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Social responsibility and firm value: The moderating role of firm size

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Abstract: *Social responsibility (SR) is a way for companies to fulfill their commitments to the public. If the companies have a positive public perception, investors will be more interested in purchasing stocks in the capital market, increasing the price. Therefore, social responsibility is expected to improve firm value, as measured by Tobin's Q, and this study aims to prove the effect of SR on firm value moderated by its size and controlled by leverage and intensity of research and development. The research samples consist of 65 non-financial companies listed on the Indonesia Stock Exchange from 2019 to 2023 and are taken utilizing a purposive sampling technique. Acting as the data analysis method is the panel data regression model. The regression coefficient testing result displays that the interaction between SR and size positively influences company value. As the control variable, leverage negatively affects this value; however, research and development intensity has no influence. This research implies that SR is an effective strategy for improving the firm's value as its size elevates by managing sustainable relationships with stakeholders amid rampant environmental issues.*

Keywords: *company value; firm size; leverage; research and development intensity; social responsibility; Tobin's Q*

Tanggung jawab sosial dan kinerja perusahaan: Peran moderasi dari ukuran perusahaan

Abstrak: *Tanggung jawab sosial (TJS) merupakan cara perusahaan memenuhi komitmen terhadap masyarakat. Jika perusahaan memiliki persepsi masyarakat yang positif, maka investor akan lebih tertarik untuk membeli saham di pasar modal sehingga menaikkan harganya. Oleh karena itu, TJS*

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diharapkan dapat meningkatkan nilai perusahaan yang diukur dengan Tobin's Q, dan penelitian ini bertujuan untuk membuktikan pengaruh TJS terhadap nilai tersebut dengan menggunakan ukuran sebagai pemoderasinya dengan leverage serta intensitas penelitian dan pengembangan sebagai variabel kendalinya. Sampel penelitian terdiri dari 65 perusahaan non-keuangan yang terdaftar di Bursa Efek Indonesia pada tahun 2019 sampai dengan tahun 2023 yang diambil oleh teknik sampel bertujuan. Bertindak sebagai metode analisis data adalah model regresi data panel. Berdasarkan hasil pengujian koefisien regresi, efek interaksi tanggung jawab sosial dengan ukuran perusahaan berpengaruh positif terhadap nilai perusahaan Sebagai variabel kendali, leverage berpengaruh negatif terhadap nilai perusahaan; namun intensitas penelitian dan pengembangan tidak memengaruhinya. Hal ini mengindikasikan bahwa TJS merupakan strategi yang efektif untuk meningkatkan nilai perusahaan seiring dengan ukurannya yang semakin besar dengan mengelola hubungan berkelanjutan dengan pemangku kepentingan di tengah maraknya permasalahan lingkungan.

Kata kunci: *intensitas penelitian & pengembangan; leverage; nilai perusahaan; tanggung jawab sosial; Tobin's Q; ukuran perusahaan*

INTRODUCTION

The general motive for the firms to exist is profits (Barbuta-Misu et al., 2019). Unfortunately, they unintentionally damage the environment by deforestation. Therefore, floods and landslides happen (Al Fikri, 2022). In addition, they may dispose of untreated waste containing toxic contaminants, which causes soil pollution, reducing the land fertility and biological creatures inside, and harming the health of the humans consuming the related crops (Senthilkumar & Kumar, 2020). In Indonesia, the number of villages or sub-districts in 38 provinces with this pollution increased from 1,301 in 2014 to 2,200 in 2018. Fortunately, this number diminished to 1,499 in 2021. Among these provinces, West Java, East Java, and West Java were the three provinces with the most substantial areas of this pollution (Badan Pusat Statistik, 2022) (see Table 1).

Table 1. The number of villages or sub-districts of the provinces based on the highest pollution in Indonesia for the years 2014, 2018, and 2021

The pollution type	The province	Year		
		2021	2018	2014
Soil pollution	Central Java	224	380	183
	East Java	154	184	104
	West Java	129	144	118
	Indonesia	1,499	2,200	1,301
Water pollution	Central Java	1,310	1,900	932
	West Java	1,217	1,890	1,131
	East Java	1,152	1,643	759
	Indonesia	10,683	16,847	8,786
Air pollution	Central Java	781	1,336	1,123
	East Java	777	1,174	1,589
	West Java	556	869	833
	Indonesia	5,644	8,882	11,998

Source: Secondary data from Central Agency of Statistics (2022)

Besides soil, untreated waste disposal can contaminate water. Polluted water can harm aquatic flora and fauna (Senthilkumar & Kumar, 2020). The pollutants can be organic (for example, hydrogen, Sulphur, carbon, and nitrogen) and non-organic (for example, heavy metals, ammonium nitrate, and nitrite). Indirectly, if people consume fish from the sea contaminated by one of these substances, their health will be harmfully affected. At worst, cancer appears (Manalo & Hemavathy, 2023). In Indonesia, the number of villages or sub-districts in 38 provinces affected by this pollution increased from 8,786 in 2014 to 16,847 in 2018, and this number cut to 10,683 in 2021, as Table 1 exhibits. Among these

provinces, Central Java, West Java, and East Java were the three provinces with the most momentous areas of this pollution (Badan Pusat Statistik, 2022).

Additionally, factory smoke containing methane (CH4), oxides of nitrogen (NO), and carbon dioxide (CO2) from manufacturing companies pollute the air. The emission of some gases leads to acid rain, smog, and respiratory disorders among humans (Senthilkumar & Kumar, 2020). In Indonesia, the number of villages or sub-districts in 38 provinces affected by this pollution decreased from 11,998 in 2014 to 8,882 in 2018, and this number declined to 5,644 in 2021, as Table 1 displays. Among these provinces, Central Java, East Java, and West Java became the three provinces with the most significant areas of this pollution (Badan Pusat Statistik, 2022).

Regionally, Indonesia had the worst air pollution among Southeast Asian countries from 2019 to 2022 (see Figure 1). KOMPAS Research and Development Team reported that the worst quality in Indonesia in 2022 was 30.4 µgram/m3 daily. This value is six times higher than the ideal level of the World Health Organization. Moreover, Laos, Vietnam, Myanmar, Thailand, Malaysia, the Philippines, Singapore, and Cambodia took the second to last places, with a level of 27.6 µgram/m3, 27.2 µgram/m3, 24.3 µgram/m3, 18.1 µgram/m3, 17.7 µgram/m3, 14.9 µgram/m3, 13.3 µgram/m3, and 8.3 µgram/m3, respectively.

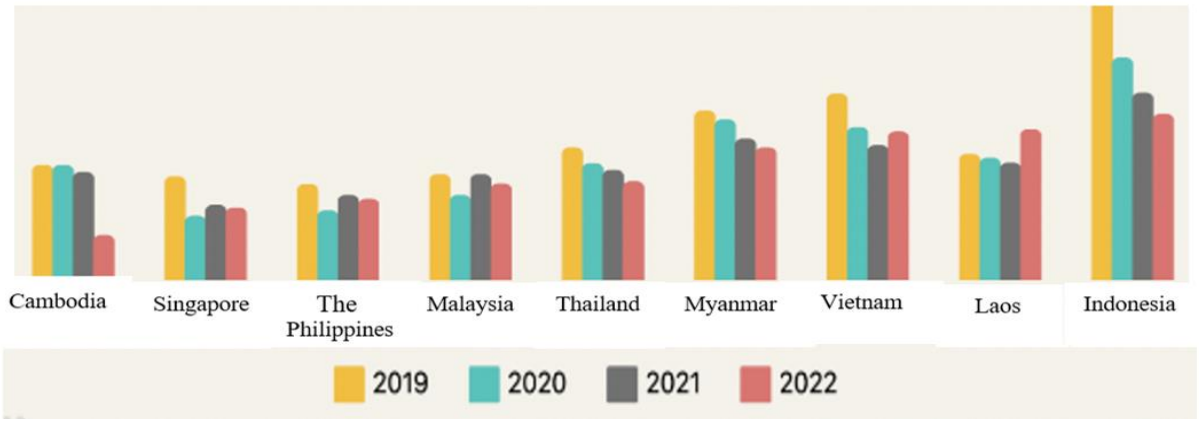

Figure 1. Air pollution in Southeast Asian countries from 2019 to 2022
Source: Research and development of Kompas (2023)

Considering the negative effect of these pollutants, public awareness of the healthy environment appears and motivates the firm to have social responsibility (SR), increasing their value in the capital market. Although numerous related investigations exist, this study is still fascinating because of two crucial antecedent factors. Firstly, it intends to prove the company size to strengthen the relationship between SR as one of the discretionary projects and company value. Secondly, this study involves the research and development intensity (RDI), as Walker et al. (2016), Yousaf et al. (2019), and D'Amato & Falivena (2020) carry out to measure innovation through the firm-allocated funds. Both are a novelty in developing the topic of the company value influenced by social responsibility, complementing the existing literature.

For a company, SR is the strategy to improve its market value. This is due to investor relational maintenance, reputable status formation (Waddock & Graves, 1997), and competitive advantage creation (Mohammadi & Saeidi, 2022). Additionally, managers disclose social responsibility activities to avoid negative publicity (Waddock & Graves, 1997). For these reasons, investors are expected to purchase their shares in the capital market, increasing their price. In their research, Jo & Harjoto (2011), Walker et al. (2016), and Feng et al. (2017) document that overall SR disclosure positively influences Q-Tobin. Similarly, this evidence is affirmed by Hou et al. (2019), who researched the firms in electronic and non-electronic industries in Taiwan, and Wijaya et al. (2022), who studied Indonesian non-mining companies. Mohammadi & Saeidi (2022) also demonstrate a positive relationship between SR and stock return. Besides, Handayati et al. (2022) prove the positive influence of SR disclosure on the price-to-book ratio. Based on this explanation, the first hypothesis is as follows.

H_1: Social responsibility disclosure positively affects firm value.

Size may strengthen the association between firm social responsibility and capital market-based performance. When the firm size increases, social responsibility will positively elevate the firm's value. Large companies with extensive resources and lower costs spend more on social responsibility as part of their discretionary projects to get positive responses from the capital market. Through their research, Sugiyanto et al. (2021) and Handayati et al. (2022) affirm this statement by proving that the interaction between SR and company size positively affects manufacturing and mining firm value (quantified by price-to-book ratio) in the Indonesian capital market, respectively. Also, Jouini & Messai (2020) confirm this evidence by demonstrating that this interaction between CSR and size exists to influence Q-Tobin of French companies in the SBF index. Based on this enlightenment, the second hypothesis is as follows.
H_2: Firm size positively affects the relationship between social responsibility and company value.

METHOD

This research treats company value as the dependent variable, social responsibility as the primary independent variable, and company size as the moderating variable. Meanwhile, leverage and research and development intensity perform as the control variables. Furthermore, the measurement of these variables is obtainable in Table 2.

Table 2. Variable measurement

Variable	Symbol	Indicator	Source
Company value	Q-TOBIN	Q- TOBIN of the firms at the end of the year = the equity market value plus the debt book value divided by the total asset book value	Walker et al. (2016), Kao et al. (2018), Hou (2019), D'Amato & Falivena (2020), Jouni & Messai (2020),
Social responsibility	SR	Dummy variable: 1 if the company discloses at least one of the Global Reporting Initiative Standard Guidelines containing 90 items related to economic, environmental, and social topics and 0 if the company does not.	Wijaya et al. (2022)
Firm size	SIZE	The natural logarithms of the total assets at the end of the year	Jo & Harjoto (2011), Mulyadi & Anwar (2012), Walker et al. (2016), Feng et al. (2017), Kao et al. (2018), Hou (2019), Yousaf et al. (2019), D'Amato & Falivena (2020), Jouni & Messai (2020), Handayati et al. (2022), and Wijaya et al. (2022)
Leverage	LEV	The ratio of debt to total assets at the end of the year	D'Amato & Falivena (2020), Jouni & Messai (2020), Kao et al. (2018), Wijaya et al. (2022) Hou (2019), Yousaf et al. (2019), Muhammadi & Saedi (2022)
Research and development intensity	RDI	Research & development expenditure divided by total sales	Yousaf et al. (2019)

Note: For RDI, this study mentions Yousaf et al. (2019) utilizing total sales as the divisor. It differs from Walker et al. (2016) and D'Amato & Falivena (2020), using total assets as a denominator.
Source: Literature review (2023)

This study employs a panel data regression model to examine the influence of social responsibility on company performance moderated by firm size. According to Hartono (2014), the interaction technique can be used to prove the moderating effect. Moreover, two regression models must exist to implement it, i.e., without and with the interaction effect, as in equations 1 and 2.

$$Q\text{-}Tobin_{it} = \delta 0_{it} + \delta_1 SR_{it} + \delta_2 SIZE_{it} + \delta_3 LEV_{it} + \delta_4 RDI_{it} + \varepsilon_{1it} \text{ (Equation 1)}$$
$$Q\text{-}Tobin_{it} = \beta_{0it} + \beta_1 SR_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 RDI_{it} + \beta_4 (CSR*SIZE)_{it} + \varepsilon_{2it} \text{ (Equation 2)}$$

This study uses a purposive sampling method to take the research samples by establishing some criteria, as Hartono (2014) explains. The requirements intended are as follows. (1) Non-financial companies must exist on the Indonesian Stock Exchange (IDX) from 2019 to 2023, (2) They must publish the annual and financial reports consistently either on their official website or IDX website, and (3) They are not initial public offering firms. By mentioning them, this study obtained 65 firms; hence, 315 observations are available.

RESULTS AND DISCUSSION

Results

The mean and median of Q-Tobin are more than 1: 1.953557 and 1.334556, indicating that the stock market plus debt book values exceed the total asset book value. Furthermore, the average and median of SIZE is 29.39988 and 29.34668. Our sample firms are not heavily leveraged because the mean and median of LEV are below 0.5: 0.413435 and 0.349221. Meanwhile, low research and development intensity exists, reflected by the average and median of 0.003112 and 0.001608 (see Table 3).

Table 3. Descriptive statistic for Q-Tobin, SIZE, LEV, and RDI

Variable	Mean	Median	Stat. Dev	Maximum	Minimum
Q-TOBIN	1.953557	1.334556	1.70065	9.689322	0.426691
SIZE	29.39988	29.34668	1.17896	33.00011	27.00732
LEV	0.413435	0.349221	0.20031	1.826135	0.085212
RDI	0.003112	0.001608	0.00298	0.015245	0.000989

Source: Secondary data, processed output from E-views (2023)

For social responsibility, the total number of firms with at least one of the GRI items yearly between 2019 and 2023 is 21, 26, 30, 37, and 43, respectively. On the contrary, the others without the GRI items are 44, 39, 35, 28, and 22 for this period (see Table 4).

Table 4. The number of firms disclosing and concealing social responsibility items

Description	Year				
	2019	2020	2021	2022	2023
The total firms with at least one of the GRI items	21	26	30	37	43
The total firms do not reveal GRI items	44	39	35	28	22
Total firms	65	65	65	65	65

Source: Secondary data, manually processed output (2023)

Table 5 shows that the correlation values between SR and SIZE, SR*SIZE and SR, SR and LEV, and SR and RDI are 0.45005, 0.70452, 0.28171, 0.06726, followed by SIZE and SR*SIZE, SIZE and LEV, SIZE and RDI, SR*SIZE and LEV, and SR*SIZE and RDI of 0.43620, 0.25480, 0.10781, 0.22149, and 0.08392. Also, this table exhibits the negative correlation between LEV and RDI of 0.006729. Because all absoluted correlations are lower than 0.9, the multicollinearity does not appear, as Ghozali (2021).

Table 5. Correlation matrix

	SR	SIZE	SR*SIZE	LEV	RDI
SR	1				
SIZE	0.45005	1			
SR*SIZE	0.70452	0.43620	1		
LEV	0.28171	0.25480	0.22149	1	
RDI	0.06726	0.10781	0.08392	-0.06729	1

Source: Secondary data, processed output from E-Views (2023)

The Hausman test is applied to choose the suitable panel model: fixed or random effects. According to Gujarati et al. (2019), if the probability of chi-square is lower than 5%, the null hypothesis, declaring that the random effect model is appropriate, is rejected. Hence, the fixed effect is chosen. As shown in Table 6, the probability for the first and second models is below 5%. As a consequence, the fixed effect model is more appropriate to estimate.

Table 6. The results of the Hausman Test

Model	Equation	Test summary	Chi-square statistic	Degree of freedom	Probability
1	Tobin-Q = f(SR, SIZE, LEV, RDI)	Cross-section random	30.31248	4	0.0000
2	Tobin-Q = f(SR, SIZE, LEV, RDI, SR*SIZE,)	Cross-section random	39.27317	5	0.0000

Source: Secondary data, processed output from E-Views (2023)

Table 7 depicts the estimation result of the fixed effect model without and with the interaction effect (SR*SIZE). Without SR*SIZE, the adjusted R-squared is 0.921143. With SR*SIZE, this adjusted R-square hikes to 0.938899, and the interaction effect is significant (see the probability of 0.00000). According to Hartono (2014), a moderating effect exists. In this research context, that size can strengthen the relationship between SR and company value, as measured by Tobin's Q.

Table 7. The estimation results of the fixed effect model

Determinant	Without interaction effect			With interaction effect		
	Coefficient	t-statistic	Probability	Coefficient	t-statistic	Prob.
C	53.223215	18.533435***	0.0000	75.768277	16.058966***	0.0000
SR	-3.543369	-3.232970***	0.0011	-12.153635	-9.798778***	0.0000
SIZE	-1.861755	-18.88598***	0.0000	-2.657506	-16.506933***	0.0000
LEV	0.4827788	5.6305463***	0.0000	0.622442	8.777532***	0.0000
RDI	-0.368721	-0.032988	0.8002	-3.889956	-0.383443	0.7958
CSR*SIZE				3.933811	10.278355***	0.0000
Adj. R-squared		0.921143			0.938899	
F-statistic		105.5443	0.0000		99.73711	0.0000

Notes: * = significant at α = 10%, **= significant at α = 5%, ***= significant at α = 1%.
Source: Secondary data processed output from E-Views (2023)

Discussion

Social responsibility significantly negatively impacts Tobin's Q. This evidence contradicts the first hypothesis but aligns with Kao et al. (2018), D'Amato & Falivena (2020), Cao et al. (2023), and Wijaya et al. (2022) for all firms as the investigated samples, demonstrating a negative tendency of SR toward Q-Tobin as the firm value proxy. Moreover, this negative relationship between SR and company value supports Sugiyanto et al. (2021) utilizing the price-to-book ratio to measure this value. This situation is

due to the agency costs. These costs arise because social responsibility is often used for the personal benefit of managers, such as building a personal reputation by sacrificing shareholders' welfare (Jo & Harjoto, 2011; Kao et al., 2018). Besides, managers investing excessively in SR activities try to cover up their mistakes (Barnea & Rubin, 2010).

As a moderating variable, firm size positively affects the relationship between social responsibility and company value. It supports the second hypothesis and aligns with Jouini & Messai (2020), Sugiyanto et al. (2021), and Handayati et al. (2022), declaring the positive interaction between firm size and social responsibility toward firm value. Large companies frequently have outstanding resources and devote more money to social responsibility to sustain stakeholder connections (Johnson & Greening, 1999). Additionally, large companies get more attention from their stakeholders about social and ecological issues. They are pressured by various social responsibility rules (Mackey et al., 2007) and the media (Maignan & Ferrell, 2004). Thus, they tend to disseminate CSR activities to communicate to stakeholders that the company has fulfilled the CSR demands of the stakeholders (Maignan & Ferrell, 2004), including the marketing strategy implementation (Adegbola, 2014; Igarová et al., 2023). On the other hand, because of low visibility, smaller ones face less pressure or little social responsibility acknowledgment (Udayasankar, 2008).

As the control variable, leverage negatively influences company value, indicating that the more debt there is, the less the firm's value will be. Therefore, this fact supports the trade-off theory of capital structure, emphasizing that debt utilization has a bankruptcy potency (Brealey et al., 2020). Meanwhile, RDI has a meaningless effect. Statistically, this evidence happens because of the low mean and median values, as Table 3 displays.

CONCLUSION AND SUGGESTIONS

This study empirically infers that social responsibility decreases company value in the capital market. It happens because the benefits from the related activities are smaller than their agency costs. Additionally, firm size can improve the association between CSR and firm value. Large businesses frequently have more excellent resources for CSR initiatives to preserve stakeholder connections.

The research demographic objects and the time becomes this study restrictions: 65 non-financial firms listed on IDX from 2019 to 2023. It happens because most non-financial companies do not have an account of research and development in their financial report. Based on this issue, this study suggests that the subsequent researchers add companies from other countries and years of observation to provide more accurate results.

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