

Green credit and bank performance in Indonesia

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Abstract

A new challenge for the banking sector in Indonesia is integrating social aspects in firm performance reports. Green credit is expected to substantially drive capital allocation to sustainable development which eventually will impact the pattern of production and consumption in the future. In this study, using commercial bank data in Indonesia, we estimate an empirical model of the effect of green credit on bank performance in Indonesia during the period 2015 to 2021. We employ a panel dynamic model using the generalized method of moments (GMM). We use return on asset (ROA) to measure bank performance. The empirical results show that green credit does not affect bank performance significantly as the amount of green credit is relatively small compared to the bank's overall credit portfolio. Thus, it could encourage the willingness of banks to lend more funds to the green economy and future studies may have to consider the long-term effect of green credit.

Keywords

green credit; bank performance; sustainable development; green economy

INTRODUCTION

The economic development of countries in various parts of the world is currently increasingly leading to a sustainable economy. The increasing challenges of environmental degradation and climate change due to inefficient economic activities pose a great risk to global conditions (Li and Zhou, 2019). This phenomenon ultimately encourages various countries to switch to implementing a sustainable economy. Business in the era of a sustainable economy is not only oriented towards economic profit but also implements an environmentally, socially, and governance (ESG) oriented economic order. With these conditions, it is very important for Indonesia to implement a green economy.

In the era of sustainable development, the financial sector plays an important role, including the banking sector. Banks play a very important role in the green transition because the distribution of funds from banks can affect the capacity and potential of the sectors that get financing. Banks and financial markets as a source of funding for green investments are key to the success of green finance policies. Moreover, the banking sector can also support countries' adaptation to climate change and increase financial resilience to climate risks. This role can be realized by allocating bank

financing to climate-sensitive sectors either through green credit, green bonds, green sukuk, blended finance, or other instruments.

Green banking is fast becoming the global standard for adopting socially and environmentally acceptable business operations that are environmentally friendly and make the earth livable for generations. Green credit is one of the tools that can protect the environment in a financial way. With the implementation of green credit, banks need to consider environmental financing, social responsibility and sustainable financing. With this environmental financing, financial institutions can assess and help strengthen environmental management. This means that commercial banks invest resources in environmentally friendly businesses based on available information (Luo et al., 2021).

To support green instruments, Indonesia is starting to commit to the establishment of a green taxonomy. The Financial Services Authority encourages banks to provide a green channel when lending to green companies. By doing this, lenders can transmit the idea of sustainable development to borrowers and force borrowers to take more environmentally friendly actions (Zhou et al., 2021). Banks can actively implement social responsibility to depositors and lenders to increase customer loyalty and satisfaction in order to increase the

integrity of the bank to maintain good relationships.

In theory, banks should channel funds to environmentally friendly borrowers to support environmental restoration. However, they will need incentives to continue this in the medium and long term. Therefore, exploring explicit benefits for the banking sector is crucial to motivate banks to include sustainability goals in their lending criteria (Chen et al., 2022). If such benefits exist, banks will support green recovery more broadly. As a result, the corporate sector can benefit from uninterrupted capital availability.

A number of studies focus on green economy, environmental, social, and governance (ESG) regulation and green finance in developed countries (ESG) (Steffen, 2021); (Dikau & Volz, 2021); (Chen et al., 2022). Existing studies found that green credit policies affect corporate cash holdings (Yuan & Gao, 2022), green credit can enhance the influence of corporate social responsibility (CSR) on bank financial performance (Zhou et al., 2021), and increased green economic development is the effect of increased green credit promotion (Zheng et al., 2022). Large banks have a tendency to lend more green credit (Luo et al., 2021). Interestingly, risk management is not a significant barrier to banks issuing green credit. Mirza et al (2023) revealed that financial incentives for banks providing sustainable credit to SMEs can contribute to sustainability goals. Green credit is a form of corporate compliance with CSR. Although many studies have found that CSR affects the financial performance of banks, a comprehensive study of green credit still needs to be conducted. CSR measurement using content-analysis can be assumed to be not optimal. Meanwhile, green credit in this study measured numerically by the proportion of green credit compared to the total loan issued. It is assumed that it can represent how banks involve in CSR better than the content-analysis measurement and its effect on the financial performance will be captured better.

Therefore, green credit play a critical role in the green transition that can influence the capacity and potential of the sectors that receive green finance. Banks and financial markets as a source of funding for green investments are key to the success of green finance policies. Moreover, green credit can also support countries' adaptation to climate change and increase financial resilience to climate risks.

This research contributes to the existing literature in three ways. First, this study analyzes Indonesia's green credit ratio and its effect on bank profitability. Empirical studies proving the performance of banks related to sustainable credit portfolios in emerging markets are still few. Several studies were conducted in China by linking the green credit ratio and its impact on bank performance and risk (Yin et al., 2021); (Lian et al., 2022); (Gao & Guo, 2022). To the best of the authors' knowledge, the effect of green credit on bank profitability in developing countries has not been comprehensively studied. This study attempts to fill this gap and more specifically explores the ratio of green credit and bank profitability in Indonesia. Second, this study is the first to apply the GMM model to explore the relationship between green credit and bank profitability in Indonesia. The main advantage of the GMM model is that the GMM estimator displays the best features in terms of small sample bias and precision. In addition, it is easy to obtain robust parameter estimates for heteroskedasticity of unknown form (Blundell et al., 2000). Third, this study uses data on the ratio of green credit to total credit covering the period 2015 to 2021.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Banks giving green credit indicates that it supports corporate environmental protection that more funds will be given to low-carbon environmental protection organizations. This act may be one of the ways for banks to comply with their corporate social responsibility. Previous literature has shown that by complying with corporate social responsibility, banks increase their financial performance (Van Nguyen et al., 2022). This is supported by stakeholder theory that mentions that a firm should not only focus on wealth maximisation but also catering the interest of stakeholders especially firm's social impacts. The management of firms' environmental aspect can increase firms' reputation and corporate image among the stakeholders. By giving the green credit, banks takes into consideration the environmental issues such as energy conservation and environmental protection. Thus, give full attention to stakeholders interests (Gao & Guo, 2022; Yao et al., 2021). Furthermore, signalling theory suggests that firms can present their potential by improving their reputation, among which, through

Table 1.
Variable measurements

Variable	Measurement
Dependent variable Profitability (PROFIT)	ROA: Net Income to Total Asset
Independent variable Greend Credit (GC)	The proportion of green credit compared to the total loan issued
Control variable Non-performing Loan (NPL)	Non-performing loans to total asset
Cost-Income Ratio (CIR)	Operational expenses to operational income
Bank Size (BSIZE)	Natural logarithm of total asset
Credit Quality (CQUAL)	Net non-performing asset to net advances ratio
Leverage (LEV)	Total debt to total equity ratio

complying with the environmental regulation (Yao et al., 2021). By implementing the green credit, banks send a positive signal to the public.

Green credit and profitability

According to stakeholder theory, by giving green credit, banks show that they focus not only on profit making but also the interest of other stakeholders. It sends a positive signal not only to the stakeholders but also the public. This may affect the increase in its financial performance as shown by previous studies. (Mirza et al., 2023) conducts a study on BRIC countries for 11 years and the findings suggest that there is a positive relationship between green lending and net interest margin. The study explains that by giving green credit, banks can obtain financial gain and also contribute to the sustainability goals. A study conducted in China also shows that the implementation of greend credit policy impact the banks' profitability by increasig the non-

interest income and reducing non-performing loans (Gao & Guo, 2022). Research by (Zhang, 2018) also shows that there is a positive relationship between green credit and bank finance performance. Study by (Weber, 2017) shows that there is a positive correlation between corporate sustainability performance and financial performance. The study shows that the correlation may be influenced by green credit policy. This shows that green credit policy may have an effect on banks' financial performance.

H1: Green credit has a positive and significant effect on bank's profitability

METHODS

Generalized Method of Movement (GMM) is used to analyse the effect of green credit on profitability. The research model is as follows:

$$ROA_{it} = \alpha + \beta_1 GC_{it} + \beta_2 NPL_{it} + \beta_3 BSIZE_{it} + \beta_4 CQUAL_{it} + \beta_5 CIR_{it} + e_{it}$$

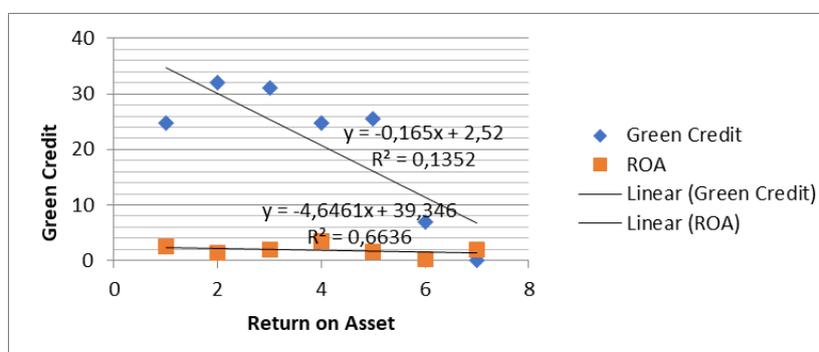


Figure 1.
The relationship between green credit and ROA

Table 2.
Estimation: return on asset

Dependent variable: return on asset			
Variable		Coefficient	Prob
ROA (t-1)		-0.1781001	0.018
GC		-0.0345667	0.424
CQUAL		-0.0229706	0.043
CIR		-1.92637	0.001
LEV		0.4623971	0.374
BSIZE		-0.1017156	0.044
NPL		-0.8954875	0.000
Constant		8.938533	0.000
Wald-Stat (5)		101.26	
Serial-Correlation Text			
	Ordo 1	-1.8548	0.0636
	Zstat		
	Ordo 2	-0.0963	0.9232
	Zstat		
Sargan Test (ST)			
	Chi Squared (X2)	12.98452	0.5277
Number of Instrumental Variables		27	
Number of Observations		31	

Where ROA_{it} refers to banks i performance or profitability in year t , GC_{it} is green credit given by bank i for the year t and $BSIZE_{it}$ is the size of banks. The qualities of credit of bank i for the year t is $CQUAL_{it}$ and CIR_{it} refers to the cost-income ratio. This simultaneous equation model will be estimated using the System GMM technique. This technique overcomes the endogeneity problem and controls for unobserved bank-specific factors (Jha, 2019). System GMM is a two-step estimation technique, resulting in more efficient and accurate estimates compared to different GMM methods (Wen et al., 2022).

Data

The observation period in this study is from 2015-2021, the total of 7 years data. The population of this study is commercial banks in Indonesia, with the total of 106 banks. Banks that disclose green credit information and have data available during the observation period are selected as the sample, with the total of 7 commercial banks. The data from green credit is obtained from banks' sustainability report and the financial performance indicators as well as control variables data are from companies' annual financial reports.

Independent variable

The green credit is defined as how much banks issue green credit in a period of time. In this study, this is measured by the proportion of green credit compared to the total loan issued by banks (Lian et al., 2022).

Dependent variable

The financial performance in this study is measured by Return on Asset (ROA). Based on previous studies (Djalilov & Piesse, 2016; Lian et al., 2022; Zhang, 2018), the majority used ROA as a proxy of profitability as it reflects the comprehensive banks profitability (Lian et al., 2022). ROA is calculated by comparing Net Income to Total Asset.

Control variable

Non-performing loans. Study shows that there is a negative relationship between non-performing loan (NPL) on banks profitability (Athanasoglou et al., 2005; Ben Selma Mokni & Rachdi, 2014; Djalilov & Piesse, 2016; Menicucci & Paolucci, 2016; Petria et al., 2015; Zhang, 2018). Results show that higher NPL ratio indicates higher risk, which causes lower profitability. NPL is measured using ratio of non-performing loans to total asset.

Bank size. Bank size is measured by total asset logarithm (Djalilov & Piesse, 2016; Menicucci & Paolucci, 2016). Studies suggest that large banks tend to have more diverse products and services, which reduces the level of risk. This in turn will increase the operational efficiency and profitability (Djalilov & Piesse, 2016; Menicucci & Paolucci, 2016).

Credit quality. Credit quality is assumed to have positive relationship with banks' profitability, in which lower credit quality leads to lower profitability (Lian et al., 2022). Credit Quality is measured using Net non-performing asset to net advances ratio.

Cost-income ratio. Cost-income ratio (CIR) reflects banks efficiency and previous studies suggest a negative relationship between CIR and profitability (Athanasoglou et al., 2005; Lian et al., 2022). Improvement in banks' management of operating expenses will increase efficiency and therefore raise profitability. CIR is measured by ratio of operational expenses to operational income.

Leverage. Leverage is calculated by the ratio of total debt to total equity. We expect a negative relationship to banks' performance.

RESULTS AND DISCUSSION

Figure 1 presents the distribution of the combination between the average value of green credit and the level of ROA in 2015-2021 from 7 large banks in Indonesia. In general, the picture above shows that there is a negative relationship between the level of green credit and ROA. This means that banks that have a high level of green credit will have a low ROA value. The highest ROA value of all banks in Indonesia occurred at Bank BCA, but the lowest level of green credit throughout 2021 actually occurred at Bank CIMB Niaga.

Based on Table 2, a serial-correlation exist in the first order while there is no serial-correlation problem in the second order. Furthermore, validity test of instrumental variables through the Sargan Test (ST) shows that the instrumental variables are valid. Therefore, it can be concluded that there is no deviation in the basic assumption of Arrelano-Bond's GMM. The results show that non-performing loan has a negative and significant relationship with ROA with a coefficient of -0.895 where every 10% increase in NPL will reduce the level of ROA by 8.95% and is significant with a probability value of 0.000. Green credit has a negative relationship with ROA but is not statistically significant. It can be seen from the coefficient value of 0.034 where

every 10% increase in the green credit variable will increase the ROA level by 3.4% but is not statistically significant with a coefficient value of 0.424. In addition, there is also a negative relationship between credit quality and ROA with a coefficient value of -0.022 where every 10% increase in credit quality will decrease ROA by 2.2% and it has significant effect with the value of 0.043. BOPO has a negative relationship with ROA, with a coefficient value of -1.926 where every 10% increase in the BOPO variable will reduce the ROA value by 19.26 and is statistically significant at a probability value of 0.001.

Solvency has a positive and statistically insignificant relationship with a coefficient value of 0.4623, meaning that there is an 46.23% increase in ROA every 10% increase in solvency. While the bank size variable has a negative relationship with a coefficient value of -0.1017156 and a probability value of 0.04 where every 10% increase in the bank size variable will reduce the level of ROA 10.17% significantly.

This study found that green credit ratio has a negative and insignificant effect on bank's performance. This finding suggests that if banks expand green credit, their profits are likely to decline. The banks sampled in this study are mostly state-owned banks. Thus, these banks tend to sacrifice their profitability. This can be attributed to the Indonesian government's regulation to encourage state-owned banks to play a key role in green lending. The greater the loan disbursement does not guarantee that it will increase profits or increase profitability because the amount of credit disbursed to customers regardless of the quality of the credit, the greater the possibility of bad debts that cause profits to decline (Sriyono & Nabellah, 2022). The opposite is found in research (Luo et al., 2021); Mirza et al (2023) where green credit is proven to increase the profitability of non-state-owned banks and reduce their risk. However, our findings suggest insignificant relationship between green credit and bank's performance, this may due to the fact that Indonesian banks may have a relatively small proportion of green loans in comparison to the overall composition of their credit portfolio.

The role of financial institutions is crucial to support green recovery in the post-pandemic world. Financial institutions can actively engage in sustainable business financing with clear incentives against this backdrop. Some banks may continue to provide green loans without benefits, but it may not apply

systemically (Gao & Guo, 2022). Therefore, the limited financing available will hinder the transition to carbon-neutral eco-systems. The impact will be more critical in countries with thin capital markets, and most corporate financing is done through banking channels. Green credit can affect the key competitiveness of commercial banks by reducing environmental risks and generating short-term replacement costs (Dikau & Volz, 2021).

CONCLUSION

This study examines empirically how green credit affects bank's profitability in Indonesia. The result shows that green credit does not have any effect on bank's performance. We

assume that the amount of green lending is comparatively small compared to the bank's overall credit portfolio. This empirical finding suggests that the government should play its role in encouraging banks to involve in green lending.

Financial authorities are expected to be able to appreciate banks and companies that can accommodate Environmental, Social, & Governance (ESG) well. The authorities can provide incentives through Risk-weighted asset adjustments for green assets and through the Macroprudential Inclusive Financing Ratio (RPIM) for Conventional Commercial Banks. In addition, policy makers can provide tax incentives to make banks more profitable when allocating to green credit portfolios.

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