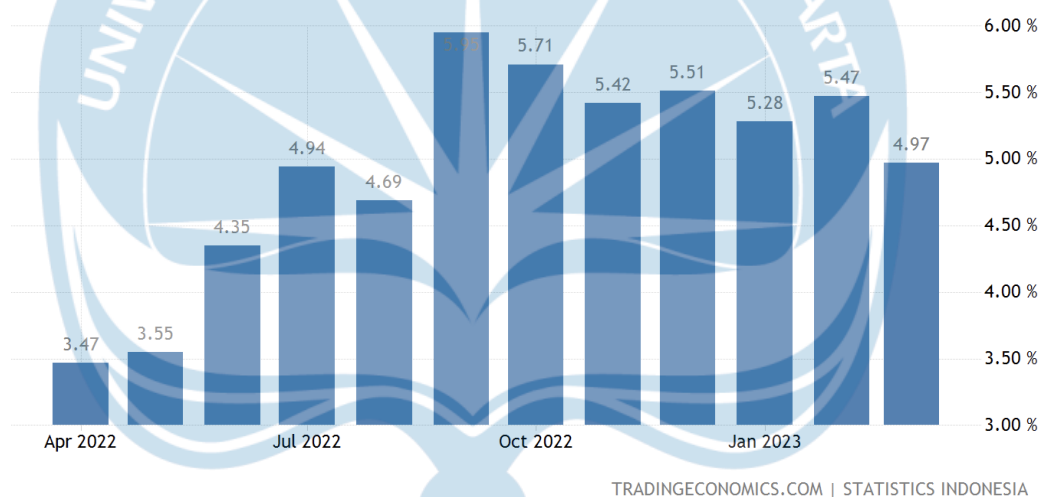


Figure 2.1
Rate of Inflation in Indonesia
 Source: Tradingeconomics.com

According to Trading Economics, the inflation rate of Indonesia had shown a fluctuating trend. In the beginning of 2022, the inflation rate was relatively low, at around 3.57%, but peaked in around October 2022 at 5.71%, with a slightly decreasing trend, but remains at a fairly high number.

Apostolik & Donohue (2015, p. 29) argued that inflation rate—and hereby the interest rate poses a risk for the Banks by reducing the value of their equity. Boubaker et al. (2023) shared a similar sentiment, as the numerous findings quoted

in their research show that financial shocks decrease the value of the assets held by a Bank, and increase risks that might be incurred by the Bank. Guénette et al. (2022) had found that the price of commodities produced mainly by Russia and Ukraine had dramatically risen (e.g. energy sources, wheat, fertilisers, and some metal products), which consequently increases the inflation rate on developing economies, as evidently shown by the increasing price of energy and some food insecurity, which might arguably trigger financial crises in developing economies.

2.2. Previous Research

Table 2.9.
Summary of Previous Research

No.	Research Title	Findings
1	Impact of Global Financial Shock to International Bank Lending in Indonesia by Azis, Baluga, and Mitra (2013)	This research found that global interdependence is highly correspondent with hastening the spread of global crisis, which spread from capital flows, or spillovers from returns or yields on financial assets
2	The Impact of Non-Performing Loans and Economic Shock on The Stability of Islamic Banking Performance as Moderating Variable in The COVID-19 Pandemic Era by Zainuri and Bawono (2022)	The researchers concluded that during the pandemic and the subsequent economic shock brought, non-performing loans rose. As a result, the increase of non-performing loans significantly hampered the load supply and loan demand, challenging the stable performance of Islamic Banks. Similarity: analysis of NPL during the pandemic Difference: Islamic Banking
3	Financial Ratio Analysis in Assessing Bank Health Level of State-Owned Enterprises (BUMN) during the Covid-19 Pandemic (Article in Indonesian) by Riftiasari (2023)	This study focuses on assessing the financial performance of BUMN Banks by examining the RGEC factors of state-run Banks, with the assessment is carried out using the Risk-Based Bank Rating method (RBBR), which analyses the NPL ratio, LDR, self-assessed GCG practices, ROA, NIM, and CAR. The results obtained through the RBBR method indicated that, although the BUMN Banks encountered difficulties in 2020, the general evaluation of the stability of BUMN Banks amid the Covid-19 pandemic between 2019 and 2022 consistently indicated a high level of health, with a temporary dip into the 'Healthy' category in 2020. Similarity: uses RBBR and same variables Difference: Sample is state run banks

No.	Research Title	Findings
4	Impact of Global Financial Shock to International Bank Lending in Indonesia by Silalahi, Wibowo, Nurliana (2012)	This research had explained the influence of times of economic crisis to banking behaviour. The research found that during economically difficult times, Banks are more likely to avoid risk, due to having to balance their Banking power (e.g. balance sheets on their assets and other loans) to the policies implemented by the government and the central bank. As a result, the rate of domestic lending is significantly lower.
5	Analysis of the RGEC Method (Risk Profile, Good Corporate Governance, Earnings, Capital) to Measure Financial Performance at PT. Bank SUMUT Medan Head Office by Supirto (2021)	In this study, Supirto (2021) analysed the overall health and performance of PT. Bank Sumut in 2013-2017. The research was conducted with descriptive analysis, by presenting and explaining the data. The writer analysed the health of the bank through the RGEC, CAR, ROA, and LDR, and the writer found that the bank is not performing well, and that the bank is facing significant credit risk. Similarity: uses RBBR and same variables Difference: research year, research sample
6	Health Assessment of Islamic Banks in Indonesia with the RGEC Method by Gultom and Siregar (2022)	This research had assessed the overall health of 11 Islamic Banks that have spun off from their original company in Indonesia. The data was processed with a quantitative descriptive method, resulting in most of the Islamic Banks studied during the period showing a fairly healthy score of 2. The writer added that Islamic Banks should increase their capital and profit, employ better risk management practices, and employ good governance system to compete with conventional banks. Similarity: uses RBBR and same variables Difference: sample is Islamic banks
7	Analysis of Bank Health Level Using RGEC Method at PT. Bank Central Asia Tbk Year 2017-2022 (Article in Indonesian) by Pattipeilohy et al. (2023)	This research analysed the overall health of PT. Bank Central Asia Tbk for fiscal years 2017-2022 using the RBBR. The research found that PT. Bank Central Asia Tbk was consistently categorised as 'Very Healthy.' The only exceptions were the NPL ratio in 2021 and the ratios from 2017 to 2019, which were classified as 'Healthy'. However, in general, this Bank was found to be of very sound health, securing Composite Rank 1. Similarity: uses RBBR and same variables, uses BCA Difference: only uses BCA
8	RGEC Method: Assessment of Bank Health Level in Sharia	Similar to other researchers that assess Bank Health with the RGEC method, the data yielded was processed with a

No.	Research Title	Findings
	Banking Companies (Article in Indonesian) by Wahasumiah and Watie (2018)	<p>descriptive quantitative approach. Their research proves that in 2014 to 2016, Bank Syariah Mandiri, BRI Syariah, BCA Syariah, BNI Syariah, and Bank Bukopin Syariah are performing very well, and the aforementioned banks are very healthy.</p> <p>Similarity: uses RBBR and same variables Difference: sample is Islamic banks</p>
9	Bank Health Level Using RGEC Method (Article in Indonesian) by Anam, Hendika, and Anhar (2022)	<p>The results showed that in the case of State Owned Enterprise Banks, NPL, Operational Expenses on Operating Income, and CAR had a significant impact on ROA, while GCG had no significant effect on ROA. On bank soundness level, the research shows that State Owned Enterprise Banks display very good health.</p> <p>Similarity: uses RBBR and same variables Difference: sample is state owned banks</p>
10	Analysis of Bank Soundness Level Using the RGEC Method (Case Study at PT. Bank Negara Indonesia Tbk and PT. Bank CIMB Niaga Tbk for Period 2009-2011) (Article in Indonesian) by Yonando (2013)	<p>RGEC Method was applied to study PT. Bank Negara Indonesia Tbk and PT. Bank CIMB Niaga Tbk for Period 2009-2011. The research shows that both Banks are very healthy, and that these Banks are in sufficient condition and are ready to face economic downturn.</p> <p>Similarity: uses RBBR and same variables Difference: sample is different Banks, and the years are not studied</p>
11	Effect of RGEC Ratio, Bank Size, Market Value, and Macroeconomic Variables on the Prediction of Financial Distress Using CD-Index (Article in Indonesian) by Nisak (2021)	<p>For this analysis, the researcher discerned the influence of RGEC factors, bank size, market value, and macroeconomic condition of Indonesia to predict the performance of the Bank during a possible financial distress, analysed using the Crisis and Default Index. The research proxied the risk profile of the Bank with NPL and LDR, while the measurement of GCG is proxied by the size of board directors. To classify the earnings, the research computed the ROA, ROE, NIM, and Operational Efficiency Ratio, while the health level of the capital is gauged with CAR of the bank. The research suggested that the internal factors and bank size could not accurately predict future financial distress, but it is highly recommended for banks to maintain the valuation of their stock. Lastly, the research concluded that good internal banking fundamentals by following and meeting the policies set by the Central Bank would enable the Banks to weather a period of financial distress.</p>

No.	Research Title	Findings
		<p>Similarity: uses RBBR and same variables Difference: using CD Index</p>
12	<p>Banking Crisis Prediction: Emerging Crisis Determinants in Indonesian Banks by Musdholifah, Hartono, and Wulandari (2020)</p>	<p>The research was conducted in 2015-2016, involving 21 variables in 5 categories. Their findings are significantly different from the findings of Nisak (2021), noting that internal banking conditions are a significant predictor towards predicting possible banking crises. The factors studied with the RGEC method were found to be able to affect the probability of a banking crisis occurring.</p> <p>Similarity: uses RGEC factors Difference: the RGEC factors were used to predict a crisis</p>
13	<p>The Impact of the COVID-19 Pandemic on Banking Performance Case Study of Banks with Core Capital Classified as KBMI 4 Banks in Indonesia (Article in Indonesian) by Anshori et al. (2022)</p>	<p>This study examines the impact of the pandemic towards the RGEC factors, proxied with NPL, LDR, ROA, ROE, BOPO, and CAR. The hypothesis testing was conducted using the paired t-test, and this research supports that there was a difference in the NPL, LDR, ROA, ROE, BOPO, before and during the pandemic; while the CAR remained consistent.</p> <p>Similarity: uses RBBR and same variables Difference: the findings of this research is different</p>
14	<p>Soundness Rating of Commercial Banks Before and After Implementation of RGEC Method in Indonesia by Andriyani, Mayasari, and Aryani (2018)</p>	<p>This research focused on the period of 2008-2016 (the period before and after the implementation of RGEC to assess bank health), with 10 Commercial Banks as sample. The research calculated the RGEC Variable of each banks, and the research concluded that risk profile (intermediated with NPL) and earnings of the bank (intermediated with NIM) were not impacted by the implementation of RGEC. On the other hand, the research noted that the implementation of RGEC had direct ramification on CAR and GCG</p> <p>Similarity: uses RBBR and same variables Difference: periods studied are different</p>
15	<p>Analysis of Bank Health Level Assessment Using the RGEC Method Before and During The Covid-19 Pandemic by Puspitasari and Dinuka (2022)</p>	<p>This study seeks to understand the composite ranking in commercial Banks listed in the Indonesia Stock Exchange (IDX) in the period of 2019-2020. The study concluded that there were no difference in the ratio of NPL, GCG, and ROA. Even so, the study found that the LDR, NIM, and CAR had improved from before and after the pandemic.</p> <p>Similarity: uses RBBR and same variables Difference: the sample banks are different</p>
16.	<p>Influence of Bank Health Level</p>	<p>The research analysed the health of BUMN Banks with</p>

No.	Research Title	Findings
	Using RGEC Method on Profit Growth in Banks Registered in BEI (Studies in BUMN Banks for period 2016-2021) (article in Indonesian) by Pratiwi (2023)	RGEC method, where several proxies were utilised, namely NPL, LDR, GCG, ROA, NIM, CAR, and BOPO were used. The research finds that sound Bank health contributes positively to profit growth. Similarity: uses RBBR and same variables Difference: the sample banks are different
17.	Analysis of Bank Soundness Level Using the RGEC Method (Case Study at PT Bank Mandiri (Persero), Tbk) by Astari et al. 2021	In discerning the bank health of PT. Bank Mandiri, this research used the RGEC method, with Risk profile proxied with NPL and LDR, GCG with the self assessed reports, Earnings with ROA and NIM, and capital adequacy with CAR. The research found that in 2016-2020, Bank Mandiri was performing very well. Similarity: uses RBBR and same variables Difference: the sample banks are different, and only uses Bank Mandiri

2.3. Hypothesis Development

2.3.1. Risk Profile Proxied with the NPL and LDR

As had been previously iterated, measuring the risk profile of a Bank is imperative. During times of crisis, Banks are more likely to sustain bad credit (Apostolik and Donohue, 2015). If the NPL and LDR of a Bank is higher than the number that had been outlined by BI, it is very likely for that Bank to sustain large losses, impairing the overall health of the bank (Puspitasari and Dinuka, 2022). Moreover, according to PBI no. 11/25/PBI/2009, Banks must report the Risk Based Bank Rating on the financial statement. These reported consolidated risk profile ratings could be used to assess the scoring of the bank risk. For that reason, this research hypothesises:

H_1 : There is a difference in the risk profile of the KBMI 4 Banks (BCA, Bank Mandiri, BRI, and BNI) that is proxied with NPL before and after the implementation of the KBMI grouping.

***H₂*: There is a difference in the risk profile of the KBMI 4 Banks (BCA, Bank Mandiri, BRI, and BNI) that is proxied with LDR before and after the implementation of the KBMI grouping.**

2.3.2. Good Corporate Governance

More literature supports the notion that GCG is crucial in determining the success of a Bank (Nisak, 2021; Puspitasari and Dinuka, 2022; Wahasusmiah and Watie, 2018). While Banks may have high CAR, low NPL, and good earnings, if these Banks do not implement GCG, these Banks could still face trouble due to mismanagement (Andriyani et al., 2018). Based on the findings of Andriyani et al. (2018), it was found that since the enforcement of Risk Based Bank Rating, the GCG reporting of Banks improved markedly. As Banks continuously endure periods of stress, is imperative that the Banks could learn from experience and be able to better their GCG For the reasons elucidated, this research hypothesise:

***H₃*: There is a difference in the GCG of BCA, Bank Mandiri, BRI, and BNI before and after the implementation of KBMI grouping**

2.3.3. Earnings Proxied with ROA, NIM, and OER

During periods of economic downturn, the earnings of a bank may be lowered (Puspitasari and Dinuka, 2022; Wahasusmiah and Watie, 2018). The slowed flow of earnings was exacerbated by the mass withdrawal of money as was the case in the 1997-1998 monetary crisis (IMF, 1998; Iriana and Sjöholm, 2002). For that reason, it is recommended for the Banks to have learned from experience and have built a sound earnings that is measured with NIM, ROA, and OER as these calculations are a great predictor of the overall health of the Bank (Puspitasari and Dinuka, 2022; and Nisak, 2021).

H₄: There is a difference in the earnings of BCA, Bank Mandiri, BRI, and BNI that is proxied by ROA before and after the implementation of KBMI grouping.

H₅: There is a difference in the earnings of BCA, Bank Mandiri, BRI, and BNI that is proxied by NIM before and after the implementation of KBMI grouping.

H₆: There is a difference in the earnings of BCA, Bank Mandiri, BRI, and BNI that is proxied by OER before and after the implementation of KBMI grouping.

2.3.4. Bank Capital Proxied by CAR

Wahasumiah and Watie (2018) stated that the capital of a Bank is important for the day-to-day operation of the Bank, and also as the capital that could be used to grow the business, along with absorbing losses that is experienced by the Bank from NPL. BI had also outlined the minimum CAR for commercial Banks so that the Banks could perform its day-to-day operation. A prior research conducted by Andriyani et al. (2018) found that the CAR of commercial Banks had increased noticeably in the period of 2008-2016.

H₇: There is a difference in the Bank Capital of BCA, Bank Mandiri, BRI, and BNI that is proxied by CAR before and after the implementation of KBMI grouping.