Analysis of the Relationship Between Corporate Sustainability and Banks' Financial Performance During the Covid-19 Pandemic

Albert Gunawan* and Yunieta Anny Nainggolan

School of Business and Management, Institut Teknologi Bandung, Indonesia

Email: christoforus_ albertg_2018@sbm-itb.ac.id

Abstract - **This study aims to understand the relationship between corporate sustainability and banks' financial performance during the Covid-19 pandemic. There are 506 banks from 56 countries observed. For data analysis, the author utilized panel data regression. From 32 models, corporate sustainability indicators are significant in 25 models. However, the findings show a mixed sign of corporate sustainability impact on banks' financial performance. There is a robust finding that corporate sustainability indicators are significant and negatively correlated with the financial performances, which are ROE, ROA, and Tobin's Q. Nonetheless, a different relationship is found with the NPL Ratio. Thus, even though the result is mixed, the finding strongly inclined to reject the hypothesis that corporate sustainability could boost banks' financial performance. The author analyzes the effect of the Covid-19 Pandemic in two ways: using the government stringency index and using the interaction variable. The government stringency index shows a negative impact on banks' financial performance. Thus, there are robust findings that the government response to the Covid-19 amplifies the negative effect of corporate sustainability on banks' financial performance.**

Keywords – **Corporate Sustainability, banks' financial performance, the Covid-19 pandemic**

I. INTRODUCTION

The research of the relationship between corporate sustainability and corporate financial performance has had a prominent place in the literature for the past 40 years [1]. Prior empirical studies show mixed evidence on the relationship between corporate sustainability and financial performance despite an existing theory that support the positive relationship between those two variables [2]. In 2019, the world was shocked by the emergence of a new virus, the Coronavirus Diseases 2019 or Covid-19. During the Covid-19 pandemic, the relation of corporate sustainability and banks' financial performance became questioned again. Although corporate sustainability initiatives are usually encouraged to improve and sustain long-term financial performance, whether companies should invest in corporate sustainability to help during difficult times remains controversial. Therefore, a thorough understanding of corporate sustainability's effect on banks' financial performance during the Covid-19 pandemic is needed to enrich the literature by exploring new facts and examine the related theory. The research offers a contribution to the literature by providing a global analysis of the corporate sustainability and financial performance of an essential homogenous industry, which is the banking industry, covering the period of global crisis due to the Covid-19 pandemic and the government policies.

II. METHODOLOGY

The author focuses on analyzing corporate sustainability and banks' financial performance during the Covid-19 pandemic. The dependent variables are Return to Assets (ROA), Return to Equity (ROE), Tobin's Q, and NPL Ratio. The independent variables are ESG score, E score, S score, G score, and interaction variables which calculated as corporate sustainability indicator multiplied by the government stringency index. The control variables are equity-to-asset, loan-to-deposit, total assets, government stringency index, GDP growth, and countries dummies.

The author collected secondary data of 609 banks from 58 countries as the initial observation. The author gathered five years of data from 2016-2020 because most ESG data availability for banks mostly began in 2015. The list of firms categorized as Bank and Financial Service by Refinitiv. The secondary data are collected from several sources: Refinitiv, banks' annual report, International Financial Statistics, OxCGRT, and countries official website. Using Refinitiv and banks' annual report, the author collected Return on Asset, Return on Equity, NPL Ratio, Tobin's Q, ESG score, E-score, S-score, and G-score. For the control variables, the author also used Refinitiv, except for Gross Domestic Product (GDP) growth data and the Government Stringency Index. The data of GDP is collected through International Financial Statistics and countries official website. The Government Stringency Index is provided by the OxCGRT that can be accessed from Our World in Data website [3].

After collecting the initial data, the author observed the data validity, such as the business operation and availability of ESG score data. Several firms categorized as a bank, but do not offer banking services. Those firms focus more on other financial services, such as leasing. Several firms also have no ESG score, which the author could not analyze the relationship of the variables. Thus, the author removes the data. After filtering the data, only 506 banks from 56 countries have the data required. The author uses panel data regression to analyze the available data.

The author uses a panel data regression to test the hypothesis. Before regress the data, the author run the classical assumption test, which are normality test, multicollinearity test, heteroscedasticity test, and

autocorrelation test. Then, the author determine which model is suitable to estimate the data using the Chow Test, Hausman Test, and Lagrange Multiplier test.

This study employs the Shapiro-Wilk (SW) test of normality. This test has been used in previous studies [4] [5]. Similar to references [4], [6], [7], [8], multicollinearity is tested using variance inflation factor. The Breusch-Pagan test will be run to test the presence of heteroscedasticity as previous studies done [4] [8] . Lastly, the presence of autocorrelation can be identified using Wooldridge test. Wooldridge test uses residuals from a regression in first-differences.

For testing hypotheses, the author uses a panel regression model. The model is built based on the literature review. This model is an adaptation from the previous researches [8] [9] [10]. In this research, there are two main models. The first one only uses one independent variable, which is ESG score or E score or S score or G score as the corporate sustainability indicator. In the second model, the author adds interaction variable which multiplies corporate sustainability with the government stringency index to understand the effect of the government response to the Covid-19 deeper. Below are the estimation models:

Model 1

$$CFP_{ijt} = C + \beta_1 \times CSP_{kjt-1} + \beta_2 \times GR_{ct} + \beta_3 \times EA_{jt} + \beta_4 \times LD_{jt} + \beta_5 \times TA_{jt} + \beta_6 \times GDP_{ct} + \beta_7 \times Countries + \varepsilon_{jt} \quad (1)$$

Model 2

$$CFP_{ijt} = C + \beta_1 \times CSP_{kjt-1} + \beta_2 \times (CSP_{kjt-1} \times GR_{ct}) + \beta_3 \times GR_{ct} + \beta_4 \times EA_{jt} + \beta_5 \times LD_{jt} + \beta_6 \times TA_{jt} + \beta_7 \times GDP_{ct} + \beta_8 \times Countries + \varepsilon_{jt} \quad (2)$$

In the equation above, i = 1, 2, 3, and 4, so that CFP_1 is Return on Assets (ROA), CFP_2 is Return on Equity (ROE), and CFP_3 is Tobin's Q, and CFP_4 is Nonperforming loans (NPL ratio). CFP_{ijt} represents CFP for bank j in time-period t. Also, k is 1 to 4, so that CSP_1 to $CSP4_4$ measures ESG_{jt-1}, E_{jt-1}, S_{jt-1}, G_{jt-1}, representing the corporate sustainability indicator measured as ESG-score, Environmental-score, Social-score, Governance-score, respectively for bank j in time-period t-1. Specifically for model 2, (CSP_{kjt-1} x GR_{ct}) is an interaction variable that multiplies each corporate sustainability indicators with the government stringency index, namely ESG score*Stringency Index, E score*Stringency Index, S score*Stringency Index, and G score*Stringency Index.

GR_{ct} represent the pandemic specific variable which is the Oxford Covid-19 Government Response Tracker (OxCGRT) that measure the stringency index. In this research, the author simplifies the variable name as the government stringency index. Each country has different stringency index, which represented by C in the variable. Also, t is the time-period.

There are three bank specific control variables, which are bank leverage, bank liquidity, and bank size, which represented by equity-to-asset, loan-to-deposit, and total assets, respectively. In the equation above, the variables are for bank j in time-period t. GDP_{jt} represent the gross domestic product growth for each country in time-period t. Countries is the country dummy which represent the country fixed effect. εjt represents the error term.

III. RESULTS

A. Descriptive Statistics

To analyze the relationship between corporate sustainability and banks' financial performance, the author uses variables divided into three categories. First, dependent variables consist of Return on Assets (ROA), Return on Equity (ROE), Tobin's Q (TOBIN), and Nonperforming loan Ration (NPL). Second, independent variable consists of ESG score, E score, S score, G Score, and interaction variables that are multiplication of corporate sustainability indicators with the government stringency index. Lastly, control variables consist of bank leverage (equity-to-asset), bank liquidity (loan-to-deposit), bank size (total assets), pandemic-specific variables (government stringency index), macroeconomics (GDP growth), and country fixed effect. The author develops a descriptive statistic for all variables to gather more insight for the analysis.

TABLE I
DESCRIPTIVE STATISTICS

Variable	Labels	Observation	Mean	Std. Dev.	Min	Max
Return on Assets	ROA	2.520	1,3493	1,1186	-5,5631	12,0825
Return on Equity	ROE	2.519	12,7355	8,9139	-92,3261	81,0551
Tobin's Q	TOBIN	2.496	0,1365	0,1070	0,0000	1,4270
Nonperforming Loan Ratio	NPL	2.456	0,0308	0,0647	0,0000	1,0297
ESG	ESG	2.224	44,8580	20,4605	0,0000	94,3071
E	E	2.224	26,4859	31,1075	0,0000	97,4330
S	S	2.224	45,4572	23,8222	0,0000	97,2430
G	G	2.224	51,3812	21,7299	0,0000	99,3762
Equity-to-asset	EA	2.521	0,1034	0,0368	0,0000	0,3828
Loan-to-deposit	LD	2.502	1,0912	7,0369	0,0143	342,2281
Total assets	TA	2.522	197,8626	505,8126	1,2203	5110,3540
Stringency Index	GR	2.530	11,4448	23,2674	0,0000	75,4586
GDP Growth	GDP	2.530	0,0314	0,0657	-0,9991	0,4748

Table 4.1 shows the research's number of observations, mean, standard deviation (Std. Dev.), minimum, and a maximum of all variables. Unit measurement of (1) ESG score, (2) E score, (3) S score, and (4) G score are decimal and using the prior year score (t-1), (5) equity-to-asset is a ratio, (6) loan-to-deposit is a ratio, (7) total assets is in USD billion, (8) governance stringency index is decimal, (9) GDP growth is decimal, and (10) country fixed effect is dummy variable which represents each country. The samples are 506 banks from 56 countries during the fiscal year 2016-2020.

As demonstrated in Table I, all the variables are more than 2.400 observations, which is large enough to be analyzed. During five years, the mean of banks' financial performance shows a positive result. However, some banks suffer from unprofitable business operations, as indicated by negative ROA and ROE in the minimum column. Interestingly, several banks, such as in Japan and Qatar, claim that there is no nonperforming loan. The low NPL ratio reflects a good credit risk management. Unlike ROA, ROE, and Tobin's Q, the lower the NPL Ratio, the preferable it is.

Moving to the independent variables, the highest score obtained by Governance Score (G Score), which is 99,3762. The G score also has the highest average. This is sure enough because most of firms have concerned about governance for a long time and enforced by the authority all around the world [8]. The combination of Environment, Social, and Governance only scored 94,3071 in the maximum column, putting it in the fourth position. However, comparing the average score, the environment score has the lowest score, which is 26,4859. E score also has the highest standard deviation, which means the data spread widely. The low environment score could indicate that banks are less active in disclosing their information on the impact of the action on the environment.

For the control variables, only GDP growth has a negative value. Total assets have a large standard deviation, which is 505,8126. From this, we could understand that sizes of the banks are varied. The stringency index shows that the highest score is 75,4586. As mentioned in the previous chapter, the stringency index could not be used as a parameter to determine the effectiveness of the policy. Instead, this indicator is used to understand how the government responds to the Covid-19 pandemic [3]. Thus, before the Covid-19 pandemic, the author gives 0 as the value.

B. Correlation Matrix

The author develops a correlation matrix for the variables to examine the multicollinearity issue. Using correlation matrix, correlation coefficients between each variable can be identified in a summarized way. Below is the table.

TABLE II
CORRELATION MATRIX

	ROA	ROE	TOBIN	NPL	ESG	E	S	G	EA	LD	TA	GR	GDP
ROA	1,0000												
ROE	0,8336	1,0000											
TOBIN	0,6817	0,4367	1,0000										
NPL	-0,0940	-0,1510	-0,0906	1,0000									
ESG	-0,1062	0,0026	-0,1580	0,0771	1,0000								
E	-0,1831	-0,0331	-0,2710	0,1223	0,8500	1,0000							
S	-0,0968	-0,0013	-0,1546	0,1064	0,9268	0,8199	1,0000						
G	-0,0271	0,0276	-0,0251	-0,0289	0,7310	0,4146	0,4468	1,0000					
EA	0,5792	0,1832	0,6233	-0,0178	-0,2774	-0,4167	-0,2686	0,0821	1,0000				
LD	0,0483	0,0760	0,0084	-0,0112	0,0091	0,0249	0,0238	-0,0264	0,0565	1,0000			
TA	-0,1561	-0,0446	-0,2322	-0,0326	0,4099	0,4665	0,3384	0,2946	-0,3183	-0,0721	1,0000		
GR	-0,1769	-0,2171	-0,1154	0,0000	0,0766	0,0501	0,0885	0,0381	-0,0304	-0,0077	0,0212	1,0000	
GDP	0,2723	0,2580	0,1056	0,0122	-0,0118	-0,0189	0,0207	-0,0512	0,1185	0,0740	-0,0332	-0,4531	1,0000

The highest correlation coefficient as shown in Table 2 is 0,85. According to reference [11] in regression analysis, a multicollinearity problem will arise if the correlation coefficient among variables exceeds the rule of thumb level, which is 0,8. However, the author also calculates mean Variance Inflation Factors (VIF) as an alternative to testing the multicollinearity problem for each model. VIF can provide a better and more accurate result for models with more than two explanatory variables.

C. Relationship Between Corporate Sustainability and ROA

The author developed four models to understand the effect of corporate sustainability on banks' ROA, which consider different independent variables, namely ESG score, E score, S score, and G score. Table 3 shows the panel data regression result that estimates the relationship between corporate sustainability and Return on Assets (ROA). There are several steps to regress the data, including normality test, multicollinearity test, heteroskedasticity test, and autocorrelation test.

There are 2.201 observations (N). The models' probability is 0, which means the models are significant. The R-squared within varied between 0,277 to 0,2814. The author also includes the country fixed effect.

Before regress the panel data, the author tests the normality, multicollinearity, heteroskedasticity, autocorrelation, and estimation model. First, the author tests the normality using the Shapiro-Wilk method. All models do not pass the test because the p-value is less than 0,05. However, the problem will not affect the credibility of the research because the data size is large [8]. Second, all models pass the multicollinearity test using the variance inflation factor (VIF) test because the results are less than 10. The mean VIF is between 1,15 to 1,22. The highest VIF is GDP growth, which is 2,87 (in models 1-4) and the lowest is the loan-to-deposit, which is 1,12 (in model 4). Third, all models encounter heteroskedasticity problems since the P-value in the Breusch-Pagan tests are less than 0,05. The result is zero for all models. The author uses clustered standard error to overcome the problem, which is part of robust standard error. Using clustered standard error method, heteroskedasticity and autocorrelation problems could be treated. Fourth, the author decided on the estimation model using the Chow test, Hausman Test, and Lagrange Multiplier test. The author estimated models 1-4 using fixed-effect because the p-value in the Chow test rejects the null hypothesis, so does in the Hausman test.

The coefficient in models 1-4 is significant. Models 2 and 4 coefficient is significant with 5% significance level, while model 1 and 3 is significant with 10% significance level. All the coefficient shows a negative sign. The fourth model has the highest coefficient which is -1,7151, while the lowest is -1,5052. Thus, the coefficient in the fourth model has a larger magnitude.

Three out of four independent variables in models 1-4 are firmly significant with a 1% significance level and negatively correlated with the dependent variable. The significant independent variables are ESG score, E score, and G score. As stated in Table 3, the ESG score has the most negative impact on financial performance, which is -0,0071, followed by the social score and environment score. This result could be interpreted that, ceteris paribus, one score increase in ESG score will reduce ROA by

TABLE III
PANEL (A) DEPENDENT VARIABLE: RETURN TO ASSET (ROA)

		Model 1			Model 2			Model 3			Model 4		
Chow			0			0			0			0	
Hausman			0			0			0			0	
LM			-						-			-	
Mean VIF			1,19			1,22			1,20			1,15	
BP Test			0,00			0,00			0,00			0,00	
Variables	**Labels**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**
Constant			-1,5052	0,067***		-1,7716	0,031**		-1,5346	0,061***		-1,7151	0,040**
ESG	ESG	2,29	-0,0071	0,004*									
E	E				3,02	-0,0035	0,006*						
S	S							2,52	-0,0060	0,009*			
G	G											-0,0021	0,137
Equity-to-asset	EA	2,14	22,5821	0,000*	2,16	22,7162	0,000*	2,14	22,5340	0,000*	2,14	22,4201	0,000*
Loan-to-deposit	LD	1,13	0,8597	0,044**	1,13	0,8990	0,038**	1,13	0,8488	0,045**	1,12	0,8876	0,041**
Total assets	TA	2,00	0,0004	0,006*	2,07	0,0004	0,010**	1,89	0,0004	0,008*	1,73	0,0004	0,005*
Stringency Index	GR	1,67	-0,0056	0,000*	1,67	-0,0059	0,000*	1,68	-0,0056	0,000*	1,66	-0,0061	0,000*
GDP Growth	GDP	2,87	0,1411	0,641	2,87	0,1178	0,701	2,87	0,1727	0,560	2,87	0,1453	0,629
Country fixed effect	C		Yes			Yes			Yes			Yes	
N			2.201			2.201			2.201			2.201	
Probability			0			0			0			0	
R-squared within			0,2811			0,2785			0,2814			0,277	
R-squared between			0,1569			0,1562			0,1578			0,1493	
R-squared overall			0,2181			0,2173			0,2192			0,2126	

The table presents panel data regression to analyze the relationship between the ROA and corporate sustainability. The dependent variable is RAE, which is a ratio. The independent variables for models 1, 2, 3, and 4 are ESG score, E score, S score, and G score, respectively. Unit measurement of (1) ESG score, (2) E score, (3) S score, and (4) G score are decimal and using the prior year score (t-1), (5) equity-to-asset is a ratio, (6) loan-to-deposit is a ratio, (7) total assets is in USD billion, (8) governance stringency index is decimal, (9) GDP growth is decimal, and (10) country fixed effect is dummy variable which represents each country. The samples are 506 banks from 56 countries during the fiscal year 2016-2020. The Chow, Hausman, and Langrage Multiplier (LM) test are used to estimate the regression, which is pooled least square, fixed effect, or random effect. All the models are not normal, but because the sample size was big, the study's credibility is not influenced. Mean VIF is to detect multicollinearity problems. Breusch-Pagan (BP) test is to detect heteroskedasticity. To overcome heteroscedasticity and autocorrelation problems, the author used clustered standard error. *, **, *** denote statistical significance level at 1 percent, 5 percent, and 10 percent, respectively.

0,0071. The S score is -0,0060, meaning that, ceteris paribus, one score increase in S score will reduce ROA by 0,0060. Meanwhile, the E score, ceteris paribus, one score increase in E score will reduce ROA by 0,0035. However, the relationship between G score and ROA is insignificant.

For the control variables, equity-to-asset (EA), loan-to-deposit (LD), total assets in billion (TA), and government stringency index (GR) are significant. All equity-to-asset and government stringency indexes are significantly affecting the ROA with a 1% significance level. The loan-to-deposit variable is significant with 5% significance level. The total assets are significant at 1% for models 1, 3, and 4. In model 2, the total assets are significant at a 5% significance level. However, the GDP growth is not significant in all models.

From four out of five significant control variables, only the stringency index negatively affects the ROA. The stringency index has a coefficient between -0,0061 to -0,0056, meaning that, ceteris paribus, one score increase in stringency index could decrease ROA between 0,0056 to 0,0061. The equity-to-asset has a dominant positive relationship with the ROA, followed by loan-to-deposit and total assets. One percent increase in the equity-to-asset could, ceteris paribus, increase ROA by 0,224201 to 0,227162. As the banks' revenue mainly from interest, by having one percent loan-to-deposit higher, they could improve the ROA between 0,0084877 to 0,0089898. If the bank larger, by having one billion more assets, ceteris paribus, the ROA will increase around 0,0004.

D. Relationship Between Corporate Sustainability and ROE

The author developed four models to understand the effect of corporate sustainability on banks' ROE, which consider different independent variables, namely ESG score, E score, S score, and G score. Table 4 shows the panel data regression result that estimates the relationship between corporate sustainability and Return on Equity (ROE). There are several steps to regress the data, including normality test, multicollinearity test, heteroskedasticity test, and autocorrelation test.

There are 2.201 observations (N). The models' probability is 0, which means the models are significant. The R-squared within varied between 0,1819 to 0,1851. The author also includes the country fixed effect.

Before regress the panel data, the author tests the normality, multicollinearity, heteroskedasticity, autocorrelation, and estimation model. First, the author tests the normality using the Shapiro-Wilk method. All models do not pass the test because the p-value is less than 0,05. However, the problem will not affect the credibility of the research because the data size is large [8]. Second, all models pass the multicollinearity test using the variance inflation factor (VIF) test because the results are less than 10. The mean VIF is between 1,15 to 1,22. The highest VIF is GDP growth, which is 2,87 (in models 5-8) and the lowest is the loan-to-deposit, which is 1,12 (in model 8). Third, all models encounter heteroskedasticity problems since the P-value in the Breusch-Pagan tests are less than 0,05. The result is zero for all models. The author uses clustered standard error to

TABLE IV
PANEL (B) DEPENDENT VARIABLE: RETURN TO EQUITY (ROE)

			Model 5			Model 6			Model 7			Model 8	
Chow			0			0			0			0	
Hausman			0			0			0			0	
LM			-						-			-	
Mean VIF			1,19			1,22			1,20			1,15	
BP Test			0,00			0,00			0,00			0,00	
Variables	**Labels**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**
Constant			-0,4767	0,904		-2,7363	0,486		-1,1235	0,783		-2,0099	0,604
ESG	ESG	2,29	-0,0617	0,008*									
E	E				3,02	-0,0347	0,006*						
S	S							2,52	-0,0442	0,031**			
G	G										1,35	-0,0238	0,062***
Equity-to-asset	EA	2,14	102,4950	0,002*	2,16	104,0549	0,002*	2,14	101,9110	0,002*	2,14	101,1003	0,002*
Loan-to-deposit	LD	1,13	5,8379	0,014**	1,13	6,1855	0,012**	1,13	5,8048	0,014**	1,12	6,0605	0,015**
Total assets	TA	2,00	0,0019	0,111	2,07	0,0017	0,157	1,89	0,0018	0,134	1,73	0,0018	0,111
Stringency Index	GR	1,67	-0,0628	0,000*	1,67	-0,0643	0,000*	1,68	-0,0631	0,000*	1,66	-0,0670	0,000*
GDP Growth	GDP	2,87	-0,3908	0,856	2,87	-0,6438	0,774	2,87	-0,1369	0,948*	2,87	-0,3850	0,858
Country fixed effect	C		Yes			Yes			Yes			Yes	
N			2.201			2.201			2.201			2.201	
Probability			0			0			0			0	
R-squared within			0,1851			0,1834			0,1840			0,1819	
R-squared between			0,0083			0,0099			0,0087			0,0093	
R-squared overall			0,0266			0,0279			0,0277			0,0284	

The table presents panel data regression to analyze the relationship between the ROE and corporate sustainability. The dependent variable is ROE, which is a ratio. The independent variables for models 5, 6, 7, 8 are ESG score, E score, S score, and G score, respectively. Unit measurement of (1) ESG score, (2) E score, (3) S score, and (4) G score are decimal and using the prior year score (t-1), (5) equity-to-asset is a ratio, (6) loan-to-deposit is a ratio, (7) total assets is in USD billion, (8) governance stringency index is decimal, (9) GDP growth is decimal, and (10) country fixed effect is dummy variable which represents each country. The samples are 506 banks from 56 countries during the fiscal year 2016-2020. The Chow, Hausman, and Langrage Multiplier (LM) test are used to estimate the regression, which is pooled least square, fixed effect, or random effect. All the models are not normal, but because the sample size was big, the study's credibility is not influenced. Mean VIF is to detect multicollinearity problems. Breusch-Pagan (BP) test is to detect heteroskedasticity. To overcome heteroscedasticity and autocorrelation problems, the author used clustered standard error. *, **, *** denote statistical significance level at 1 percent, 5 percent, and 10 percent, respectively.

overcome the problem, which is part of robust standard error. Using clustered standard error method, heteroskedasticity and autocorrelation problems could be treated. Fourth, the author decided on the estimation model using the Chow test, Hausman Test, and Lagrange Multiplier test. The author estimated models 1-4 using fixed-effect because the p-value in the Chow test rejects the null hypothesis, so does in the Hausman test.

The coefficient in models 5-8 is not significant. All independent variables in models 5-8 are significant and negatively correlated with the dependent variable. The ESG and E score is significant with a 1% significance level, S score is significant with a 5% significance level, while G score is significant with a 10 % significance level. As stated in Table 4, the ESG score has the most negative impact on financial performance, which is -0,0617, followed by the social score, environment score, and governance score. This result could be interpreted that, ceteris paribus, one score increase in ESG score will reduce ROE by 0,0617. The S score is -0,0442, meaning that, ceteris paribus, one score increase in S score will reduce ROE by 0,0442. Meanwhile, the E score, ceteris paribus, one score increase in E score will reduce ROE by 0,0347. Lastly, one score increase in G score, will decrease ROE by 0,0238.

For the control variables, equity-to-asset (EA), loan-to-deposit (LD), and government stringency index (GR) are significant. All equity-to-asset and government stringency indexes are significantly affecting the ROE with a 1% significance level. The loan-to-deposit variable is significant with a 5% significance level. However, the GDP growth is not significant in all models.

From three out of five significant control variables, only the stringency index negatively affects the ROE. The stringency index has a coefficient between -0,0628 to -0,0670, meaning that, ceteris paribus, one score increase in stringency index could decrease ROE between 0,0628 to 0,0670. The equity-to-asset has the biggest positive relationship with the ROE, followed by loan-to-deposit. One percent increase in the equity-to-asset could, ceteris paribus, increase ROE by 101,100 to 104,0549. As the banks' revenue mainly from interest, by having one percent loan-to-deposit higher, they could improve the ROE between 0,058048 to 0,061855.

E. Relationship Between Corporate Sustainability and Tobin's Q

The author developed four models to understand the effect of corporate sustainability on banks' Tobin's Q, which consider different independent variables, namely ESG score, E score, S score, and G score. Table 5 shows the panel data regression result that estimates the relationship between corporate sustainability and Tobin's Q. There are several steps to regress the data, including normality test, multicollinearity test, heteroskedasticity test, and autocorrelation test.

There are 2.196 observations (N). The models' probability is 0, which means the models are significant. The R-squared within varied between 0,1825 to 0,1886. The author also includes the country fixed effect.

Before regress the panel data, the author tests the normality, multicollinearity, heteroskedasticity, autocorrelation, and estimation model. First, the author tests the normality using the Shapiro-Wilk method. All models do not pass the test because the p-value is less than

TABLE V
PANEL (C) DEPENDENT VARIABLE: TOBIN'S Q

			Model 9			Model 10			Model 11			Model 12	
Chow			0			0			0			0	
Hausman			0			0			0			0	
LM			-						-			-	
Mean VIF			1,19			1,22			1,20			1,15	
BP Test			0,00			0,00			0,00			0,00	
Variables	**Labels**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**
Constant			0,0449	0,383		0,0236	0,620		0,0425	0,398		0,0329	0,514
ESG	ESG	2,29	-0,0005	0,012**									
E	E				3,03	-0,0001	0,377						
S	S							2,52	-0,0004	0,009*			
G	G										1,35	-0,0002	0,061***
Equity-to-asset	EA	2,14	0,6262	0,002*	2,16	0,6228	0,002*	2,14	0,6213	0,002*	2,14	0,6154	0,002*
Loan-to-deposit	LD	1,13	0,0537	0,146	1,13	0,0562	0,123	1,13	0,0528	0,154	1,12	0,0554	0,130
Total assets	TA	2,00	0,00003	0,000*	2,07	0,00002	0,000*	1,89	0,00003	0,000*	1,73	0,00003	0,000*
Stringency Index	GR	1,68	-0,0005	0,000*	1,67	-0,0005	0,000*	1,68	-0,0005	0,000*	1,66	-0,0005	0,000*
GDP Growth	GDP	2,87	-0,0540	0,024**	2,87	-0,0539	0,028**	2,87	-0,0517	0,026**	2,87	-0,0540	0,029**
Country fixed effect	C		Yes			Yes			Yes			Yes	
N			2.196			2.196			2.196			2.196	
Probability			0			0			0			0	
R-squared within			0,1886			0,1825			0,1886			0,1845	
R-squared between			0,0339			0,0295			0,0346			0,0247	
R-squared overall			0,0751			0,0671			0,0760			0,0586	

The table presents panel data regression to analyze the relationship between the Tobin's Q and corporate sustainability. The dependent variable is Tobin's Q, which is a decimal. The independent variables for models 9, 10, 11, 12 are ESG score, E score, S score, and G score, respectively. Unit measurement of (1) ESG score, (2) E score, (3) S score, and (4) G score are decimal and using the prior year score (t-1), (5) equity-to-asset is a ratio, (6) loan-to-deposit is a ratio, (7) total assets is in USD billion, (8) governance stringency index is decimal, (9) GDP growth is decimal, and (10) country fixed effect is dummy variable which represents each country. The samples are 506 banks from 56 countries during the fiscal year 2016-2020. The Chow, Hausman, and Langrage Multiplier (LM) test are used to estimate the regression, which is pooled least square, fixed effect, or random effect. All the models are not normal, but because the sample size was big, the study's credibility is not influenced. Mean VIF is to detect multicollinearity problems. Breusch-Pagan (BP) test is to detect heteroskedasticity. To overcome heteroscedasticity and autocorrelation problems, the author used clustered standard error. *, **, *** denote statistical significance level at 1 percent, 5 percent, and 10 percent, respectively.

0,05. However, the problem will not affect the credibility of the research because the data size is large [8]. Second, all models pass the multicollinearity test using the variance inflation factor (VIF) test because the results are less than 10. The mean VIF is between 1,15 to 1,22. The highest VIF is GDP growth, which is 2,87 (in models 9-12) and the lowest is the loan-to-deposit, which is 1,12 (in model 12). Third, all models encounter heteroskedasticity problems since the P-value in the Breusch-Pagan tests are less than 0,05. The result is zero for all models. The author uses clustered standard error to overcome the problem, which is part of robust standard error. Using clustered standard error method, heteroskedasticity and autocorrelation problems could be treated. Fourth, the author decided on the estimation model using the Chow test, Hausman Test, and Lagrange Multiplier test. The author estimated models 1-4 using fixed-effect because the p-value in the Chow test rejects the null hypothesis, so does in the Hausman test.

The coefficient in models 9-12 is not significant. Three out of four independent variables in models 9-12 are significant and negatively correlated with the dependent variable. The significant independent variables are ESG score, S score, and G score. The ESG score is significant with 5% significance level, the S score is significant with 1% significance level, and the G score is significant with 10% significance level. As stated in Table 5, the ESG score has the most negative impact on financial performance, which is -0,00051, followed by the social score and environment score. This result could be interpreted that, ceteris paribus, one score increase in ESG score will reduce Tobin's Q by 0,00051. The S score is -0,00042, meaning that, ceteris paribus, one score increase in S score will reduce Tobin's Q by 0,00042. Meanwhile, the G score, ceteris paribus, one score increase in G score will reduce Tobin's Q by 0,00021. However, the relationship between E score and Tobin's Q is insignificant.

For the control variables, equity-to-asset (EA), total assets in billion (TA), government stringency index (GR), and Gross Domestic Product (GDP) growth are significant. All equity-to-asset, total asset in billion, and government stringency indexes are significantly affecting the Tobin's Q with a 1% significance level. The GDP growth are significant at 5% for models 9-12. However, the loan-to-deposit is not significant in all models.

From four out of five significant control variables, the stringency index and GDP growth negatively affects the Tobin's Q. The stringency index has a coefficient around -0,0005, meaning that, ceteris paribus, one score increase in stringency index could decrease Tobin's Q between 0,0005. Meanwhile one percent GDP growth meaning that, ceteris paribus, the Tobin's Q will decrease 0,0517 to 0,0540. The equity-to-asset has a dominant positive relationship with the Tobin's Q, followed by total assets. One percent increase in the equity-to-asset could, ceteris paribus, increase Tobin's Q by 0,006154 to 0,006262. If the bank larger, by having one billion more assets, ceteris paribus, the Tobin's Q will increase around 0,00003.

TABLE VI
PANEL (D) DEPENDENT VARIABLE: NPL Ratio

		Model 13			Model 14			Model 15			Model 16	
Chow		0			0			0			0	
Hausman		0,5488			0,3556			0,8200			0,4586	
LM		0			0			0			0	
Mean VIF		1,19			1,21			1,19			1,15	
BP Test		0,00			0,00			0,00			0,00	
Variables	**Labels**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**
Constant			0,0209	0,051***		0,0145	0,186		0,1931	0,072***		0,0196	0,067***
ESG	ESG	2,29	-0,0002	0,055***									
E	E				3,00	-0,00003	0,765						
S	S							2,51	-0,0002	0,054***			
G	G										1,36	-0,0001	0,115
Equity-to-asset	EA	2,11	0,0166	0,815	2,14	0,0159	0,823	2,12	0,0143	0,840	2,12	0,0164	0,816
Loan-to-deposit	LD	1,12	-0,0024	0,021**	1,12	-0,0022	0,039**	1,13	-0,0024	0,022**	1,12	-0,0023	0,029**
Total assets	TA	2,00	-1.70e-06	0,501	2,07	-3.96e-06	0,163	1,89	-2.56e-06	0,244	1,73	-3.06e-06	0,189
Stringency Index	GR	1,66	0,00002	0,541	1,66	7.45e-06	0,831	1,67	0,00002	0,558	1,65	9.42e-06	0,779
GDP Growth	GDP	2,85	0,0245	0,227	2,85	0,0247	0,229	2,85	0,0255	0,212	2,85	0,0244	0,227
Country fixed effect	C		Yes			Yes			Yes			Yes	
N			2.148			2.148			2.148			2.148	
Probability													
R-squared within			0,0065			0,0044			0,0066			0,0056	
R-squared between			0,3604			0,3565			0,3582			0,3596	
R-squared overall			0,3969			0,3932			0,3944			0,3967	

The table presents panel data regression to analyze the relationship between the Nonperforming loan (NPL) Ratio and corporate sustainability. The dependent variable is NPL Ratio, which is a decimal. The independent variables for models 13, 14, 15, 16 are ESG score, E score, S score, and G score, respectively. Unit measurement of (1) ESG score, (2) E score, (3) S score, and (4) G score are decimal and using the prior year score (t-1), (5) equity-to-asset is a ratio, (6) loan-to-deposit is a ratio, (7) total assets is in USD billion, (8) governance stringency index is decimal, (9) GDP growth is decimal, and (10) country fixed effect is dummy variable which represents each country. The samples are 506 banks from 56 countries during the fiscal year 2016-2020. The Chow, Hausman, and Langrage Multiplier (LM) test are used to estimate the regression, which is pooled least square, fixed effect, or random effect. All the models are not normal, but because the sample size was big, the study's credibility is not influenced. Mean VIF is to detect multicollinearity problems. Breusch-Pagan (BP) test is to detect heteroskedasticity. To overcome heteroscedasticity and autocorrelation problems, the author used clustered standard error. *, **, *** denote statistical significance level at 1 percent, 5 percent, and 10 percent, respectively.

F. Relationship Between Corporate Sustainability and NPL Ratio

The author developed four models to understand the effect of corporate sustainability on banks' Nonperforming Loans (NPL) Ratio, which consider different independent variables, namely ESG score, E score, S score, and G score. Table 6 shows the panel data regression result that estimates the relationship between corporate sustainability and NPL ratio. There are several steps to regress the data, including normality test, multicollinearity test, heteroskedasticity test, and autocorrelation test.

There are 2.196 observations (N). The models' probability is 0, which means the models are significant. The R-squared within varied between 0,0044 to 0,0065. The author also includes the country fixed effect.

Before regress the panel data, the author tests the normality, multicollinearity, heteroskedasticity, autocorrelation, and estimation model. First, the author tests the normality using the Shapiro-Wilk method. All models do not pass the test because the p-value is less than 0,05. However, the problem will not affect the credibility of the research because the data size is large [8]. Second, all models pass the multicollinearity test using the variance inflation factor (VIF) test because the results are less than 10. The mean VIF is between 1,15 to 1,21. The highest VIF is GDP growth, which is 2,85 (in models 13-16) and the lowest is the loan-to-deposit, which is 1,12 (in model 13, 14, 16). Third, all models encounter heteroskedasticity problems since the P-value in the Breusch-Pagan tests are less than 0,05. The result is zero for all models. The author uses clustered standard error to overcome the problem, which is part of robust standard error. Using clustered standard error method, heteroskedasticity and autocorrelation problems could be treated. Fourth, the author decided on the estimation model using the Chow test, Hausman Test, and Lagrange Multiplier test. The author estimated models 13-16 using random-effect because the p-value in the Chow test rejects the null hypothesis but accept the null hypothesis in the Hausman test.

The coefficient in models 13, 15, and 16 is significant with 10% significance level. The coefficient shows a positive relationship with the NPL Ratio. The fifteenth model has the highest coefficient, which is 0,072, while the lowest is in model 16. Thus, the coefficient in the fifteenth model has a larger magnitude.

Two out of four independent variables in models 13-16 are significant with 10% significance level and negatively correlated with the dependent variable. The significant independent variables are ESG score and S score. As stated in Table 6, the ESG score has the most negative coefficient on NPL Ratio, which is -0,0002, followed by the social score. This result could be interpreted that, ceteris paribus, one score increases in ESG, or S score will reduce NPL by around 0,0002. This means that ESG score and S score are positively significant to the financial performance of banks because the lower the NPL, the preferable it is.

For the control variables, only loan-to-deposit that significant with a 5% significance level. The loan-to-deposit appears to have a negative relationship with NPL Ratio around -0,0022 to -0,0024. This could be interpreted that, ceteris paribus, the loan-to-deposit could decrease the NPL Ratio between 0,0022 to 0,0024. The other control variables are not significant to the dependent variable.

TABLE VII
PANEL (E) DEPENDENT VARIABLE: RETURN ON ASSET (ROA)

			Model 17			Model 18			Model 19			Model 20	
Chow			0			0			0			0	
Hausman			0			0			0			0	
LM			-			-			-			-	
Mean VIF			1,38			1,17			1,35			1,36	
BP Test			0,00			0,00			0,00			0,00	
Variables	**Labels**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**
Constant			-1,5336	0,062***		-1,7898	0,029**		-1,5465	0,059***		-1,7309	0,039**
ESG	ESG	2,55	-0,0059	0,024**									
ESG*Stringency Index	ESGS	7,12	-0,0001	0,009*									
E	E				3,33	-0,0029	0,032**						
E*Stringency Index	ES				2,20	-0,00003	0,186						
S	S							2,81	-0,0048	0,044**			
S*Stringency Index	SS							5,93	-0,0001	0,012**			
G	G										1,59	-0,0016	0,264
G*Stringency Index	GS										7,67	-0,00005	0,061***
Equity-to-asset	EA	2,14	22,5484	0,000*	2,16	22,7468	0,000*	2,14	22,4856	0,000*	2,14	22,3773	0,000*
Loan-to-deposit	LD	1,13	0,8038	0,059***	1,13	0,8771	0,046**	1,13	0,7850	0,059***	1,12	0,8660	0,047**
Total assets	TA	2,00	0,0006	0,002*	2,07	0,0005	0,007*	1,89	0,0005	0,006*	1,73	0,0005	0,001*
Stringency Index	GR	7,02	-0,0025	0,102	2,41	-0,0053	0,000*	5,87	-0,0027	0,074**	7,75	-0,0038	0,012**
GDP Growth	GDP	2,88	0,0700	0,815	2,88	0,0840	0,788	2,88	0,1063	0,710	2,88	0,1077	0,723
Country fixed effect	C		Yes			Yes			Yes			Yes	
N			2.201			2.201			2.201			2.201	
Probability			0			0			0			0	
R-squared within			0,2843			0,2794			0,285			0,2784	
R-squared between			0,1599			0,1556			0,1637			0,1491	
R-squared overall			0,2205			0,2166			0,2247			0,2121	

The table presents panel data regression to analyze the relationship between the ROA and corporate sustainability considering the government response to the Covid-19 Pandemic. The dependent variable is ROA, which is a ratio. The independent variables are corporate sustainability indicators and interaction variable (corporate sustainability multiplies by stringency index). Unit measurement of (1) ESG, E, S, G, ESGS, ES, SS, and GS are decimal, (2) equity-to-asset is a ratio, (3) loan-to-deposit is a ratio, (4) total assets is in USD billion, (5) GR is a decimal, (6) GDP growth is decimal, and (7) country fixed effect is dummy variable which represents each country. The samples are 506 banks from 56 countries during the fiscal year 2016-2020. The Chow, Hausman, and Langrage Multiplier (LM) test are used to estimate the regression, which is pooled least square, fixed effect, or random effect. All the models are not normal, but because the sample size was big, the study's credibility is not influenced. Mean VIF is to detect multicollinearity problems. Breusch-Pagan (BP) test is to detect heteroskedasticity. To overcome heteroscedasticity and autocorrelation problems, the author used clustered standard error. *, **, *** denote statistical significance level at 1 percent, 5 percent, and 10 percent, respectively.

G. Relationship Between Corporate Sustainability and ROA Considering the Government Response to the Covid-19 Pandemic

The author developed four models to understand the effect of corporate sustainability on banks' ROA considering the government response to the Covid-19 pandemic, which employ four another different independent variable besides ESG score, E score, S score, and G score. The independent variables are an interaction variable of Corporate Sustainability multiplied by the Government Stringency Index, namely ESG score*Stringency Index, E score*Stringency Index, S score*Stringency Index, and G score*Stringency Index. Table 7 shows the panel data regression result that estimates the relationship between corporate sustainability and Return on Assets (ROA) considering the government response to the Covid-19 pandemic. There are several steps to regress the data, including normality test, multicollinearity test, heteroskedasticity test, and autocorrelation test.

There are 2.201 observations (N). The models' probability is 0, which means the models are significant. The R-squared within varied between 0,2751 to 0,2798. The author also includes the country fixed effect.

Before regress the panel data, the author tests the normality, multicollinearity, heteroskedasticity, autocorrelation, and estimation model. First, the author tests the normality using the Shapiro-Wilk method. All models do not pass the test because the p-value is less than 0,05. However, the problem will not affect the credibility of the research because the data size is large [8]. Second, all models pass the multicollinearity test using the variance inflation factor (VIF) test because the results are less than 10. The mean VIF is between 1,17 to 1,38. The highest VIF is the government stringency index, which is 7,75 (in models 20) and the lowest is the loan-to-deposit, which is 1,12 (in model 20). Third, all models encounter heteroskedasticity problems since the P-value in the Breusch-Pagan tests are less than 0,05. The result is zero for all models. The author uses clustered standard error to overcome the problem, which is part of robust standard error. Using clustered standard error method, heteroskedasticity and autocorrelation problems could be treated. Fourth, the author decided on the estimation model using the Chow test, Hausman Test, and Lagrange Multiplier test. The author estimated models 17-20 using fixed-effect because the p-value in the Chow test rejects the null hypothesis, so does in the Hausman test.

The coefficient in models 17-20 is significant. Model 18 and 20 coefficient is significant with 5% significance level, while models 17 and 19 are significant with 10% significance level. All the coefficient shows a negative sign. The eighteenth model has the highest coefficient which is -1,7898, while the lowest is in model 17. Thus, the coefficient in the eighteenth model has a larger magnitude.

In model 17, ESG score and ESG score*Stringency Index are negatively significant with 5% and 1% significance level, respectively. The government response

TABLE VIII
PANEL (F) DEPENDENT VARIABLE: RETURN ON EQUITY (ROE)

			Model 21			Model 22			Model 23			Model 24	
Chow			0			0			0			0	
Hausman			0			0			0			0	
LM			-			-			-			-	
Mean VIF			1,38			1,25			1,35			1,36	
BP Test			0,00			0,00			0,00			0,00	
Variables	**Labels**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**
Constant			-0,9057	0,819		-3,1929	0,417		-1,2885	0,751		-2,2223	0,567
ESG	ESG	2,55	-0,0435	0,075***									
ESG*Stringency Index	ESGS	7,12	-0,0011	0,000*									
E	E				3,33	-0,0206	0,129						
E*Stringency Index	ES				2,20	-0,0007	0,001*						
S	S							2,81	-0,0282	0,198			
S*Stringency Index	SS							5,93	-0,0009	0,000*			
G	G										1,59	-0,0173	0,181
G*Stringency Index	GS										7,67	-0,0006	0,010*
Equity-to-asset	EA	2,14	101,9859	0,002*	2,16	104,8233	0,002*	2,14	101,2339	0,002*	2,14	100,5289	0,002*
Loan-to-deposit	LD	1,13	4,9933	0,038**	1,13	5,6369	0,023**	1,13	4,9135	0,038**	1,12	5,7709	0,022**
Total assets	TA	2,00	0,0043	0,009*	2,07	0,0044	0,013**	1,89	0,0036	0,029**	1,73	0,00292	0,018**
Stringency Index	GR	7,02	-0,0154	0,250	2,41	-0,0499	0,000*	5,87	-0,0228	0,058***	7,75	-0,03594	0,008*
GDP Growth	GDP	2,88	-1,4656	0,513	2,88	-1,4930	0,528	2,88	-1,0665	0,615	2,88	-0,8869	0,690
Country fixed effect	C		Yes			Yes			Yes			Yes	
N			2.201			2.201			2.201			2.201	
Probability			0			0			0			0	
R-squared within			0,1943			0,1911			0,1928			0,1852	
R-squared between			0,0080			0,0092			0,009			0,009	
R-squared overall			0,0299			0,0296			0,0324			0,0292	

The table presents panel data regression to analyze the relationship between the ROE and corporate sustainability considering the government response to the Covid-19 Pandemic. The dependent variable is ROE, which is a ratio. The independent variables are corporate sustainability indicators and interaction variable (corporate sustainability multiplies by stringency index). Unit measurement of (1) ESG, E, S, G, ESGS, ES, SS, and GS are decimal, (2) equity-to-asset is a ratio, (3) loan-to-deposit is a ratio, (4) total assets is in USD billion, (5) GR is a decimal, (6) GDP growth is decimal, and (7) country fixed effect is dummy variable which represents each country. The samples are 506 banks from 56 countries during the fiscal year 2016-2020. The Chow, Hausman, and Langrage Multiplier (LM) test are used to estimate the regression, which is pooled least square, fixed effect, or random effect. All the models are not normal, but because the sample size was big, the study's credibility is not influenced. Mean VIF is to detect multicollinearity problems. Breusch-Pagan (BP) test is to detect heteroskedasticity. To overcome heteroscedasticity and autocorrelation problems, the author used clustered standard error. *, **, *** denote statistical significance level at 1 percent, 5 percent, and 10 percent, respectively.

intensifies the negative relationship between corporate sustainability and banks' ROA. Based on the regression result, one score increase in the ESG score could reduce the ROA by an aggregate effect of 0,0060.

In model 18, only E score is negatively significant with 5% significance level. The interaction variable sign is negative, but it is not significant. Thus, the result mean that, ceteris paribus, one score increase in E score will decrease ROA by around 0,0029.

In model 19, S score and S score*Stringency Index are negatively significant with 5% significance level. The government response intensifies the negative relationship between corporate sustainability and banks' ROA. Based on the regression result, one score increase in the S score could reduce the ROA by an aggregate effect of 0,0049.

In model 20, only G score*Stringency Index is negatively significant with 5% significance level. The G score is not significant. Thus, the result mean that, ceteris paribus, one score increase in G score*Stringency Index will decrease ROA by 0,00005.

In model 17-20, the significant control variables are the equity-to-asset, loan-to-deposit, and total assets. The equity-to-asset and total assets is significant at 1% significance level in all models. The loan-to-deposit is significant at 5% in model 18, 19, 20, and significant at 10% in model 17. These three control variables show a positive sign. Align with the first model, the equity-to-asset is significantly correlated with ROA, which one percent increase will boost ROA around 0,22. The loan-to-deposit coefficient is around 0,78502-0,87711, meaning that, ceteris paribus, one percent increase led to 0,0079-0,0088 increase in ROA. If the bank size is one billion USD more in term of assets, the ROA will increase around 0,00049-0,00056. Lastly, the government stringency index is significant at 1% significance level in model 18, 19, and 20.

H. Relationship Between Corporate Sustainability and ROE Considering the Government Response to the Covid-19 Pandemic

The author developed four models to understand the effect of corporate sustainability on banks' ROE considering the government response to the Covid-19 pandemic, which employ four another different independent variable besides ESG score, E score, S score, and G score. The independent variables are an interaction variable of Corporate Sustainability multiplied by the Government Stringency Index, namely ESG score*Stringency Index, E score*Stringency Index, S score*Stringency Index, and G score*Stringency Index. Table 8 shows the panel data regression result that estimates the relationship between corporate sustainability and Return on Equity (ROE) considering the government response to the Covid-19 pandemic. There are several steps to regress the data, including normality test,

multicollinearity test, heteroskedasticity test, and autocorrelation test.

There are 2.201 observations (N). The models' probability is 0, which means the models are significant. The R-squared within varied between 0,1852 to 0,1943. The author also includes the country fixed effect.

Before regress the panel data, the author tests the normality, multicollinearity, heteroskedasticity, autocorrelation, and estimation model. First, the author tests the normality using the Shapiro-Wilk method. All models do not pass the test because the p-value is less than 0,05. However, the problem will not affect the credibility of the research because the data size is large [8]. Second, all models pass the multicollinearity test using the variance inflation factor (VIF) test because the results are less than 10. The mean VIF is between 1,25 to 1,38. The highest VIF is the government stringency index, which is 7,75 (in models 20) and the lowest is the loan-to-deposit, which is 1,12 (in model 20). Third, all models encounter heteroskedasticity problems since the P-value in the Breusch-Pagan tests are less than 0,05. The result is zero for all models. The author uses clustered standard error to overcome the problem, which is part of robust standard error. Using clustered standard error method, heteroskedasticity and autocorrelation problems could be treated. Fourth, the author decided on the estimation model using the Chow test, Hausman Test, and Lagrange Multiplier test. The author estimated models 21-24 using fixed-effect because the p-value in the Chow test rejects the null hypothesis, so does in the Hausman test. The coefficient in models 21-24 is insignificant.

In model 21, ESG score and ESG score*Stringency Index are negatively significant with 10% and 1% significance level, respectively. The government response intensifies the negative relationship between corporate sustainability and banks' ROE. Based on the regression result, one score increase in the ESG score could reduce the ROE by an aggregate effect of 0,0446.

In model 22, only E score*Stringency Index is negatively significant with 5% significance level. The E score is not significant. Thus, the result mean that, ceteris paribus, one score increase in E score*Stringency Index will decrease ROE by 0,0007.

In model 23, only S score*Stringency Index is negatively significant with 1% significance level. The S score is not significant. Thus, the result mean that, ceteris paribus, one score increase in S score*Stringency Index will decrease ROE by 0,0009.

In model 24, only G score*Stringency Index is negatively significant with 1% significance level. The G score is not significant. Thus, the result mean that, ceteris paribus, one score increase in G score*Stringency Index will decrease ROE by 0,0006.

In model 21-24, the significant control variables are the equity-to-asset, loan-to-deposit, and total assets. The equity-to-asset is significant at 1% significance level in all models. The loan-to-deposit is significant at 5% in model 21-24. The total assets are significant at 1% significance level in model 21, and 5% significance level in model 22-24. These three control variables show a positive sign.

Align with the first model, the equity-to-asset is significantly correlated with ROE, which one percent increase will boost ROE around 1,0123 to 1,020. The loan-to-deposit coefficient is around 4,9135 to 5,77092, meaning that, ceteris paribus, one percent increase led to 0,049135 to 0,0577092 increase in ROE. If the bank size is one billion USD more in term of assets, the ROE will increase around 0,00292-0,00441. Lastly, the government stringency index is significant at 1% significance level in model 24 and 5% significance level in model 23.

I. Relationship Between Corporate Sustainability and Tobin's Q Considering the Government Response to the Covid-19 Pandemic

The author developed four models to understand the effect of corporate sustainability on banks' Tobin's Q considering the government response to the Covid-19 pandemic, which employ four another different independent variable besides ESG score, E score, S score, and G score. The independent variables are an interaction variable of Corporate Sustainability multiplied by the Government Stringency Index, namely ESG score*Stringency Index, E score*Stringency Index, S score*Stringency Index, and G score*Stringency Index. Table 9 shows the panel data regression result that estimates the relationship between corporate sustainability and Tobin's Q considering the government response to the Covid-19 pandemic.

There are 2.196 observations (N). The models' probability is 0, which means the models are significant. The R-squared within varied between 0,1846 to 0,1926. The author also includes the country fixed effect.

Before regress the panel data, the author tests the normality, multicollinearity, heteroskedasticity, autocorrelation, and estimation model. First, the author tests the normality using the Shapiro-Wilk method. All models do not pass the test because the p-value is less than 0,05. However, the problem will not affect the credibility of the research because the data size is large [8]. Second, all models pass the multicollinearity test using the variance inflation factor (VIF) test because the results are less than 10. The mean VIF is between 1,25 to 1,38. The highest VIF is the government stringency index, which is 7,75 (in models 28) and the lowest is the loan-to-deposit, which is 1,12 (in model 28). Third, all models encounter heteroskedasticity problems since the P-value in the Breusch-Pagan tests are less than 0,05. The result is zero for all models. The author uses clustered standard error to overcome the problem, which is part of robust standard error. Using clustered standard error method, heteroskedasticity and autocorrelation problems could be treated. Fourth, the author decided on the estimation model using the Chow test, Hausman Test, and Lagrange Multiplier test. The author estimated models 25-28 using fixed-effect because the p-value in the Chow test rejects the null hypothesis, so does in the Hausman test. The coefficient in models 25-28 is insignificant.

TABLE IX
PANEL (G) DEPENDENT VARIABLE: TOBIN'S Q

		Model 25			Model 26			Model 27			Model 28		
Chow			0			0			0			0	
Hausman			0			0			0			0	
LM			-			-			-			-	
Mean VIF			1,38			1,25			1,35			1,36	
BP Test			0,00			0,00			0,00			0,00	
Variables	**Labels**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**
Constant			0,0465	0,367		0,0265	0,575		0,0433	0,391		0,0327	0,517
ESG	ESG	2,55	-0,0006	0,004*									
ESG*Stringency Index	ESGS	7,12	4,17e-06	0,002*									
E	E				3,34	-0,0002	0,093***						
E*Stringency Index	ES				2,20	4,19e-06	0,000*						
S	S							2,81	-0,0005	0,002*			
S*Stringency Index	SS							5,93	4,32e-06	0,000*			
G	G										1,59	-0,0002	0,070***
G*Stringency Index	GS										7,67	-8,16e-07	0,581
Equity-to-asset	EA	2,14	0,6283	0,002*	2,16	0,6176	0,002*	2,14	0,6245	0,002*	2,14	0,6146	0,002*
Loan-to-deposit	LD	1,13	0,0569	0,125	1,13	0,0597	0,105	1,13	0,0571	0,124	1,12	0,0550	0,134
Total assets	TA	2,00	0,00002	0,013**	2,07	7,18e-06	0,250	1,89	0,00002	0,007*	1,73	0,00003	0,000*
Stringency Index	GR	7,02	-0,00069	0,000*	2,41	-0,00063	0,000*	5,87	-0,00070	0,000*	7,75	-0,0005	0,000*
GDP Growth	GDP	2,89	-0,0500	0,035**	2,89	-0,0485	0,046**	2,88	-0,0473	0,036**	2,88	-0,0546	0,028**
Country fixed effect	C		Yes			Yes			Yes			Yes	
N			2.196			2.196			2.196			2.196	
Probability			0			0			502			0	
R-squared within			0,1912			0,1888			0,1926			0,1846	
R-squared between			0,0365			0,0368			0,0358			0,024	
R-squared overall			0,0809			0,0824			0,0796			0,0572	

The table presents panel data regression to analyze the relationship between the Tobin's Q and corporate sustainability considering the government response to the Covid-19 Pandemic. The dependent variable is Tobin's Q, which is a ratio. The independent variables are corporate sustainability indicators and interaction variable (corporate sustainability multiplies by stringency index). Unit measurement of (1) ESG, E, S, G, ESGS, ES, SS, and GS are decimal, (2) equity-to-asset is a ratio, (3) loan-to-deposit is a ratio, (4) total assets is in USD billion, (5) GR is a decimal, (6) GDP growth is decimal, and (7) country fixed effect is dummy variable. The samples are 506 banks from 56 countries during the fiscal year 2016-2020. The Chow, Hausman, and Langrage Multiplier (LM) test are used to estimate the regression, which is pooled least square, fixed effect, or random effect. All the models are not normal, but because the sample size was big, the study's credibility is not influenced. Mean VIF is to detect multicollinearity problems. Breusch-Pagan (BP) test is to respectively.

In Panel G, ESG score and ESG score*Stringency Index (model 25), E score and E score*Stringency Index (model 26), and S score and S score*Stringency Index (model 27) are significant. These variables are significant at 1% significance level, except E score (model 26) that significant at 10% significance level. The ESG score, E score, and S score show a negative sign, but the ESG score*Stringency Index, E score*Stringency Index, and S score*Stringency Index show a positive sign. This could be interpreted that the government response decreases the negative relationship between corporate sustainability and banks' Tobin's Q. However, the coefficient of all interaction variables is very small, which are around 0,000004. Thus, one score increases in ESG, E, and S score, could generate an aggregate impact of decreasing Tobin's Q by 0,0006, 0,0002, and 0,0005, respectively.

In model 28, G score is negatively significant with 10% significance level. The interaction variable sign is negative, but it is not significant. Thus, the result mean that, ceteris paribus, one score increase in G score will decrease Tobin's Q by around 0,0002.

The equity-to-asset is positively significant in all models with 1% significance level. One percent increase in the equity-to-asset, will increase Tobin's Q around 0,00614 to 0,006283. The loan-to deposit is not significant in all models. The total assets are significant in model 25 (5% significance level) and 27-28 (1% significance level). The stringency index is negatively significant in all models with 1% significance level. One score increase in the stringency index could decrease Tobin's Q around 0,0005 to 0,0007. The GDP growth is negatively significant in all models with 5% significance level. An increase in GDP will diminish Tobin's Q by 0,00036-0,0005.

J. Relationship Between Corporate Sustainability and NPL Ratio Considering the Government Response to the Covid-19 Pandemic

The author developed four models to understand the effect of corporate sustainability on banks' Nonperforming Loans (NPL) Ratio considering the government response to the Covid-19 pandemic, which employ four another different independent variable besides ESG score, E score, S score, and G score. The independent variables are an interaction variable of Corporate Sustainability multiplied by the Government Stringency Index, namely ESG score*Stringency Index, E score*Stringency Index, S score*Stringency Index, and G score*Stringency Index. Table 10 shows the panel data regression result that estimates the relationship between corporate sustainability and Nonperforming Loans Ratio (NPL Ratio) considering the government response to the Covid-19 pandemic. There are several steps to regress the data, including normality test, multicollinearity test, heteroskedasticity test, and autocorrelation test.

There are 2.148 observations (N). The models' probability is 0, which means the models are significant. The R-squared within varied between 0,0057 to 0,0116. The author also includes the country fixed effect.

Before regress the panel data, the author tests the normality, multicollinearity, heteroskedasticity, autocorrelation, and estimation model. First, the author tests the normality using the Shapiro-Wilk method. All models do not pass the test because the p-value is less than 0,05. However, the problem will not affect the credibility of the research because the data size is large [8]. Second, all models pass the multicollinearity test using the variance inflation factor (VIF) test because the

TABLE X
PANEL (H) DEPENDENT VARIABLE: NPL RATIO

			Model 29			Model 30			Model 31			Model 32	
Chow			0			0			0			0	
Hausman			0,7302			0,4589			0,9507			0,4819	
LM			0			0			0			0	
Mean VIF			1,37			1,25			1,34			1,36	
BP Test			0,00			0,00			0,00			0,00	
Variables	**Labels**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**	**VIF**	**Coef.**	**P-value**
Constant			0,0194	0,072**		0,0133	0,226		0,0177	0,102		0,0194	0,070*
ESG	ESG	2,55	-0,0002	0,128									
ESG*Stringency Index	ESGS	7,14	-2,73e-06	0,068***									
E	E				3,31	2,06e-06	0,985						
E*Stringency Index	ES				2,19	-1,95e-06	0,008*						
S	S							2,80	-0,0001	0,171			
S*Stringency Index	SS							5,94	-2,78e-06	0,019**			
G	G										1,60	-0,0001	0,149
G*Stringency Index	GS										7,76	-5,04e-07	0,758
Equity-to-asset	EA	2,11	0,0159	0,822	2,14	0,0196	0,782	2,12	0,0127	0,857	2,12	0,0161	0,820
Loan-to-deposit	LD	1,12	-0,0025	0,015**	1,12	-0,0022	0,035**	1,13	-0,0025	0,015**	1,12	-0,0023	0,027**
Total assets	TA	2,00	-2.01e-07	0,938	2,07	-1,99e-06	0,478	1,89	-1,29e-06	0,559	1,74	-2,82e-06	0,262
Stringency Index	GR	7,02	0,00014	0,024**	2,38	0,00006	0,081***	5,86	0,00015	0,008*	7,80	0,00004	0,669
GDP Growth	GDP	2,87	0,0221	0,277	2,87	0,0224	0,280	2,86	0,0229	0,258	2,86	0,0240	0,234
Country fixed effect	C		Yes			Yes			Yes			Yes	
N			2.148			2.148			2.148			2.148	
Probability			0			0			0			0	
R-squared within			0,0099			0,0089			0,0116			0,0057	
R-squared between			0,3615			0,3571			0,3594			0,3598	
R-squared overall			0,3982			0,3941			0,3959			0,3969	

The table presents panel data regression to analyze the relationship between the NPL Ratio and corporate sustainability considering the government response to the Covid-19 Pandemic. The dependent variable is NPL Ratio, which is a ratio. The independent variables are corporate sustainability indicators and interaction variable (corporate sustainability multiplies by stringency index). Unit measurement of (1) ESG, E, S, G, ESGS, ES, SS, and GS are decimal, (2) equity-to-asset is a ratio, (3) loan-to-deposit is a ratio, (4) total assets is in USD billion, (5) GR is a decimal, (6) GDP growth is decimal, and (7) country fixed effect is dummy variable. The samples are 506 banks from 56 countries during the fiscal year 2016-2020. The Chow, Hausman, and Langrage Multiplier (LM) test are used to estimate the regression, which is pooled least square, fixed effect, or random effect. All the models are not normal, but because the sample size was big, the study's credibility is not influenced. Mean VIF is to detect multicollinearity problems. Breusch-Pagan (BP) test is to detect heteroskedasticity. To overcome heteroscedasticity and autocorrelation problems, the author used clustered standard error. *, **, *** denote statistical significance level at 1 percent, 5 percent, and 10 percent, respectively.

results are less than 10. The mean VIF is between 1,25 to 1,37. The highest VIF is the government stringency index, which is 7,80 (in models 32) and the lowest is the loan-to-deposit, which is 1,12 (in model 32). Third, all models encounter heteroskedasticity problems since the P-value in the Breusch-Pagan tests are less than 0,05. The result is zero for all models. The author uses clustered standard error to overcome the problem, which is part of robust standard error. Using clustered standard error method, heteroskedasticity and autocorrelation problems could be treated. Fourth, the author decided on the estimation model using the Chow test, Hausman Test, and Lagrange Multiplier test. The author estimated models 29-32 using fixed-effect because the p-value in the Chow test rejects the null hypothesis, so does in the Hausman test.

The coefficient in models 29 and 32 are positively significant with 5% significance level and 1% significance level, respectively. The coefficient for models 29 and 32 is 0,0194. The coefficient in model 30 and 31 is not significant.

In model 29-31, the interaction variables are negatively significant with 10% significance level, 1% significance level, and 5% significance level, respectively. The interaction variables which relevant are ESG Score*Stringency Index, E Score*Stringency Index, and S Score*Stringency Index. However, the ESG, E, S, and G score are not significant in all models. Based on the regression result, one score increase in ESG Score*Stringency Index, E Score*Stringency Index, and S Score*Stringency Index, will decrease the NPL Ratio by around 0,000002. The lower NPL Ratio is preferable, so the result support the research hypothesis.

The loan-to-deposit is negatively significant in all models with 5% significance level. One percent increase in the loan-to-deposit, ceteris paribus, will decrease the NPL Ratio by around 0,0015 to 0,0035. The other control variable which is significant is the government stringency index. The government stringency index is positively significant in model 29 (5% significance level), 30 (10% significance level), and 31 (1% significance level). Based on the coefficient, an increase in the government stringency index, ceteris paribus, in model 29 will increase NPL Ratio by 0,00014, in model 30 will increase NPL Ratio by 0,00006, and in model 31 increase NPL Ratio by 0,00015. This means that the higher the government stringency index, the financial performance is decreased because lower NPL Ratio is preferable.

IV. DISCUSSION

Based on the regression result, shown in Table 3-10, the author found a relationship between corporate sustainability and banks' financial performance. From 32 models, corporate sustainability indicators are significant in 25 models. However, the findings show a mixed sign of corporate sustainability impact on banks' financial performance.

In panel B (model 5-8), E (model 17-20), F (model 21-24), G (model 25-28), there is a robust finding that ESG score, E score, S score, and G score are significant and negatively correlated with the financial performance,

which are Return on Equity (ROE) in Panel B and F, Return on Assets (ROA) in Panel E, and Tobin's Q in Panel G. Similar to those panels, in Panel A and C, three independent variables are significant and negatively correlated. In Panel A (model 1-4), ESG score, E score, and S score are significant with the dependent variable, ROA. While in Panel C (model 9-12), ESG score, S score, and G score are significant with the dependent variable, Tobin's Q.

Based on the regression result, 22 models show a negative relationship between corporate sustainability and banks' financial performance. It means that banks across the countries showing better performance on the corporate sustainability will not have higher financial performance than those showing less sustainability performance. Comparing the elasticity of the performance in response to corporate sustainability indicators, the Tobin's Q is the least sensitive. The negative coefficient of corporate sustainability on banks' financial performance is the smallest compared with ROA and ROE, which is around -0,00021 to -0,00058. This finding is corresponding to [8]. This could indicate that the investors are quite concerning the corporate sustainability of a bank.

Nonetheless, a different relationship is found in Panel D and H, which show a relationship between corporate sustainability and the Nonperforming Loans Ratio (NPL Ratio). In Panel D, models 13 and 15 demonstrated a positive impact on the dependent variable. The independent variable in models 13 and 15 are ESG score and S score, respectively. These independent variables are significant and negatively correlated. Important to remember that lower the NPL Ratio is preferable. This finding also occurs on model 29, 30, and 31, which has ESG Score*Stringency Index, E Score*Stringency Index, and S Score*Stringency Index as the independent variable. In model 29, 30 and 31, the coefficient of interaction variables is diminutive, which is -0,0000019 to -0,0000028. While in models 13 and 15, the coefficient is around -0,0002. It means that the relationship is weak and corporate sustainability not positively affecting the financial performance. Moreover, if we compared the corporate sustainability with other variables in the model, the corporate sustainability has the lowest effect.

The positive relationship is aligned with stakeholder theory [12]. Based on this theory, if a company could meet stakeholders' needs and expectations, it can increase its financial performance, reduce cost, decrease financial risk, increase the number of investments from financial markets, and improve reputation. The finding is also corresponding with [13]. However, reference [13] show a substantial result.

Even though the result is mixed, the finding strongly inclined to reject the hypothesis that corporate sustainability could boost banks' financial performance based on three reasons. First, the substantial and negative relationship is shown in all corporate sustainability in different models, which significant in 22 models. Second, the coefficient of the significant corporate sustainability indicators that improve the NPL Ratio is relatively small. Third, the other significant variable in panel D and H is only the loan-to-deposit only. The loan-to-deposit is significant and shows a negative sign. There is a likelihood that the loan-to-deposit is more influential to the NPL Ratio rather than corporate sustainability. The higher the loan, when the deposit remains unchanged, the NPL Ratio will be lessened.

A negative relationship between corporate sustainability and banks' financial performance is explained by the principal-agent theory [8] and shareholder theory [10] [14] [15]. The principal-agent theory is a conflict of interest between the owner and the person to whom control of the asset has been delegated. At the same time, shareholder theory supporters argued that a commitment to corporate sustainability puts them at a competitive disadvantage and increases shareholders' costs [14] [15]. These two theories believe that resolving social issues is the work of governments and nonprofit organizations [10].

The negative relationship between corporate sustainability and financial performance also found by previous studies, such as [4] [16] [17] [18] [19]. Resonating reference [4], ESG weakens banks' performance in developed and developing countries. The research examines 882 banks from different countries with 11 years of time span after the 2008 financial crisis. Reference [19] argue that social performance does not directly correlate with banks' financial performance because the action does not meet the requirements of the stakeholders well. This argument is similar with [19], which stated that the negative effect happens because the action is not performed correctly or there is not enough institutional support to render them more visible, thus not ensuring approval from stakeholders. Then, if a company makes an investment in ESG, they will waste their cash flow. Alternatively, a negative relationship could arise because of the impact of corporate sustainability that could not be measured in the short term. However, the investment will return in the future as the reputation of the banks is rising.

In most of the models, the ESG score has the most significant negative impact on financial performance, followed by Social Score (S Score), Environmental score (E Score), and Environmental Score (E Score). This is corresponding to the scoring mechanism of the ESG score, which combines those three categories as a single score. The highest coefficient for ESG score is in model 1, which shows -0,00706. The range of significant ESG score coefficient in all models are -0,00051 to -0,00706, which mean, ceteris paribus, one score increase in ESG score could decrease the financial performance by 0,00051 to 0,00706.

Based on the regression result, the social score has the second biggest negative impact on financial performance indicators after the ESG score. This may happen because the bank focuses on responding to the most potent stakeholders' demands or deciding to act when there is a demand for a particular activity [19]. The social score, or S score, coefficient ranges between -0,00050 to -0,04422,

that mean, ceteris paribus, one score increase will decrease financial performance around 0,00050 to 0,04422.

The governance score coefficient is between -0,0002 to -0,02376, which means, ceteris paribus, every one score increase in G score will reduce banks' financial performance by 0,0002 to 0,02376. Lastly, the E score coefficient is between -0,00019 to -0,03471, which represents, ceteris paribus, one score increase in E score will decrease banks financial performance by 0,00019 to 0,03471.

The environmental and governance issue has been all over the business since a long time ago. Therefore, tremendous pressure on the management appears to make sure compliance [19]. Thus, one reason E and G have a negative impact is that they are mandatory, and society does not see them as something special. There is also a possibility that the society where the bank operates does not become aware of environmental issues. Any investment in environmental activities will not change society's decisions [8].

This research also considers the extraordinary event, which is the Covid-19 Pandemic. The author analyzes the effect of the Covid-19 Pandemic in two ways. First, using the government stringency index as one of the control variables in the entire data set. The government stringency index provides a systematic measurement of government responses from 1 January 2020. This variable could explain more about the effect of the Covid-19 Pandemic rather than using a dummy variable because it has more value that shows detailed differences between one country to another. Second, the author develops an interaction variable which multiplies ESG score, E score, S score, and G score with the government stringency index. The interaction variable is added to the first model as an independent variable. This methodology has been used in previous research to see the effect of a crisis [19]. Thus, there are two main model of regression used in this research.

The government stringency index is used in models 1-32. The variable is significant at a 1% significance level in Panel A, B, and C, or models 1-12. This variable is also significant in Panel E (model 18-20), Panel F (model 22-24), Panel G (model 25-28), and Panel H (model 29, 30, and 31). The variable shows a negative impact on banks' financial performance. The coefficient of the variable is ranging from -0,0005 to -0,0670. In model 29, 30, and 31, the government stringency index coefficient are positive between 0,00006 to 0,00015. In model 29, 30, and 31, the dependent variable is the NPL Ratio, thus, higher ratio is not preferable. It can be safely said that this variable is substantial too. Every one score increase of the government stringency index, ceteris paribus, banks' financial performance could decrease by 0,0005 to 0,0670.

Based on the stringency index, there are 34 countries which has the government stringency index above the average. Banks in these countries could suffer more losses compared to those in less stringent countries. Some of the countries are Argentina, Oman, United States, Italy, and Indonesia. The higher score of the stringency index means that these countries have higher intensity of closure and containment policies (for example school closings and stay-at-home policies) and stronger policies towards disease surveillance (for example testing and contact tracing). Several countries which have higher score also implemented a strong containment or lockdown as the national health policies in early March, such as China, Phillippines, Malaysia, Italy, United Kingdom, etc. There also several countries that implement localised lockdown, such as Indonesia, Australia, Thailand, Brazil, Chile, etc. Countries may have observed their neighbors or the global response and reacted in concert [3]. Thus, we could see that the negative relationship reflects the effect of stringency, limiting workplace activities, close public transport, restriction on travel, etc. The limitation shocked the community's economic situation and disrupted the business process. This could lead to decreasing in the number of credit applications to banks. We could see that banks in more stringent countries experience a financial performance decline.

Panel E, F, G, and H use the second model that employ the interaction variable as the independent variable besides the ESG, E, S, and G score. All the added independent variable, which are ESG Score*Stringency Index, E Score*Stringency Index, S Score*Stringency Index, G Score*Stringency Index are significant and negatively correlated with the financial performance in Panel E (models 17, 19, and 20), and Panel F (models 21-24). The interaction variable coefficient of models 17-24 corresponds to models 1-8 in terms of the negative relationship between corporate sustainability and banks' financial performance. However, in Panel G and H, the ESG Score*Stringency Index, E Score*Stringency Index, S Score*Stringency Index is positively significant. The interaction variables coefficient for Tobin's Q and NPL Ratio, which are in Panel G and H are also similar with Panel C and D. Both panels show a positive impact of corporate sustainability to financial performance.

Based on the regression result of the second model, the interaction variable has a lower estimated coefficient than corporate sustainability. In model 17, 19, 21, and 25-27, the corporate sustainability indicators (ESG or E or S or G score) and the interaction variable are significant. The relationship of the interaction variables with the financial performance, represented by ROA and ROE, are showing an aggregate impact of reducing more banks' financial performance. Align with the stringency index, this evidence is supported with the fact of mobility limitations and communities' business disruption because of the government policies.

Interestingly, only in Tobin's Q the interaction variables are reducing the negative impact of corporate sustainability to banks' financial performance. However, the positive coefficient of interaction variables are small, so they are not as that substantial. In fact, the aggregate impact is still showing a negative impact. The positive impact could indicate that the investors are slightly more confident with banks that operates ethically in stringent country because it could generate revenue as the virus can be maintained through policies by the government and

banks' initiatives in sustainability. Finally, the author concludes that there is a robust finding that the government response to the Covid-19 is amplifying the negative effect of corporate sustainability on banks' financial performance.

In panel E (model 20), panel F (models 22-24), and panel H (model 29-32), the interaction variable is significant, while the corporate sustainability indicator (ESG, E, S, or G score) is not significant. In contrast, in panel E (model 18), panel G (model 28), the interaction variable is not significant, while the corporate sustainability indicators are significant. This mean that each variable act as an individual independent variable without a moderating effect. However, the results are still consistent with the corresponding panel data using the first model. In conclusion, we could argue that the corporate sustainability in country that is more stringent will decrease the financial performance as the aggregated effect is higher.

Based on the regression result, there is enough evidence that the research hypotheses are rejected. Most of the regression shows a negative impact of corporate sustainability on a bank's financial performance. Sustainability requires trade-offs, especially across time. Firms must choose between investing less for smaller profits sooner and investing more for greater profits later [20]. Moreover, customers are attracted to the social investments and financial transparency that characterize ethical banking [16].

In this research, there are several controls variable, which are the earning-to-asset, loan-to-deposit, total assets, the government stringency index, and GDP growth. All control variables at least significant in two panels. The government stringency index is the control variable that is significant in most models, which are 25 models.

Bank leverage represented with equity-to-asset is significant in Panel A (ROA), B (ROE), C (Tobin's Q), E (ROA), F (ROE), and G (Tobin's Q, model 25-27 only). In fact, equity-to-asset is the variable that has the most influential impact on financial performance regardless of the sustainability indicators. These findings strengthen several previous studies, such as [4] [13]. A bank with a higher equity-to-asset ratio is considered less risky and safer than a bank with a lower ratio [21]. If the bank increases its equity-to-asset ratio by one percent, ceteris paribus, the bank will generate 0,006177 to 1,0482 more financial performance.

The loan-to-deposit is also significant in Panel A (ROA), B (ROE), D (NPL Ratio), E (ROA), F (ROE), G (Tobin's Q, model 25-27 only), and H (NPL Ratio). The loan-to-deposit indicates the bank's liquidity. This control variable is significant and positively correlated with financial performance, except Tobin's Q in Panel C. This ratio could depict the bank's risk management. By giving loans, ceteris paribus, banks could generate more interest income and boost the financial performance by 0,00002 to 5,8379, as the coefficient stated in the table.

The total asset representing the bank size is significant and positively correlated with financial performance in Panel A (ROA), C (Tobin's Q), E (ROA), F (ROE), G (Tobin's Q, model 25, 27, and 28 only). Banks that have bigger size could enjoy the economies of scale, hence they have better performance [21]. If the bank has one billion more assets, they could generate 0,00002 to 0,00441 more financial performance.

During the Covid-19 Pandemic, GDP growth negatively correlates with financial performance, as portrayed in Panel C and G, which show a relationship between corporate sustainability and Tobin's Q. There is a possibility that the GDP growth is not mainly affected by the banking industry. If the GDP growth increase by one percent, ceteris paribus, the financial performance will decrease by -0,054.

To summarize the regression analysis result of Panel A-H, Table 12 below presents the relationship between corporate sustainability and banks' financial performance. The independent variable is ESG score, E score, S score, G score, ESG Score*Stringency Index, E Score*Stringency Index, S Score*Stringency Index, and G Score*Stringency Index. The control variables are equity-to-asset, loan-to-deposit, total assets, the government stringency index, and GDP growth.

TABLE XII
REGRESSION RESULT SUMMARY

Variables	Expected Relationship	Results	Additional Information
Independent Variable			
ESG	+	Mixed	Positive only in model 13
E	+	-	
S	+	Mixed	Positive only in model 15
G	+	-	
ESG Score*Stringency Index	+	Mixed	Positive only in model 25 and 29
E Score*Stringency Index	+	Mixed	Positive only in model 26 and 30
S Score*Stringency Index	+	Mixed	Positive only in model 27 and 31
G Score*Stringency Index	+	-	
Control Variables			
Equity-to-asset	+	+	
Loan-to-deposit	+	+	
Total assets	+	+	
Government stringency index	-	-	
GDP Growth	+	-	

V. CONCLUSION

The regression result shows a mixed relationship between corporate sustainability and banks' financial performance during the Covid-19 pandemic, although it tends to reject the hypothesis that corporate sustainability could improve banks' financial performance. The independent variables are robust in 25 models. From 25 models, only three models found a positive relationship with a relatively small impact. The positive relationship is only to the NPL Ratio. The positive relationship between corporate sustainability and banks' financial performance is aligned with [13]. The remaining other models show a significant and negative effect on corporate sustainability and banks' financial performance represented with ROA,

ROE, and Tobin's Q. The negative relationship is consistent with previous studies that showing there's a cost of being sustainable [4] [8] [10] [18].

The pandemic-specific variable and the interaction variables are significant and negatively correlated with financial performance. During the pandemic, the government stringency index is decreasing the banks' financial performance. This could happen because of the restrictions made by the governments. The interaction variables also significant and show a mixed evidence. The E score, G score, ESG Score*Stringency Index, S Score*Stringency Index, and G Score*Stringency Index show a robust, negatively significant impact on banks' financial performance in panel E and F. In model panels G (Tobin's Q) and H (NPL Ratio), the interaction variables show a positively significant, but very small. However, the aggregate impact of corporate sustainability in panel G (Tobin's Q) still show a negative relationship. It means that the interaction variables also amplify the negative impact of corporate sustainability indicators on banks' financial performance.

This research should not be read as a reason for the banking industry to neglect the interest of stakeholders beyond their shareholders. The negative effect could indicate that a year prior corporate sustainability could not directly impact the financial performance. Sustainability requires trade-offs, especially across time. Banks must choose between investing less for smaller profits sooner and investing more for greater profits later. However, bankers should not utilize corporate sustainability as a shortcut to generate more profit in the short-term. Other stakeholders, such as the government, organizations, schools, communities, shareholders, creditors, debtors, etc. should increase their knowledge about sustainable business, including banking. Thus, it would be a consideration of choosing and investing in a bank. Furthermore, a regulated and centralized reporting system handled by organizers like the central bank or stock exchange will be a great move to raise awareness about sustainability. A clear and mandatory sustainability reporting could also be determined by the authority to ensure transparency.

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