THE U-SHAPED EFFECT OF CSR ON FINANCIAL PERFORMANCE OF COMPANIES IN INDONESIA DURING FINANCIAL CRISIS COVID-19

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Abstract - This research studies the nonlinear relationship between Corporate Social Responsibility (CSR) and the financial success of companies listed on Indonesia Stock Exchange. By analyzing 2808 observations from quarterly panel data of 145 companies throughout 2019 to 2023, the study uses fixed effect regression model with Driscoll-Kraay method to assess how CSR impacts in nonlinearity way on Return on Asset (ROA). The result shows there's a U-shaped relationship between CSR and ROA. At first when CSR goes up, ROA goes down. But after reaching an optimal level, CSR begins to have positive impact on ROA. Factors like company size, age, growth, leverage and liquidity have consistently shown effects on financial performance indicator in this study. When the research then specifically studies on the relationship during financial crisis era (COVID-19), it shows that the nonlinear relationship between CSR and financial performance is not significant. The results provide information for managers and policymakers to take into consideration both short term and long-term impacts on financial performance when creating CSR strategies.

1.   INTRODUCTION
1.1   Background

Initially, social and environmental activities were considered a distinct external part of a company's business operations. However, awareness and demand for more socially and environmentally responsible business practices have increased worldwide, so social activities are beginning to have an impact on corporate operations (Malik et al., 2015). Increased consumer attention to social and environmental issues is a key driver. Consumers are increasingly concerned about responsible business practices as they make their purchasing decisions (Ahmadi & Mahargyani, 2024). If companies do not exceed these expectations, they risk losing sales and gaining a bad reputation. For example, boycotts are increasing against companies that exploit labor or damage the environment (Jalil et al., 2020). On the other hand, companies that conduct socially and environmentally responsible business can gain competitive advantages such as increased customer loyalty, ease in recruiting and retaining high-quality employees, and gaining entry into new markets and resources (Roszkowska, 2020). On the other

hand, investors and regulators encourage all companies to adopt sustainable business practices (Arı et al., 2023). The interaction between social activities and corporate business in Indonesia has evolved in recent years. The social dimension where social activities were only considered as donations and philanthropy no longer applies; it has now become part of the business strategy. Companies in Indonesia are required to comply with social and environmental action regulations set by the government. This is particularly relevant to companies operating in the natural resources sector. Government Regulation No. 40 of 2007 on Limited Liability Companies and Government Regulation No. 47 of 2012 on Social and Environmental Responsibility of Limited Liability Companies regulate social and environmental responsibility in Indonesia. In addition to government regulations, there is social pressure from civil society and non-governmental organizations (NGOs) on companies' business operations and their impact on communities and the environment. With issues such as resource exploitation, clashes with local communities, and environmental pollution, these issues have become of high public concern and therefore companies are trying to be more socially responsible.

Although many studies have been conducted to investigate the relationship between CSR and financial performance in Indonesia, the majority of studies still focus on the linear relationship between the two variables (Fauzi, Hasan; Idris M, 2010). However, in other countries there has been a shift in research from a linear to a nonlinear relationship which suggests that the relationship between CSR and financial performance can be nonlinear with a U-shaped or inverse U-shaped pattern (Cordeiro et al., 2021; Pu, 2023). Thus, it is necessary to conduct research on the nonlinear relationship between CSR and finance to see if the concept also affects companies in Indonesia.

Since the beginning of 2020, the COVID-19 pandemic has caused many problems for commerce in Indonesia and the world at large. The impact is not only felt in the public health sector but also shocks the economy as a whole. In a crisis situation like this, the role of CSR becomes increasingly important both as a form of corporate social responsibility and as a strategy to maintain business continuity. On the one hand, companies are asked to make a greater contribution to overcoming the impact of the pandemic, but on the other hand they also face significant financial pressures (Mahmud et al., 2021).

1.2 Literature Review and Hypothesis Development
1.2.1 Corporate Social Responsibility (CSR)

According to the World Business Council for Sustainable Development, CSR is the ongoing commitment of companies to behave ethically and contribute to economic development, while improving the quality of life of employees and their families, local communities, and society at large (Watts, P; Holme, 1999). In understanding the relationship between Corporate Social Responsibility (CSR) and corporate financial performance (CFP), it is necessary to look at the evolution of CSR itself. According to Caroll (1999), the "modern" era of CSR began in the 1950s with an emphasis on the responsibility of business to society. Over the next decade, the definition of CSR evolved to include broader considerations than just economic profit. The definition of CSR visibly began to evolve in the 1970s, where CSR was divided into four categories: economic, legal, ethical, and philanthropic (Carroll, 1999). In the 1980s, the focus shifted to empirical research on CSR, while the 1990s saw CSR become the starting point of related concepts and an integral part of a broader theoretical framework. This understanding of the evolution of CSR has significant implications for contemporary research on the nonlinear relationship between CSR and finance.

In Indonesia, the development of CSR has undergone a significant evolution since the 1990s until today. In the early stages (1990s to early 2000s), CSR practices in Indonesia were

still voluntary and more towards philanthropic activities, with the main focus on charity and community development. Entering the transition stage (2007-2012), there was a paradigm shift along with the enactment of Law No. 40/2007 on Limited Liability Companies, which requires companies engaged in natural resources to implement CSR (Sumiyati et al., 2023). The developmental stage (2012-present) is characterized by the strengthening of regulations through Government Regulation No. 47 of 2012 on Social and Environmental Responsibility of Limited Liability Companies, which further strengthens the implementation of CSR in Indonesia. This period is also characterized by increased corporate awareness of the importance of CSR and the emergence of various studies that examine the relationship between CSR and corporate financial performance.

This historical exploration shows how CSR has evolved from simply "doing good" to an integrated business strategy. This is in line with the premise of U-shaped CSR research which views CSR as a strategic investment that can influence financial performance at varying levels of intensity (Barnett & Salomon, 2018). An understanding of the evolution of CSR can help explain why the U-shaped relationship may not be apparent in certain historical periods and why it may be more relevant in contemporary business contexts. The development of CSR is becoming an integral part of business strategy where substantial and strategic CSR investments can yield significant financial benefits. This is in line with the findings of previous U-shaped research which shows that companies that have very high levels of CSR investment tend to have better financial performance (Cordeiro et al., 2021). In the early stages of CSR investment (left side of the U-curve), companies may focus on fulfilling basic economic and legal responsibilities, which may not result in significant financial benefits. However, as companies move to higher levels of CSR investment (the right side of the U-curve) they are better able to integrate CSR into their core business strategies, address more complex ethical issues, and engage in more substantial philanthropic initiatives. These higher levels of CSR investment are more likely to generate significant reputational, customer loyalty, and operational efficiency benefits that can in turn improve financial performance.

While strategic integration of CSR promises significant benefits, there are challenges in its implementation. Strategically integrating CSR often requires fundamental changes in an organization's culture and values, which can take significant time and resources. In addition, measuring and reporting the impact of integrated CSR can be more complex than traditional CSR approaches, as it involves assessing broader and longer-term outcomes. Companies must also balance short-term performance demands with CSR investments that may only yield benefits in the long term, which can create pressure from shareholders who are oriented toward short-term results.

1.2.1.1 Stakeholder Theory

Friedman (1970) put forward the controversial view that the only social responsibility of business is to increase its profits. In a free market system, corporate executives are employees of the business owners (shareholders) and have a direct responsibility to them to run the business according to the owners' wishes, which is generally to make as much money as possible while obeying the basic rules of society both embodied in law and in ethics. When business executives use corporate money for social causes, they are essentially taxing shareholders, employees and customers without a clear mandate. Supposedly if there is a need for social action, it should be done by the individuals using their own money or by the government through the proper political process.

But then Freeman (1984) came up with a theory that says that companies must consider the interests and needs of various stakeholders in their business activities. Companies are not

only responsible for shareholders, but also for customers, employees, communities and suppliers. This stakeholder theory assumes that companies must consider the impact of their business activities on stakeholders, including the impact caused by CSR. By managing CSR in a transparent, ethical and tangible way, companies are expected to improve their reputation and legitimacy in the eyes of stakeholders, which in turn can have a positive impact on the company's financial performance. Within the framework of stakeholder theory, CSR can be viewed as a strategic tool to manage relationships with various stakeholders by taking into account stakeholder interests not only morally but also can benefit the company. For example, employee-focused CSR programs can increase productivity and loyalty, while environmental initiatives can improve operational efficiency and attract environmentally conscious consumers.

1.2.1.2 Legitimacy Theory

Legitimacy theory proposed by Dowling and Pfeffer (1975), explains that organizations seek to ensure that their operations are considered legitimate and in accordance with the norms and values prevailing in society. This theory is an important foundation in understanding the motivation of companies to conduct CSR activities and their relationship with the company's financial performance. In the modern context, legitimacy theory emphasizes the importance of companies to not only meet economic expectations, but also social and environmental expectations of stakeholders. The social legitimacy gained through CSR practices can act as "insurance" for companies, protecting them from potential reputational and operational risks. This can be seen during the COVID-19 pandemic, where companies with strong CSR practices showed better resilience to market shocks and had more stable stock performance during the crisis period (Broadstock et al., 2021). In the digital and social media era, CSR disclosure has become increasingly crucial in building and maintaining corporate legitimacy. Companies that actively and transparently communicate their CSR initiatives tend to have better relationships with stakeholders and more positive public perceptions (Platonova et al., 2018). In the context of the digital economy, investment in CSR can enhance a company's innovation capabilities, which in turn has a positive impact on financial performance (Liu et al., 2024). It can be concluded that by doing CSR, companies show their activities in accordance with the norms and values prevailing in society, so that the legitimacy obtained from society is expected to have a positive impact on the company's financial performance.

1.2.2 Financial Performance

Financial performance is a description of the condition and financial achievements of a company that reflects how well the company manages and utilizes its resources (Fahmi, 2014). In assessing financial performance, one indicator that is often used is Return on Assets (ROA), which measures the company's ability to generate profits by utilizing all of its assets. ROA is calculated by dividing net profit after tax by the company's total assets (Xu, 2023). This ratio is very important because it provides an overview of the effectiveness of management in managing the company's investment, where the higher the ROA value, the better the company's ability to generate profits from its assets.

1.2.2.1 Signaling Theory

Signaling theory was proposed by Spence (Spence, 1973), where signaling is an action taken by parties who have information to communicate this information to other parties who do not have the same information. In the context of CSR and financial performance, signaling theory explains that CSR activities can serve as an effective signaling mechanism for companies

to communicate their quality, prospects, and long-term commitments to stakeholders (Pondrinal, 2021). Companies that invest in CSR activities send positive signals to the market that they have sufficient resources to make social and environmental investments, while demonstrating their commitment to sustainable development.

Previous research has found a nonlinear U-shaped relationship between CSR and Return on Asset (ROA) that can be explained through the perspective of signaling theory. Barnett and Salomon (2018) found that in the early stages of CSR investment, companies may experience a decrease in ROA due to the significant implementation costs of CSR programs. This creates a short-term negative signal to the market. However, after reaching an optimal point, CSR investments begin to provide greater benefits through improved corporate reputation, customer loyalty, and operational efficiency, which ultimately contribute to an increase in ROA (Cordeiro et al., 2021).

This U-shaped relationship indicates that the effectiveness of signaling through CSR activities requires time and consistency. Signals sent through CSR activities may not be fully captured or believed by stakeholders. However, over time and with the consistent implementation of CSR programs, these signals become more credible and effective in influencing stakeholder perceptions, which are then reflected in the company's improved financial performance.

1.2.3 The Effect of CSR on Financial Performance

In the strategic management and business ethics literature, there is much discussion about the relationship between CSR practices and corporate financial performance. There are arguments in favor of the relationship, both positive and negative. Stakeholder theory, which supports a positive relationship, explains that companies that do CSR well have the ability to improve their relationships with stakeholders, including consumers, employees, and communities. This can increase employee productivity, consumer loyalty, and company reputation, thereby improving financial performance (Mariani & Suryani, 2017). Good CSR practices can also help businesses use resources more efficiently, such as saving energy, reducing waste, and building more sustainable supply chains. This can lead to lower operating costs and increased profitability. In contrast, the argument that CSR and financial performance are negatively correlated is based on the idea that investment in CSR programs may increase a company's operating costs, especially in the short term, which may result in a decrease in the company's profitability and financial performance (Brammer & Millington, 2008). In addition, certain businesses may be more interested in achieving short-term economic and environmental goals than long-term social and environmental goals. Over the past few decades, the relationship between CSR and finance has been the subject of extensive research, with mixed and not always consistent results, leading to the idea of nonlinearity research, where it is seen that the costs and benefits of CSR are not linear, where at lower levels of CSR costs may outweigh benefits, but at higher levels of CSR, benefits outweigh costs (Barnett & Salomon, 2018). Furthermore, according to stakeholder and legitimacy theory, a certain level of CSR may be required by companies to gain legitimacy from stakeholders and society which can then have a positive impact on financial performance (Cordeiro et al., 2021). Then too low or too high a level of CSR may be perceived as not credible by society (Brammer & Millington, 2008). This suggests that a linear relationship may not be sufficient to explain the complex relationship between CSR and corporate financial performance.

Given the limitations and complex results of linear research, researchers began to conduct nonlinear research (Barnett & Salomon, 2018; Brammer & Millington, 2008). They argue that increasing public relations (CSR) services at low CSR levels can help improve

financial performance as it enhances the reputation and legitimacy of the firm. However, at higher CSR levels, further increases in CSR services may result in a decline in financial performance as the costs involved outweigh the benefits gained. The Indian study (Cordeiro et al., 2021) supports this opinion by finding a curvilinear U-shaped relationship between CSR and corporate finance; the logic being that firms must make greater investments to build sufficient capacity to influence their stakeholders, and greater stakeholder influence capacity (SIC) will result in greater financial returns. In contrast, research in China found that the relationship between customer service (CSR) and financial performance is inverted U-shaped, where lower levels of customer service indicate a positive relationship between customer service and corporate financial performance (Pu, 2023). This relationship becomes negative when it reaches its peak. As a result, nonlinear research is essential to identify potentially more complex and nonlinear relationships between CSR and financial performance. This method can help decision-makers better understand how different levels of CSR can impact firm performance. It can also provide a better understanding of how to manage effective CSR practices. Management can make better decisions on how to allocate resources to CSR initiatives by knowing the shape of the curvilinear relationship. This information helps to balance social and financial objectives and avoid excessive CSR investments that may harm the firm (Pu, 2023). In addition, results about the optimal point of CSR can help companies assess and change their CSR strategies to be more efficient. Knowing the nonlinear relationship between CSR and financial performance helps management make decisions when developing a business. By understanding the dynamics of this relationship, management can create a CSR strategy that matches the company's goal to thrive in the long run. For example, companies can concentrate on CSR initiatives that promote innovation, operational efficiency, or market expansion; all of these can improve financial performance (Bocquet et al., 2017). Knowing the curvilinear relationship also allows management to anticipate and manage risks associated with excessive CSR investment to ensure business sustainability and optimize resource allocation.

In Indonesia, the idea of CSR is still relatively new and its development has not been very long when compared to other developed countries, so research on CSR in Indonesia is still lacking and only a few have addressed more complicated issues including the nonlinear relationship between CSR and financial performance. In addition, sufficiently in-depth data on companies' CSR policies and their financial performance indicators are needed to investigate the nonlinear relationship between CSR and financial performance. But many businesses in Indonesia have not recorded CSR activities clearly and methodically, which makes data acquisition a challenge for researchers. Still varied and inconsistent is the level of CSR disclosure among Indonesian firms. Compared to other countries, the level of CSR disclosure in Indonesia is still quite low according to several studies (Ahyani & Puspitasari, 2019). As a fairly broad spectrum of CSR practices is required to uncover complex patterns, the lack of variation in CSR disclosure levels may limit researchers' capacity to detect nonlinear relationships. One of the challenges for researchers to investigate the possible nonlinear relationship between CSR and financial performance is this data limitation.

Most research on the relationship between CSR and financial performance conducted in Indonesia still focuses on testing linear relationships, both positive (Ahyani & Puspitasari, 2019; Pondrinal, 2021) and negative (Dewi & Muslim, 2022). No studies have specifically investigated nonlinear forms of relationships as few researchers have considered the possibility of such relationships. This could be a result of the limited analytical techniques available to Indonesian researchers. In addition, in the Indonesian context, there may be other research subjects that are considered more important and urgent to study, such as the implementation and impact of CSR in general or the elements that influence companies' CSR implementation.

As a result, research on the nonlinear relationship between CSR and financial performance has not received major attention from researchers in Indonesia.

Despite these difficulties, nonlinear research on the relationship between CSR and financial performance in Indonesia is essential. Understanding the dynamics of this complex relationship will help Indonesian businesses to maximize social and financial returns by optimizing their CSR policies.

Thus, in this nonlinear study, the following hypothesis is applied to find the relationship between CSR and financial performance:

Hypothesis I: *The relationship between CSR and financial performance is nonlinear U-shaped.*

1.2.4 The Effect of CSR on Financial Performance during the COVID-19 Period

The relationship between CSR and corporate financial performance during the COVID-19 crisis has been the subject of in-depth and complex analysis. This global pandemic has drastically changed the business landscape. Companies have had to rethink their place in society and how CSR activities affect their financial success. Initially, observers anticipated a simple linear relationship between financial performance during the crisis and CSR investments (Albuquerque et al., 2020; Ding et al., 2021). Their hypothesis centered on the idea that businesses with a strong CSR reputation would be better able to retain customer loyalty, maintain employee morale, and attract investors amid economic uncertainty. Companies with high CSR scores experienced smaller stock price declines during the onset of the COVID-19 pandemic compared to those with low CSR scores (Bae et al., 2021). It was also observed that companies with strong environmental and social policies showed higher stock returns, lower return volatility, and higher operating cash flows during the COVID-19 crisis (Albuquerque et al., 2020). This confirms that a commitment to CSR can provide tangible benefits to companies, even in challenging economic conditions.

However, with time and data collected, it has become clear that the relationship between CSR and financial performance during the pandemic is much more complex and often non-linear. During the COVID-19 pandemic, companies are facing significant financial pressures, but are also required to respond to urgent social needs. In this situation, initial investments in CSR may not immediately yield significant financial benefits, and may even lead to a short-term decline in financial performance due to limited resource allocation. However, over time and reaching a certain level of CSR investment, companies begin to see benefits that exceed the initial costs, resulting in improved financial performance. Companies that are able to quickly adapt and respond to pressing social needs through their CSR initiatives are likely to see a positive impact on their reputation and financial performance (Donthu Naveen, 2020). This suggests a "turning point" where CSR investments begin to yield greater benefits, creating a U-shaped curve in the relationship between CSR and financial performance. Companies that take a long-term approach to CSR, while possibly facing higher short-term costs, are likely to see greater reputational and financial benefits over time, corroborating the idea of a U-shaped relationship (He & Harris, 2020). This idea is supported by research (Yadav & Srivastava, 2023) which found a U-shaped relationship between CSR and corporate financial performance and the relationship strengthened during the pandemic. They explained that this U-shaped relationship arises due to the trade-off between agency costs and organizational legitimacy. At low levels of CSR, an increase in CSR investment may initially increase agency costs, which negatively impacts financial performance. However, as CSR investment increases, firms begin to benefit from greater organizational legitimacy, which ultimately improves financial performance. During the COVID-19 crisis, this U-shaped relationship is considered to have become stronger as the pandemic increased the importance of organizational legitimacy, as

stakeholders increasingly pay attention to the role of companies in addressing social and health crises. Companies that demonstrate a strong commitment to CSR are likely to receive greater support from customers, employees and investors during these difficult times. Furthermore, companies with strong CSR practices tend to be better prepared for external shocks and can adapt more quickly to changing market conditions. This reinforces the positive effects of CSR on financial performance, especially at higher levels of CSR investment. Then, during the pandemic, firms face greater pressure to manage their resources efficiently. This means that the agency costs associated with CSR investment become more significant at lower levels of investment. However, once firms reach an optimal level of CSR investment, the benefits of organizational legitimacy and business resilience begin to outweigh the agency costs, resulting in a more rapid improvement in financial performance. In this case the monitoring role by the board of directors and institutional shareholders becomes more important during the crisis.

During the crisis, especially the COVID-19 pandemic, the nonlinear relationship between CSR and corporate financial performance in Indonesia is likely to follow a U-shaped pattern, similar to global findings, but with distinctive characteristics influenced by local factors. In the early stages of CSR investment, Indonesian firms experience a short-term decline in financial performance, especially amid economic uncertainty due to the pandemic. However, over time, as CSR investments reach a certain level, companies begin to see benefits that outweigh the initial costs. This turning point may happen faster in Indonesia compared to developed countries, given the importance of social and community relations in the local business culture.

After passing the turning point, Indonesian companies with high CSR investment tend to experience significant improvement in financial performance. This can be attributed to several factors. First, in the Indonesian context where social relationships are highly valued, companies that show social concern during the crisis tend to gain greater customer loyalty and stakeholder support. Indonesian companies involved in COVID-19 relief experienced improved brand image and customer loyalty. Second, companies with strong CSR practices may have better access to capital and government support during times of crisis, which is particularly relevant in Indonesia where relationships with the government and local communities can affect business continuity. Third, the COVID-19 crisis has pushed many Indonesian firms to innovate their business models, so Indonesian firms that integrate CSR into their core business strategies are better able to survive and adapt during the pandemic. For this reason, this research also raises the next hypothesis:

Hypothesis II: *The effect of CSR on Financial Performance is U-shaped strengthened during the COVID-19 crisis.*

2. RESEARCH METHODOLOGY
2.1 Data

This study uses all companies listed on the Indonesia Stock Exchange (IDX) as a population. Then using a sampling technique with the following criteria:

    a. Companies listed on the Indonesia Stock Exchange for the period 2019-2023
    b. Has CSR performance disclosure

So based on these criteria, the following are the criteria for the number of companies data obtained from the S&P Global Market Intelligence or Capital IQ website.

Table 1 Sample Size Calculation

Criteria	Total
Number of companies listed on the IDX	895 companies

Number of companies that have disclosed CSR performance for 5 years in the period 2019-2023	145 companies
Number of observations per quarter in the period 2019-2023	2808 observations

This study examines the effect of CSR on the company's financial performance using a nonlinear U-shaped approach. The population in this study are all companies listed on the Indonesia Stock Exchange (IDX) in the period 2019 - 2023, with the number of samples used in this study being quarterly data from 145 companies. This is an unbalanced study where not all companies have complete CSR disclosure data for 5 years, so the sample studied in this study is 2808 observation data.

2.2 Empirical Model

To examine the relationship between CSR and financial performance during the Covid-19 crisis, the study uses ROA as the dependent variable, CSR as the independent variable, CSR squared to capture *nonlinear* effects, and several other control variables, with the empirical model used as follows:

$$\text{Financial Performance}_{i,t} = \beta_0 + \beta_1 CSR_{i,t} + \beta_2 CSR_{i,t} + \beta_3 CSR_{i,t} * COV_t + \beta_4 CSR^2_{i,t} * COV_t + \beta_5 SIZE_{i,t} + \beta_6 LEV_{i,t} + \beta_7 LIQ_{i,t} + \beta_8 GRO_{i,t} + \beta_9 AGE_{i,t} + \varepsilon$$

Description:

Financial Performance	= ROA
β_0	= Constant
$\beta_1, \beta_2, \beta_n$	= Independent Variable Coefficient
CSR	= CSR score
CSR^2	= Square of CSR score
COV	= Dummy variable of COVID-19 crisis period
SIZE	= Company size
LEV	= Debt to asset ratio
LIQ	= Current ratio
GRO	= Revenue growth percentage
AGE	= Logarithm of company age
ε	= Error term

2.3 Operational Variables
2.3.1 Dependent Variable

Financial performance measurement is carried out using the Return on Asset (ROA) ratio. The higher the ROA, the better the company's performance. In the context of the relationship between CSR and financial performance, ROA is used to assess whether investment in CSR initiatives contributes to increased corporate profitability. Company performance is measured by ROA using the formula:

$$ROA = \frac{\text{Net Income}}{\text{Total Assets}}$$

2.3.2 Independent Variables

The independent variables in this study are Corporate Social Responsibility (CSR) disclosure data and the Crisis Period. The explanation of the measurement of independent variables is as follows:

1. CSR Score

CSR disclosure data was obtained from each company's Sustainability Report, which was released annually for the last 5 years. CSR score data is measured using the CSR disclosure index calculated based on CSR disclosure items in the company's annual sustainability report. This index refers to the CSR reporting guidelines according to the Global Reporting Initiative (GRI). By using a dichotomous approach, each disclosed item is given the number 1 and if there is no disclosure is given the number 0 (Ahyani & Puspitasari, 2019) . The score value which is the value obtained from the total disclosure divided by the total disclosure reference with the following formula:

$$\text{CSR}_j = \frac{\sum \text{X}ij}{\text{N}j} \text{x } 100$$

Description:

CSR$_j$: CSR disclosure score of company j

N$_j$: Number of GRI disclosure items

Xij : Score 1 if the item is disclosed; score 0 if the item is not. disclosed

2. Financial Crisis

   Financial crisis in this study uses *dummy data*, where code 1 is given in 2020-2022 when the financial crisis due to the COVID-19 pandemic occurred, and code 0 is given in 2019 and 2023.

2.3.3 Control Variable

In this study, the control variables used are as follows:

Table 2. Operationalization of Control Variables

Code	Definition	Measurement	Source
LEV	Ratio of company debt to total assets	Total liabilities at year-end divided by total assets at year-end	(Xu, 2023)
AGE	Age of the company in operation	ln (current year - year of establishment) + 1	(Xu, 2023)
LIQ	Ratio of current assets to current debt	Quick ratio ((current assets - inventory)/ current liabilities)	(Xu, 2023)
GRO	Change in Revenue	Total Revenues, 1 Year Growth	(Yadav & Srivastava, 2023)
SIZE	Company size calculated from the company's total assets	Annual total assets natural logarithm	(Xu, 2023)

2.4 Data Analysis Technique

This study employs panel data analysis technique which combine cross-section and time series, with determination to choose the perfect model through a series of statistical test, including Chow Test to choose between Common Effect Model and Fixed Effect Model, and Hausman Test to choose between Fixed Effect Model and Random Effect Model, where decision criteria are based on p-values with a 0.05 significance level (Brooks, 2019). Furthermore, the model will have to pass classical assumption tests where for this study the

model is tested for heteroskedasticity and autocorrelation. And then for nonlinearity impact, U-test was conducted, where U-shaped relationship is confirmed if coefficient β_1 is negative and β_2 is positive (Lind & Mehlum, 2010) with the extreme point falling within the observed CSR value range.

3. RESULT AND DISCUSSION
3.1 Descriptive Analysis

The purpose of descriptive statistical analysis is to determine the mean, maximum, minimum, and standard deviation of the data for each variable. In addition, descriptive statistical analysis studies data collection and presentation techniques so that it is easier to understand.

Table 3. Descriptive Analysis Results

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	2808	3.804	6.692	-19.168	27.238
CSR	2808	23.16	3.892	12.088	35.165
SIZE	2808	12.19	1.632	2.14	17.181
GRO	2808	4.498	34.778	-88.171	134.248
LEV	2808	51.573	41.061	6.978	307.255
LIQ	2808	2.614	2.895	.087	19.116
AGE	2808	4.767	.403	2.792	6.333

Table 3 shows the descriptive statistical results for all variables after winsorizing 1% on variables that have extreme values. Winsorizing on ROA, GRO, LEV and LIQ is done because these variables are financial ratios that can have extreme values due to fluctuations in profits or losses. While other variables are not winsorized because they are considered not to have extreme values.

Based on the descriptive statistics of the 2,808 sample observations, we can see some findings regarding the company's performance during 2019-2023. In terms of profitability, the company's average ROA reached 3.804% with a wide range between -19.168% to 27.238%, reflecting the diversity of results that is the impact of the COVID-19 pandemic crisis on the company's financial performance.

In terms of corporate social responsibility, the CSR score has an average of 23.16 with a standard deviation of 3.892 which ranges from 12.088 to 35.165. Firm size (SIZE), measured in natural logarithms, shows an average of 12.19, reflecting the variety of firm sizes in the sample. Firm growth (GRO) shows interesting dynamics with an average growth of 4.498% and significant variation ranging from -88.171% to 164.249%, indicating a diverse response of firms to the crisis situation. The financial structure of the companies, reflected by the leverage ratio (LEV), shows an average percentage of 51%, with a wide variation between 7 and 307%, indicating the various funding strategies used by these companies. The liquidity level of the firms (LIQ), has an average of 2 times the amount of current assets held with variations ranging from 0 to 19 times, reflecting the different abilities of the firms to manage their assets efficiently and effectively. When looking at company age (AGE), the natural logarithm of average age is 5 years with a range from 3 to 6 years, indicating variations in the level of business maturity within the data sample.

3.2 The Effect of CSR on Financial Performance

From the results of the model selection test for panel data regression, the fixed effect model was selected as the appropriate model as presented in table 4 and table 5.

Table 4. Chow Test Result

Test	Model 1	Model 2
F test	51.514	9.667
Prob > F	0.0000	0.0000
Conclusion	FE Model	FE Model

Table 5. Hausman Test Result

Test	Model 1	Model 2
$Chi^2(6)$	14.99	19.60
Prob > chi^2	0.0204	0.0065
Conclusion	FE Model	FE Model

However, the classical assumption test found heteroscedasticity (table 6) and autocorrelation (table 7) in the data, so the Driscoll-Kraay method was chosen to test the nonlinear U-shaped relationship between CSR and financial performance. This method is specifically designed to overcome heteroscedasticity and autocorrelation problems in panel data (Driscoll & Kraay, 1998).

Tabel 6. Heteroskedasticity Test Result

Test	Model 1	Model 2
$Chi^2(145)$	55667	1.2e+06
Prob > chi^2	0.0000	0.0000
Conclusion	Heteroskedasticity indicated	Heteroskedasticity indicated

Tabel 7. Autocorrelation Test Result

Test	Model 1	Model 2
F test	9.109	0.050
Prob > F	0.0030	0.8236
Conclusion	Autocorrelation indicated	No autocorrelation indicated

Empirical results using the Driscoll-Kraay method show a significant U-shaped nonlinear relationship between CSR and ROA. Table 3.7 shows that the coefficient of CSR has a negative value of -0.79505 and the coefficient of CSR squared has a positive value of 0.01659, and both are significant at the 1% level. These findings reveal that in the early stages, investment in CSR activities may lead to a decrease in firm profitability as reflected by a decrease in ROA. However, after reaching a certain optimal level, the subsequent increase in CSR activities actually contributes positively to the increase in ROA. This result supports and accepts Hypothesis I, which examines the shape of the relationship between CSR and financial performance as a U-shaped nonlinear relationship. This result is also in line with previous research (Barnett & Salomon, 2018; Cordeiro et al., 2021). This suggests that CSR investments require an "incubation" period before they can generate financial benefits for the company. When companies are just starting to invest in CSR programs, there is a decline in ROA due to the need for significant resources to effectively manage these programs and build strong relationships with relevant stakeholders. However, after reaching an optimal point of around 23-24%, CSR investments begin to have a positive impact on the company's ROA as the benefits of good stakeholder relations are seen. Operational efficiency can be improved in a number of ways such as increasing employee loyalty, strengthening relationships with suppliers, providing greater support to local communities and reducing operational risks.

3.3 The Effect of CSR on Financial Performance during the COVID-19 Crisis

When the analysis is extended to consider the COVID-19 pandemic crisis period (Model 3), the U-shaped relationship between CSR and ROA still shows strong consistency with CSR coefficient -0.6643 and CSR squared 0.0149, both of which remain significant at the 1% level (Table 3.7). However, the interaction with COVID-19 dummy variables (COV and COV2) does not show statistical significance. This result does not support previous research (Yadav & Srivastava, 2023) but indicates that the strategic benefits of CSR investment in Indonesia are more long-term and relatively resilient to macroeconomic shocks, but have no effect in times of crisis. This result is also inconsistent and rejects Hypothesis II which tests that the nonlinear U-shaped relationship between CSR and financial performance strengthens during the COVID-19 crisis.

In terms of relevant control variables, there are findings that deserve special attention. Stable firm growth (GRO) shows a significant positive impact at the 1% level on both profitability metrics of ROA and ROE, suggesting the importance of firm growth for firm financial performance. Leverage (LEV) on the other hand has a different impact, showing a significant negative impact on ROA but a significant positive impact on ROE at the 10% level, reflecting the trade-off between the use of debt and various aspects of overall financial performance. The level of liquidity affects ROA negatively at the 5% significance level, but has no significant impact on ROE. This suggests that maintaining excessively high liquidity may reduce efficiency in asset utilization.

The quality of model interpretation can be seen from the difference in R-squared values between ROA (between 12%-13%) and ROE (2.48%-2.51%). The higher value in the ROA model indicates that the variables used are more effective in explaining variations in ROA than ROE. All models show strong overall significance with Prob > F = 0.000, confirming that the independent variables jointly affect the company's financial performance significantly.

3.4 U-shaped Test

To obtain more accurate results, a U-shaped test was conducted in this study. The results of the U-shaped test in Table 3.6 show that in Model 1 to test the U-shaped relationship of CSR on ROA, a highly statistically significant U-shaped relationship was found, with an extreme point at the CSR level of 23.96% with a p-value of 0.00186.

Table 8. U-shaped Test Results

Model	(1)	(3)	
	ROA	ROA	COV - COV2
Extreme point	23.9600	23.4746	-23.5115
t-value	3.3000	2.6400	
P>t	0.0019	0.0080	

Then a more specific analysis was carried out by taking into account the impact of the COVID-19 crisis period in Model 3, the U-shaped relationship between CSR and ROA remained consistent and significant. The extreme point is at the CSR level of 23.47% with a p-value of 0.00801, showing similar results to Model 1. This suggests that the relationship pattern between CSR and ROA remains stable even during the crisis. However, the dummy variables of CSR score during the crisis period, namely the COV and COV squared variables, show no significant effect. This reflects that the fundamental relationship between CSR and ROA is relatively resistant to external shocks such as the COVID-19 pandemic crisis.

Overall, the results of this study are consistent with stakeholder theory (Freeman, 1984) which emphasizes the importance of maintaining relationships with related parties other than shareholders. The relationship between CSR and ROA suggests that investing in interactions with related parties provides tangible and measurable operational benefits.

3.5   Robustness Test

For the robustness test, a relationship study was conducted with ROE as an alternative financial performance measurement. Evaluation of ROE yielded different findings. For Model 2 in Table 3.7, there is no statistically significant relationship between CSR and ROE, indicating that the pattern is not U-shaped as expected from the coefficient values of CSR (0.81004) and CSR squared (-0.01211). The difference in results between ROA and ROE could possibly be due to the level of leverage, where companies in Indonesia generally have higher levels of debt than developed countries (Hasibuan et al., 2024). This affects the calculation of ROE through the financial leverage effect, making ROE more responsive to changes in capital structure compared to ROA. This provides important insights into how CSR benefits can be interpreted into firm value in more detail. ROE, which is more oriented towards shareholder interests, is influenced by various complex factors such as capital structure and so on, so the benefits of CSR implementation are not always clearly reflected in metrics that prioritize shareholder interests.

Model 4 in table 3.7, which examines the relationship between CSR and ROE during the COVID-19 period, shows a U-shaped pattern with a COV coefficient of -0.21353 and a squared COV of 0.00802. With a p-value of 0.0659, it shows that although the p-value is close to significance, it is still greater than 0.05 so the conclusion still shows no significance.

Table 9. Hypothesis Test Results with Driscoll-Kraay Method

	(1)	(2)	(3)	(4)
	ROA	ROE	ROA	ROE
CSR	-.79505***	.81004	-.69943***	.90541
	(.22108)	(1.48697)	(.23603)	(1.51559)
CSR2	.01659***	-.01211	.0149***	-.0162
	(.0043)	(.0317)	(.0046)	(.03182)
SIZE	-.23458	-4.56743	-.22207	-4.65714
	(.77476)	(5.24983)	(.86467)	(5.28193)
GRO	.04171***	.10679***	.04322***	.1078***
	(.0056)	(.0203)	(.00532)	(.01969)

	(1)	(2)	(3)	(4)
LEV	-.02744***	.1091*	-.02616***	.10817*
	(.0079)	(.06109)	(.00804)	(.06042)
LIQ	-.08992**	-.38004	-.0945**	-.37171
	(.03697)	(.32188)	(.0374)	(.31706)
AGE	-2.75671	7.52832	-2.86823*	8.15956
	(3.50026)	(13.27115)	(1.65541)	(12.96351)
COV			-.02083	-.21353
			(.03589)	(.13556)
COV2			-.00044	.00802
			(.00125)	(.00492)
_cons	30.59295	9.19028	30.07066**	7.66305
	(19.67686)	(71.61257)	(12.82556)	(64.18095)
Observations	2808	2808	2808	2808
Prob > F	0.0000	0.0000	0.0000	0.0000
Pseudo R^2	0.1194	0.0248	0.1272	0.0251
Standard errors are in parentheses				
*** p<.01, ** p<.05, * p<.1				

4. CONCLUSION

Based on the results of the research, the following are the conclusions obtained:

1. There is an effect of CSR on financial performance, especially the relationship between CSR and ROA and the shape of the relationship is nonlinear U-shaped, which indicates that in the early stages of increasing CSR activities can reduce ROA, but after passing the optimal point, increasing CSR will increase ROA. However, the nonlinear relationship between CSR and ROE was found to be insignificant.

2. The COVID-19 crisis period does not have a significant effect on the nonlinear relationship between CSR and financial performance, which means that the relationship between CSR and finance remains consistent despite macroeconomic shocks.

4.1 Managerial Implications

CSR and financial performance have been shown to have a nonlinear U-shaped relationship. Therefore, initial investment in CSR activities may not result in an immediate increase in ROA, but once past the optimal point, the benefits to financial performance become clear. Managers should be prepared to survive the initial phase when ROA is likely to fall. Furthermore, the difference in results between ROA and ROE suggests that managers should not rely solely on one performance measure when evaluating the impact of CSR activities on corporate finance. Furthermore, keeping in mind the complexity of the relationship between CSR and financial performance, managers must formulate effective communication strategies to explain the long-term value of CSR investments to shareholders and other interested parties, especially when short-term negative impacts occur. In addition, managers should also be able to manage internal and external expectations regarding the results of CSR activities so that it is recognized that the benefits of CSR activities are not immediately visible financially but can actually help in long-term sustainability.

4.2 Implications for Investors

From the research findings that show a U-shaped pattern between CSR and financial performance, especially on ROA, investors need to be aware that investing in CSR programs requires a long-term view. The finding that CSR does not have a significant nonlinear relationship with ROE suggests that investors need to pay more attention to the efficient use of

company assets rather than return on equity when looking at the impact of CSR programs. For this reason, investors need to conduct a more in-depth evaluation of the implementation of the company's CSR program by considering its quality and sustainability, not just looking at the amount of investment spent, and designing a diverse investment portfolio by considering the different stages of CSR implementation in each company.

5. LIMITATION AND RECOMMENDATION

Future research should consider several limitations that exist in this study. The first is that the research period using quarterly data from 2019 to 2023 may not be long enough to fully illustrate the long-term impact of CSR implementation on the financial performance of companies in Indonesia. Quarterly data can also be affected by seasonal fluctuations that can affect the results of the study. Furthermore, the sample size is limited due to the limited number of companies that have CSR scores, which may not fully reflect the population of companies in Indonesia. Furthermore, the proxy measurement of CSR scores using CSR disclosure data may not be able to capture CSR performance thoroughly, and the use of ROA and ROE as an assessment of financial performance may not cover all aspects of company performance.

Furthermore, the relatively low R-squared value indicates that the research model is only able to explain about 12-13% of the variation in financial performance (ROA), while the remaining 87-88% is explained by other factors outside the model. This suggests that although there is a significant U-shaped relationship between CSR and ROA, there are still many other important variables affecting corporate financial performance that are not included in this study. This limitation also underscores the complexity of the relationship between CSR and financial performance, where factors such as macroeconomic conditions, industry characteristics, management strategies, capital structure, firm size and various other variables may have a greater influence on financial performance.

Based on these limitations, there are several recommendations for future research. Future research can extend the observation period to gain a better understanding of the relationship between CSR and firm performance, as well as expand the sample by involving more companies using different CSR score proxy approaches. Analysis by industry sector can also be conducted to understand the variation of CSR effect between sectors. Also, future research may consider more comprehensive control variables such as macroeconomic factors and industry-specific variables that may affect financial performance, which may result in research with higher R-squared values.

Regarding the COVID-19 crisis, future research can conduct a deeper and more comprehensive comparative analysis between the pre- and post-pandemic periods, taking into account industry-specific aspects and identifying changes in the strategy of companies in responding to the crisis. External matters such as government policies also need to be considered.

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