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Author : Elsya Sari Nasution and Syarief Fauzie
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# Analysis of the Effect of Charter Value on Risk Behaviour of Go- Public Banks in Indonesia

Elsya Sari Nasution, Syarief Fauzie

*Department of Economics Development, Faculty of Economics and Business, Universitas Sumatera Utara*
*Prof. T. M. Hanafiah Street, SH USU Campus, Medan, Sumatera Utara, Indonesia*

sarinasutionelsya005@gmail.com, syarief_fauzie@usu.ac.id

**Abstract**

This study aims to determine the effect of charter value on the risk behavior of go-public banks in Indonesia. Risk behavior as the dependent variable in this study consists of two risks, namely, non-performing loans risk and bankruptcy risk (z-score). Charter value is an independent variable in the study which is calculated using the Tobin's q indicator. This study uses descriptive quantitative research with dynamic panel data regression models using the Generalized Method of Moment (GMM) estimation method. There are 35 selected banking institutions that meet the criteria as determined by the researcher. This study uses secondary data in the form of quarterly financial publication reports of each bank. The results obtained show that charter value has a significant negative effect on non-performing loans. Then, it is found that charter value has a significant positive effect on z-score.

**Keywords**: charter value; bank risk; non performing loan; z-score.

## 1. Introduction

The global financial crisis of 2007-2009 resulted in the largest bank risk realization [1]. The 2007-2009 global financial crisis exposed the lack of increased discipline towards risk taking by banks. This global financial crisis occurred in mid-2007 as a result of the low-grade housing loan crisis or better known as the subprime mortgage case. Subprime mortgage is a term for mortgage loans given to borrowers with poor credit history or no credit history at all, thus classified as high-risk loans. The distribution of subprime mortgages in the United States increased rapidly from 2002 to 2005. Before the existence of derivative products, banks were very careful in lending because it was long-term and risky. The existence of third parties who were willing to buy up the bank's loans, caused banks to no longer be conservative. Unqualified debtors found it easy to obtain bank mortgages. With the sale of these loans, the risk of poor quality loans moved from banks to third parties (investment banks). The packaging of subprime mortgages into various other forms of securities which were then traded in the global financial markets was the source of the crisis in 2007- 2009.

The low interest rates in the United States caused the people of the United States to become consumptive by relying on bank loans for financing. The consumptive nature of the people of the United States encouraged the demand for loans which caused inflation so that the Central Bank of the United States gradually tightened credit by raising interest rates. As the direction of US monetary policy changed to a tighter one, the trend of increasing interest rates began and continued until 2006. This condition eventually put great pressure on the US housing market, which was characterized by many debtors defaulting and banks eventually foreclosed on many houses which led to a high risk of bad debts (defaults) which had an impact on the low health of the bank and also had an impact on the sustainability of the bank.

[2] stated that regulators around the world have not efficiently monitored the risk management functions of most banks which was one of the sources of the 2007-2009 crisis problems. [2] believes there are three most significant risk management failures in most banks such as lack of a clear capital allocation strategy, disaggregated risk vision, and inappropriate risk governance structures. These issues were never addressed properly or at all by banks and became apparent during the economic crisis. The

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defense of the financial system, especially for the banking sector, shows fragility, many banks do not apply prudential principles in their activities, many banks only seek profit from credit, resulting in an increase in non-performing loans in each bank [3].

In the wake of the 2007-2009 global crisis, the banking industry realized the importance of improving banks' risk- taking discipline. These elements include regulatory discipline and bank charter value (also known as bank self- discipline [4]. In addition, [5] highlighted that charter value is an important part of the banking industry due to its ability to reduce moral hazard incentives that may arise from deposit insurance schemes.

According to [6] and [7] charter value is the capitalized value of the bank's future economic benefits. Charter value can be interpreted as the company's ability to generate profits in future cash flows. Banks tend to maintain charter value, and even have an incentive to target lower risk, to lower the risk that could damage the charter value that the bank has. Thus, charter value means that it can reduce risk taking where banks prefer to take low risks in an effort to maintain their charter value. Furthermore, the charter value hypothesis also states that charter value self-regulates bank risk taking and offers a valuable source of monopoly power for banks [8]. Therefore, banks will be more cautious in taking risks. Banks will have strategies to protect themselves from greater potential losses. The greater the potential profit of the bank in the future, the more important it is for the bank to take preventive steps and act carefully in managing its risks so as not to face large losses [9].

## 2. Literature Review

### *2.1. Market Lemon Theory*

Market lemon theory was proposed by George A. Akerlof who is an American economist and was written in a 1970 research paper in The Quarterly Journal of Economic, entitled “The Market ‘Lemons’: Quality Uncertainty and the Market Mechanism.” In his paper [10] examines the used car market and illustrates how information asymmetry between sellers and buyers can cause the market to collapse eliminating profitable exchange opportunities and leaving only “Lemons”, or poor quality products at low prices. [10] reflects on the old adage “let the buyer beware,” where he agrees there is uncertainty when information is available to different people (information asymmetry). The problem of information asymmetry arises because buyers and sellers do not have the same amount of information needed to make a decision about a transaction. The seller or holder of a product or service usually knows its true value or at least knows whether the quality is above or below average. However, potential buyers usually do not have this knowledge and buyers cannot easily verify quality before buying, as buyers are not privy to all the information that sellers have. The lemon problem occurs in consumer and business product markets, and also in the investment arena, related to the disparity in perceived investment value between buyers and sellers. Lemon problems are also prevalent in the financial sector, including the insurance and credit markets. For example, in the area of corporate finance, lenders have asymmetric and less-than-ideal information regarding the true creditworthiness of borrowers. [10] proposes strong collateral as one way to address the lemon problem, as it can protect buyers from any negative consequences of lemon purchases.

### *2.2. Agency Theory*

Agency theory is a theory that explains the agency relationship between the owner (principal) and management (agent). Managers are given power by company owners, namely shareholders to make decisions, where this has the potential to form a conflict of interest known as agency theory. The emergence of information asymmetry is a consequence of agency conflict [11] Management and shareholders need reliable and relevant information to make decisions. Management has more information because it is directly related to company activities while shareholders rely on information disclosed by management in the company's annual report. Information submitted by management sometimes does not match the actual condition of the company [11]. Agency theory can be used as a basis for understanding risk disclosure practices. Managers, as agents, have more and more accurate company information, compared to stakeholders. This information includes all conditions of the company, including conditions that the company may face in the future. Shareholders, creditors and other stakeholders need this information to be used as a basis for making decisions that will be made. If there is information asymmetry between the agent and the principal, the decision taken can have a bad impact and harm various parties. Managers should ensure the availability of relevant and complete information about the risks faced by the company, one of which is by using a disclosure mechanism. In conclusion, good risk disclosure will reduce information asymmetry between the agent and the principal [12].

### *2.3. Charter Value Theory*

Charter value theory has been developed by [7]. This theory shows that when banks have a valuable charter value, they become relatively conservative in an effort to maintain their charter value and are more cautious in various risk- taking actions at the bank. Charter value plays an important role in risk taking by banks. Charter value theory predicts that banks will experience losses in future income if bankruptcy occurs and the impact of these losses will be felt by several parties including stakeholders. Based on the research of [13] and [5] state that the benefits of charter value only exist when the bank's business activities are still ongoing or in other words, charter value will be lost in the event of bankruptcy so that banks try to avoid bankruptcy so as not to

lose their charter value. Therefore, a higher charter value reduces the bank's incentive to take excessive risks. Banks limit aggressive risk taking so that banks often become conservative to protect their charter value.

*2.4. Bank Risk*

Risk and banks are two things that cannot be separated. Banks exist because of the courage to take risks. Banking business activities are consistently associated with all forms of risk. Bank risk is a potential event, both anticipated and unticipated, that can have a negative impact on the bank's income and capital [14]. The risk that arises from the failure of other parties to fulfill their obligations to the bank based on mutually agreed provisions is credit risk. Credit risk occurs due to the failure of debtors, credit concentration risk, counterparty credit risk, and settlement risk. Credit risk can come from a variety of bank functional activities such as lending (financing), treasury activities (placement of interbank funds), investment activities, and trade finance. Credit risk is proxied by Non Performing Loan (NPL), which is a ratio that exposes the amount of non-performing loans in the bank compared to the total loans issued by the bank. The higher the NPL ratio indicates that the greater the non-performing loans experienced by the bank so that the bank cannot receive repayments of principal loans and interest from its borrowers. In other words, the smaller the NPL of a bank, the smaller the credit risk borne by the bank. on the other hand, the greater the NPL of a bank, the greater the credit risk borne by the bank.

A stable bank is able to assess and manage risks effectively and use resources efficiently. A stable bank also has strong resilience so that the bank is able to maintain its business continuity in various economic conditions, even when there is a sudden economic disruption. Thus, banks that have good stability will be more disciplined in taking risks in an effort to maintain their charter value. Banking stability can be measured using the Z-score formula Z-score is a risk measurement commonly used to determine the possibility of bank failure in running its business. The Z-score value on bank stability where the higher the bank's Z-score value, the more stable the bank is.

## 3. Method

In this study using secondary data or data that has been collected by an institution and published to the public. At this study uses secondary data or data that has been collected by an institution and published by the public. already published on the Indonesia Stock Exchange (www.idx.co.id), LESG (Refinitiv), and OJK (www.idx.co.id) websites. The data period is a time span of quarters starting from 2018-2022. The data that researchers use is panel data. Panel data is a combination of time series data and cross section data. Where time series data is data that contains variables that are combined based on time during a certain period of time. Meanwhile, cross section data is a type of data that contains from variables that are combined from a number of individuals and categories at a certain time. So it can be concluded that panel data is a type of data that contains variables that are collected over time. Contains variables that are collected based on the time sequence of a number of individuals or categories at a certain time. a number of individuals or categories at a certain time.

The samples in this study are banks that have gone public, banks that publish complete quarterly financial reports consistently, and have the availability of historical data and the number of shares outstanding during the period 2018- 2022. This study uses bank risk which has two types of risk, namely non-performing loan risk (NPL) and bankruptcy risk (z-score) as the dependent variable. Charter value calculated by Tobin's q as an independent variable and five control variables, namely size, capital ratio, return on assets, noninterest income, cost income.

Researchers in this study conducted data processing and hypothesis testing using the help of Microsoft Office Excel 2019 and Stata 17 applications. Researchers used Microsoft Office Excel 2010 to process and calculate secondary data as independent variables, dependent variables, and control variables. Then hypothesis testing and estimation of panel data regression analysis, researchers used Stata 17. This study establishes a dynamic model that includes the lag dependent variable as an independent variable. Researchers estimated the model using a two-step Generalized Method of Moments (GMM) estimator. The GMM estimator is one of the effective methods used to deal with the weaknesses of other estimation methods that are biased and inconsistent such as the OLS estimation method. Dynamic relationship methods cause endogeneity problems and produce biased and inconsistent estimates when estimated using static panel data analysis [15]. The existence of a lag in the dependent variable means that the model depends not only on the current period but also on the previous period [15]. The GMM method produces a smaller standard error which makes GMM more efficient [16]. In this study using Sys-GMM estimation. Researchers used 2 estimation models. The first estimation model is to see whether charter value in banks affects the risk of non-performing loans, with the following estimation model:

$$NPL_{i,t} = \beta_0 + \beta_1 NPL_{i,t-1} + \beta_2 CV_{i,t} + \beta_3 size_{i,t} + \beta_4 CR_{i,t} + \beta_5 ROA_{i,t} + \beta_6 NII_{i,t} + \beta_7 CI_{i,t} + \varepsilon_{it}$$

The second regression model used to see the effect of charter value on z-score is written with the following estimation model:

$$Z\text{ - score}_{i,t} = \beta_0 + \beta_1 Z\text{ - score}_{i,t-1} + \beta_2 CV_{i,t} + \beta_3 size_{i,t} + \beta_4 CR_{i,t} + \beta_5 ROA_{i,t} + \beta_6 NII_{i,t} + \beta_7 CI_{i,t} + \varepsilon_{it}$$

Where :
t = year period
I = cross section group
it-1 = previous period
β = coefficient
NPL = non performing loan (credit risk) Z-Score = insolvency risk
CV = charter value
Size = bank size
CR = capital ratio ROA = return on assets
NII = non interest income CI = cost income
εit = error term

In this study, the hypothesis testing criteria set in making decisions are at the α = 5% or 1% level in the hope that the hypothesis is accepted. Statistical testing is a very effective way of analyzing quantitative data generated in research. The purpose of this test is to determine and find out whether the data being analyzed is outside the projection and range of values predicted by the hypothesis

## 4. Results and Discussion

This descriptive statistical analysis aims to present the data obtained in a simple way to be understood more easily and descriptively explained based on the average value (mean), median value, maximum value, minimum value, and standard deviation. This descriptive analysis was carried out by presenting statistical data on banks that became research samples with 35 bank samples in Indonesia and 700 observation data. An overview of the research data is presented in the table below which presents descriptive statistics of the data as a whole.

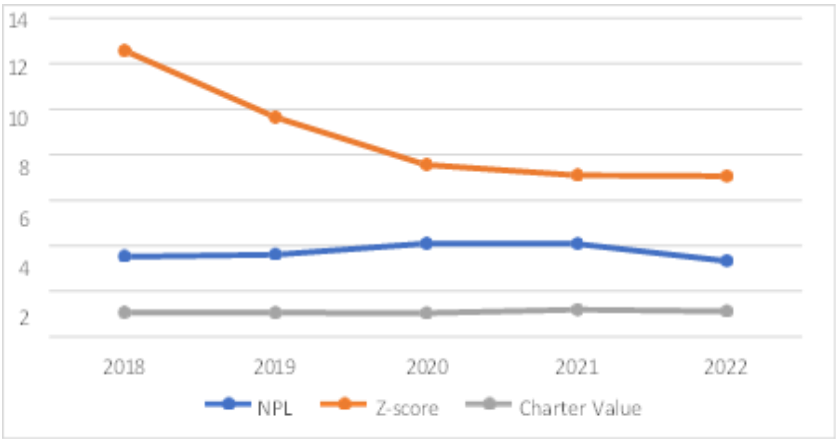


Figure 1. Movement of Variables for the 2018-2022 Period

The movement of the dependent variables NPL and Z-score on the independent variable charter value calculated by Tobin's q, starting from 2018 to 2022. Based on this graph, it can be seen that the dependent variable NPL in 2020 and 2021 has increased but has experienced a significant decline again in 2022. This is partly due to the Covid-19 outbreak that hit the world so that Indonesia was also affected. The impact of Covid-19 has a bad influence on the economy, one of which is that banks experience an increase in non-performing loans. The dependent variable z-score has decreased starting from 2019. This is also partly due to the impact of Covid-19 where bank stability is disrupted. The independent variable charter value tends to decrease slightly starting from 2020 and the situation increases again in 2022.

The effect of non-performing loan risk (NPL) in the previous period to the bank's non-performing loan risk.

The results of GMM processing and testing, the results show that loan growth in the previous period has a negative relationship across all types of banks and the equation model, which means that a one-point increase in loan growth in the previous period will reduce the amount of loan growth. And those that only have a significant effect occur in small banks in the three equation models. Where model I uses capital as the regressor, model II uses liquidity as the regressor and model III uses capital and liquidity as the regressor. The fastest speed of adjustment for loan growth occurs when small banks use the model I, namely by using capital with the Capital Adequacy Ratio (CAR) indicator as the independent variable. And also this variable has the highest level of significance compared to other variables with all models applied. Based on the GMM test results, it can be seen that non-performing credit risk (NPL) in the previous period has a positive and significant effect on NPL risk. This shows that the greater the risk. The previous period's non-performing loans, the greater the risk of non-performing loans (NPLs) in the current period. The coefficient value of this variable describes the amount of credit risk formed from the credit risk of the previous period. Non-

performing loans in the previous period often affect non-performing loans in the next period, this is due to the bank's inability to overcome non-performing loans in the previous period, causes an increase in the NPL ratio in the following period and triggers an increase in the bank's operating expenses.

Triggering an increase in the bank's operating expenses. These results are consistent with research conducted by [17], which states that non-performing loans in the previous period have an effect on non-performing loans in the next period. which states that non-performing loans in the previous period have a positive effect on the next non- performing loan. Research conducted by [17] used a sample of banks in the United States during the period 1990- 2006,in his research using dynamic panel data (GMM) using a sample of 396 banks.

- The effect of the independent variable charter value on the dependent variable

  Based on the GMM test results above, it shows that charter value has a negative and significant effect on NPL. In this study, charter value is calculated by Tobin's q to measure the value of the company (bank). So that it can be said that the higher the charter value of the bank will reduce the risk of non-performing loans (NPL). This is in accordance with the charter value theory developed by [7] which shows that banks tend to have a higher charter value maintain charter value, and even have an incentive to target lower risks, to lower risks that could undermine charter value. To lower risks that could undermine the bank's charter value that the bank has. So that charter value can reduce risk taking where banks prefer to take low risks to maintain charter value. Banks with high charter value tend to have a strong incentive to maintain their asset quality and manage credit risk carefully, which contributes to higher credit risk carefully, which contributes to a lower NPL rate.

  These results are consistent with research conducted by [17], which states that charter value is the most important factor in bank performance. [17] which states that charter value has a negative effect on non-performing loans (NPL). Research conducted by [17] used a sample of banks in the United States during the period 1990-2006, in his research using dynamic panel data (GMM) using a sample of 396 banks.

- The effect of each control variable (size, capital ratio, return on assets, NIR, and CIR) on the dependent variable non-performing loans

  Based on the GMM estimation results above, it shows that the size control variable is negative and significant on NPL. These results are in line with previous research conducted by [8] which examined banks in India during the period 1996 to 2006 consisting of 33 banks. This shows that if there is an increase in size, it will reduce NPLs in banks. This indicates that credit risk is usually lower in larger banks. due to diversification benefits as larger banks tend to have more diversified loan portfolios. Larger banks have better access to financial resources, including capital and liquidity. This better access allows banks to absorb losses from non-performing loans better when compared to smaller banks. The capital ratio variable in this study has a negative and significant value. This shows that if there is an increase in the capital ratio, it will reduce NPLs in the bank. A higher level of bank capital can lead to a decrease in credit risk as it increases the bank's ability to absorb losses from non- performing loans.

  Return on assets on NPL shows significant negative results where if ROA increases then NPL will decrease. These results are consistent with research conducted by [17]) using a sample of banks in the United States during the period 1990-2006, in his research using dynamic panel data (GMM) using a sample of 396 banks where ROA in banks in the United States has a negative effect on NPL. This indicates that banks with high ROA have high profitability and have profit reserves that can absorb losses due to bad loans.The noninterest income ratio (NIR) variable has a negative and significant effect on NPL. This shows that if NIR increases, NPL will decrease. NIR is one of the banking components in diversifying income. By diversifying income, it is hoped that banks can increase profitability and can also reduce bank risk, one of which is NPL. The last control variable, the cost income ratio, has a positive and significant effect on NPL. This shows that if the CIR increases, the NPL will increase. CIR is an indicator of bank efficiency, which measures how much the bank's operating costs are compared to its operating income. A high CIR indicates that the bank uses more costs to generate income, reflecting low operational efficiency. Lack of operational efficiency can result in a lack of focus on monitoring and managing loans, which can increase the level of non-performing loans (NPLs). These results are in line with research conducted by [18].

- The effect of the previous period's z-score on the z-score

  Based on the GMM estimation test results above, it shows that the z-score of the previous period has a positive and significant effect on the z-score. This explains that the greater the z-score of the previous period, the greater the z-score of the current period. The coefficient on the current variable explains the amount of z-score formed from the previous period's z-score. This result indicates that banks with a high z-score in the previous period tend to have good risk management practices, including prudent asset and liability management and effective credit monitoring. Consistency in risk management helps banks maintain or improve their current period z-score. This result is consistent with research conducted by [17] which states that the previous period's z-score has a positive effect on the next z-score. Research conducted by [17] used a sample of banks in the United States during the period 1990-2006, in his research using dynamic panel data (GMM) using a sample of 396 banks.

- The effect of the independent variable charter value on the dependent variable z- score

  Based on the GMM test results above, it shows that charter value has a positive and significant effect on z-score. In this study, Charter value is calculated with Tobin's q to measure the value of the company (bank). So it can be said that the higher the charter value of the bank will increase the z-score (bank stability), thus reducing the risk of bankruptcy. This condition

shows that banks that have a high charter value tend to reduce bank risk, which can directly increase the z-score. Banks tend to avoid very risky actions because the potential loss of charter value owned by the bank is much greater than the gain from high-risk activities. These results are in line with research conducted by [18] using a sample of banks listed on the stock exchange in China during the period 2000 to 2015 on a quarterly basis with a sample of 16 banks.

- The effect of each control variable (size, capital ratio, return on assets,NIR and CIR) on the dependent variable z- score

In the table of GMM test estimation results above, it shows that the size variable has a negative but insignificant effect on z-score. So it can be said that size has no effect on z-score. This condition shows that the larger the size of the bank, which is indicated by the total assets owned, it hinders the flexibility in the bank to run its operations. The capital ratio variable has a positive but in significant effect on z-score. So it can be said that the capital ratio has no effect on z-score. This can happen because if the bank's capital, the higher the level of capital, the higher the bank's cash reserves, so that it has a good ability to cover risky assets and is able to maintain bank stability. These results are consistent with research conducted by [17] using a sample of banks in the United States during the period 1990- 2006, in his research using dynamic panel data (GMM) using a sample of 396 banks.

Return on assets (ROA) variable has a positive and significant influence on z- score. The greater the ROA, the higher the z-score which indicates the lower the bank will experience bankruptcy risk. A high ROA indicates that the bank generates high profits from its assets, so high profitability increases the bank's ability to absorb losses and will increase bank stability. These results are consistent with research conducted by [17] which states ROA has a positive effect on z-score. Research conducted by [17] used a sample of banks in the United States during the period 1990-2006, in his research using dynamic panel data (GMM) using a sample of 396 banks. The noninterest income ratio (NIR) variable has a positive but insignificant effect on z-score. Variable cost income ratio (CIR) has a positive but insignificant effect on z- score. So it can be said that in this model CIR has no effect on z-score. These results are consistent with research conducted by [17] using a sample of banks in the United States during the period 1990-2006, in his research using dynamic panel data (GMM) using a sample of 396 banks. rates.

## 5. Conclusion

This study found that charter value in banks in Indonesia has a significant effect on bank risk, namely non- performing loan risk and z-score. Charter value has a significant negative effect on non-performing loan risk (NPL) in banks in Indonesia. The negative effect shows that if the charter value increases, the NPL in banks decreases, because banks with high charter value tend to have a strong incentive to maintain the quality of their assets and manage credit risk carefully, which contributes to lower NPL rates. Charter value has a significant positive effect on z-score. This means that the higher the charter value of banks in Indonesia, the higher the z-score. This is because banks that have a high charter value tend to reduce bank risk, which can directly increase z-score. The control variable, size, has a significant negative effect on NPL, but the z-score has negative results and no significant effect. Capital ratio has a significant negative effect on NPL, but has a positive and insignificant result on z-score. ROA has a negative and significant effect on NPL and has a positive and significant effect on z-score. NIR has a negative and significant influence on NPL, but NIR has a negative influence and has no significant effect on z-score. Finally, the control variable CIR has a positive and significant effect on NPL, but CIR has a positive and insignificant result on z-score.

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