The Effect of COVID-19 Pandemic on Banking Financial Performance through Credit Risk with ESG Performance as Moderating Variable: Study in ASEAN

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Abstract. This study aims to analyze the effect of COVID-19 pandemic on banking financial performance through credit risk with ESG performance as moderating variable. This study examines 115 firm-year observations for 23 banking companies in ASEAN countries: Indonesia, Philippines, Malaysia, Singapore, and Thailand during 2017 to 2021. This study uses the Structural Equation Modelling (SEM) methodology. The results showed that (1) COVID-19 pandemic had a significant positive effection credit risk, (2) credit risk had a significant negative effect on the financial performance of banks, (3) COVID-19 pandemic had a significant negative effect on financial performance through credit risk, (4) banks with high ESG performance can reduce or lessen the positive impact of the COVID-19 pandemic on credit risk than banks with low ESG performance, (5) The negative impact of credit risk on the financial performance of banks with high ESG performance will be greater than that of banks with low ESG performance.

Keywords: COVID-19 Pandemic; Credit Risk; Financial Performance; ESG Performance

1. Introduction

At this time, the world is facing a crisis caused by the Coronavirus Disease 2019 (COVID-19) pandemic which spreads very quickly and dangerously so that the Indonesian government and other countries have implemented several policies to overcome the COVID-19 pandemic, one of which is lockdown thus stopping most economic activities in various sectors. This causes a decrease in company profits to the national economy. It is anticipated that the financial sector, particularly the banking industry, will play a significant role in mitigating the pandemic shock by extending credit to the corporate and household sectors. In order to facilitate this, central banks and governments around the globe are implementing a variety of policy measures to increase liquidity and support credit flows. But many people, including bank debtors, have lost their livelihoods, making it difficult to get additional income in order to fulfill their achievements to the bank.

[1] shows that the detrimental impact of the COVID-19 pandemic on banks is much more durable than other companies and non-bank financial institutions. Bank financial performance can be affected by several factors, including credit risks that customers cannot repay, the banks inability to fulfill its obligations, and others. [2] found that COVID-19 deaths and lockdowns

had a negative impaction the performance of banks in Bangladesh, both conventional and Islamic banks.

Credit risk is a situation when the borrower (debtor) cannot pay part or all of his debts within a specified period of time. In banks, a credit risk strategy is very important for the advancement of turnover, financial performance and survival of the company. [3] also found that NPLs not only negatively impacted banks' performance or profitability, but also had an impact on the economy. [4] found that the COVID-19 pandemic had an impact on increasing NPLs to banks in Indonesia.

At this time, there are also many companies that not only pay attention to financial performance, but also pay attention to sustainability performance which is often seen from Environmental, Social, and Governance (ESG). Unlike the concept of Corporate Social Responsibility (CSR) which is relatively focused on social aspects, ESG emphasizes more on the balance of the three factors without leaning towards one of the factors [5]. The COVID-19 pandemic and bank credit risks that have a lot of negative effects on banking financial performance can be minimized by having good ESG performance.

Developing countries are very vulnerable to social and environmental issues compared to developed countries. One of the regions consisting of developing countries is Southeast Asia. ESG performance in Association of Southeast Asian Nations (ASEAN) countries is still in the development stage not as advanced as in developed countries. Also, the financial sector in ASEAN still provides many loans that have not focused on sustainability issues. Therefore, this paper is expected to contribute to the literature review and discuss the impact of the current COVID-19 pandemic on credit risk and bank financial performance with the role of ESG performance in ASEAN. First, research discussing developing countries is still scarce when compared to developed countries. Second, bank performance is still given less attention than other sectors. Finally, research on the COVID-19 pandemic in the banking industry is currently restricted. This study attempts to present empirical evidence of the influence of the COVID-19 pandemic on credit risk, the effect of credit risk on financial performance, and an analysis of the influence of the COVID-19 pandemic on financial performance via bank credit risk. As well as the role of ESG performance as a moderating variable.

2. Hypothesis Development

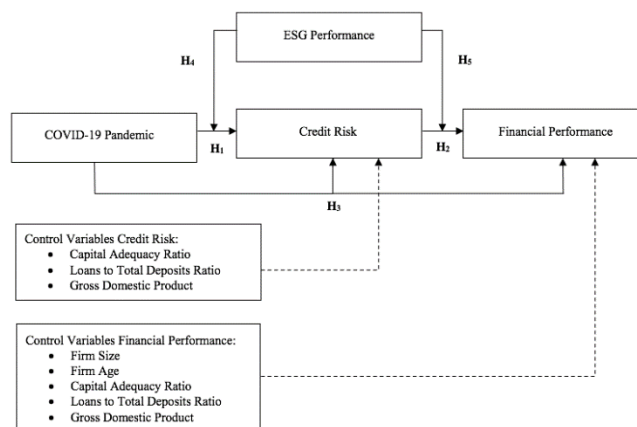The conceptual framework in this study can be seen in Figure 1.

Fig 1. Conceptual Framework

Credit risk can come from internal and external factors of the bank. External factors include natural disasters, the COVID-19 pandemic. COVID-19 pandemic has had a very big impact, such as, resulting in many business ventures being hampered even to the point of stopping operations, declining income, many companies that have terminated their employment, and so on. This makes the debtor's income fall so that the debtor cannot repay his credit to the bank, in other words, the credit risk increases. The proxies used in this study is the ratio of Non-Performing Loan (NPL). [4] The COVID-19 pandemic had an effect on the increase of non-performing loans at Indonesian banks, according to a study. COVID-19 has exacerbated the debtor's business circumstances, rendering him unable to satisfy his credit repayment obligations. The rising number of COVID-19 cases would increase bank NPLs because it pushes the government to implement regulations such as lockdowns that make it harder for many parties to repay their bank loans, which means that the number of bank bad loans will increase [6].

H$_1$: The COVID-19 pandemic has a positive effect on Credit Risk.

Credit risk can be interpreted as the risk of loss for the bank because the debtor cannot repay his loan on the due date (with the terms and conditions agreed in the loan agreement). Based on signalling theory, financial statements that have suffered losses provide a bad signal that means the company's performance is also declining. Research by Pratiwi and Masdupi (2021) [6] found that credit risk has a negative and significant effect on Return on Asset (ROA) in conventional banks in Indonesia. This is due to the fact that an increase in bad loans will result in a more irregular rate of return for banks, which will result in a decrease in bank profits and, if left unchecked, will cause bank capital to become uncontrollable. [3] found that NPLs negatively affect the bank performance in South Africa. [7] also found that NPL was negatively and significantly related to the financial performance in Jordan.

H$_2$: Credit Risk has a negative effect on Financial Performance.

COVID-19 pandemic affected the ability of debtors to serve loans, thus incurring the risk of bad debts that suppressed bank income and ultimately disrupted the health and stability of banks [8]. Due to the high NPL, it will increase the costs of banks, which will have an impact on reducing the banks financial performance. This indicates that NPLs have a negative effect on the bank financial performance. Bank considerations for preventing a pandemic and improving business performance by making transactions online, and so on. [9] found that there was a difference between before and during the COVID-19 pandemic. [6] found that the number of COVID-19 cases and the number of COVID-19 deaths had a positive and insignificant effect on ROA in conventional banks in Indonesia. The rising incidence of COVID-19 will exacerbate the bank's NPL rate, making it more difficult for borrowers to repay their loans. This will be a negative signal for banks, as the number of bad loans will rise, credit risk will increase, and bank profitability will fall. Hemisphere (2020) [10] shows that past epidemics had an economically and statistically significant negative influence on company performance, especially for small and young companies.

H$_3$: COVID-19 pandemic has negatively affected Financial Performance through Credit Risk.

The crisis due to the COVID-19 pandemic has an impact on banking operations, thereby changing banking behavior in minimizing bank lending. [11] found that since the announcement of COVID-19, all banks have experienced significant NPL differences. The implementation of the new normal has not been effective in restoring bank operations to normal and does not reduce NPL. Banks in most countries are experiencing a substantial contraction due to social

distancing imposed to combat the COVID-19 pandemic [12]. In the conditions of the COVID-19 pandemic, the provision of credit with good governance will avoid significant bank credit risks. Bank governance is a very important issue to ensure lending to non-performing debtors, so that problem loans can be reduced. Banks with stronger ESG risk management and which selectively choose who they lend to and for what purposes will be more financially resilient in the COVID-19 period. Based on this, banks that have high concerns and high performance in ESG aspects will be more careful in lending.

H4: The positive effect of COVID-19 Pandemic on Credit Risk is smaller in banks that have high ESG Performance.

Based on stakeholders theory, ESG performance can reduce information asymmetry because it is considered a signal of better management quality. Many studies have found that credit risk (NPL) negatively affects banking financial performance, such as research by [7] on banks in Jordan. This is because there are still many banks that experience a decrease in income and even losses due to debtors who are uncertain in repaying their loans. Banks can reduce the negative impact of credit risk on bank performance in several ways, such as diversifying their credit to different debtors. In addition, when loan applications are evaluated by several managers, they are less likely to lend to low-credit debtors, thereby reducing bad loans and increasing bank profitability [13]. Another way to reduce the negative influence of credit risk on performance is to have good ESG performance. [14]found that a company's good ESG performance can reduce a company's financial risk.

H5: The negative effect of Credit Risk on Financial Performance is smaller on banks that have high ESG Performance.

3. Research Methods

This research was conducted via testing hypotheses. Using the STATA software with the Structural Equation Model (SEM) technique because this investigation utilized intervening variables. The data sources are derived from the Thomson Reuters e-ikon program. From 2017 to 2021, the population and samples for this study consisted of five listed banking organizations in ASEAN countries, including Indonesia, Philippines, Malaysia, Singapore, and Thailand. Based on the sample selection results in Table 1, there are 115 firm-years of sample observations.

Table 1. Sample Selection

Description	ID	FP	MY	SG	TH	Total
Banking listed on Thomson Reuters	47	16	6	2	9	80
Less: Banks that do not have a complete ESG score in 2017-2021	41	12	0	0	4	57
Total Banks that have ESG scores at Thomson Reuters in 2017-2021	6	4	6	2	5	23
Year of Observation (5 years)	5	5	5	5	5	5
Final sample in firm-year observations	30	20	30	10	25	115

Notes:
ID: Indonesia; FP: Philippines; MY: Malaysia; SG: Singapore; TH: Thailand

There are 2 models of this research. Model 1 was used to test related to banking credit risk in hypothesis 1, namely how much influence the COVID-19 pandemic had on banking credit risk. The research model 1 is:

$$CR_{it} = \alpha + \beta_1 COV_{it} + \beta_2 CAR_{it} + \beta_3 LDR_{it} + \beta_4 GDP_{it} + \varepsilon i \qquad (1)$$

Model 2 are used to test related to banking financial performance. Research model 2 can test for hypotheses 2, 3, 4 and 5. Research model 2 is as follows:

$$FP_{it} = \alpha + \beta_1 CR_{it} + \beta_2 COV_{it} + \beta_3 SIZE_{it} + \beta_4 AGE_{it} + \beta_5 CAR_{it} + \beta_6 LDR_{it} + \beta_7 GDP_{it} + ei \qquad (2)$$

Where:
FP_{it} = Financial Performance
CR_{it} = Credit Risk
COV_{it} = COVID-19 Pandemic
$SIZE_{it}$ = Firm Size
AGE_{it} = Firm Age
LDR_{it} = Loans to Total Deposits Ratio
CAR_{it} = Capital Adequacy Ratio
GDP_{it} = Gross Domestic Product
ε = Error

Table 2. Variable Measurements

Variable Measurements		
FP	=	Net income divided by total asset.
CR	=	Non performing loan divided by total gross loan.
COV	=	Dummy variable, 1 if COVID-19 pandemic; and 0 otherwise.
ESGscore	=	Weighted Average of ESG Score and ESG Controversies Score.
ESGdummy	=	Dummy variable, 1 if ESG Performance Score above 50; and 0 otherwise.
SIZE	=	Natural logarithm of totaliassets.
AGE	=	Natural logarithm of 1 + total years since the firm IPO.
CAR	=	Total capital divided by total assets.
LDR	=	Net loans divided by deposits.
GDP	=	Percentage annual growth rate of Gross Domestic Product per capita.

However, for hypotheses 4 and 5, the role of ESG performance only compares companies with high ESG performance and low ESG performance. Bank with high ESG performance can be seen in the ESG score above 50, while banks with low ESG score below 50. Please see the all variables measurements in Table 2.

4. Results And Discussion

Table 3 summarizes the descriptive statistics showing the mean, median, the standard deviation, the highest value, and the lower value for each variable. Financial performance (FP) had an mean value of 1.181 with standard deviation of 0.567, a minimum value of 0.444, and maximum value of 3.134. The credit risk (CR) has minimum value of 0.872, the maximum of 7.545, the mean of 2.381, and the standard deviation of 1.243. The COVID-19 pandemic (COV) has an mean of 0.4, a standard deviation of 0.492, a minimum value of 0 and maximum value of 1. The results of the descriptive statistic can be seen in Table 3.

Table 3. Descriptive Statistics

Variable	N	Mean	Median	Standard Deviation	Minimum	Maximum
FP	115	1.181	1.04	0.567	0.444	3.134
CR	115	2.381	2.03	1.243	0.872	7.545
COV	115	0.4	0.00	0.492	0	1
ESGscore	115	62.406	63.88	11.732	41.736	87.406
ESGdummy	115	0.513	1	0.502	0	1
SIZE	115	29.254	26.95	3.107	24.711	35.084
AGE	115	3.236	2.94	0.786	0.223	4.094
CAR	115	13.975	10.76	4.750	6.240	29.162
LDR	115	93.375	85.71	11.904	67.043	126.508
GDP	115	2.560	1.57	4.346	-9.52	7.61

Source: Stata results. Notes: All variables are described in Table 2.

3.1 Regression Results

Table 4. Hypothesis Testing Results 1 (Full Sample) - Direct Effects

Variable	Pred. Sign	Coeff.	t-stat	P-value
COV	H_1: +	0.596	2.20	0.027**
CAR		0.059	2.79	0.005***
LDR		0.036	4.10	0.000***
GDP		-0.042	-1.42	0.157
Cons		-1.944	-2.20	0.027
R-Squared		0.269		
Observation		115		
Prob>chi^2		0.0011***		
***significant 1%; **significant 5%; *significant 10%				

Source: Stata results. Notes: All variables are described in Table 2.

Table 4 shows that COVID-19 pandemic coefficient is marked positively at 0.596 with a significance below 1% which is 0.027. Thus, hypothesis 1 in this study was accepted and proved that the COVID-19 pandemic could increase banking credit risk compared to before the COVID-19 pandemic. This results are consistent with several previous studies, which found that the impact of the COVID-19 pandemic has worsened the debtor's business situation, resulting in an increase in the number of NPL at conventional banks in Indonesia [4].

Table 5 shows that the credit risk coefficient is negatively marked at -0.161 with a significance of 0.000. Thus, hypothesis 2 in this study is accepted and proves that the higher the credit risk that bank has, the lower the financial performance. The results of this study are consistent with previous studies, such as [3] which found that NPLs have a negative effect on banking performance in South Africa. [7]also found that credit risk is significantly negatively to the bank financial performance in Jordan In hypothesis 3, the COV coefficient in Table 5 is negatively marked at -0.096 and significantly 0.043, so hypothesis 3 is acceptable. This shows that the COVID-19 pandemic causes debtors to experience financial difficulties so that the number of bank non-performing loans will increase which will also reduce bank profitability and performance. This finding is in line with [9] which found a quite severe negative impact from the influence of the COVID-19 pandemic on the financial performance of companies in China.

Table 5. Hypothesis Testing Results 2, 3 (Full Sample) - Direct, Indirect and Total Effects

Variable	Dependent Variable: Financial Performance										
	Direct Effects				Indirect Effects				Total Effects		
	Pred. Sign	Coeff.	t-stat	P-value	Pred. Sign	Coeff.	t-stat	P-value	Coeff.	t-stat	P-value
CR	H_2: -	-0.161	-5.15	0.000***		-	-	-	-0.161	-5.15	0.000***
COV		-0.352	-4.03	0.000***	H_3: -	-0.096	-2.03	0.043**	-0.448	-4.63	0.000***
SIZE		0.134	11.41	0.000***		-	-	-	0.134	11.41	0.000***
AGE		0.014	0.36	0.722		-	-	-	0.014	0.36	0.722
CAR		0.017	2.30	0.021**		-0.010	-2.45	0.014**	0.017	0.90	0.370
LDR		-0.006	-1.93	0.053*		-0.006	-3.21	0.001***	-0.006	-3.66	0.000***
GDP		-0.000	-0.03	0.974		0.007	1.36	0.172	-0.000	0.61	0.543
Cons		-1.967	-4.79	0.000		-1.967	-4.79	0.000	-1.967	-4.79	0.000
R-Squared	0.693										
Observation	115										
Prob>chi^2	0.0011***										
***significant 1%; **significant 5%; *significant 10%											

Source: Stata results. Notes: All variables are described in Table 2.

Table 6. Hypothesis Testing Results 4, 5

Variable	Pred. Sign	Dependent Variable: Credit Risk						Pred. Sign	Dependent Variable: Financial Performance					
		Low ESG Samples			High ESG Samples				Low ESG Samples			High ESG Samples		
		Coeff.	t-stat	P-value	Coeff.	t-stat	P-value		Coeff.	t-stat	P-value	Coeff.	t-stat	P-value
CR		0.235	0.52	0.605	0.573	1.88	0.060*	H_5: -	0.002	0.04	0.966	-0.172	-4.91	0.000***
COV	H_4: -	-	-	-	-	-	-		0.011	0.11	0.912	-0.427	-4.30	0.000***
SIZE		-	-	-	-	-	-		0.115	4.93	0.000***	0.143	10.41	0.000***
AGE		-	-	-	-	-	-		-0.065	-1.52	0.129	0.046	0.82	0.412
CAR		0.006	0.12	0.904	0.059	2.60	0.009***		0.021	1.77	0.076*	0.013	1.64	0.101
LDR		0.037	2.88	0.004***	0.044	4.08	0.000***		0.006	1.57	0.117	-0.010	-2.78	0.005***
GDP		-0.049	-1.23	0.219	-0.039	-1.10	0.271		0.022	2.39	0.017**	-0.005	-0.50	0.614
Cons		-1.797	-1.46	0.145	-2.484	-2.35	0.019**		-2.813	-5.86	0.000***	-1.790	-3.32	0.001**
R-Squared		0.269			0.269				0.693			0.693		
Observation		25			90				25			90		

Source: Stata results. Notes: All variables are described in Table 2.

Furthermore, the regression results for hypothesis 4 which were tested using low and high ESG samples with the dependent variable of credit risk are shown in Table 6. The results of hypothesis 4 testing on the COV coefficient in Table 6 are 0.235 for low ESG samples with a significance level of 0.605, and by 0.573 for high ESG samples with a significance level of 0.060. These results indicate that banks with high ESG performance have a greater positive effect of the COVID-19 pandemic on credit risk than banks with low ESG performance. So that hypothesis 4 is rejected. These results indicates that banks that carry out ESG performance during the COVID-19 pandemic are considered unable to assess which factors are more important to overcome during the current COVID-19 pandemic.

Lastly, testing the effect of credit risk on financial performance moderated by ESG performance is shown in Table 6. The results of hypothesis 5 tessting at CR coefficient in Table 6 are 0.002 for low ESG samples with a significance level of 0.966, and -0.172 for high ESG samples with a significance of 0.000. These results indicate that banks with high ESG performance have a greater negative effect of credit risk on financial performance than banks with low ESG performance. So that hypothesis 5 is rejected.

5. Conclusion

This research intends to objectively investigate the impact of the COVID-19 epidemic on the financial performance of ASEAN banks via credit risk regulated by ESG performance. This

study's research methodology is Structural Equation Modeling. The first noteworthy outcome of this analysis is that the COVID-19 pandemic had a beneficial impact on credit risk. Second, credit risk had a substantial negative impact on the financial performance of the bank. Thirdly, the COVID-19 pandemic negatively impacted financial performance through credit risk. Fourthly, banks with high ESG performance are able to mitigate or diminish the favorable impact of the COVID-19 epidemic on credit risk relative to banks with low ESG performance. Finally, banks with strong ESG performance will have a greater negative effect on financial performance due to credit risk than banks with low ESG performance.

This paper has the following limitations. First, the number of observations of this study is relatively small because the sector taken is only banking, and companies that have ESG scores in ASEAN are still small. For further research, it can expand research samples, changes in research sectors. Second, this study included ESG performance as a intervening variable simply by dividing the sample categories. So that the future research is expected to be able to conduct different tests that include ESG coefficients so that they provide different results.

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