

SYNERGY, DIVERSIFICATION AND FIRM PERFORMANCE IN MERGERS AND ACQUISITIONS

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Abstract—*Synergy from merger and acquisition (M&A) theoretically increases firm performance. However, diversification leads to coinsurance effect which reduces firm value. This study aims to analyze the relationship between synergy and firm performance measured using return on assets (ROA) and Tobin's Q, with diversification as moderating variable. Analysis was carried out using data from 33 M&A cases by non-financial firms listed in the Indonesia Stock Exchange, done between 2010 and 2016. Results show that synergy has a positive effect on both ROA and Tobin's Q. Meanwhile, diversification moderates the impact of synergy towards both ROA and Tobin's Q, thereby decreasing firm performance.*

Keywords—*Merger, Acquisition, Synergy, Diversification, Firm Performance*

I. INTRODUCTION

From a financial management perspective, the objective of a firm is to maximize its value to the shareholders (Brealey, Myers & Allen, 2017). Firm value is highly important to investors because it indicates how much profit they can make out of their investment. It is also closely related to firm performance, defined as the firm's ability to obtain and manage its resources to increase its competitiveness (Iswati & Anshori, 2007). Firm performance is an indicator of the firm's profitability by utilizing its resources optimally (Fatihudin et al., 2018).

Firm performance will increase when a firm is managed properly. Merger and acquisition (M&A) are corporate actions taken by management in order to boost the firm's profitability and performance through inorganic growth (Rashid & Naeem, 2017). A small firm lacking in capital could gain access to greater capital and boost its performance. On the other hand, a firm with an advantage in marketing will be able to help other firms to sell their more competitive products and ultimately generate greater combined revenue (Frankel & Forman, 2017).

The decision to undertake M&A is justified when it creates synergy, defined as the positive difference

between the value of the business combination and the values of stand-alone firms added together (Ross et al., 2016). Synergy from operations theoretically affects firm performance internally. Internal firm performance is of great concern to management because it indicates the firm's profitability and sustainability. In addition, external parties will also respond to M&A, particularly for publicly-listed companies. A large business transaction such as M&A will cause the market to react and then affect firm performance from an external point of view.

Apart from increasing firm performance, another theoretical benefit of M&A is business diversification, whereby firms can minimize business risk by increasing the number of affiliated entities. However, diversification does not always lead to synergy or business efficiency (Dismukes & Deupree, 2016). Besides, it is more convenient for shareholders to minimize risk by purchasing shares of other firms and diversifying their portfolios (Ross et al., 2016). Hence, the argument for diversification as a benefit or M&A is still questionable.

Previous studies on how M&A affect firm performance yielded various results. Zhang, Wang, Li, Chen (2018); Bianconi & Tan (2019); Kruse et al., (2007); concluded that M&A had a positive impact on firm performance and value, whilst Rao-Nicholson, Salaber, and Cao (2016) and Agyei-Boapeah (2018) found that the relationship was negative. Meanwhile, synergy was found to be insignificant towards firm performance (Pervan, Višić & Barnjak, 2014; Al-Hroot, 2016; Rashid & Naeem, 2017). All these findings suggest that there are still inconsistencies over the impact of M&A on firm performance, and that studies on synergy and diversification are still very limited. Thus, this research aims to analyze how M&A, through the synergy created, affects firm's internal and external performance post-M&A, with the firm's degree of diversification as a moderating variable.

II. LITERATURE REVIEW

Both merger and acquisition are defined as the consolidation of two or more business entities, albeit in different ways. In merger, the combining firm is

absorbed into the parent firm and therefore it ceases to exist as a business entity (Ross et al., 2016). Acquisition, on the other hand, takes place when an acquiring firm purchases another target firm using cash, stock, or other payment methods (Roberts, Wallace & Moles, 2016; Ross et al., 2016).

Roberts et al. (2016) suggested that the objective and motivation behind M&A differs among firms. M&A is seen as a strategic initiative to boost profitability by increasing market share, cost-cutting, and optimizing production processes. It can also be done to expand a firm's global business portfolio through acquisition of another foreign-based firm. However, some firms may also undertake M&A for more speculative motives, for example when an opportunity arises to acquire another firm at present in order to sell it for some profit in the future.

Regardless of the motive, a firm will decide to undertake M&A if the management believes it will create benefit or synergy to the firm. Synergy is achieved when the value of business combination post-M&A is greater than the combined values of each of the firms had they remained stand-alone (Brealey et al., 2016; Ross et al., 2016). Synergy from M&A may be reflected in the increase of revenue as well as decrease in cost, tax expenses, and capital requirements. Through synergy, a firm can also expand its market share and improve its production capacity, thereby increasing its profitability (Hagedoorn & Duysters, 2002; Wang & Wang, 2015). This benefit should be obtained by the firm in both short-term and long-term periods because M&A is a strategic move to develop the firm further. For investors, M&A may also give a positive signal that the firm is growing in the right direction. As such, it is hypothesized that synergy has a positive impact on firm performance, both internally and externally.

H1a: Synergy has a positive impact on internal firm performance.

H1b: Synergy has a positive impact on external firm performance.

Diversification is often cited as a benefit of M&A, especially in conglomerate M&A (Ross et al., 2016). A firm can utilize its excess cash to acquire another firm and thus minimize the unsystematic risk of its investment portfolio. Gaughan (2013) suggested that diversification creates a competitive advantage in the form of economies of scale when a firm acquires another firm in the same industry. Through diversification, a firm also gains access to a wider consumer base. In addition, diversification also creates an internal capital market for the relatively smaller acquired firms, thereby giving them competitive advantage over their non-acquired rivals.

Based on International Financial Reporting Standards (IFRS) 10, parent firms are obliged to consolidate their financial statements with their

subsidiaries. As a result, firms with greater number of subsidiaries should have a higher consolidated performance. Any losses from the subsidiaries may be compensated by profits from the other consolidated entities. However, additional subsidiary also translates into higher degree of diversification for the parent firm (Ross et al., 2016). This situation benefits the creditors because the firm's loans are guaranteed by more entities, including the subsidiaries. In other words, the parent firm and its consolidated entities have greater ability to fulfill its liabilities. On the other hand, shareholders are at a disadvantage as they are hurt by the amount of the gain to the creditors. This phenomenon is also known as *coinsurance effect* (Billett & Yang, 2016; Gaughan, 2013). As M&A increases the firm's degree of diversification, the synergy created will also be affected. The combined value of the business combination is hypothesized to be reduced due to diversification.

H2a: Diversification moderates the impact of synergy on internal firm performance.

H2b: Diversification moderates the impact of synergy on external firm performance.

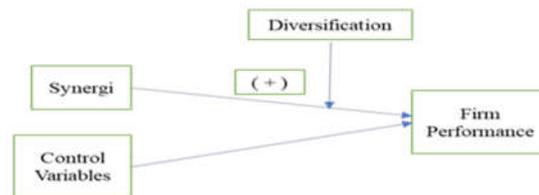


Fig. 1. Research Model

III. METHODS

This research uses secondary data obtained from annual financial statements. The subjects are public firms which were already listed in the Indonesia Stock Exchange (IDX) when undertaking M&A between 2010 and 2016, are not in the financial industry, and also have audited annual financial statements one year before and after M&A. The M&A transactions must also be registered to the Commission for the Supervision of Business Competition (KPPU). The acquirers purchased more than fifty percent ownership of the targets, hence the target firms' financial statements were consolidated into the acquirers' financial statements in accordance with IFRS 10. Another selection criterion is that the M&A transaction generated positive synergy. Based on these criteria, 33 M&A transactions are selected as the research subjects.

Firm performance is the dependent variable in this research and is split into two: internal performance and external performance. Internal firm performance is measured by return on assets (ROA), calculated by dividing the firm's normalized operating profit after tax (NOPAT) with its total assets. After-tax interest must be added back to net income in order to reflect the firm's performance if it is fully financed by equity (Karnadi,

1993). This calculation is more robust when comparing the performance of firms with different capital structure (Brealey et al., 2017). On the other hand, external firm performance is measured by Tobin's Q, defined as the ratio of the firm's market value to the replacement cost of its total assets (Chung & Pruitt, 1994; Fu et al., 2016). Since market value is used in the calculation, Tobin's Q reflects investors' point of view on the firm's performance (Alhenawi & Krishnaswami, 2015). It is calculated by adding the firm's total liabilities to its market capitalization, divided by its total assets.

Synergy is defined as the excess value of the business combination post-M&A over the combined values of the stand-alone firms, stated in trillions of Rupiah. The values of the acquirers are measured by enterprise value (EV), defined as the total of market capitalization, total liabilities, and non-controlling interest, minus cash and cash equivalents (Ross et al., 2016). However, none of the targets were public firms at the time of M&A and as such, their EVs cannot be calculated. Instead, the values of the target firms are measured by their net fair values of assets (NFVA). The post-M&A EV of the business combination is calculated from the financial data one year after M&A, whereas the EV of the acquirer and the NFVA of the target are taken from the data one year before M&A.

Diversification is defined as the number of consolidated entities a firm has. Ross et al. (2016) suggested that M&A would increase the firm's business diversification. In accordance with IFRS 10, the parent firm must publish a consolidated financial statement which takes into account every subsidiary of which the parent firm has significant control over. Therefore, diversification is measured by taking the natural logarithm of the number of consolidated entities.

This research also analyzes the impact of control variables (liquidity, firm size, leverage, firm age, and corporate governance) on firm performance. This is done in order to conclude that changes in internal and external firm performance are indeed caused by the synergy from M&A, despite the presence of other variables.

Analysis on the relationship between independent and dependent variables are done using multiple linear regression models. As prerequisites, several classical assumption tests are carried out prior to running the regression models, namely normality, multicollinearity, autocorrelation, heteroscedasticity, and linearity tests. Two regression models are analyzed in this research:

$$ROA = \beta_0 + \beta_1 SYN + \beta_2 DIV + \beta_3 MOD + \beta_4 CR + \beta_5 SIZE + \beta_6 DR + \beta_7 AGE + \beta_8 BI + e$$

$$Q = \beta_0 + \beta_1 SYN + \beta_2 DIV + \beta_3 MOD + \beta_4 CR + \beta_5 SIZE + \beta_6 DR + \beta_7 AGE + \beta_8 BI + e$$

- ROA = return on assets
- CR = current ratio (liquidity)
- Q = ln Tobin's Q
- SIZE = firm size
- SYN = synergy
- DR = debt ratio (leverage)
- DIV = diversification
- AGE = firm age
- MOD = moderating factor (cross-multiplication of SYN and DIV)
- BI = board independence (corporate governance)

IV. RESULTS AND DISCUSSION

Results of the classical assumption tests suggest that multiple linear regression is a suitable model to analyze the research data. Using LM test showing no autocorrelation with p value > 0,05 for both model. Multi collinearity test showing no collinearity, just SYN*MOD because of using moderation regression analysis model. White test showing p value > 0,05 so there is no heteroskedasitas. Normality test using Jarque Bera showing p value > 0,05, the residual data is distributed normally in both model.

TABLE 1. AUTO CORRELATION TEST

ROA		Q	
Obs*R-squared	p-value	Obs*R-squared	p-value
0.688852	0.7086	0.099176	0.9516

TABLE 2. MULTICOLLINEARITY TEST

Variable	ROA		Q	
	Coeff. Variance	VIE	Coeff. Variance	VEF
SYN	0.000020	52.9105	0.006528	144.2057
DIV	0.000122	1.8211	0.026721	1.9417
SYN*DIV	0.000002	56.5052	0.000694	142.8224
WC	0.000007	1.4914	0.000625	1.1641
SIZE	0.000158	2.3725	0.019249	2.2370
DR	0.001905	1.5794	0.520104	1.8734
AGE	0.000031	1.2299	0.014261	2.4425
BI	0.005165	1.2454	0.396159	1.4578

TABLE 3. HETEROCEDASTICITY TEST

ROA		Q	
Jarque-Bera	p-value	Jarque-Bera	p-value
2.875879	0.2734	2.435452	0.2959

TABLE 4. NORMALITY TEST

ROA		Q	
Obs*R-squared	p-value	Obs*R-squared	p-value
4.78598	0.7802	8.198411	0.4143

Using EViews as the statistical tool, Table 1 below are the outputs of the two models at 0.05 significance level:

TABLE 5. COEFFICIENTS OF DETERMINATION AND F-TEST RESULTS

Dependent Variable	R-squared	Adjusted R-squared	F-statistic	p-value
ROA	0.6751	0.5669	6.2350	0.0002
ln Q	0.6468	0.5291	5.4939	0.0005

TABLE 6. MULTIPLE REGRESSION LINEAR OUTPUT FOR ROA

Variable	Coefficient	Std. Error	t-Statistic	p-value
C	-0.020149	0.028196	-0.714621	0.4817
SYN	0.004184	0.001211	3.455744	0.0021
DIV	0.000781	0.000414	1.888502	0.0711
MOD	-0.000123	0.000039	-3.174935	0.0041
CR	0.011499	0.003991	2.881163	0.0082
SIZE	-0.000006	0.000225	-0.272858	0.7873
DR	0.039962	0.041729	0.957657	0.3478
AGE	0.001961	0.000674	2.911337	0.0077
BI	0.021435	0.049471	0.433292	0.6687

TABLE 7. MULTIPLE REGRESSION LINEAR OUTPUT FOR TOBIN'S Q

Variable	Coefficient	Std. Error	t-Statistic	p-value
C	-0.272966	0.357379	-0.763800	0.4524
SYN	0.070734	0.015347	4.609041	0.0001
DIV	0.000659	0.005245	0.125665	0.9010
MOD	-0.002047	0.000490	-4.174009	0.0003
CR	0.019832	0.050586	0.392054	0.6985
SIZE	-0.007834	0.002847	-2.751746	0.0111
DR	0.779263	0.528902	1.473359	0.1536
AGE	0.016606	0.008537	1.945287	0.0635
BI	-0.818592	0.627034	-1.305499	0.2041

Table 2 shows that synergy from M&A has a positive and significant impact on a firm's internal performance, measured by ROA. Firms generally undertake M&A as a form of strategic initiative to increase its growth (Hagedoorn & Duysters, 2002; Wang & Wang, 2015).

Through M&A the firm's profitability, and therefore its performance, may increase. In addition, acquiring firms are generally bigger and more established compared to the target firms. Both acquirer and target can benefit from M&A through the creation of a more efficient production chain, as well as the presence of managerial support from the parent firms.

Synergy is also found to have a positive and significant impact a firm's external performance. Tobin's Q indicates the firm's value with respect to its total assets from the investor's perspective, hence it reflects the firm's external performance. By consolidating its financial statement with those of its subsidiaries, a firm's total assets will significantly increase after M&A. Any corporate action, including M&A, must be taken following careful consideration by the management because it must be reported and justified to the shareholders and the general public. M&A transactions that generate synergy can act as an assurance to the external parties that the firm is growing, and thus the firm's value as measured by Tobin's Q increases.

Tables 2 and 3 also show that the moderating factor MOD has a negative and significant impact on both ROA and Tobin's Q. Therefore, it can be concluded that diversification moderates the positive impact of synergy on both internal and external performance. This finding confirms the existence of coinsurance effect arising from the increasing number of subsidiaries (Berger & Ofek, 1995; Lang & Stulz, 1994; Ross et al., 2016). As business diversification increases, the firm's liabilities become more "insured" and the risk of default diminishes. Conversely, its equity value decreases, hence the firm does not receive maximum benefit from the synergy.

Aside from the findings above, analysis on the control variables shows that liquidity and age positively impact ROA, whereas size, leverage, and corporate governance are insignificant towards ROA. As for Tobin's Q, only size has a negative impact, while the other control variables do not have significant impact.

V. CONCLUSION

This research aims to analyze the impact of synergy from M&A transactions on firm's internal and external performance, measured by ROA and Tobin's Q respectively. In addition, this research also analyzes the moderating effect of a firm's degree of diversification, as well as the presence of control variables namely liquidity, size, leverage, age and corporate governance.

Analyses on both multiple linear regression models show that synergy has a positive and significant impact on both internal and external performance, whereas diversification moderates that positive impact. The greater the synergy created, the higher the firm's internal and external performance will be. However, a high number of subsidiaries prevents a firm from

experiencing maximum performance growth due to the coinsurance effect. Internal performance is also affected by the firm's liquidity and age, while firm size negatively impacts external performance.

For future studies, it is suggested that another proxy is used to measure diversification in order to reflect a firm's attempt to expand its business through conglomerate M&A. Other measurements for synergy, such as discounted cash flow approach, may also be used to calculate synergy in M&A transactions involving non-public firms.

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