Green M&A

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ABSTRACT: This research examines the impact of green mergers and acquisitions (GMA) on the company's performance (return on asset). This research tested the sample of mergers and acquisitions of firms using OLS regression and a comparative test with t-statistics. The green factor had a statistically positive and significant effect with ROA changes after three years of mergers and acquisitions. In both green and non-green sub-samples, the average $\Delta ROA (T + 3)$ has a minus value in three years after mergers and acquisitions. However, the green sample has a better average $\Delta ROA (T + 3)$ value, close to zero. These results indicate that green deals, despite the higher cost of green mergers and acquisitions (green premium), are expected to improve bidder companies' financial performance in the future. This research investigated the opportunities for an environmentally friendly transition to a green economy by increasing energy efficiency and renewable energy.

1 INTRODUCTION

Global warming and climate change are caused by environmental damage. Global warming is getting worse each year, as carbon dioxide (CO₂) produced by burning fossil fuels keeps increasing (Hill, 2020). The increase in CO₂ emission has prompted the Indonesian government to reduce environmental pollution by transitioning from conventional energy to renewable energy. This action follows the agreement in Paris on December 12, 2015, held by the UNFCCC. The Paris Agreement, attended by 197 countries, aims to combat climate change and accelerate action and future low-carbon investments (UNFCCC, 2015).

Many companies use CSR activities to show concern for the environment. Unfortunately, CSR does not always provide higher value creation than the cost of implementing it, creating an assumption that CSR activities are detrimental to some companies (Jonikas, 2014). Moreover, to instill the corporate value that positively impacts the future environment, companies begin acquiring green technology from eco-friendly companies to increase efficiency and reduce pollution levels. This action is often referred to as green mergers and acquisitions (GMA) (Salvi, Petruzzella & Giakoumelou, 2018).

Mergers and acquisitions, in general, can positively affect the company's financial performance in the future. However, many studies also show that mergers and acquisitions can damage company performance (Ferreira, Reis, & Pinto, 2016). These varying research reports lead researchers to test indicative GMA against financial performance changes.

GMAs are expensive, as they require companies to adopt green technology, adjust new green business models, and train employees. Bidder companies tend to be willing to pay highly (green premium) to acquire target companies with green businesses (Salvi, Petruzzella, & Giakoumelou 2018), even though the mergers and acquisitions, in general, can either improve or deteriorate companies.

2 LITERATURE REVIEW

Environmental management has become essential in the last few decades because it mitigates the environmental or ecological damage caused by company activities. Proper environmental

management also demonstrates a company's commitment to environmental sustainability; hence, it improves company image and creates moral capital that can reduce stakeholder sanctions' severity in harmful activities (Salvi, Petruzzella, & Giakoumelou 2018).

GMA refers to acquisitions, mergers, and other companies' economic activities to acquire green resources and develop green technology (Lu, 2021). GMA can be utilized as a company strategy in changing and improving environmental protection. In recent years, industries with high pollution levels have carried out green mergers and acquisitions to increase investment in environmental sustainability and adopt environment-friendly technologies (Lu, 2021).

GMA helps heavy pollution companies to regain stakeholders' trust and reduce their risk of sanctions caused by environmental damage (Li, Liu, Liu, & Liu 2020). Direct business innovation will positively impact companies' competitiveness, profits, and business sustainability. Furthermore, research on the effects of GMA on company changes based on the ROA ratio in companies in European and American regions supports the application of GMA. The findings show that GMA positively and statistically impacts ROA for the next two to three years. This tendency encourages bidder companies to obtain good CSR and environmental management, even with a high premium price (Salvi, Petruzzella, & Giakoumelou 2018).

3 METHODOLOGY

3.1 Research data

A sample of companies that carried out mergers and acquisitions in the 2007–2016 period and their financial data were analyzed to understand the impact of green mergers and acquisitions on companies' performance. The companies conduct business in emerging market countries and developed markets in the Asia Pacific and Europe. Eikon Thomson Reuter's database was accessed to examine the companies' transactions. The specific criteria for companies' transactions taken from the Eikon Thomson Reuters database are as follows: (1) M&A go public companies, (2) minimum takeover of 50.01%, (3) sample taken from January 1, 2007, to December 31, 2016, (4) consisting of companies in the highly polluting industrial sector (chemicals, oil and gas, metals and mining, other energy and power, paper and forest products, petrochemicals, and power), and (5) complete financial data from a year before and three years after the mergers and acquisitions.

3.2 Research model

Assessment of the company performance three years after ($T + 3$) mergers and acquisitions or GMA can be seen from the change in the value of ROA one year before ($T - 1$) to three years after ($T + 3$) mergers and acquisitions.

Figure 1. Research model

The OLS regression and the mean comparison test with t-statistics were used for the test.

3.3 T-test

Hypothesis testing in this research uses parametric statistics. The parametric statistical method used in this research is the mean comparison test with the t-test. This method compares the mean differences between samples of green and non-green at three years ($T + 3$) after mergers and acquisitions. The t-statistic value and probability value were calculated to determine the mean difference between the two samples.

3.4 OLS regression

OLS regression testing regression model $\Delta ROA (T + 3)$ is as follows:

$$\Delta ROA(T + 3) = \alpha + \beta_1 Lev + \beta_2 LnTA + \beta_3 LnDV + \beta_4 Cash + \beta_6 GA + \beta_7 Green + e \quad (1)$$

Before testing the t-statistics and OLS regression, the classical assumptions were tested to provide the best linear unbiased estimator (BLUE). This research used cross-sectional data. Hence, the classical assumption tests use the normality test, heteroscedasticity test, and multicollinearity test.

4 RESULTS

4.1 T-test results

Initially, the regression model is tested for its normality, heteroscedasticity is tested with the Glejser test, and a multicollinearity test is conducted with the variance inflation factor (VIF). The regression models show that data are normally distributed. The heteroscedasticity test using the Glejser test found no heteroscedasticity between each variable, and the multicollinearity test using VIF showed no multicollinearity symptoms on the regression model.

The sample is divided into two sub-samples, green and non-green samples, to test the mean ROA change caused by green mergers and acquisitions.

Table 1. Average whole sample, green sub-sample, and non-green sub-sample

Sample	$\Delta ROA (T + 3)$
Whole Sample	-0.492 (0.479)
Green Sample (A)	-0.158 (0.444)
Non-Green Sample (B)	-0.603 (0.439)
Difference (A-B)	0.445***

Notes: *P < 0.1, **P < 0.05, ***P < 0.01

The findings are not in line with previous research, which shows that the green sample average ΔROA has a positive value and is better than the average value of non-green ΔROA (Salvi, Petruzzella, & Giakoumelou, 2018), whereas in this study, the result has a minus value three years after mergers and acquisitions. In previous research, a comparison was made using a sample of green mega deals and non-green mega deals in Europe and America. The findings show that companies that did mega deals and had more acquisition experience are superior in the integration processes, such as in terms of cultural alignment and establishing a vision and mission. Also, they have a better performance than the agreement in the short and long terms (Hu, Li, Li, & Wang, 2020). However, the average green sample in this research shows a smaller minus value. It is closer to zero than the average ΔROA of the non-green samples at three years after mergers and acquisitions, and the T-test confirmed that the difference is statistically significant at 1%.

4.2 OLS regression

A cross-sectional OLS regression analysis for the whole sample after three years of merger and acquisition deal completion was conducted to investigate the effect of green mergers and acquisitions on change $\Delta ROA (T + 3)$

The results show a significant positive impact of green mergers and acquisitions on bidder post-acquisition performance with regard to ΔROA (T + 3). The results can be seen as follows:

Table 2. OLS Regression Impact of Green Deals on ΔROA (T + 3)

ΔROA (T + 3)			
Variabel	Coefficient	Standard Error	Probability
Constant	-0,7662**	0,3538	0,0321
LEV	0,0203	0,1171	0,8625
LNTA	0,0288	0,0233	0,2176
LNDS	-0,0139	0,0209	0,5066
CASH	0,2064**	0,0818	0,0128
HOM	-0,2142**	0,0854	0,0134
GA	0,0655	0,0806	0,4175
GREEN	0,3499***	0,0891	0,0001
Adjusted R-Squared	0,2391		
N	144		

Notes: *P < 0.1, **P < 0.05, ***P < 0.01

OLS regression test results show that green deals have a positive and statistically significant impact on ΔROA at three years after mergers and acquisitions. The previous study results also indicate that green mergers and acquisitions have a positive and statistical impact on ΔROA (Salvi, Petruzzella, & Giakoumelou 2018). Specifically, ΔROA (T + 3) has a coefficient of 0.3499 and significance at 1%. The findings show that green has a strong impact after three years of mergers and acquisitions.

5 CONCLUSIONS

This research analyzes and determines the impact of green mergers and acquisitions and non-green merger and acquisitions on changes in public companies' performance in emerging market and developed market countries in the Asia-Pacific and European regions in 2007–2016. The research investigates the change in the ratio of return on assets (ROA) three years after mergers and acquisitions.

T-test and OLS regression indicate a positive and statistically significant impact on ROA changes in bidder companies affected by mergers and acquisitions with green indications three years after the events. Even though the research did not find that the average change in ROA has a positive value after mergers and acquisitions, the average change in the green companies' ROA is better than that of the non-green companies. Hence, the research indicates that GMA and non-green mergers and acquisitions generally negatively affect companies' value. Nevertheless, the results show that the ROA changes for the green companies are closer to zero than those for the non-green companies. The average ROA increases three years after mergers and acquisitions. We believe that GMA positively affects bidder companies in the long term, especially with regulations supporting green business development in the future.

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