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Research Article

Determinants of Capital Structure: Evidence in Indonesia and Malaysia

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Abstract: *This research investigates the factors that influence a company's capital structure. The panel data was obtained from all non-financial companies registered in Indonesia and Malaysia. The sampling technique used purposive sampling based on certain criteria. Based on the sampling method, 520 non-financial companies in Indonesia and Malaysia were obtained for the 2019-2022 period. The data obtained was 2080 data taken from Osiris. The research uses three estimation models, namely pooled least squares, fixed effect model, and random effect model. The profitability has a significant negative effect on the company's capital structure. Growth Opportunities and Tangible assets have a significant positive effect on the company's capital structure. While Size, Non-debt tax shield, Tax, and business risk do not affect the company's capital structure. The results of this research support the application of trade-off theory in developing countries, especially in Indonesia and Malaysia.*

Keywords: *Capital Structure, Profitability, Company Size, Non-Debt Tax Shield, Growth Opportunities, Tax Expense, Liquidity, Tangible Assets, and Business Risk.*

I. INTRODUCTION

One of the important policies within a company is determining the choice of a company's capital structure. The funding sources and the capital structure of the company are connected so that the company will choose to carry out its business. The sources of company funding were from internal company sources with retained earnings and external sources with debt. Both funding sources have consequences. It encourages managers to be able to analyze the most appropriate capital structure composition for carrying out company activities. So, the research topic of company capital structure is always an interesting area for academics to research. Modigliani & Miller (1958) and Modigliani & Millier (1963) were the first academics to reveal that capital structure had no relevant effect on company value. After this theory, several theories emerged, such as the trade-off theory and the pecking order theory. Trade-off theory reveals that a company's capital structure trades off tax benefits by using debt, so the costs incurred will be smaller. When a company chooses debt, the company will get the benefits and costs of that debt if it does not exceed a certain limit (Kraus and Litzenberger, 1973; Myers, 1984). Meanwhile, Myers and Majluf (1984) expressed the pecking order theory, which states that companies prefer internal financing to external financing. Where a company needs funding, the company will use internal funding optimally and then use debt because the cost of debt is higher than internal funding.

Numerous capital structure studies, like one conducted in Indonesia, have been conducted in emerging nations. According to Haron (2016), there is still very little research in Indonesia that uses dynamic models in capital structure research. Several studies looking at the factors influencing capital structure in Indonesia are still not able to confirm the target of the company's capital structure and the amount of adjustment costs for adjusting the capital structure issued by the company. Meanwhile, research using dynamic models was carried out by (Bolarinwa & Adegboye, 2020 Khémiri & Noubbigh, 2018 Liang et al., 2020 Saif-Alyousfi et al., 2020; Zelia & Marcia, 2009) in several developing countries. The dynamic model uses a lag in debt so that it affects the capital structure. The research in Indonesia only uses statistical regression models and is only in one industry (Astuti, 2018; Sakinah & Anggono, 2014). Several previous studies found that the factors that influence a company's capital structure include profitability, company growth, tax levels, and risk. business, company size and several macroeconomic factors (Bolarinwa & Adegboye, 2020; Rajan & Zingales, 1995; Ramli et al., 2019; Titman & Wessels, 1988). Apart from being conducted in Indonesia, this research was also carried out in Malaysia. According to Harlon (2016), in developing countries, there are several reasons for taking objects in developing countries. First, compared to wealthy countries, capital markets in nations that are developing are less fully financed and efficient. Second, asymmetric information in developing countries is higher than in developed countries. Therefore, based on the theoretical gap, this research aims to analyze the factors that influence the capital structure of non-financial companies in Indonesia and Malaysia and to analyze the capital structure theory used in Indonesia and Malaysia.

II. LITERATURE REVIEW

Several theories have attempted to explain how companies make decisions regarding their capital structure. The first theory proposes that the proportion of debt and equity has no relevance (Modigliani & Miller, 1958, 1963). This concept is known as the principle of capital structure disconnection. This theory is based on a number of assumptions, such as the absence of taxes, highly efficient markets, minimal agency costs, and the absence of asymmetric information. However, Haugen and Kumar (1974) firmly rejected this theory because they considered the assumptions to be too strict and not appropriate to real-world situations.

The popular trade-off theory, introduced by Kraus and Litzenberger (1973) and Myers (1984), indicates a harmony between the advantages and disadvantages of issuing debt. Companies can increase their value by issuing debt as long as the amount of debt does not exceed their financing costs. Furthermore, having debt can also provide tax benefits. The investors which align with their interests ultimately generate more wealth for investors. The companies that do not take advantage of tax benefits will give some of their funds to the government in the form of taxes, and these funds cannot be given to investors. Simply put, in trade-off theory, unless companies are experiencing poor performance, they are more likely to choose to issue bonds even though they actually have sufficient internal funds for their project's funding.

The pecking order theory explains that companies are more likely to use internal funding than external funding (Myers and Majluf, 1984). This theory posits that there is a sequence that companies follow in financing their projects. If internal sources are insufficient to finance the project, the company will prefer to issue bonds rather than new shares. Issuing new shares becomes a negative signal because investors may assume that the company cannot afford interest costs, thereby creating suspicions about the company's health. This theory relies on two assumptions. First, managers have better information than outside investors. Second, the interests of managers are in line with the shareholder's interests. Under these conditions, managers work efficiently. For example, managers understand that issuing shares often results in less favorable evaluations. Outside investors may watch out that a company issuing shares is giving a signal that the company is in trouble because it is afraid of bearing interest costs.

Several previous studies related to capital structure factors have been widely studied in developing countries. Research conducted by Haron (2016) shows that factors that influence capital structure in Indonesia include Non-Debt Tax Shield (NDTS), profitability, business risk, tangible assets, company size, company growth, liquidity, and share price. Meanwhile, research conducted by Alyousfi et al. (2020) showed that factors that influence capital structure in Malaysia include profitability, company growth, asset tangibility, corporate tax levels, tax shields, non-debt tax shields (NDTS), liquidity, earnings volatility, etc. macroeconomics as a control variable. Based on several previous studies conducted in developing countries, the researchers took several variables that will explain the existing capital structure in Indonesia and Malaysia. The variables of this research include profitability, liquidity, non-debt tax shield (NDTS), company growth, tax level, company size, business risk, tangible assets, and several macroeconomic variables.

A) Factors That Affecting The Capital Structure

a. Profitability

Profitability is the company's ability to generate profits. Profitability is measured by Return on Assets (ROA). Modigliani and Miller (1963) stated that companies will choose to use debt by taking advantage of tax protection. The amount of debt and profitability are positively correlated to reducing fraud committed by managers. The companies must ensure that the free cash flow within the company is used for organizational goals, not individual goals. Trade-off theory is that companies that experience profits can take advantage of tax credits, and the possibility of experiencing bankruptcy is also smaller (Khemiri and Noubbigh, 2018). When a company experiences profits, the company is more likely to finance the company with debt to get tax benefits. Meanwhile, the pecking order theory is the opposite; according to the pecking order theory, when a company experiences a profit, the company tends to choose retained earnings and reduces the company's debt level, so that companies that experience a profit tend to choose internal funding compared to external funding. Empirical findings mainly find that profitability has a negative relationship with corporate debt (Ahmed Sheikh & Wang, 2011; Bolarinwa & Adegboye, 2020; Liang et al., 2020; Onofrei et al., 2015; Panda & Nanda, 2020; Saif-Alyousfi et al., 2020).

H1: Profitability has a significant negative impact on company's capital structure

b. Company Size

The natural logarithm of total assets measures company size. Large companies have cash flows that tend to be stable, and the probability of the company experiencing bankruptcy is smaller than that of small companies. So, the risk of bankruptcy is considered lower in large companies than in small companies (Bolandria & Adegboy 2020). This is in accordance with the trade-off theory, which states that large companies tend to take on debt because the risk of bankruptcy is lower than small companies. Several previous research results regarding the influence of company size on company

capital structure conducted by Zou & Xiao (2006), Eriotis et al. (2007), and Zelia & Marcia (2009) found a positive relationship between company size and debt ratio. Meanwhile, other studies found a negative relationship between company size and company debt, such as Bolarinwa & Adegboye (2020) in companies listed in Nigeria and Liang et al. (2020) in companies in Malaysia, the Philippines and Thailand. Based on the explanation, the research hypothesis is as follows.

H2: Company's size has a significant positive effect on the company's capital structure.

c. Non-Debt Tax Shield (NDTS)

Non-debt tax shield is measured by the ratio of depreciation to depreciation plus profit before interest and tax. The benefits of tax protection are not only obtained from debt levels but also from asset depreciation. The depreciation can reduce the tax burden because depreciation reduces the company's income. The companies that have a large non-debt tax shield are expected to be able to reduce debt levels because non-debt tax shields can reduce the tax burden. Several previous research results discovered that capital structure was significantly harmed by the non-debt tax shield research conducted by Deesomsak et al. (2004), Huang & Song (2006) and (Liang et al., 2020). To measure this variable, we adopted measurements based on Liang et al. (2020).

H3: Non-Debt tax shield has a significant negative effect on the company's capital structure

d. Growth Opportunities

To calculate growth opportunities, use the ratio of sales growth to asset growth (Ahmed Sheikh & Wang, 2011). The pecking order stated that the interests of managers are in line with the interests of shareholders, especially regarding financing; they tend to use internal financing (Myers & Majluf, 1984) / companies that have good growth opportunities tend to use internal financing to reduce the risk of bankruptcy in the future from the costs they bear. When a company chooses to use debt, based on the research findings, it can be inferred that expansion opportunities significantly negatively impact the capital structure of Bolarinwa & Adegboy (2020), which found that growth opportunities have a significant negative effect on capital structure, Deemsosak et al. (2004) and Eriotis et al. (2007) found growth opportunity has a negative effect on capital structure.

H4: Growth Opportunity has a significant negative effect on a company's capital structure

e. Tax Expense

Tax Expense is measured by the ratio of the difference in profit after tax compared to profit before tax. According to trade-off theory, companies will be motivated to increase their debt to obtain tax benefits. This idea states that there is a positive correlation between corporate tax levels and debt. Companies can use debt to reduce the corporate tax rate when the tax rate imposed is high, and the company will be willing to buy assets using debt. The higher the corporate tax rate, the greater the proportion of debt used by the company to obtain benefits from the tax. This is in accordance with the results of research conducted by Bolanrinwa & Adegboye (2020), which found that the tax level has a significant positive effect on capital structure.

H5: Taxe expense has a significant positive effect on the company's capital structure.

f. Liquidity

Liquidity is a company's ability to pay off short-term debts that must be paid off immediately. In this research, debt is measured using the current ratio. Based on trade-off theory, companies with a high level of liquidity can use high debt because the company can pay the costs incurred due to debt and can take advantage of the tax shield. Meanwhile, according to pecking order theory, companies that have a high level of liquidity will utilize internal funding first compared to external funding. Companies with a high level of liquidity are expected to tend to use debt due to the existence of a tax shield from the debt used. The results of previous research conducted by Deesomsak et al. (2004) found that liquidity had a notably favourable impact on capital structure.

H6: Liquidity has a significant positive effect on a company's capital structure.

g. Tangible Asset

The tangible assets are measured by comparing tangible assets (fixed assets) to total assets (Khemiri and Noubbigh, 2018). Companies that have a lot of fixed assets will show the collateral value of the debt they have. The company will combine the proportion of debt and the term of the debt with the fixed assets owned as collateral for the debt. Trade-off theory indicates that there is a positive correlation between the amount of debt a company has and its tangible assets. Tangible assets will determine the composition of the company's debt because these assets will be used as collateral, so the more tangible assets the company has, the higher the company's debt level. This is in accordance with the research results of Yang et al. (2010) and Ramli et al. (2019), which found that tangible assets significantly positively affect the company's capital structure.

H7: Tangible assets have a significant positive effect on a company's capital structure

h. Business Risk

Business risk is measured by changes in EBIT each year. Business risk describes changes in a company's income each year. When a company has high earnings volatility, it shows a high risk of default. Business risks are risks that arise due to company debt. The higher the business risk, the smaller the company's debt level. This is consistent with research by Haron (2016) and Ramli et al. (2019) that showed business risk significantly degrades an organization's capital structure.

H8: Business risk has a significant negative effect on the company's capital structure

III. METHOD

The research population is non-financial companies listed on the Indonesia and Malaysia Stock Exchanges taken from the Osiris and Bloomberg databases. Financial companies and non-financial companies have different characteristics in financial reports (Al-Najjar and Hussaney, 2011). 930 companies have listings in Malaysia, and 700 non-financial companies are listed on the Indonesia Stock Exchange. The research sample used purposive sampling, namely sampling based on certain criteria. Based on the sample criteria, 520 companies were obtained, consisting of 174 companies in Indonesia and 376 companies in Malaysia, with total data of 550 companies. The research period was from 2019 to 2022. The estimates used are pooled least squares, fixed effect models, and random effect models.

Table 1: Definition of Operational Variable

Variable	Operational Definition
Capital Structure is measured using the Debt Ratio	DR = $\frac{Total\ Debt}{Total\ Assets}$
Profitability is measured using Return to Assets (ROA)	ROA = $\frac{Net\ income}{Total\ Assets}$
Company size is measured by the natural logarithm of total assets	Size = Natural Logarithm of total asset
Non-Debt Tax Shield (NDTS)	$NDTS = \frac{Depreciation}{EBIT + Depreciation}$
Growth Opportunities (GROW)	Growth = $\frac{\text{Sales growth}}{\text{total assets growth}}$
Tax expense (TAX)	Tax = Logarithm of income taxes
Liquidity is measured by the Current Ratio (CR)	$CR = \frac{Current\ Asset}{Current\ liabillity}$
Tangible assets are measured by comparing tangible assets and total assets.	$TA = \frac{Tanggible\ asset}{Total\ Asset}$
Business risk	Business risk is measured by changes in EBIT each year.

Research Model

Capital Structure = β_0+ β_1ROA+ β_2Size+ β_3NDTS+ β_4GROWTH+ β_5TAX+ β_6CR+ β_7TA+ β_8BRISK+ β_9GDP+ β_{10}INFL+e

IV. RESULT

700 Indonesian companies and 930 Malaysian companies with the research period 2019-2022 with a total of 2080 data. The results of each descriptive statistic are shown in the descriptive statistics results table.

Table 2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
DEBT	2080	0.3961	2.22207	0.000317	59,61374
ROA	2080	1040.5	600.5886	1	2080
SIZE	2080	27.5616	2.98836	16.5524	33.65519
NDTS	2080	0.10244	2.797132	-115.232	27.42578
GROW	2080	0.87209	1.314924	0.000442	28.82381
INCOME TAX	2080	16.935	2.224218	11.11513	21.77035
CR	2080	2.921936	14.60407	0.010758	486.7174
TANG	2080	0.522333	0.240757	0.0000532	0.982457
Ebit	2080	0.00012	-0.000021	-0.000055	0.0000044

DEBT reflects debt ratio, ROA reflects profitability, SIZE reflects the firm size, NDTS reflects non-debt tax shields, GROW reflects the firm's growth opportunity, and income tax reflects tax expense. CR reflects the firm's liquidity, TANG reflects Tangible Assets, and Ebit reflects business risk.

To test the multicollinearity in each independent variable, a correlation matrix should be conducted since all of our variables are parametric by choosing the Pearson correlation test. The result shows that there is no correlation value lower than -0.8 or higher than 0.8, indicating no multicollinearity.

Table 3: Result of Multicollinearity Test

	roa	size	ndts	growth	log_in~X	cr	ta	ebit1
roa	1.000							
size	-0.0166	1.000						
ndts	0.0075	0.0085	1.000					
growth	0.1148	-0.0651	0.0308	1.000				
log_in~X	0.2754	0.7788	-0.0351	0.0397	1.000			
cr	-0.0082	-0.0316	0.0023	-0.0085	-0.0707	1.000		
ta	-0.1919	0.1212	-0.0203	-0.3405	0.0260	-0.1408	1.000	
ebit1	0.0943	0.0920	-0.0010	0.0125	0.1249	-0.0059	0.0044	1.000

DEBT reflects debt ratio, ROA reflects profitability, SIZE reflects firm size, NDTS reflects non-debt tax shields, GROWTH reflects the firm's growth opportunity, and TAX reflects tax expense. CR reflects the firm's liquidity, TA reflects Tangible Assets, and Ebit reflects Business Risk.

A) Regression Test

In this research, several regression tests were carried out to find the research model. Statistic regression consists of polled least square, fixed effect, and random effect tests. Fix effect and random effect have been carried out to control unobserved factors. The results of the regression test were as follows.

Table 4: Regression Test

	(PLS)	(Fixed Effect.)	(Random Effect)
Variables	**DEBT**	**DEBT**	**DEBT**
ROA	-0.000399***	-0.0000	-0.0000***
	(0.0000777)	(0.00003)	(0.0003)
SIZE	-0.006691	-0.0438	0.02286
	(0.0238825)	(0.05201)	(0.0238)
NDTS	-0.0120704**	-0.0020	-0.0029
	(0.0146479)	(0.0044)	(0.0045)
GROWTH	0.9694439***	0.4341***	0.4927***
	(0.0333013)	(0.01752)	(0.0172)
TAX	-0.0001332	-0.0004***	-0.0004***
	(0.001296)	(0.00008)	(0.0008)
CR	-0.00046	-0.0008	-0.0010
	(0.002838)	(0.0013)	(0.0013)
TA	1.1884***	0.3178*	0.3584**
	(0.18599)	(0.1898)	(0.1628)
EBIT	0.0013	-0.0004	0.0004
	(0.00019)	(0.0005)	(0.0006)
Constant	-0.3357	1.6008	-0.3306
	(0.5976)	(1.4472)	(0.6344)
Observations	2,080	2,080	2,080
R-squared	0.3007	0.3212	0.3193
F-test	111.32***	82.06***	
Hausman Chi^2		1189.79***	

DEBT reflects debt ratio, ROA reflects profitability, SIZE reflects the firm size, NDTS reflects non-debt tax shields, GROWTH reflects the firm's growth opportunity, and TAX reflects tax expense. CR reflects the firm's liquidity, TA reflects Tangible Assets, and Ebit reflects Business Risk. Asterisk (***), (**) and (*) indicate statistically significant at 1%, 5%, and 10% significance level.

Table 2 shows the regression of Pooled Least Square (PLS), Fixed Effect (FE), and Random Effect (RE). Fixed effect and random effect should be conducted since; theoretically, panel data suffer unobserved individual factors. As a consequence of the existence of heteroscedasticity and multicolinearity, we use a fixed effect with robust standard errors. We also show the result of Chi2 of the Hausman test to understand which model is appropriate, fixed effect or random effect. Theoretically, a random effect is more efficient than a fixed effect. However, the random effect model may not have a consistent estimator. Hausman test shows that if the model of fixed effect model is significantly different from the random effect model, it implies that the fixed effect model has a more consistent estimator than random effect. Thus, a fixed effect is more appropriate. However, if the Chi2 of the hausman test is not significant, it implies that the consistency of fixed effect and random effect are

similar. Then, RE should be more appropriate as it has a similar consistency to FE while being more efficient than FE. Our result shows that Hausman Chi2 is significant (P-value<0.05). Thus, the FE model was more appropriate than the RE model since FE provides a more consistent estimator than RE. Therefore, we only explain the FE model. We keep showing the result of the RE model as a piece of information for readers.

Table 3 also shows that the significance of GROWTH and TA are consistent in both models. Meanwhile, Tax has a significant negative effect on the fixed effect and random effect models with significance at the 1% level. The ROA variable has a significant negative effect on the PLS and random effect models with a significance level of 1%. NDTS has a significant negative effect on the PLS model, with a significance level of 1%. CR and EBIT have no effect on debt in all models. In this regression test, multicollinearity and heteroscedasticity problems occurred, so a fixed effect test with robust standard error. The results of the fixed effect test with robust standard error are as follows.

Table 5: Fixed Effect With Robust Standard Error

Variables	(FE with Robust SE.) DEBT
	-0.0000
ROA	(0.0000)
	-7.396
SIZE	(0.200)
	-0.022
NDTS	(0.0056)
	0.4360**
GROWTH	(0.2058)
	-0.0004
TAX	(0.0003)
	-0.0009
CR	(0.00057)
	0.3475**
TA	(0.1735)
	0,0004
EBIT	(0.0005)
	0.3861
Constant	(0.3277)
Observations	2,080
R-squared	0.3209

DEBT reflects debt ratio, ROA reflects profitability, SIZE reflects the firm size, NDTS reflects non-debt tax shields, GROWTH reflects the firm's growth opportunity, and TAX reflects tax expense. CR reflects the firm's liquidity, TA reflects tangible assets, and EBIT reflects business risk. Asterisk (***), (**) and (*) indicate statistically significant at 1%, 5%, and 10% significance level.

Table 4 shows that growth and tangible assets have a significant positive effect on company debt at the 5% level. This shows that the higher the company's growth and the tangible assets it owns, the company's debt level will also increase. The variables ROA, SIZE, NDTS, TAX, CR, and EBIT do not affect the company's capital structure.

B) Discussion

The research results show that growth opportunities and tangible assets have a significant positive effect on the company's capital structure as measured using the debt ratio in companies in Indonesia and Malaysia. The company's debt load increases in proportion to its revenue growth. The company needs debt originating from external companies to carry out the company's operational activities. These results support the trade-off theory, which states that companies in the growth stage need funds to develop their business, and companies need debt to avoid the high costs of issuing shares. The use of debt is a natural incentive for the company to increase company profits. The research results also prove that tangible assets have a notable improvement in the capital structure of the business; the more company assets, the higher the company's debt level. These results support the trade-off theory that the higher the assets owned by the company, the company tends to increase external funding through debt with the assets owned as collateral for the company's debt. Trade-off theory also proves that companies use external funds in the form of debt to increase investment in their business.

The results of this research support the results of research conducted by Bolarinwa and Adegboye (2020) and Panda and Nanda (2020). Return on assets (ROA), which reflects the level of company profitability, has a significant negative effect on

capital structure in the pooled least square and random effect models. The higher the company's profit level, the lower the company's debt level. Companies tend to fund other companies using profits generated by the company. These results support the pecking order theory that companies which have high profits tend to choose lower debt for tax savings. This is in accordance with the research results of Bolarinwa and Adegboye (2020) and Liang et al. (2020). SIZE, Non-debt, tax shield, tax level, and company liquidity do not affect the company's capital structure. When calculating the debt funding component, the corporation does not take the size of the company's tax rate into account.

V. CONCLUSION

Research has demonstrated that the Return on Assets (ROA) of a corporation has a major negative impact on the debt-to-equity ratio, which measures the capital structure of the organization. The company's capital structure is significantly improved by growth opportunities and tangible assets. Several implications of the research results include, firstly, the results of this research prove that company characteristics in Indonesia and Malaysia use trade-off theory in making external funding decisions, especially through debt. Therefore, managers need to use the company's profit level first to finance investment. Companies in Indonesia and Malaysia are in the developing stage, so they need external funds for investment activities, and developing companies tend to use debt. Second, tax levels are not proven to influence company capital structure decisions, so Indonesia and Malaysia do not use debt to save taxes.

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