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## The Effect of Capital Structure on Firms' Profitability: a Case Study of Indonesian Firms

Neneng Djuaeriah<sup>1</sup>, MCom, Bella Joy Winarta, SE<sup>2</sup>

Swiss German University, Prominence Tower, Alam Sutera, Tangerang, Indonesia<sup>1</sup>

PriceWaterhouseCoopers(PWc), Jl. Jend. Sudirman, Jakarta Selatan, Indonesia<sup>2</sup>

[nenengd@gmail.com](mailto:nenengd@gmail.com)<sup>1</sup>, [bellajoywinarta@gmail.com](mailto:bellajoywinarta@gmail.com)<sup>2</sup>

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**Abstract**

*The purpose of this research is to seek the impact of capital structure towards firms' profitability on Indonesian firms listed in LQ45 using panel data of five consecutive years (2013 to 2017). The data obtained are from audited financial statements of 24 constantly listed in LQ45 . This study used the linear regression to analyze the connection between total debt to represent capital structure and firms' profitability of Return on Assets. This study includes growth opportunity, firm size, tangibility, liquidity and non-debt tax shield as controlled variables. The research resulted in a significant positive relationship between firms' profitability and capital structure. Only liquidity provides a negative significant impact on profitability. In addition to that growth opportunity and size have insignificant negative influence, while tangibility and non debt tax shields have insignificant positive influence toward profitability.*

*Keywords: Profitability, Capital Structure, Total Debt Ratio, Return on Asset, Indonesian Firms.*

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## I. INTRODUCTION

### A. Background of Study

Investigation of the relationship between capital structure has been an important research topic for decades[1]. A firm's profitability is affected by multiple factors, especially by capital structure. Any company's financial decisions are essential to the company's management. A critical determination comes from an optimal capital structure[2]. Capital, the external source, becomes a sign of a company's financial debts. Capital structure plays an essential role in company operation. It is a critical and common determinant to measure the firm's profitability for many researchers and managers. The capital structure choice decision is crucial to any companies' development. Capital structure consists of debt and equity, and its combination of debt and equity used for financial analysis purposes. The managers always use two ways to get the capital: one is from debt including bonds issuance, and loaning from creditors, and the other one is from equity that includes issuing stocks to investors [3].

The most popular capital structure theories are theory of pecking order, static trade-off theory and agency cost theory. Although, both financing by debt and equity have their own strengths and weaknesses. The strengths of debt finance are tax-shield, regular paying off and cheapest sources of finance, while default risks and cost of bankruptcy are its weaknesses. The equity financing benefit is likely to occur in low cost bankruptcy, while lack of tax advantage, expensive and controlling free cash flow difficulty are its drawbacks [4].

The capital structure choice is crucial for the firm's financial decision makers. It is because it affects Earnings before Interest and Tax. It is in turn to change the market value of the firm and share value. Nevertheless, The optimal capital structure to increase firm's profitability through capital cost reduction has not been formulated by corporate finance academicians and practitioners [3].

The main research aim was to look into the connection between capital structure (total debt ratio) and profitability of LQ45 publicly listed companies in Indonesian Stock Exchange(IDX). Furthermore, this review will look for any consequences between control variables included and profitability. The control variables are growth opportunity, firm size, tangibility, liquidity and non debt tax shield. The reason is to clarify the variations in profitability that cannot entirely be explained by leverage.

## II.LITERATURE REVIEW

### A. Theories of Capital Structure

Theory of Static Trade-off: In order to get a good company value is to form an attractive target debt ratio prediction. It is due to the debt costs issuance and repayment issue. The best combination may be achieved when there is an offsets between the payback marginal value linked with debt concerns and the raise in the present value of the costs corresponding by handing out more debt [5]. The interest payment tax deduction is the main advantage of debt. This is in favors of the debt application[6]. The other of debt finance concerns how to control the conflict of interest between managers and shareholders. The misuse of free cash flow opportunity is possessed by corporate managers on ineffective and perquisites investment decisions. The use of debt allows the limited free cash flow available to managers and improves control of firms. The costs related to debt issuance are the cost of financial distress[7] and the firm's cost to resolve the conflicts between shareholders and debtors[8].

Pecking Order Theory. Myers and Majluf [9] and Myers[10] advise the extra cost on issuing new external funds due to the asymmetric information among managers and investors overwhelms the other costs and benefits mentioned in the trade-off model. Thus, the risk, transaction costs and asymmetric information linked with issuing new securities guides firms of their financing choice priority by: first internally through retained earnings then cash balance reduction or marketable securities liquidation, second externally by debt saving then the issuing equity as a last resort. Consequently, it is difficult to form an optimal capital structure posited by the pecking order theory[32]. Shyam-Sunder and Myers [32] suggest that based this theory, the debt proportion should be quantitatively matched by the internal financial deficit. However, they have documented that the assumption of information asymmetry invalidates the sole effect of the financial deficit on capital structure. Similarly, Frank and Goyal [33] assert that financial deficit is not the only explanatory factor of pecking order behavior. Instead, much of its influences are derived from conventional factors that are related to the requirements of external finance and facts of the way firms use it.

Agency costs Theory. The separation of ownership and control and conflicts of interest between managers and shareholders are agency costs representation. The free cash flow is one of the conflict motives between managers and shareholders. Jensen [8] as quoted in Saleyi & Biglar [11] defines a regular repayment of debt to secure that managers give prepossession to create wealth of the equity-holders. The managers' own interest can be

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reduced by increasing debt, using high cash flow and profitable companies. This is done until no wasted company's resources as their individual interest consequences. The other complication is that managers may not receive all the benefits of their activities. This is acknowledged by low manager's share in company ownership. To overcome this when manager's increase stock is high[11].

#### B. Empirical Evidence

The examination done by Alimi et al. [12] reviewed a sample of 115 Nigerian companies from 1998 to 2012 to examine the interaction between capital structure and profitability. The finding is the performance is negatively related to capital structure.

According to Negasa [4] studied 32 large private manufacturing firms in Ethiopia from 2006 to 2010. The outcome showed a positive connection between debt and profitability. There was a significantly positive relationship between firm's size and profitability as well as firms' growth and profitability.

Agha[13] investigated the analysis of capital structure determinants and their relationship in the cement companies in Pakistan. The effect shows profitability is negatively and significantly tied in debt ratio. She did a review in the financial information of the cement industry and lower debt structure to increase profit and maximize the shareholders wealth.

Yegon et al. [14] examined the association of capital structure and the firm's profitability. They used data from 2004-2012. The sample is from the banking industry listed on Nairobi Stock Exchange, Kenya. The result indicated that there is an unfavorable link between the long-term debt and profitability. And the relationship of short-term debt and profitability are positive.

The inspection done by Akinyomi [15] on capital structure connection with financial performance in Nigeria. The data is selected from three companies from 2007 to 2011 in the food and beverage industries. The results found that there is a significant relationship between capital structure(long debt capital to capital, debt to capital, debt to common equity and short term debt to total debt and age) and corporate financial performance( ROA and ROE). All capital structure measures except long term debt to capital are positive and significant toward ROE and ROA. However, long term debt to capital is significantly and negatively related with ROA and ROE.

The analysis by Khalaf [16] depicted a relationship between capital performance (ROA) and capital structure(total debt ratio and profit margin) by using data from 2005-2009 and 45 selected manufacturing firms listed in Amman Stock Exchange. It is found that total debt is positively related to return on assets.

In accordance with Zeitun and Tian[17] inquired the capital structure and corporate performance impact in 167 Jordanian listed firms. The results showed a firm's total debt ratio had a significant negative impact on the firm's performance measures, in both the market's and accounting measures. Furthermore, the variable growth and size have a positive and significant effect on the firm's profitability. The assets tangibility is negatively interconnected with firm's performance

The research conducted by Wu Quibing[3] regarding capital structure and profitability (return on asset and return on invested capital) on 15 manufacturing companies in the U.S for ten-year period (2009-2018). The findings revealed that the total debt to tangible assets and total debt to equity ratios demonstrate a negative relationship with profitability and significant at 1% confidence level. In addition to that, Firm size is positively related to profitability.

Furthermore, Ashraf,Ameen & Shahzadi [18] explored the impact of capital structure on firms' profitability of 18 listed cement companies in Pakistan. It is found that short term debt has significantly positive correlations with ROA and ROE. While debt ratio and long term debt ratio have significantly negative on return on asset (ROA) and return on equity (ROE). This would assist to predict optimal capital structure.

C. Conceptual Framework

Profitability

:

ROA

TDR proxy Capital  
Structure

Controlling Variable:  
GROW, SIZE, TANG,  
LIQU,NDTS  
SIZE  
TANG  
LIQU  
NDTS

The following graphic is our conceptual framework



**Fig. 1: Research Framework**

**D. Hypothesis**

Based on the research problems and conceptual framework above therefore the hypotheses of this research are as follows:

1. There is a positive significant relationship between total debt ratio and profitability.
2. There is a positive significant relationship between growth opportunity and profitability.
3. There is a positive significant relationship between firm size and profitability.
4. There is a positive significant relationship between tangibility and profitability.
5. There is negative significant relationship between liquidity and profitability,
6. There is a positive significant relationship between non debt tax shield and profitability.

### III. METHODOLOGY

**A. Population and Sampling**

The population sampling companies are from LQ45 listed in Indonesian Stock Exchange (IDX). The period is from 2013 to 2017. The criteria used to select the sample are as follows. There are 580 companies listed in IDX and constantly published its financial statement in IDX from 2013 to 2017. There are 29 companies that are those constantly listed in index LQ45 including 5 banks and financial institutions. The 24 chosen companies exclude the banks and financial institutions. Based on the above selection criteria, there are a total of 24 firms as our sample with 5 years observation period. Thus we have a total of 120 observations.

**B. Data Analysis**

The Data is analyzed by using multiple linear regression analysis on panel data samples of firms from the period of 2013-2017. The regression has been used to analyze the relationship between dependent variable (ROA) and independent variables (debt ratio, growth rate, firm size, assets tangibility, liquidity and non-debt tax shield) as presented at table 1 below.

Table 1. Variable Measurement

Variable	Formula	Previous Research
Profitability(ROA)	Net Income/Total Assets	[19] [20]

Total Debt(TDR)	Total Debt/Total Assets	[21] [22]
Growth opportunity (GROW)	Liabilities plus market value of equity to total assets	[23] [4] [24]
Size(SIZE)	Natural Log of Total Assets	[25] [26] [27]
Tangibility(TANG)	Fixed Assets/Total Assets	[21] [22] [28]
Liquidity(LIQU)	Curr.Assets/Current.Liability	[29] [30] [31]
Non Debt Tax Shield (NDTS)	Depreciation/Total.Assets	[27] [28]

### C. Model Specification

The regression equations tested are as follows:

$$ROA_{i,t} = \alpha_{i,t} + \beta_1 TDR_{i,t} + \beta_2 GROW_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 TANG_{i,t} + \beta_5 LIQU_{i,t} + \beta_6 NDTS_{i,t} + \epsilon_{i,t}(1)$$

Where:  $\beta_1$  is the coefficient for total debt ratio,  $\beta_2$  is the coefficient for growth rate  $\beta_3$  is the coefficient for firms' size,  $\beta_4$  is the coefficient for tangibility,  $\beta_5$  is the coefficient of firms, liquidity,  $\beta_6$  is the coefficient of nod debt tax-shield,  $\epsilon_{i,t}$  is error terms.

Linear regression analysis methods should meet the statistical requirements through classical assumption tests. The requirements on the classic assumption test include: normally distributed residual value (normality test) ; no linear relationship between independent variables (test of multicollinearity) ; no correlation between the residues in period t with residue in period t-1 (test of autocorrelation) ; similarity residual variance from one observation to another observation (test of heteroscedasticity).

Research Question:

Do debt ratio, growth opportunity, firm size, assets tangibility, liquidity and non-debt tax shields have influence on firm's capital structures?

## IV. RESULTS AND DISCUSSIONS

### A. Analytical Framework

The Descriptive Statistics, Correlation and Regressions results summarized on the following tables:

Table 2. Descriptive Statistic

	N	Min	Max.	Mean	Std. Deviation
ROA	120	-.007	.643	.103	.092
TDR	120	.047	.768	.412	.159
GROW	120	.637	23.286	2.665	3.561
SIZE	120	13.436	26.412	23.044	3.110
TANG	120	.000	1.000	.610	.216
LIQU	120	.450	12.117	2.442	1.816
NDTS	120	.025	.949	.241	.195

From the descriptive table above, it is concluded that the variables of capital structure(TDR) mean and maximum values are greater than return on asset (ROA). non debt tax shield(NDTS), liquidity(LIQU), tangibility(TANG), firm size(SIZE), Growth opportunity (GROW), mean and maximum value is high but return on asset (ROA) mean and maximum values are low. This clarifies that Indonesian firms listed in LQ45 use more debt than equity because of this firms maintaining low profitability. In addition, the classical assumption tests pass normality and multicollinearity, but do not pass heteroscedasticity and autocorrelation Therefore, this data is only valid for this research.

Table 3. Correlation between variables

	ROA	TDR	GRO W	SIZE	TAN G	LIQ U	NDT S
ROA	1						
TDR	.215*	1					
GRO W	-.072	.050	1				
SIZE	.438	.590		1			
TAN G					1		
LIQ U						1	
NDT S							1

SIZE	-.153	-.042	.064	1			
	.086	.651	.488				
TANG	.001	.450**	-.010	.057	1		
	.990	.000	.914	.537			
LIQU	-.219*	-.123	.189*	-.136	-.066	1	
	.017	.182	.039	.139	.477		
NDTS	.129	.023	.320**	.141	.067	-.054	1
	.192	.820	.001	.105	.497	.581	

From table 3 reflects the correlation between profitability and capital structure variables. The total debt ratio, and liquidity are positively and negatively correlated at 5% confidence level respectively. The growth and size are found negatively correlated toward profitability but not significant. Then tangibility and non debt tax shields are positive and insignificant correlated with profitability This is in line with the theory of capital structure [7]. The theory states that the debt to lower the cost of capital and maximize the firm's value are used by firms. This is also consistent with the previous research findings such as Gill, Nahum and Neil [36], Ayad and Mustofa [37], Tiny and Lean[38]. Whereas it contradicts with the studies made by Zeitun and Tian[17], Ashraf, Ameen & Shahzadi[18], Alimi et.al[12] and Agha[13].

The growth opportunity(GROW) has a negative insignificant effect on firms' profitability. It is depicted by correlation coefficient value of 0.948 from table 4. The result is inconsistent with Zeitun and Tain[17], Negasa[4].

The variable firm's size and ROA showed a negative relationship with a coefficient of 78.572. It means that it gains higher profit as the firms' become smaller, and vice versa. This follows Yazdanfar and Ohman[39] reviews. This finding differs from previous studies, which found a positive relationship conducted by Negasa [4], Zeitun and Tian[17], Wu Quibing[3].

A positive coefficient of 0.887 is experienced by the tangibility(TANG) variable, but insignificant. This displays that profitability of Indonesian' firms is affected by having larger fixed assets. This in compliance with the research conducted by Negasa [4] but as opposed to Wu Quibing[3]

Moreover, the liquidity (LIQU) has a significant negative impact on ROA at 5% significance level. This goes after agency cost theory states that debt finance as a disciplinary tool as consequences of managers discretion to use large amounts of free cash flow leading to company's profitability reduction. This is similar with Negasa [4], and Bagchi[34].

The positive regression result illustrated relation non debt tax shield (NDTS) and profitability but insignificant confirmed by a coefficient of correlation value of 0.550. This is consistent with Negasa[4] and Zeitun and Tian[17]. This is because a firm having lower non debt tax shield is more sensitive to use higher leverage than a firm having higher non debt tax shield[35].

**Table 4** Regression Result

Variable	Coefficient	T-statistic	Sig.
C	28516.958	2.717	.008
TDR	.089	1.529	.120
GROW	-.948	-.192	.848
SIZE	-78.572	-2.584	.011
TANG	.887	2.028	.045
LIQU	-2.961	-2.272	.025
NDTS	.550	.770	.443
Rsquared	0.564		
F-statistic	24.380		
Sig.	<u>0.000</u>		

Form table 4 illustrates that the value of R-squared 0.564 means that 56.4% of profitability variation is described by capital structure. Total debt ratio (TDR) has a positive significant impact on return on asset (ROA). The same results found by Yegon et al. [14] but inconsistent with Agha[13]

#### B. Data

The FDI data used in this study are Outward FDI from China to the 10 host countries from ASEAN, which are Brunei, Cambodia, Thailand, Singapore, Vietnam, Malaysia, Myanmar, Laos, Philippines and Indonesia. For the dependent variable, the study uses the annual FDI outward from 2003 to 2018, collected from World Bank Database. For the independent variables are collected from World Bank Database, The Statistical Bulletin of China's Outward Foreign Direct Investment, International Monetary Fund, UNCTAD Database, China Banking Regulatory Commission, China Insurance Regulatory Commission, People's

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Bank of China, China State Administration of Foreign Exchange, the geographic distance are obtained from the website ([www.indo.com/distance](http://www.indo.com/distance)).

## V. CONCLUSION AND RECOMMENDATIONS

### A. Conclusion

1. The investigation of capital structure approached by total debt ratio and profitability is positively correlated with profitability at 5% confidence level. It means higher degrees of leverage have higher profitability. As less expected bankruptcy costs will be experienced by high performance firms. Therefore, hypothesis one is accepted

2. The relationship between growth opportunity and size are insignificant negatively correlated with profitability. As growth depends on the size of the firm. All firms are not relying on internal financing so they have the ability to consider issuing external equity to stay in control. The larger firms generally are more profitable. Therefore, hypothesis two and three are rejected.

3. The relationship between non debt tax shields and tangibility are positively insignificant correlated with profitability. This indicates that tangibility has a negative influence on profitability. In addition, the non debt tax shield goes the same direction as profitability increases. Companies with low non debt tax shields tend to use high leverage. Therefore hypothesis four and six are rejected.

4. The relationship between liquidity is a negative significantly correlated with profitability. This implies that a unit change in liquidity will decrease the profitability by 296 percent. Therefore hypothesis five is accepted.

### B. Recommendation

This study was only focused on Indonesian LQ45 companies and the outcome may not represent all other sectors in Indonesia. Moreover, it would be advisable to add variables for instance short term debt ratio, long term debt ratio, debt to equity ratio and other profitability measurement such as return on equity, earning per share, operating margin and profit margin. The research did not include macroeconomics variables such as inflation and interest rate for further study examination.

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