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Article

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FINANCIAL ECONOMICS | RESEARCH ARTICLE

Risk Based bank rating and financial performance of Indonesian commercial banks with GCG as intervening variable

Andini Nurwulandari^{1*}, Hasanudin Hasanudin¹, Bambang Subiyanto¹ and Yulia Catur Pratiwi¹

Abstract: This study aims to analyze the effect of the financial health of Indonesian commercial banks on financial performance with good corporate governance as an intervening variable. This study utilizes the risk-based bank rating (RBBR) method with secondary data by examining annual reports of 41 commercial banks taken as samples for the period from 2014 to 2019. The ratios used in this study are Non-Performing Loans (NPL), Loan Deposit Ratio (LDR), Net Interest Margin (NIM), and Operating Efficiency Ratio (OER), Capital Adequacy Ratio (CAR), Return on Assets (ROA) and Good Corporate Governance (GCG). The results showed that NIM had a direct positive and significant effect on ROA, while OER had a negative and significant effect on ROA, as hypothesized. Direct testing of GCG shows a negative and significant effect of NPL and OER, as well as a positive and significant effect of NIM. Furthermore, indirect testing with intervening variables shows that GCG is able to mediate the relationship between NPL and OER on the financial performance of conventional banks in Indonesia. In addition, GCG is also empirically proven to



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PUBLIC INTEREST STATEMENT

Good Corporate Governance has long been an interesting issue for public companies. Publicly listed commercial banks, in this regard, have a strategic responsibility in managing their good corporate governance to gain legitimacy and credibility and to balance the various demands between regulation, and the demands of shareholders and the public. This study presents an investigation of the mediating role of good corporate governance in the commercial banking industry in Indonesia. By using the latest data, the results evaluate how the internal mechanisms in Indonesian commercial banks regulate risk management by utilizing good corporate governance in order to improve their financial performance. The results encourage the need to strengthen the governance mechanisms that have been adopted so far in Indonesia, and theoretically confirm the governance mechanism as an important strategic domain in risk management in commercial banks in Indonesia.

strengthen the positive and significant effect of NIM on ROA. This finding underscores the importance of good corporate governance in improving the financial health of commercial banks in Indonesia. In addition, the results theoretically would imply for the relevance of investigations regarding governance mechanisms and moral ethics as the domains of strategic issues of corporate governance.

Subjects: Economics; Finance; Banking; Business, Management and Accounting

Keywords: non-performing loan (NPL); Return on Assets (ROA); Good Corporate Governance (GCG); Risk Based Bank Rating (RBRR)

1. Introduction

Banks are one of the financial institutions that play an important role in supporting the economic development of a country (Berger & Bouwman, 2015). Banks function as trust institutions and community intermediary institutions and are part of the monetary system (Werner, 2016). In Indonesia, there are types of banks based on ownership. Firstly, government owned bank refers to a bank in which both the deed of establishment and capital are owned by the government, so that all the profits of the bank are owned by the government as well. Secondly, private bank refers to a bank which is wholly or most of its capital owned by the national private sector and its deed of establishment is also established by the private sector, as well as the distribution of profits is also shown for the private sector as well. Thirdly, foreign bank is a branch of a bank that is abroad, either owned by foreign private companies or by foreign governments, with the ownership being owned by foreign parties (Ghonyiah & Hartono, 2020). Conventional banks are banks that carry out their business activities consisting of commercial banks and rural banks (Sukmana et al., 2020). According to Law No. 10 of 1998 what is meant by bank is a business entity that collects funds from the public in the form of savings and distributes them to the community in the form of credit and/or other forms in order to improve the standard of living of the people at large. The purpose of the commercial banks is to support the implementation of national development in order to increase equity, economic growth and national stability towards improving the welfare of the people at large (Wulandari & Subagio, 2015; Soetjipto et al., 2021). In accordance with the definition of a bank or the two main functions as a business entity that collects funds from the public in the form of demand deposits, certificates of deposit, and other forms of savings entrusted by the public to the bank, and as a business entity that distributes funds to the public in the form of credit.

According to the Financial Stability Study No. 34, March 2020 by Bank Indonesia, the stability of the Indonesian financial system during Semester 2/2019 was maintained, amidst continuing uncertainty due to reduced globalization, increased risks on global financial markets and the emergence of new, unknown risks. Looking ahead, the pressure on financial system stability is expected to increase in line with the widespread impact of the Covid-19 pandemic. The wide spread of the Covid-19 pandemic to many countries including Indonesia has become a threat to global and domestic macro-financial stability (D'Orazio, 2021; Feyen et al., 2021; Kasim & Muslimin & Dwijaya, 2022; Mansour et al., 2021).

From the banking side according to (Banking Industry Profile Report by the Financial Services Authority, 2019). Slowing domestic economic growth was also reflected in credit, which grew moderately at 6.08% (year-over-year), compared to 11.75% in the same period the previous year. Nonetheless, the banking intermediation function is running well accompanied by adequate liquidity conditions supported by growth in deposits of 6.54%, up from last year's 6.45%. The performance of commercial banks is shown by the main financial ratios, showing improvement. Bank Indonesia Circular No. 13/24/DPNP dated 25 October 2011, explained that profitability performance is assessed using Return on Assets (ROA) and Net Interest Margin (NIM). Meanwhile, the capital factor is assessed using Capital Adequacy Ratio (CAR), while the credit risk is assessed

Table 1. Financial Ratios of commercial banks 2014–2019

Years	NPL	LDR	OER	NIM	CAR	ROA
2014	2.04	89.42	79.49	4.23	19.57	2.85
2015	2.39	92.11	81.49	5.39	21.39	2.32
2016	2.93	90.5	82.25	5.47	22.71	2.17
2017	2.93	88.35	79.22	5.19	23.01	2.42
2018	2.33	94.78	77.86	5.14	22.97	2.55
2019	2.5	94.43	79.39	4.91	23.4	2.47

Source: Processed, Indonesian Banking Statistics and LHBUI

Table 2. Composite rating of bank health using the RBBR Method

Weight %	Information
86–100	Strongly Healthy
71–85	Healthy
61–70	Fairly Healthy
41–60	Unhealthy
< 40	Strongly Unhealthy

Source: Bank Indonesia Circular No 13/24/DPNP/2011

by using Non-Performing Loans (NPL). Moreover, liquidity risk is assessed using Loan-to-Deposit Ratio (LDR), and operational risk assessment is assessed using operating efficiency (OER).

Table 1 shows the ratio of NPL, LDR, OER, NIM, CAR, and ROA in commercial banks for the period 2014–2019, where it can be seen that there are inconsistencies between the variables of bank financial performance. The next assessment factor is Good Corporate Governance (GCG) or corporate governance. Bank Indonesia regulation (*Peraturan Bank Indonesia/PBI*) No. 13/1/2011 specified every commercial bank to consider the factor of GCG to guarantee the existence of good governance to improve company performance. Figure 1 is a graph of the GCG development of 20 commercial banks that published the results of corporate governance for 2014 to 2019 which were processed from the results of self-assessment of each bank.

Previous financial health assessments used the CAMELS method based on Bank Indonesia Circular Letter No. 6/23/DPNP/2004. However, the global financial crisis that occurred in the last

Figure 1. GCG Development of commercial banks for the period 2014–2019.

Source: Processed data, 2014–2019 GCG Report

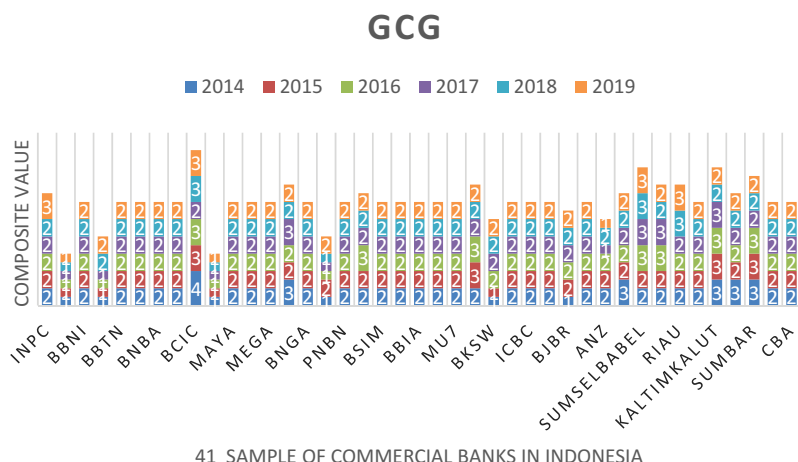
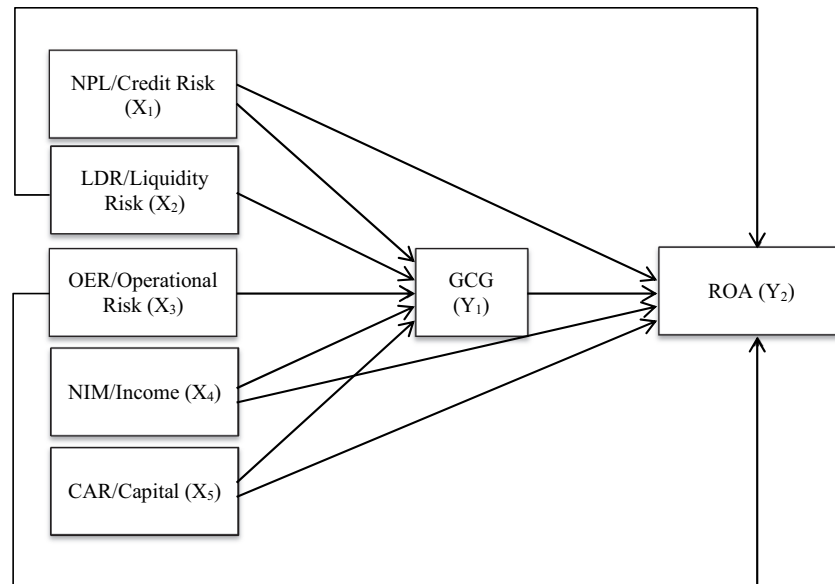


Figure 2. Research framework.



few years provided a valuable lesson that innovations in banking products, services and activities must be balanced with the application of adequate risk management so that the government created a new method for assessing the health of banks (Mansyur, 2021). The complete calculation guideline is stipulated in Bank Indonesia Circular Letter No. 13/24/DPNP dated 25 October 2011 concerning assessment of the soundness of commercial banks is an implementation guideline of Bank Indonesia Regulation No. 13/1/PBI/2011, which requires commercial banks to conduct self-assessment of bank soundness using the Risk-based Bank Rating (RBRR), both individually but on a consolidated basis. In this context, this study aims to empirically analyze the effect of financial health using RBRR method on bank financial performance with Good Corporate Governance as an intervening variable in commercial banks in Indonesia for the period 2014–2019.

2. Literature review and hypotheses

2.1. Risk Based Bank Rating

Financial statements are basically the result of an accounting process that can be used as a tool to communicate between financial data or a company's activities and parties with an interest in the company's data or activities (Brown & Ronen, 2013). Financial reports are needed to determine the financial position of a company and the results it has achieved (Staszkiwicz & Staszkiwicz, 2014). The level of health assessment at commercial banks is regulated in PBI Number 13/1/PBI/2011 concerning bank soundness assessment based on risk profiles as a refinement of PBI Number 9/1/PBI/2007. This regulation was renewed due to the growing development of the banking business so that the problems experienced by banking institutions were increasingly complex. According to Bank Indonesia Regulation Number 13/1/PBI/2011 Financial health must be maintained or enhanced so that public trust in the Bank can be maintained.

Based on Bank Indonesia regulation No. 13/1/PBI/2011, the risk-based approach to financial health assessment (Risk-Based Bank Rating) is a bank soundness assessment method replacing the previous assessment method, namely methods based on Capital, Asset, Management, Earning, Liquidity and Sensitivity to Market Risk (CAMELS), this is in accordance with Bank Indonesia Circular Letter Number: 13/24/DPNP dated 25 October 2011. The assessment of the soundness level as referred to is determined in five categories of Bank soundness predicate as shown in Table 2.

2.2. Hypotheses

2.2.1. The effect of NPL, LDR, OER, NIM and CAR on ROA

Banks with high non-performing loan (NPL) condition will likely have increasing costs, both the cost of reserves for productive assets and other costs. Therefore, it has a consequential impact on the potential for bank losses (Arping, 2017). The higher the NPL ratio, the worse the quality of credit, which causes the number of non-performing loans to increase, which can increase the likelihood of a bank in problematic condition (Hakim, 2017). Soin this case, the higher the NPL ratio, the lower the profitability of a bank. In the context of the relationship between non-performing loan and bank profitability, previous research (Laryea et al., 2016; Mdaghri, 2021; Menicucci & Paolucci, 2016) show that NPL has a negative effect on financial performance (ROA). Thus, the following hypothesis is proposed:

H1: *NPL has a negative effect on return on assets*

The loan-to-deposit ratio or LDR is a ratio that gives an indication of the amount of third-party funds channeled in the form of credit (Boďa & Zimková, 2021; Muhammad et al., 2020). Bank Indonesia has determined that a good LDR value is 80%—110%. This means that if the bank distributes the funds collected have a large enough amount in the form of credit, the bank will also get a large profit from loan interest. The higher the LDR level while remaining within the limits set by Bank Indonesia and supported by good-quality lending by the bank, the spread based obtained by the bank will increase, thereby increasing its profitability. Previous research (Kumar & Bird, 2022; Menicucci & Paolucci, 2016) have shown that LDR has a positive effect on financial performance (ROA).

H2: *LDR has a positive effect on return on assets*

The operating expense ratio or OER is a comparison between operating costs and operating income. Operational costs are used to measure the level of efficiency and ability of a bank to carry out its operational activities (Kumar & Bird, 2022). The smaller the OER, the more efficient the bank is in carrying out its business activities so that the bank is healthier. Meanwhile, the higher the OER, the less efficient the operational expenses incurred by the bank. Therefore, the ability of the bank to make a profit is getting smaller. Istan and Fahlevi (2020) show that OER has a negative impact on financial performance (ROA).

H3: *OER has a negative effect on return on assets*

Net Interest Margin or NIM reflects market risk arising from changes in market conditions (Marinković & Radović, 2014). NIM is strongly influenced by changes in interest rates and the quality of earning assets. Banks need to be careful in extending credit so that the quality of their earning assets is maintained (Nguyen & Du, 2022). The greater the NIM achieved by a bank will increase interest income on productive assets managed by the bank concerned, so that the bank's profit (ROA) will increase and the possibility of the bank in a problematic condition is getting smaller. Doyran (2013), Menicucci and Paolucci (2016) state that NIM has a significant positive effect on ROA.

H4: *NIM has a positive effect on return on assets*

CAR is an assessment of own capital to generate profits. The greater the CAR, the greater the chance for the bank to generate profits (Karim et al., 2014). With large capital, bank management is very flexible in placing its funds into profitable investment activities. If the CAR value is high, the bank is able to finance operational activities and make a large enough contribution to profitability (Sarwar et al., 2020). So that CAR has a positive influence on profitability. Thus, the bank must provide sufficient minimum capital to secure the interests of third parties. Menicucci and Paolucci (2016), Wahyudi (2019), Madugu et al. (2020), and Hussain and Hassan (2005) state that CAR has a significant positive effect on ROA. This means that the increased CAR will be more likely to improve profitability.

H5: *CAR has a positive effect on return on assets*

2.2.2. The effect of NPL, LDR, OER, NIM and CAR on GCG

Risk management is one of the points of assessment in the self-assessment working paper, so that if bank risk management, the implementation of GCG in the bank will also be good and can reduce risks due to lending to the public. Every decrease in the NPL or non-performing loan will increase the GCG composite value. The composite value of GCG according to Bank Indonesia Circular Letter or SE 12/13/DPbS 2010 Letter F No. 6, has the highest composite value at point 1 characterized a very good composite predicate and the lowest at point 5 characterized a poor composite predicate. Because the fewer non-performing loans faced by commercial banks, the better the company's control in creating added value for stakeholders and in managing the company. In terms of NPL, previous research (Adegboye et al., 2020; Tarchouna et al., 2017) showed that NPL has a negative effect on Good Corporate Governance (GCG).

H6: *NPL has a negative effect on Good Corporate Governance*

Loan-to-deposit ratio or LDR shows how far the level of liquidity of a bank is (Hakim, 2017). The higher the LDR level, the less liquid a bank is, which means that it will be difficult for the bank to meet its short-term obligations, such as a sudden withdrawal by customers of their deposits. Conversely, the lower the LDR level, the more liquid a bank is. However, the more liquid condition of the bank indicates that there are many idle funds, thus reducing the opportunity for banks to obtain greater revenue, because the bank intermediation function is not well accomplished. When a bank is unable to maintain its liquidity level, it can cause a liquidity crisis that cannot be avoided by the bank, meaning that there is a decrease in the level of public trust in the bank (Abbas et al., 2019). The crisis of confidence with the rush to the bank can be recovered in a number of ways, including increasing bank vigilance and bank supervision. Mahrani and Soewarno (2018) state that one way to restore the level of public trust is by applying the principles of GCG to banking. In addition, Hakim (2017), Yamori et al. (2017) stated that the loan-to-deposit ratio has a significant effect on Good Corporate Governance.

H7: *LDR has a positive effect on Good Corporate Governance*

OER is the ratio between operating expenses and operating income. The operational cost ratio is used to measure the level of efficiency and the ability of a bank to carry out operational activities (Camanho & Dyson, 2005; Jarmuzek & Lybek, 2020; Lotto, 2019). Thus, the lower the OER, the better the company is in managing costs and the higher the value of the GCG composite. In Indonesia, Bank Indonesia Circular Letter No. 15/15/DPNP 2013 and SE 12/13/DPbS 2010 classified good governance with 5-point scale with 1 as the highest composite value and 5 as the lowest composite predicate. In terms of the relationship between cost-efficiency on good governance, previous research has shown a negative effect (Jarmuzek & Lybek, 2020; Jiang & Yao, 2010;

Lensink et al., 2008). This means that the greater operating cost is more likely to burden good governance. Thus, the following hypothesis is proposed:

H8: OER has a negative effect on Good Corporate Governance

Net Interest Margin (NIM) as one of the proxies of market risk refers to return obtained from imposing interest rate between saving and loan (Marinković & Radović, 2014). Thus, the market ratio can be measured by the difference between the funding interest rate and the loan interest rate. In absolute form, it is the difference between the total interest cost of funding and the total interest cost of the loan (Kumar, 2014). According to Bank Indonesia Circular Letter No. 6/23/DPNP dated 31 May 2004, Net Interest Margin (NIM) is the ratio between net interest income and average earning assets. This ratio is used to measure the ability of bank management to manage its earning assets to generate net interest income. The higher the NIM ratio, the better the bank management's ability to manage its productive assets (Barth et al., 2001). In terms of the relationship between Net Interest Margin and good governance, Degryse and Ongena (2008), Laeven and Levine (2009), and Haris et al. (2019) show that NIM has a positive effect on Good Corporate Governance (GCG).

H9: NIM has a positive effect on Good Corporate Governance

Capital Adequacy ratio (CAR) is the minimum capital provision for banks based on broad risk assets, both assets listed in the balance sheet and administrative assets. It is reflected in liabilities that are still dependent and/or commitments given by the bank to third parties or market risk. Laeven and Levine (2009) state that managerial ownership has a positive effect on risk taking by banks. Managerial ownership is one indicator of GCG assessment. This is consistent with the theory that strong incentive capital holders increase risk taking so that bank risk management will also improve. Chitan (2012) states that by increasing the provision of funds or capital (CAR) at the bank, the role of the external committee on GCG will be better. Thus, it can be said that CAR or bank capital has a positive effect on GCG. Abou-El-Sood (2017) states that the Capital Adequacy Ratio has a significant effect on Good Corporate Governance.

H10: CAR has a positive effect on Good Corporate Governance

2.2.3. The effect of GCG on ROA

Good corporate governance is good corporate governance carried out by a company as a structure, system and process in order to provide sustainable added value to the company in the long term. According to the Indonesian Institute of Corporate Governance, the smaller the GCG composite value indicates the better the performance of bank GCG. The composite value of GCG according to Bank Indonesia Circular Letter No. 15/15/DPNP 2013 and SE 12/13/DPbS 2010 Letter F No. 6, has the highest composite value at number 1 (one) with a very good composite predicate and the lowest at number 5 (five) with a poor composite predicate. So that the higher the composite value, it proves the implementation of good GCG so as to prevent errors in decision-making which will automatically increase company value, which is reflected in profitability (ROA). Tjondro and Wilopo (2011) state that Good Corporate Governance has a positive influence on Return on Assets.

H11: GCG has a positive effect on financial performance (ROA)

2.2.4. The effect of GCG as an intervening variable

NPL (Non-Performing Loan) is one indicator of a bank's asset health. The higher the NPL value (above 5%), the bank is not healthy. A high NPL causes a decrease in profits to be received by the bank. Meanwhile, ROA is the ratio used to measure a bank's ability to generate profits relative to its total assets. This ratio measures the company's ability to generate net income based on a certain level of assets. The greater the ROA, the greater the level of profit (profit) achieved by the bank. GCG is defined as the structures, systems and processes used by company organs as an effort to provide added value to the company in a sustainable manner in the long term. The smaller the GCG composite value, the better the performance of bank GCG.

H12: *GCG is able to mediate the negative effect of NPL on financial performance (ROA) of commercial banks.*

Banking liquidity needs to be managed in order to meet the needs when customers take their funds and channel loans (credit) to borrowers (debtors). If the LDR value is too high, it means that banks do not have sufficient liquidity to cover their obligations to customers (TPF). Conversely, if the LDR value is too low, it means that banks have sufficient liquidity so that the ROA will be greater. The higher the LDR level while remaining within the limits set by Bank Indonesia and supported by good-quality lending by the bank, the spread based obtained by the bank will increase, thereby increasing its profitability. When a bank is unable to maintain its liquidity level, it can cause a liquidity crisis that cannot be avoided by the bank, which means a decrease in the level of trust. The level of trust is very important for society. The existence of GCG principles is important because these principles will assist banks in carrying out existing principles and are able to increase the trust or image of banks.

H13: *GCG is able to mediate the positive effect of LDR on financial performance (ROA) of commercial banks.*

OER is the ratio used to measure the level of efficiency and the ability of a bank to carry out its operations. The smaller this ratio means the more efficient the operational costs incurred by the bank concerned so that the possibility of a bank in a problematic condition is getting smaller. So that the higher the OER, the more inefficient the operational expenses incurred by the bank, so that the bank's ability to earn profit (ROA). Conversely, the lower the OER ratio means the better the performance of the bank's management and the more efficient it is in using existing resources in the company. This performance improvement will increase profit (ROA) and lead to higher GCG composite value. It is necessary to emphasize again the composite value of GCG, according to Bank Indonesia Circular No. 15/15/DPNP 2013 and Circular No. 12/13/DPbS/2010, has the highest composite value at number 1 with a very good composite predicate and the lowest at number 5 with a poor composite predicate.

H14: *GCG is able to mediate the negative effect of OER on financial performance (ROA) of commercial banks.*

This ratio is used to measure the performance ability of bank management in extending credit, considering that bank operating income is highly dependent on the difference between the interest rate for loans and the interest rate on deposits received (net interest income). NIM is the ratio between net interest income and average earning assets. The higher the NIM, the more likely the bank's profit will increase (ROA) so that the composite value on Good Corporate Governance (GCG) will also increase in managing the company.

H15: GCG is able to mediate the positive effect of NIM on financial performance (ROA) of commercial banks.

CAR (Capital Adequacy Ratio) is a capital adequacy ratio that shows the ability of banks to provide funds that are used to overcome possible risk of loss. This ratio is important because keeping CAR at a safe limit, at least 8% according to Indonesian banking regulations. CAR aims to protect customers and maintain overall financial system stability (Bichsel & Blum, 2004). The higher the capital ratio, the higher the capital owned by the bank. Therefore, the stronger the bank will be to bear the risk of each loan given. Increased bank capital and increased credit distribution show that banks are able to finance bank operations (Abid et al., 2021). This favorable situation can contribute to profitability or ROA at the bank, eventually affects the increase in the composite value on GCG. Accordingly, the smaller the value of the composite in the self-assessment, the better and higher the results of the GCG.

H16: GCG is able to mediate the positive effect of CAR on financial performance (ROA) of commercial banks.

3. Research methods

This research is a quantitative study that attempts to empirically examine the role of good corporate governance in strengthening the effects of bank health indicators on the financial performance of commercial banks in Indonesia. GCG assessment in Indonesian banking is carried out by means of self-assessment in accordance with Bank Indonesia Circular No. 9/12/DPNP/2007. The assessment of the implementation of GCG principles contains eleven factors, namely the duties and responsibilities of the board of commissioners, directors, and committees, handling conflicts of interest, implementation of the compliance function, internal audit, external audit, risk management, provision of funds and large exposures to related parties, transparency financial and non-financial conditions, GCG implementation reports, internal reporting and strategic plans (Tjondro & Wilopo, 2011) (Figure 2).

The population in this study are commercial banks in Indonesia that have gone public registered with the Financial Services Authority (OJK) during the observation period of 2014–2019. By limiting the analysis to commercial banks, the total population in this study is 101 banks. The sample selection in this study is done by utilizing a purposive sampling method. Purposive sampling technique was conducted as to select sample based on certain criteria.

More specifically, the sample was selected for banks with assets of IDR 20–500 trillion that are categorized as healthy, and published financial reports and corporate governance reports in a row during the observation period of 2014–2019. In addition, the sample was selected by identifying the published data on the variables used in the study (NPL, LDR, OER, NIM, CAR, GCG and ROA). By using these criteria, 41 banks were obtained as the final sample (Table 3).

This research utilizes secondary data. The data in this study comes from bank financial statements which are accessed from the official website of each bank. Using a 6-year period from 2014 to 2019 for each of the 41 selected banks, this study analyzes a total of 246 observations. Data analysis used in this research is quantitative analysis using SEM (Structural Equation Modeling) based on Partial Least Square (PLS). To analyze the data, this research uses SmartPLS software.

4. Research result

The results of processing with SmartPLS 3.00 can be seen Table 4 of the entire correlation value of the bank's financial performance indicators to its construct of 1,000. So that the value of the outer model or the correlation between the construct and the variable has met the convergent validity because all loading factor values have a value above 0.70. It can also be seen that the value of the

Table 3. Research sample

ARTHA GRAHA	MANDIRI	PERMATA	HSBC	SUMSELBABEL
BCA	MAYAPADA	SINARMAS	ICBC	PAPUA
BNI	MAYBANK	WOORI	KEB HANA	RIAU
BRI	MEGA	UOB	BJB	BALI
BTN	MNC	MAYORA	BTPN	CAPITAL INDO
BUKOPIN	CIMB NIAGA	DBS	ANZ	SUMUT
BUMI ARTHA	OCBC NISP	BANK DKI	COMMONWEALTH	SUMBAR
DANAMON	PANIN	QNB	JATIM	VICTORIA
JTRUST				

Average Variance Extracted (AVE) value of each construct has a value above 0.50, so it is said that the convergent validity is good (Yamin & Kurniawan, 2011). Thus, all constructs meet the criteria reliably according to the recommended criteria.

From the measurement results as shown in Table 4, all latent variables have a composite reliability value >0.8 , meaning that all independent latent variables are appropriate and feasible to be tested to determine their effect on the dependent latent variable, namely bank financial performance.

Moreover, from the cross-loading results in Table 5, it shows that the correlation value of the construct with the indicator is greater than the correlation value with other constructs. Thus, all latent constructs or variables have good discriminant validity, where the indicators in the construct indicator block are better than the indicators in other blocks. All latent variables also have a Cronbach's Alpha >0.70 , meaning that all independent latent variables are suitable and suitable to be tested to determine their effect on the dependent latent variable, namely bank financial performance.

Analysis of variance (R^2) or the determination test, which is to determine the influence of the independent variable on the dependent variable, the value of the coefficient of determination can be shown in Table 5. It is known that the R-square value at Y1 or GCG is 0.452 which means that the variation of changes in GCG (Y1) which can be explained by the independent variable is 45.2%, while the rest can be explained by other variables that are not included in the model. Then the R-square value at Y2 or ROA is 0.932, which means that the variation of changes in ROA (Y2) that can be explained by the independent variable is 93.2%, while the rest can be explained by other variables not included in the model (Table 6).

The test results of the hypothesis stating that NPL has a negative effect on financial performance (ROA) obtained an original sample estimate value of NPL of -0.035 with a t-statistics of $1.561 < 1.96$, which means that NPL has an insignificant effect on financial performance (ROA) at commercial banks with p -value of $0.119 > 0.05$. Thus, the first hypothesis is rejected. The test results of the effect of LDR on financial performance (ROA) showed an original sample estimate value of LDR of 0.015 with a t-statistics of $0.612 < 1.96$ with p -value of $0.541 > 0.05$. This means that there is no significant effect revealed in the relationship between LDR and ROA. Thus, the second hypothesis is rejected.

The results on the relationship between OER and ROA showed the original sample estimate value of -0.811 with t-statistics of $21.371 > 1.96$ and p -value of $0.000 < 0.05$. This means that OER has a negative and significant effect on financial performance at Indonesian commercial banks. The third hypothesis stating that there is a negative and significant effect of OER on ROA is empirically proven. Thus, third hypothesis is accepted.

Table 4. Outer model, composite reliability and average variance extracted (AVE)

	Outer Loading	Average Variance Extracted (AVE)	Composite Reliability	Cronbach's Alpha	Verification
OER2014	0.897	0.712	0.936	0.917	Valid and Reliable
OER2015	0.884				
OER2016	0.789				
OER2017	0.699				
OER2018	0.950				
OER2019	0.818				
CAR2014	0.626	0.655	0.918	0.895	Valid and Reliable
CAR2015	0.804				
CAR2016	0.792				
CAR2017	0.900				
CAR2018	0.882				
CAR2019	0.823				
GCG2014	0.771	0.638	0.913	0.886	Valid and Reliable
GCG2015	0.768				
GCG2016	0.874				
GCG2017	0.790				
GCG2018	0.833				
GCG2019	0.748				
LDR2014	0.853	0.724	0.940	0.938	Valid and Reliable
LDR2015	0.775				
LDR2016	0.789				
LDR2017	0.862				
LDR2018	0.909				
LDR2019	0.909				
NIM2014	0.954	0.920	0.986	0.983	Valid and Reliable
NIM2015	0.974				
NIM2016	0.970				
NIM2017	0.965				
NIM2018	0.968				
NIM2019	0.924				
ROA2014	0.917	0.726	0.940	0.923	Valid and Reliable
ROA2015	0.871				
ROA2016	0.834				
ROA2017	0.711				
ROA2018	0.934				
ROA2019	0.825				
NPL2019	0.730	0.600	0.900	0.868	Valid and Reliable
NPL2014	0.738				
NPL2016	0.776				
NPL2015	0.782				
NPL2017	0.790				
NPL2018	0.827				

Table 5. Cross-Loading and R-square

Variable	NPL	LDR	OER	NIM	CAR	GCG	ROA
NPL (X1)	1.000	-0.21	0.495	-0.226	-0.265	0.382	-0.515
LDR (X2)	-0.21	1.000	-0.175	-0.005	0.088	-0.078	0.171
OER (X3)	0.495	-0.175	1.000	-0.443	-0.309	0.437	-0.95
NIM (X4)	-0.226	-0.005	-0.443	1.000	0.281	-0.06	0.555
CAR (X5)	-0.265	-0.088	-0.309	0.281	1.000	-0.135	0.344
GCG (Y1)	0.382	-0.078	0.037	-0.06	-0.135	1.000	-0.459
ROA (Y2)	-0.515	0.171	-0.95	0.555	0.344	-0.459	1.000
R ²	-	-	-	-	-	0.452	0.932

Table 6. Path coefficients

Hypotheses	Expected Sign	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/ STDEV)	p-values
NPL → ROA	-	-0.035	-0.035	0.023	1.561	0.119
LDR → ROA	+	0.015	0.014	0.024	0.612	0.541
OER → ROA	-	-0.811	-0.811	0.038	21.371	0.000
NIM → ROA	+	0.177	0.179	0.030	5.945	0.000
CAR → ROA	+	0.023	0.021	0.032	0.714	0.475
NPL → GCG	-	-0.229	-0.224	0.069	3.300	0.001
LDR → GCG	+	0.042	0.045	0.051	0.837	0.403
OER → GCG	-	-0.407	-0.411	0.069	5.920	0.000
NIM → GCG	+	0.173	0.174	0.068	2.528	0.011
CAR → GCG	+	0.001	0.004	0.063	0.012	0.990
GCG → ROA	+	0.076	0.075	0.022	3.399	0.001

The test results showed a positive and significant effect of NIM on financial performance in Indonesian commercial banks. This is indicated by original sample value of 0.177 with t-statistics of 5.945 > 1.96 and p-value of 0.000 < 0.05. The results empirically proved the positive and significant effect of NIM on ROA. Thus, the fourth hypothesis is accepted. Moreover, the statistical analysis of the effect of CAR on ROA obtained an original sample value of 0.023 with a t-statistic value of 0.714 < 1.96 and p-value of 0.475 < 0.05. This means that there is no significant effect of CAR on the financial performance of Indonesian commercial banks. Thus, the fifth hypothesis is rejected.

Furthermore, regarding the effect of NPL on Good Corporate Governance (GCG), the test results obtained an original sample value of -0.229 with t-statistics of 3,300 > 1.96 and p-value of 0.001 < 0.05. This means that the hypothesis stating a negative and significant effect of NPL on GCG is empirically proven. This suggests that high NPL is more likely to weaken good governance. Thus, the sixth hypothesis is accepted.

The results showed an insignificant effect of LDR on GCG. This is indicated by the value of original sample of 0.042 with t-statistic value of 0.837 < 1.96 and p-value of 0.403 > 0.05. This means that the hypothesis stating that there is a positive and significant effect of LDR on GCG is not empirically supported. Thus, the seventh hypothesis is rejected.

In testing the eighth hypothesis stating the negative effect of OER on Good Corporate Governance (GCG), the test results showed the value of the original sample of -0.407 with t -statistics of $5.920 > 1.96$. This means that OER has a negative effect on Good Corporate Governance (GCG). Moreover, p -value obtained from the analysis is $0.000 < 0.05$. This empirically confirms that there is a negative and significant effect of OER on Good Corporate Governance (GCG). Thus, the eighth hypothesis is accepted.

Moreover, statistical testing in the relationship between NIM on GCG showed the original sample value of 0.173 with t -statistics of $2.528 > 1.96$ and p -value of $0.011 < 0.05$. This confirms a positive and significant effect of NIM on Good Corporate Governance in Indonesian commercial bank. Thus, the ninth hypothesis stating that there is a positive and significant effect of NIM on Good Corporate Governance is accepted. Similarly, in testing the effect of CAR on GCG, the statistical results showed the original sample value of 0.001 , t -statistics of $0.012 < 1.96$ and p -value of $0.990 < 0.05$. This means that there is no significant effect revealed from the analysis. In this regard, the hypothesis stated that CAR has a positive and significant effect on Good Corporate Governance is not empirically supported. Thus, the tenth hypothesis is rejected.

The results in testing direct relationship between GCG on financial performance showed that original sample value of 0.076 , t -statistics of $3.399 > 1.96$ and p -value of $0.001 < 0.05$. This means that there is a positive and significant effect of GCG on ROA, meaning that the higher the good corporate governance, the higher the financial performance. Thus, the eleventh hypothesis is accepted.

Next analysis is to perform the hypothesis testing of indirect effects. The results of testing the indirect effect hypothesis through commitment as an intervening variable by looking at the results of the specific indirect effect can be presented in Table 7.

The results found that Good Corporate Governance (GCG) is able to mediate the relationship between NPL and financial performance (ROA). The statistical results obtained an original sample value of -0.017 , t -statistics of $2.174 > 1.96$ and p -value of $0.030 < 0.05$. It means that NPL indirectly has a negative and significant effect through Good Corporate Governance (GCG) as an intervening variable on financial performance (ROA) in commercial banks in Indonesia. These results confirm the mediating role of GCG in amplifying the significant effect between NPL and ROA, whereas in direct testing, no significant effect was obtained in this relationship. Thus, the hypothesis that GCG mediates the relationship between NPL and ROA in conventional banks in Indonesia is empirically proven. Thus, the twelfth hypothesis is accepted.

Likewise, the statistical output also shows that the mediating effect of GCG in the relationship between OER on financial performance (ROA), which is indicated by the estimated value of -0.031 , t -statistic of $2.979 > 1.96$ and p -value of $0.003 < 0.05$. This means that OER indirectly has a negative and significant effect on ROA through Good Corporate Governance (GCG) as an intervening variable. This confirms that the hypothesis that GCG is able to mediate the relationship between OER and ROA is accepted. Furthermore, the testing results also found that GCG was able to strengthen the positive and significant effect of NIM on financial performance (ROA). The estimate value obtained in the test is 0.013 with a t -statistic of $2.067 > 1.96$ and a p -value of $0.039 < 0.05$. This confirms that GCG is able to mediate the relationship between NIM and financial performance (ROA) at commercial banks in Indonesia. Thus, the hypothesis that states the mediating effect of GCG in this relationship is accepted.

However, the statistical output found no mediating effect of GCG in the relationship between LDR and ROA, which was indicated by p -value of $0.421 > 0.05$. Likewise, the test results found that GCG is less able to mediate the relationship between CAR and ROA, which is reflected in the p -value of $0.991 > 0.05$. This shows that in these two relationships, the empirical results show that GCG does not act as a mediating variable in the effect of LDR and CAR on ROA at commercial banks in

Table 7. Statistical results of indirect effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics	p-values	Result
Indirect effects:						
NPL → GCG → ROA	-0.017	-0.017	0.008	2.174	0.030	Accepted
LDR → GCG → ROA	-0.003	-0.003	0.004	0.805	0.421	Rejected
OER → GCG → ROA	-0.031	-0.031	0.010	2.979	0.003	Accepted
NIM → GCG → ROA	0.013	-0.013	0.006	2.067	0.039	Accepted
CAR → GCG → ROA	0.000	0.000	0.005	0.012	0.991	Rejected
Total Effects:						
NPL → ROA	-0.035	-0.035	0.023	1.561	0.119	Rejected
LDR → ROA	0.015	0.014	0.024	0.612	0.541	Rejected
OER → ROA	-0.811	-0.811	0.038	21.371	0.000	Accepted
NIM → ROA	0.177	0.179	0.030	5.945	0.000	Accepted
CAR → ROA	0.023	0.021	0.032	0.714	0.475	Rejected
NPL → GCG	-0.229	-0.224	0.069	3.300	0.001	Accepted
LDR → GCG	0.042	0.045	0.051	0.837	0.403	Rejected
OER → GCG	-0.407	-0.411	0.069	5.920	0.000	Accepted
NIM → GCG	0.173	0.174	0.068	2.528	0.011	Accepted
CAR → GCG	0.001	0.004	0.063	0.012	0.990	Rejected
GCG → ROA	0.076	0.075	0.022	3.399	0.001	Accepted

Source: Processed data, SmartPLS 2020

Indonesia. Thus, the hypothesis that states the mediating role of GCG in these two relationships is not empirically supported.

The mediation effect shows the relationship between the independent and dependent variables through the intervening or mediating variable. The influence of variables on the dependent variable does not occur directly but through a transformation process represented by the mediating variable (Baron & Kenny, 1986; Abdillah & Hartono, 2015). Testing the mediation effect can be done using regression techniques, but in a complex model or hypothetical model, the regression technique becomes inefficient. The Variance Accounted For (VAF) method developed by Preacher and Hayes (2008) as well as bootstrapping in the distribution of indirect effects is considered more appropriate because it does not require any assumptions about the distribution of variables so that it can be applied to a small sample size. This approach is most appropriate for PLS that uses the resampling method and has a higher statistical power than the Sobel method. The results of the total effect can explain and evaluate the percentage of influence carried by the independent variable and the intervening variable on the dependent variable by calculating the total effect. In this method, the category for the magnitude of the mediating effect is determined from the VAF value obtained. Specifically, the VAF value above 80% indicated the role of the intervening variable as full mediator. Furthermore, the VAF values ranging from 20% to 80% were categorized as partial mediator, while VAF values less than 20% indicated no mediating effect.

Based on the calculation of VAF, as shown in Table 8, the test results of the influence of the variable of Good Corporate Governance (GCG) as an intervening variable in the relationship

Table 8. VAF results of mediating effect

	Indirect Influence	Total Effect	VAF	Result
NPL → GCG → ROA	−0.017	−0.053	0.321 (32.1%)	Partial effect
LDR → GCG → ROA	−0.003	0.011	−0.272 (−27.2%)	No effect
OER → GCG → ROA	−0.031	−0.842	0.037 (3.7%)	No effect
NIM → GCG → ROA	0.013	0.164	0.079 (7.9%)	No effect
CAR → GCG → ROA	0.000	0.023	0.001 (0.1%)	No effect

Source: Processed data, SmartPLS 2020

between NPL and ROA found a VAF value of 0.321 or 32.1%. Thus, it can be concluded that the GCG variable has a partially mediating effect on the relationship between NPL and ROA. This means that NPL is able to directly affect ROA without going through or involving intervening variables or GCG. While the results of the calculation of VAF between LDR, OER, NIM, CAR on ROA using GCG as an intervening variable get a VAF value of less than 20%. Accordingly, it can be concluded that GCG has no intervening effect on LDR, OER, NIM, CAR on ROA. This shows that GCG does not act as a mediator variable for LDR, OER, NIM, and CAR on ROA. (Table 8).

The results confirm a fairly low capability of GCG in mediating the relationship between financial performance and some of the ratios used in this study. In this context, the results are in line with existing literature (Al-Malkawi & Pillai, 2018; Sanda et al., 2010) which highlights the GCG assessment may have an effect on the absence of an empirical relationship with financial performance. Specifically, this is arguably related to the self-assessment model used in the assessment of good governance in the Indonesian banking sector (Tjondro & Wilopo, 2011). This self-assessment in turn is less effective in describing the actual conditions that occur in a bank. In addition, the factor in the GCG assessment focuses on the governance structure which focuses more on the roles of the board of directors, committees and shareholders, and does not focus on governance mechanisms that may be more integrative in reflecting the bank's financial condition.

In addition, the analysis of effect size or f^2 is performed to evaluate the strength of the latent variable relationship. Chin et al. (2003) stated that the researcher should not only identify the significance of the variables in the model but also evaluate the effect size or f^2 between the variables. The basis used as an assessment of f^2 is that a value greater than 0.35 indicates a large effect size, 0.15 for a medium effect and 0.02 for a small effect (Cohen, 1988). The results of f^2 analysis are shown in Table 9.

Table 9. Effect size (f^2)

	GCG	ROA
NPL	0.051	0.013
LDR	0.002	0.003
OER	0.138	5.240
NIM	0.031	0.342
CAR	0.000	0.007
GCG	-	0.064

Source: Processed data, SmartPLS 2020

The analysis shows various effect sizes between the dependent variables and independent variable of ROA, as well as with the intervening variable of GCG. The results showed a large effect size was found in the relationship between OER and ROA with a value of f^2 of $5.240 > 0.35$, and a medium effect was obtained in the relationship between NIM and ROA, with a value of f^2 of $0.342 > 0.15$, while several other relationships showed a small effect of $f^2 < 0.02$.

5. Conclusion

The results showed that NIM had a positive and significant direct effect on ROA, while OER had a negative and significant effect on ROA, as hypothesized. Meanwhile, NPL, LDR and CAR were not empirically found to have significant effects on ROA. This result has managerial implications for increasing interest income and reducing operating expenses in commercial banking in Indonesia. Furthermore, direct testing on the variable of GCG showed that NPL and OER had a negative and significant effects, while NIM had a positive and significant effect. Meanwhile, the results show no empirical evidences regarding the effect of LDR and CAR on GCG during the observation period. This shows that a strategic issue in the technical implementation of good governance in the context of improving bank financial performance is the need to suppress bad loans, while at the same time balancing attractive and profitable loan interest rates by reducing operating expenses.

Furthermore, indirect testing with intervening variables shows that GCG is able to mediate the relationship between NPL and OER on the financial performance of conventional banks in Indonesia. In addition, GCG is also empirically proven to strengthen the positive and significant effect of NIM on ROA. Overall, the findings theoretically underline the importance of good corporate governance in improving the financial health of commercial banks in Indonesia. Practically speaking, the results can be interpreted that the better the implementation of GCG is, the more likely the bank's financial performance to improve. This study provides empirical evidence that increasing the application of GCG principles in certain financial ratios in the operational activities is more likely to encourage financial performance of commercial banks.

Finally, as to direct further research, the limitations of this study need to be pointed out. The sample used is limited to commercial banks, which consequently is less likely to be able to cover data of all banking registered either in Jakarta Composite Index of Financial Services Authority. In addition, GCG in this study focuses on the governance structure which assesses the roles and responsibilities of directors, supervisory boards and shareholders, in implementing compliance, auditing and conflicts of interest. This is because the GCG domain in the governance structure as discussed in this study is less able to reveal the mediating role of GCG in several empirical relationships between the dependent variable and bank financial performance. In addition, caution should be exercised in generalizing the findings because the availability of data that influences sample selection and the number of observations can substantially reduce the probability criteria. Future research is expected to emphasize the domain of GCG strategic issues in governance mechanisms or moral ethics. They are also expected to be able to investigate more deeply about the role of GCG in banking financial performance using the RGEK Method (Risk Profile, Good Corporate Governance, Earning and Capital). Lastly, the research sample is also expected to include all banking companies listed on the Jakarta Composite Index or the Financial Services Authority.

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