# The Effect of Banking Competition and Efficiency on Banking Performance Moderated by GCG and Crisis Factors

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**Abstract.** *The aim of this research is to test the influence of the level of competition on bank profitability, bank efficiency on bank profitability, test the relationship between competition and bank efficiency and company performance using ROA as a measure of performance, while GCG and the crisis period due to the pandemic are used as moderating variables for this relationship. . Testing of this research uses the multiple regression analysis method with the help of the SPSS version 21 program. The results of this research show that competition is a variable that has a positive and significant influence on banking performance. The greater competitive ability of banks will improve their performance. However, the bank's technical efficiency has not shown significant results. The moderating effect of implementing GCG by banks does not seem to be able to improve the relationship between competition and performance. The same results were also obtained on the relationship between bank efficiency and performance which also cannot be moderated by GCG. The moderating effect of the crisis period was found to be significant on the relationship between competition and bank performance, whereas during the crisis the relationship between competition and bank performance remained low. However, bank efficiency was not moderated by the crisis period resulting from the pandemic.*

*Keyword: ROA, Banking Performance, Efficiency, Competition, Critical*

## Introduction

Over the past few decades Indonesia has experienced several financial pressures that have led to crises. In 1997/1998 Indonesia was hit by the Asian crisis, in 2008/2009 Indonesia was affected by the mortgage subprime crisis that occurred in America and in 2020 there was a crisis caused by the Corona virus pandemic. Several crises that occurred have put pressure on many companies in Indonesia including banks. A financial crisis is considered an event involving default conditions, stock market crashes, and/or currency crises (Claessens & Kose, 2013). In 2020 the corona virus outbreak resulted in various businesses, both micro and macro businesses, not being able to operate optimally due to restrictions on population mobility which resulted in many business activities stopping where this led to many bad loans and resulted in worsening banking performance. Banks are seen as one of the most innovative and dynamic institutions operating in the financial system. The primary role of banks is not for economic growth and prosperity, but to facilitate growth opportunities. The amount of bank credit greatly affects economic growth indicators (Sastradinata & Muljono, 2020). It is therefore imperative to have a good understanding of the underlying dynamics of bank work to ensure a robust and profitable banking system.

A bank is a for-profit business institution, for which it will implement management strategies to maximize its profitability and stay on top of business competition. A higher level of banking competition should result in lower monopoly power of banks. Competence in the banking world that occurs in the current era is very high. Starting from services in banking, ease of transactions, and many other things. The banking world is competing to win the competition to get as many customers as possible. According to (Pruteanu-Podpiera et al., 2008) in addition to the level of competition, efficiency factors are also seen as factors that can affect the performance of bank profitability. Increased competition will encourage banks to reduce their operating costs or cost efficiency strategies. The efficient structure (ES) hypothesis states that better efficiency will lead to increased bank profitability. Industry structure arises due to the superiority of operating efficiency by certain companies. Efficiency can occur due to the low cost structure owned by the company will be able to increase profits by lowering prices and expanding market share. The importance of research on efficiency in the banking sector has increased in recent years, as all banks strive for efficiency by minimizing inputs, such as costs, and maximizing their output, i.e. profits. However, studying efficiency in banking can be beneficial to shareholders, policy makers, managers, market analysts, investors, clients and government regulators (Andrieş & Capraru, 2014).

Banking performance is declared healthy if the company's internal and external sources of income are large while the efficiency carried out is also large, so that banking company expenses can be reduced. The largest external income in banking companies according to audit results is obtained from the sensitivity of banking company finances to a decrease in lending rates, rent reduction and cost efficiency will have an impact on investment and economic growth (Koju et al., 2019). An efficient bank can use minimum inputs to produce maximum outputs, which can improve the sustainability of the bank. Berger and Humphrey (in Sharma, 2018) argue that the success or failure of all firms has to do with converting their inputs into outputs. The inconsistency of results in the effect of the level of competition and efficiency on bank profitability indicates that the effect of the level of competition and efficiency on bank profitability is conditional which depends on the characteristics of the bank or the conditions/situation faced by the company. This study tries to use corporate governance and crisis conditions as the conditional variables in question. Corporate governance is the principle that directs and controls the company in order to achieve a balance between the power and authority of the company in providing accountability to shareholders in particular, and to stakeholders in general (Jensendan Meckling, 1976). Corporate governance is intended to regulate the authority of managers, shareholders and other parties related to the development of companies in a particular environment. With the implementation of good governance, the management of company resources is expected to be efficient, effective,

economical and productive with companies that are always goal-oriented and meet concerns based on a stakeholder approach.

Apart from CG governance, the crisis period variable will also be used as a conditional (moderating) variable. The financial crisis period in this study will use the pandemic period as the trigger for the crisis that occurred. The financial crisis has triggered a chain reaction where the economic slowdown began to affect economic growth and export-driven investment activities through lower trade in goods and services as well as through a decline in commodities, prices, and including oil. The economic downturn not only affects the investment and financing activities of financial institutions including banks, but also reduces the funding of these banks through lower personal savings and declining corporate profits. In a crisis banks may face risks on both their financing and investment sides of the balance sheet due to the crisis-volatility of equity markets in which these banks have large positions (Amba & Almukharreq, 2013). This condition reflects that there are several things that can affect the performance of bank profitability, including the level of competition and bank efficiency. In addition, corporate governance and crisis periods are used as conditional variables. In addition, several studies show that the existence of this gap phenomenon attracts researchers to examine the determinants of bank profitability performance. Previous research on the effect of efficiency on profitability still shows inconsistencies in results. For example, in research (Fang et al., 2019) found that cost efficiency has a significant effect on profitability. Conversely, research (Khalifaturofi'ah, 2018) found that efficiency is not significant to profitability. With the difference in results in previous studies that tested bank profitability, this study will re-examine the effect of the level of competition and efficiency on bank profitability. The difference in several previous studies generally lies in the results of the influence of the independent variable on the dependent variable.

This study uses a more complete model in explaining and measuring the efficiency of banks, namely in calculating efficiency by calculating with Data Envelopment Analysis (DEA) to obtain the level of bank efficiency. Likewise, the GCG mechanism will not be measured using individual indicators but will use a model or composite measure. So in this study the authors will re-examine the factors that affect bank profitability with the title "The Effect of the Level of Competition and Efficiency on Bank Profitability with Corporate Governance and Financial Crisis as Moderation (Case Study on Banking Companies Listed on the IDX in 2018 - 2020).

## Research Methods

The population in this study were commercial banks operating in Indonesia and those listed on the IDX from 2018-2021 as many as 44 banks, but the sampling technique used purposive sampling of 39 banks listed on the IDX in 2018-2021. Techniques and data analysis using descriptive analysis of respondents, descriptive analysis of variables, classical assumption test,

multiple regression analysis, hypothesis testing, and moderation effect test. This research method can be described as follows:

**Table 1.** Variables and Measurements in Research

| No | Variabel | Size | source |
|----|----------|------|--------|
| 1 | Kinerja | *Return on Asset* (ROA). $$ROA = \frac{Laba\ bersih}{Total\ Aset}$$ | Munawir (2016). |
| 2 | Competition | Metode Herfindahl Hirschman Index (HHI) $$S_i = \frac{Sales\ firm}{Sales\ industri}$$ $$HHI = \sum_{i=1}^{n} S_i^2$$ | (Schaeck & Cihak, 2014). |
| 3 | Efficiency | Data Envelopment Analysis (DEA) Input : a. Fixed assets b. Third Party Funds c. Number of Employees Output: a. Total Funding b. Operating Income | Andrieș, Alin Marius Capraru, Bogdan and Mutu, Simona (2016) |
| 4 | *Corporaye Governance* | self assestment GCG | |
| 5 | Economic Crisis | Dummy variabel 0 : before crisis 1 : after crisis | |

Source: Processed secondary data, 2023

## Results and Discussion

The research conducted took data from the number of bank companies listed on the IDX in 2018-2021, totaling 44 bank companies and the final complete sample was 39 banking companies with observations for 4 periods, which means there are 156 data. Based on the results of data analysis that has been carried out, the results of the validity test and reliability test, determination test, analysis test, and moderation test are as follows:

**Normality Test**

Data normality testing will be carried out using the Skewness and Kurtosis tests. Normal data is indicated by the Skewness and Kurtosis test values which have skewness and kurtosis ratios between -1.96 and +1.96.

**Table 2.** Normality Test

| | N | Minimum | Maximum | Mean | Std. deviation | Skewness | | Kurtosis |
|---|---|---|---|---|---|---|---|---|
| | statistic | statistic | statistic | statistic | statistic | statistic | Std.error | Std.error |
| Unstandardized residual | 106 | -0.01246 | 0.01337 | 0 | 0.0049487 | 0.154 | 0.235 | 0.465 |
| Valind N (listwise) | 106 | | | | | | | |
| Rasio skewness | 0.655319 | | | | | | | |
| Rasio kurtosis | 1.408602 | | | | | | | |

Descriptive statistics

Source: Processed secondary data, 2023

The results of normality testing on testing the initial data or 156 data after removing some data or 106 data show that the regression model has a normally distributed ratio value where the skewness test ratio value shows 0.655 and the kurtosis test ratio value of 1.409 in the normal standard range of -1.96 to +1.96.

**Multicollinearity Test**

The independent variables of the two models are the same so testing the two models will produce the same VIF value. The VIF and Tolerance values of each independent variable are obtained as follows:

**Table 3.** Multicollinearity test

| Model | | Collinearity Statistics | |
|---|---|---|---|
| | | Tolerance | VIF |
| 1 | (Constant) | | |
| | COMPETITION | .881 | 1.136 |
| | EFFECIENCY | .881 | 1.136 |

Source: Processed secondary data, 2023

The test results show that there is a VIF value of the variable that has a value smaller than 10. Thus, the regression model does not have a multicollinear problem.

**Heteroscedasticity Test**

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Heteroscedasticity testing is done using the Glejser Test. The Glejser test which has an insignificant value indicates the absence of heteroscedasticity problems. The test results are obtained as follows:

**Table 4.** Glejser Heteroskedastisitas Test

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | .001 | .001 | | .728 | .468 |
| | COMPETITION | .031 | .024 | .129 | 1.275 | .205 |
| | EFFECIENCY | 3.215E-5 | .000 | .196 | 1.940 | .055 |

a. Dependent Variable: AbsRes

Source: Processed secondary data, 2023

The Glejser test results show that both model 1 and model 2 show significant results where the significance value of the model is greater than 0.05 where the significance value is 0.205 and 0.055> 0.05.

**Autocorrelation Test**

Autocorrelation testing is done using the Durbin Watson test. A Durbin Watson value that is between du and 4 - du indicates a model that is not affected by autocorrelation problems.

**Table 5.** Durbin Watson autocorrelation test

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | .626[a] | .392 | .381 | .00500 | 1.923 |

Source: Processed secondary data, 2023

The DW value obtained is 1.923. The du table value for k = 2 and data of more than 106 samples is obtained at 1.72. Thus, both DW values are between 1.72 and 4 - du = 2.28. This means there is no autocorrelation problem in the regression model.

**Regression Analysis Test**

This hypothesis testing aims to test the significance of the influence between the independent variables on the dependent variable. Multiple regression analysis is a statistical technique through parameter coefficients to determine the magnitude of the influence of the independent variable on the dependent variable. Hypothesis testing both partially and simultaneously is carried out after the regression model used is free from violations of classical

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assumptions. The goal is that the research results can be interpreted appropriately and efficiently. The regression equation is as follows (Ghozali, 2015):

$$ROA = a + b1KOMP + b2EFF + e \dots\dots\dots\dots\dots\dots\dots\dots\dots(1)$$

$$ROA = a + b1KOMP + b2EFF + b3KOMP*CG + b4\ EFF*CG + e\dots\dots\dots\dots(2)$$

$$ROA = a + b1\ KOMP + b2\ EFF + b3\ KOMP*CRIS + b4\ EFF*CRIS + e\dots\dots\dots(3)$$

**Model Test (F Test)**

**Table 6.** Model Test Results

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | .002 | 2 | .001 | 33.252 | .000[b] |
| | Residual | .003 | 103 | .000 | | |
| | Total | .004 | 105 | | | |

Source: Processed secondary data, 2023

The F value of 33.252 is obtained with a significance of 0.000, indicating that this regression model provides empirical evidence that good company performance with ROA proxy can be explained by bank competition and efficiency.

**Determination Coefficient Test**

**Table 7.** Determination Test Results

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | .626[a] | .392 | .381 | .00500 | 1.923 |

Source: Processed secondary data, 2023

This study obtained an adjusted $R^2$ value of 0.381. This means that 38.1% of company performance can be explained by bank competition and efficiency.

**Hypothesis Test (t)**

**Table 8.** Hypothesis Test Results

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | .001 | .002 | | .541 | .589 |
| | COMPETITION | .273 | .038 | .594 | 7.262 | .000 |

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| EFFECIENCY | 2.519E-5 | .000 | .080 | .973 | .333 |

Source: Processed secondary data, 2023

To see which variables have a meaningful influence partially on company performance. The test results found that none of the variables had significance below 0.05. The test results regarding the effect of competition on company performance proxied by ROA show that it has a t value of 7.262 with a significance of 0.000 (p <0.05). This means that competition has a positive influence on company performance ROA.

**Effect of Company Performance Efficiency**

The test results regarding the effect of efficiency on company performance proxied by ROA show that it has a t value of 0.973 with a significance of 0.333 (p> 0.05). This means that bank efficiency does not have a positive influence on company performance ROA.

**Testing the Moderating Effect of GCG**

To test the moderating effect of GCG, it is done by using the MRA model, namely by adding the interaction of competition and efficiency with GCG into the model.

**Table 9.** Moderation Test Results GCG

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | .003 | .006 | | .486 | .628 |
| | COMPETITION | .335 | .061 | .730 | 5.459 | .000 |
| | EFFECIENCY | 2.428E-5 | .000 | .077 | .863 | .390 |
| | GCG | -.001 | .002 | -.038 | -.282 | .778 |
| | KOMP.GCG | -.001 | .001 | -.166 | -1.411 | .161 |
| | EFF.GCG | .000 | .001 | .025 | .274 | .785 |

Source: Processed secondary data, 2023

The moderation test results of GCG on the relationship between competition and ROA show a statistical value of t = -1.411 with a significance of 0.161> 0.05. This shows that GCG cannot moderate the relationship between competition and bank performance. The moderation test results of GCG on the relationship between efficiency and ROA show a statistical value of t = 0.274 with a significance of 0.785 > 0.05. This shows that GCG cannot moderate the relationship between Efficiency and bank performance.

**Testing the Moderating Effect of Crisis**

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To test the moderating effect of the crisis due to the pandemic, we used the MRA model by adding the interaction of competition and efficiency with the crisis into the model.

**Table 10.** Moderating Effect of Crisis

| Model | | Unstandardized Coefficients B | Std. Error | Standardized Coefficients Beta | t | Sig. |
|---|---|---|---|---|---|---|
| 1 | (Constant) | .005 | .003 | | 1.557 | .123 |
| | COMPETITION | .368 | .050 | .800 | 7.355 | .000 |
| | EFFICIENCY | -2.898E-5 | .000 | -.092 | -.701 | .485 |
| | CRISIS | -.005 | .004 | -.400 | -1.290 | .200 |
| | COMP.CRISIS | -.194 | .073 | -.331 | -2.645 | .009 |
| | EFF.CRISIS | 7.408E-5 | .000 | .451 | 1.406 | .163 |

Dependent Variable: ROA

The moderation test results of KRISIS on the relationship between competition and ROA show a statistical value of t = -2.645 with a significance of 0.009 <0.05. This shows that oandemic KRISIS can moderate the relationship between competition and bank performance where during a pandemic the relationship becomes weaker. The moderation test results of CRISIS on the relationship between efficiency and ROA show a statistical value of t = 1.406 with a significance of 0.163> 0.05. This shows that the crisis cannot moderate the relationship between efficiency and bank performance.

## Conclusion

This study examines the relationship between competition and bank efficiency with firm performance using ROA as a performance measure, while GCG and the pandemic-accented crisis period are used as moderating variables for the relationship. The results show that competition is a variable that has a positive and significant influence on banking performance. The greater competitive ability of the bank will improve its performance. However, the technical efficiency of banks has not shown significant results.

The moderating effect of GCG implementation by banks does not seem to improve the relationship between competition and performance. The same result is also obtained in the relationship between bank efficiency and performance which also cannot be moderated by GCG. The moderating effect of the crisis period is significant on the relationship between competition and bank performance where during the crisis the relationship between competition and bank

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performance becomes lower. However, bank efficiency is not moderated by the crisis period due to the pandemic.

## Implications

The main findings of this study present the various effects of corporate governance on firm performance. The research supports the theory that affirms the role of GCG as a leader in improving firm performance. Based on the empirical results, subjects for corporate governance are proposed where companies should focus on a better supervisory role.

### Limitations and Future Research

The main limitation in this study is related to the narrow research sample area because it only includes limited banking companies so that the results of this study may not be able to represent companies listed on the IDX in general. In addition, the use of the research model is in the form of GCG implementation by the company. The main findings of this study present various effects of corporate governance without using control variables, which can lead to bias because the implementation of ideal GCG mechanisms also requires costs so that on the one hand the implementation of GCG mechanisms is expected to improve company performance, but in the early stages related to company expenses to implement GCG mechanisms, it can actually reduce company performance results. Future research can use control variables to be included in the mosaic model by using total assets or company revenue.

## References
**Journal**

Amba, M. S., & Almukharreq, F. (2013). Impact of the Financial Crisis on Profitability of the Islamic Banks vs Conventional Banks- Evidence from GCC. *International Journal of Financial Research*, *4*(3). https://doi.org/10.5430/ijfr.v4n3p83

Andrieş, A., & Capraru, B. (2014). Convergence of bank efficiency in emerging markets: The experience of Central and Eastern European Countries. *Emerging Markets Finance and Trade*, *50*(June), 9–30. https://doi.org/10.2753/REE1540-496X5004S401

Anggraini, F. N. (2018). Pengaruh Kompetisi, Kualitas Aktiva Produktif, Dan Risiko Pembiayaan Terhadap Profitabilitas Bank Syariah Yang Dimediasi Oleh Variabel Rentabilitas. *Jurnal Manajemen Bisnis Indonesia*, *3*.

Claessens, S., & Kose, M. A. (2013). Financial Crises: Explanations, Types and Implications. *SSRN Electronic Journal*, *August 2018*. https://doi.org/10.2139/ssrn.2295201

Cvilikas, A., & Jurkonyte-Dumbliauskiene, E. (2016). Assessment of Risk Management Economic Efficiency Applying Economic Logistic Theory. *Transformations in Business & Economics*, *15*(3).

Fang, J., Lau, C. K. M., Lu, Z., Tan, Y., & Zhang, H. (2019). Bank performance in China: A Perspective from Bank efficiency, risk-taking and market competition. *Pacific Basin Finance Journal*, *56*(February), 290–309. https://doi.org/10.1016/j.pacfin.2019.06.011

Jaouadi, D. S., & Zorgui, D. I. (2014). Exploring Effectiveness and Efficiency of Banks in Switzerland. *International Journal of Academic Research in Business and Social Sciences*, *4*(4). https://doi.org/10.6007/ijarbss/v4-i4/787

Khalifaturofi'ah, S. O. (2018). Cost Efficiency, Total Assets, and Profitability: Evidence from Islamic Bank. *Jurnal Keuangan Dan Perbankan*, *22*(4), 769–778. https://doi.org/10.26905/jkdp.v22i4.2218

Koju, L., Koju, R., & Wang, S. (2018). Does Banking Management Affect Credit Risk? Evidence from the Indian Banking System. *International Journal of Financial Studies*, *6*(3), 67. https://doi.org/10.3390/ijfs6030067

Koju, L., Koju, R., & Wang, S. (2019). Macroeconomic determinants of credit risks: evidence from high-income countries. *European Journal of Management and Business Economics*, *29*(1), 41–53. https://doi.org/10.1108/EJMBE-02-2018-0032

Lazăr, S. (2016). Determinants of Firm Performance: Evidence from Romanian Listed Companies. *Review of Economic and Business Studies*, *9*(1), 53–69. https://doi.org/10.1515/rebs-2016-0025

Panda, B., & Leepsa, N. M. (2017). Agency theory: Review of theory and evidence on problems and perspectives. *Indian Journal of Corporate Governance*, *10*(1), 74–95. https://doi.org/10.1177/0974686217701467

Pruteanu-Podpiera, A., Weill, L., & Schobert, F. (2008). Banking competition and efficiency: A micro-data analysis on the Czech banking industry. *Comparative Economic Studies*, *50*(2), 253–273. https://doi.org/10.1057/palgrave.ces.8100248

Santoso, Y. W. (2018). Penyebab Krisis Finansial Global tahun 2008: Kegagalan Financial Development dalam Mendorong Pertumbuhan dan Stabilitas Ekonomi. *Jurnal Hubungan Internasional*, *XI*(1).

Sastradinata, Dhevi Nayasari Muljono, B. E. (2020). Analisis Hukum Relaksasi Kreadit Saat Pandemi Corona Dengan Kelonggaran Kredit Berdasarkan Peraturan Otoritas Jasa Keuangan Nomor 11/POJK.03/2020. *Jurnal Sains Sosio Humaniora*, *4*(2).

Seelanatha, L. (2011). Determinants of firms' performance: Some Chinese evidence. *Investment Management and Financial Innovations*, *8*(3).

Sharma, D. (2018). Stock Market Performance and Efficiency of Banks in a Developing Economy: Evidence from the Indian Banking Sector. *IIM Kozhikode Society & Management Review*, *7*(2), 178–193. https://doi.org/10.1177/2277975218770502

Sudarmanta, I. K. (2016). Determinasi Profitabilitas Sektor Perbankan Di Bursa Efek Indonesia. *JAGADHITA: Jurnal Ekonomi & Bisnis*, *3*(2).

Yuanita, N. (2019). Competition and bank profitability. *Journal of Economic Structures*, *8*(1). https://doi.org/10.1186/s40008-019-0164-0

**Conference Paper/Proceeding/Book**

Munawar, Y. (2017). Kompetisi Dan Efisiensi Bank Umum Di Indonesia Periode 2008-2013. *Bina Ekonomi*, *21*(1).

Munawir. (2016). *Analisis Laporan Keuangan* (Edisi Kedu). Liberty.