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**EFFECT OF PROFITABILITY, LIQUIDITY,  
SALES GROWTH, BUSINESS RISK, AND ASSET  
STRUCTURE ON CAPITAL STRUCTURE**

Mohamad Zulman Hakim<sup>1</sup>, Dinda Apriliani<sup>2\*</sup>

**ABSTRACT**

The purpose of this study was to determine the effect of Profitability, Liquidity, Business Risk Sales Growth, Asset Structure on Stock Prices in companies in the basic and chemical industry sectors that are Listed on the Indonesia Stock Exchange (IDX). The time period of the study is 3 years, 2016-2018. The population of this study includes all basic and chemical industry companies listed on the Indonesia Stock Exchange (IDX) for the 2016-2018 period. The sampling technique uses purposive sampling technique. Based on the predetermined criteris obtained 27 companies. The type of data used is using secondary data obtained from the Indonesia Stock Exchange website. That The analysis method used is panel data regression analysis. The results showed that partially profitability (ROA) and sales growth had a positive effect on Mode Structure. Business risk and asset structure have a negative effect on capital structure. While liquidity does not affect the capital structure.

**KEYWORDS:** Asset Structure, Business Risk, Liquidity, Profitability, Sales Growth.

**ABSTRAK**

Tujuan dari penelitian ini untuk mengetahui pengaruh Profitabilitas, Likuiditas, Pertumbuhan Penjualan Risiko Bisnis, Struktur Aktiva terhadap Harga Saham pada perusahaan sektor Industri dasar dan Kimia yang Terdaftar di Bursa Efek Indonesia (BEI). Periode waktu penelitian yang digunakan adalah 3 tahun yaitu 2016-2018. Populasi penelitian ini meliputi seluruh perusahaan Industri dasar dan Kimia yang terdaftar di Bursa Efek Indonesia (BEI) periode 2016-2018. Teknik pengambilan sampel menggunakan teknik purposive sampling. Berdasarkan teknik yang telah ditetapkan diperoleh 27 perusahaan. Jenis data yang digunakan menggunakan data sekunder yang diperoleh dari website Bursa Efek Indonesia. Bahwa Metode analisis yang digunakan adalah analisis regresi data panel. Hasil penelitian menunjukkan bahwa secara parsial profitabilitas (ROA) dan pertumbuhan penjualan berpengaruh positif terhadap struktur modal. Risiko Bisnis dan Struktur Aktiva berpengaruh negatif terhadap struktur modal. Sedangkan likuiditas tidak berpengaruh terhadap struktur modal.

**KATA KUNCI:** Likuiditas; Pertumbuhan Penjualan; Profitabilitas; Risiko Bisnis; Struktur Aktiva.



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## INTRODUCTION

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Capital structure is a balance or comparison between foreign capital and own capital in a company. This foreign capital is in the form of long-term and short-term debt. Meanwhile, capital itself is divided into two, namely retained earnings and company ownership. Capital structure according to ([Sartono, 2014](#)) is defined as follows: "The capital structure is a balance of permanent short-term debt, long-term debt, preferred stock and common stock". According to ([Sudana, 2009, p. 189](#)), the capital structure is defined as follows: "The capital structure is related to the long-term expenditures of a company as measured by the ratio of long-term debt to its owner's equity". So the capital structure is a comparison between long-term debt and equity used do company.

Indonesia as a developing country has experienced rapid development in several industrial sectors, particularly in the fields of plastics and packaging, metals and their components, ceramics, glass and wood porcelain, chemicals, pet food, paper and cement. Companies in the basic industry and chemical sectors were chosen to be the objects of research with the consideration that the existence of this industrial sector is directly felt by all levels of society, for example in the cement sector, wood porcelain, ceramics, without which the development process in Indonesia cannot run well. , because this is very closely related to the others. So that with this, investors are interested in investing in this company.

Profitability plays an important role in company development because it can measure the company's performance and success. Profitability can enhance a company's reputation by maximizing investor value and stakeholder value. Because profitability shows there are good prospects in the future. Thus every business entity or company will always try to increase its profitability for the survival of the company itself. Because the higher the profitability of a company, the more guaranteed the survival of the company today and in the future ([Hermuningsih, 2013](#)). Profitability is the ability of a company to use its resources, both assets and capital to make a profit. Companies that obtain high profitability are considered as companies that are performing well. According to the pecking order theory, companies that obtain high profitability have a tendency to use debt, so that their capital structure will be low. Empirical evidence conducted by previous researchers ([Utami & Widanaputra, 2017](#)) states that the results of profitability have a negative effect on capital structure while the results of research conducted by ([Wijaya & Utama, 2014](#)) show that the results of profitability have a positive effect on capital structure and ([Septiani & Suaryana, 2018](#)) conducted a study which showed that the results of profitability had no effect on the capital structure.

Liquidity is the ability of a company to meet short-term financial obligations in a timely manner, which is indicated by the size of current assets, namely assets that are easy to convert into cash consisting of cash, securities, trade receivables and inventories ([Sartono, 2014](#)). Liquidity is useful for knowing the company's ability to finance and fulfill its obligations or debts when they are collected or due. Companies that have high liquidity mean companies that have sufficient internal financing to pay their obligations so that their capital structure is also reduced ([Ramlall, 2009](#)). Previous empirical evidence ([Utami & Widanaputra, 2017](#)) states that the results of liquidity have a negative effect on capital structure while the results of research conducted by ([Deviani & Sudjarni, 2018](#)) show that liquidity results have a positive effect on capital structure and ([Wirawan, 2017](#)) conducted research that shows that the liquidity results have no effect on the capital structure.

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Sales growth is an indicator or condition of demand and company competitiveness in an industry. Thus, an increase in the growth of a company will affect the ability to maintain

profits in marking future opportunities. According to ([Brigham & Haouston, 2011](#)) the stability of a company's sales can have an impact on the amount of loans a company can obtain. The better the sales rate of the company, the larger the loan amount. The company's capital structure will change depending on the development of the company's sales level. Previous empirical evidence ([Gunadhi & Putra, 2019](#)) states that the results of Sales Growth have a positive effect on capital structure, while the results of research conducted by ([Yudiandari, 2018](#)) show that the results of Sales Growth have a negative effect on capital structure. And ([Wijaya & Utama, 2014](#)) show that sales growth results have no effect on capital structure.

Business risk is the uncertainty that a company faces in carrying out its business activities. According to ([Brigham & Haouston, 2011, p. 157](#)) In a company, business risk increases if high debt is used. stated that companies with high business risk will increase the use of debt as a source of funding. Business risk has an insignificant effect on the capital structure because low risk will result in company management not considering business risk in determining the amount of debt. Previous empirical evidence ([Puspita & Dewi, 2019](#)) states that the results of business risk have a negative effect on capital structure, while the results of research ([Septiani & Suaryana, 2018](#)) show that business risk has no effect on capital structure.

Asset structure is a balance or comparison between fixed assets and total assets. The problem in the formation of the asset structure of most industrial companies is that most of their capital is embedded in fixed assets which prioritize the fulfillment of their capital from fixed capital, namely equity, while debt is a complement. Companies with larger assets consisting of current assets will tend to prioritize meeting their financing needs with debt. Thus it shows the effect of asset structure on the capital structure of a company. Previous empirical evidence ([Deviani & Sudjarni, 2018](#)) states that the results of the Asset Structure have no effect on capital structure, while research conducted by ([Wirawan, 2017](#)) shows that the Asset Structure results have a positive effect on capital structure and ([Nopando, 2015](#)) conducted research that shows that the Asset Structure result has a negative effect on the capital structure.

Based on the above phenomena, the researcher is interested in conducting a study entitled "The Effect of Profitability, Liquidity, Sales Growth, Business Risk, and Asset Structure on Capital Structure in an Empirical Study of Companies in the Basic Industry and Chemical Sectors in Indonesia. Stock Exchange 2016-2018".

### **Basic Theory: Agency Theory**

The main principle of this theory is the statement that there is a relationship between performance and the party that gives authority (principal), namely the owner (shareholder), as well as creditors and investors as parties who receive authority (agents) in the form of a cooperation contract ([Rahmawati, 2015](#)). In this study, the principal focused on the creditor's role as an authorization. Modern agency theory attempts to explain a firm's capital structure as a way of minimizing the costs associated with the separation of ownership and control of the firm. The company is managed by managerial, has low agency costs. This is because shareholders and managers have the same goals ([Aljana & Purwanto, 2017](#)).

### **Conceptual Framework**

The variables used in this study consisted of two variables, namely the dependent variable and the independent variable. The dependent variable used in this study is the capital

structure variable which is proxied by DER. While the independent variables used in this study are Profitability, Liquidity, Sales Growth, Business Risk, Asset Structure as factors that affect the company's capital structure. Thus based on the theoretical basis, research objectives and results of previous research as well as the problems that have been raised, then used as the basis for formulating hypotheses, the following is the framework used in the research model. The following is an overview of the conceptual framework which is formed as follows:

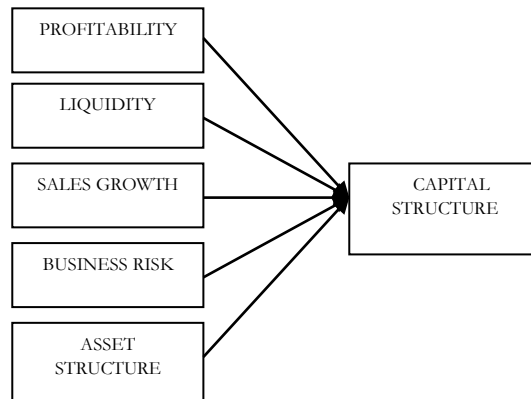


Figure 1. Conceptual Framework

**Hypothesis Development**

**Effect of Profitability (X1) on Capital Structure**

Profitability has a relationship with capital structure, if the company has positive profitability or makes a profit, then in meeting the company's future capital needs, the company can use funding or financing through retained earnings. If retained earnings are deemed sufficient to meet the company's capital, it means that the company does not need to use capital originating from debt. (Brigham & Haouston, 2011, p. 189) states that companies with higher profit levels generally use relatively little debt because with high profits, companies can use capital only with retained earnings. Profitability is a measure of the success of a company, profitability is the company's ability to generate profits. The higher the level of profit generated by the company, the higher the profitability ratio. This is in accordance with the Pecking Order Theory, namely company managers prefer to use internal rather than external funding, but if internal funding is deemed insufficient to collect funds originating from debt.

The results of the study (Marfuah & Nurlaela, 2017) reveal that profitability has a positive effect on capital structure. The results of research (Wijaya & Utama, 2014) also show that their results are in accordance with the pecking order theory which implies that it is more profitable if companies prefer to use internal funds rather than use debt in their capital structure. Based on this description, the following hypothesis can be formulated:

***H1: Profitability affects the capital structure.***

**Effect of Liquidity (X2) on Capital Structure**

According to (Sartono, 2014, p. 116) Liquidity is the ability of a company to meet its short-term financial obligations on time, by showing the size of current assets, namely assets that are easy to convert into cash, consisting of cash, securities, accounts receivable and inventory. Based on the pecking order theory, companies with high levels of liquidity will reduce the use of debt. The higher the level of liquidity of a company, the lower the company's capital structure. The high liquidity of a company indicates that the

company has adequate internal finance to meet short-term obligations that have an impact on the capital structure.

The results of the study ([Deviani & Sudjarni, 2018](#)) reveal that liquidity has a positive effect on capital structure. Research results ([Dharmadi & Putri, 2018](#)) also show that their research results are the same. Based on this description, the following hypothesis can be formulated:

***H<sub>2</sub>: Liquidity affects the capital structure.***

### **The Effect of Sales Growth (X3) on Capital Structure**

Sales growth is a decision making regarding the selection of elements of the capital structure that can be influenced by the company's sales growth rate. The higher the sales growth rate of a company, the more successful the company is in executing its strategy. According to ([Brigham & Haouston, 2011](#)), the stability of a company's sales can have an impact on the amount of loans a company can obtain. The better the sales rate of the company, the larger the loan amount. The company's capital structure will change depending on the development of the company's sales level. High company growth causes the company to need more capital so that additional external capital is needed. In line with the pecking order theory, companies with higher growth rates will rely on external sources of funding in the form of long-term debt. This is because internal funding sources are no longer sufficient to support the company's growth. Based on this description, it can be concluded that the higher the growth rate of the company, the higher the level of debt utilization by the company.

This statement is strengthened by an empirical study of the effect of sales growth on capital structure as conducted by ([Gunadhi & Putra, 2019](#)) which shows that sales growth has a positive effect on capital structure. Based on a number of supporting results, the following hypothesis is formulated:

***H<sub>3</sub>: Sales growth affects the capital structure.***

### **Effect of Business Risk (X4) on Capital Structure**

Business Risk If income variability is high, the company's business risk will be high. So that the resulting profit will fluctuate, which means that income is not stable, with high business risk, companies tend not to reduce debt, but still use debt to meet their funding needs. This study supports the trade-off theory, where companies that have high profitability and at the same time have high business risk will try to reduce their taxes by increasing their debt ratios, so that additional debt will reduce taxes.

This is supported by research ([Puspita & Dewi, 2019](#)) which states that business risk has a negative effect on capital structure. Based on this description, the hypothesis proposed is as follows:

***H<sub>4</sub>: Business risk has a negative effect on capital structure.***

### **Effect of Asset Structure (X5) on Capital Structure**

Asset structure is defined as the composition of the company's assets which shows how much the company's assets can be used as collateral for a loan. Asset structure can affect the capital structure because companies that have large fixed assets will tend to get loans where these assets can be used as collateral to increase their operating activities ([Tijow et al., 2018](#)). The higher the asset structure of the company, the higher the company's ability to guarantee long-term loan debt ([Batubara et al., 2017](#)).

The results of the study (Wirawan, 2017) state that profitability has a positive effect on capital structure. Based on this description, the following hypothesis can be formulated:

*H<sub>5</sub>: Asset structure affects the capital structure.*

## METHOD

### Population and Sample

The research method used was purposive sampling, which is the type of sample selection based on certain considerations and considerations based on the research objectives. The sample in this study were companies in the basic industry and chemical sectors listed on the Indonesia Stock Exchange (BEI) during 2016-2018. From the results of sample selection using purposive sampling, 27 companies that meet the criteria were selected.

### Operational Definition of Variables

#### Capital Structure (Y)

The capital structure in this study is calculated using the debt to equity ratio (DER), which is the ratio between total debt and total assets for 2016-2018 in transportation companies on the Indonesia Stock Exchange. The total debt-to-equity ratio unit is a percentage. According to Wiagustini in (Gunadhi & Putra, 2019), to measure the debt to equity ratio (DER) is:

$$DER = \frac{\text{Total Liability}}{\text{Total Equity}} \times 100$$

#### Profitability (X<sub>1</sub>)

Profitability is the company's ability to earn profits as measured by using a percentage used to assess the extent to which the company is able to generate profits. One of the measuring tools that can be used to measure company profitability is Return On Assets (ROA). ROA shows how much net profit can be polished from all assets owned by the company, because it uses the profit after tax figure with the company's assets (Yudiandari, 2018).

The more this ratio also provides a better objective level for the profitability of a company because it shows the effectiveness of management in using assets to generate income. The return on assets or ROA formula is as follows:

$$ROA = \frac{\text{Profit After Tax}}{\text{Total Assets}} \times 100\%$$

#### Liquidity (X<sub>2</sub>)

The liquidity ratio that is commonly used is the current ratio. A high current ratio will be considered to indicate that there is no liquidity problem, so the higher the liquidity of a company, the higher the profit generated by a quality company, because company management does not need to practice earnings management (Warianto dan Rusiti; 2014).

Liquidity in this study is calculated using the quickt ratio. Almost the same as the current ratio, but current assets must be reduced by the amount of inventory (inventory). According to (Kasmir, 2010), the formula for measuring liquidity with a quick ratio is:

$$\text{Quick Ratio} = \frac{\text{Current Asset} - \text{Inventory}}{\text{Current Liability}} \times 100\%$$

### Sales Growth (X<sub>3</sub>)

According to ([Gunadhi & Putra, 2019](#)), the company's sales growth in this study is a comparison between period t sales minus period t-1 sales with t-1 company sales from 2016-2018. Sales growth is expressed as a percentage and can be expressed in the following formula:

$$\text{Sales Growth} = \frac{\text{Sales}(t) - \text{Sales}(t-1)}{\text{Sales}(t-1)} \times 100\%$$

### Business Risk (X<sub>4</sub>)

Business risk is the risk of running a type of business or business. According to ([Brigham & Haouston, 2011, p. 157](#)) business risk will show how much risk a company has if a company does not use debt. According to ([Puspita & Dewi, 2019](#)) the proxy for business risk is measured by the standard deviation of the expected return before tax (EBIT) on the company's assets in the form of a percentage with the following formula:

$$\text{Basic Earning Power Ratio} = \frac{\text{EBIT}}{\text{Total Aktiva}}$$

### Asset Structure (X<sub>5</sub>)

Asset structure or what is commonly called as asset tangibility is the determination of how much the allocation amount for each asset component will reflect the ability or amount of collateral for the assets owned by the company for the guarantee made ([Andika & Sedana, 2019](#)). The greater the asset structure of the company, the greater the opportunity for the company to use debt, with a percentage using the following formula:

$$\text{TANG} = \frac{\text{Total Aktiva Tetap}}{\text{Total Aktiva}}$$

## Hypothesis testing

### Descriptive Statistical Analysis

Descriptive statistical analysis is statistical data that can be used to analyze data by describing or describing the data that has been collected so that the data will produce or make conclusions that apply to the general public or generalizations ([Sugiyono, 2019](#)). Descriptive statistical analysis provides an overview or description of a data seen from the average (mean), standard deviation, variance, maximum, minimum.

### Panel Data Regression Estimates

Panel data is a combination of cross section data with time series. If each sectional unit has the same number of time series observations, it is called a balanced panel (number of observations = N x T). Conversely, if the number of time series observations is different for the uni cross section it is called an unbalanced panel. Panel data regression analysis has three kinds of models, namely: Common Effect, Fixed Effect and Random Effect models.

**Common Effect Model or Ordinary Least Square**

The Common Effect Model is the simplest panel data approach. This model does not pay attention to or emphasize individual dimensions or time, so it is assumed that the behavior between individuals is the same in various time periods. This can be seen from the model that combines time series and cross section data in the form of a pool, estimating using the pooled least square approach.

The regression equation in the common effect model can be written as follows:

$$Y_{it} = \alpha + X_{it}\beta + \epsilon_{it}$$

Where:

i = Number of observations

t = Number of periods

$\epsilon$  = Time (error)

**Fixed Effects Model**

Fixed Effects Model assumes that there are different effects between individuals. These differences can be accommodated through differences in intercept, where differences in intercept can occur due to differences in work culture, managerial and incentives. However, the slope is the same between companies.

**Random Effects Model**

In contrast to the fixed effect model, the specific effect of each individual is treated as part of the random error component and is uncorrelated with the observed explanatory variables, such a model is called the Random Effects Model (REM). This model is often called the Error Component Model (ECM). This random effect model equation can be formulated as follows:

$$Y_{it} = \alpha + X'_{it}\beta + w_{it}$$

Where :

$$w_{it} = \epsilon + u_i; E(w_{it}) = 0; E(w_{it}^2) = \alpha^2 + \alpha_u^2;$$

$$E(w_{it}, w_{jt-1}) = 0; i \neq j; E(u_i, \epsilon_{it}) = 0;$$

$$E(\epsilon_{it}, \epsilon_{jt}) = E(\epsilon_{it}, \epsilon_{js}) = 0$$

Although the  $w_{it}$  error component is homoscedastic, it turns out that there is a correlation between  $w_{it}$  and  $w_{it-1}$  (equicorrelation), namely:

$$Corr(w_{it}, w_{i(t-1)}) = \alpha_u^2 / (\alpha^2 + \alpha_u^2)$$

Therefore, the OLS method cannot be used to obtain efficient estimators for random effects models. The right method for estimating the random effect model is the Generalized Least Square (GLS) with homoscedastic assumptions and without cross-sectional correlation ([Zamir & Mirakhor, 2018](#)).

**Panel Data Regression Model Selection Technique**

To determine the right panel data regression model for use in panel data regression analysis, you can perform the following tests:



**Chow test**

The Chow test is used to select the model used whether to use the Common Effect Model (CEM) or Fixed Effect Model (FEM). This test can be seen in the Profitability value ([Eksandy, 2018](#)). Cross-section F and Cross-section chi-square with the following hypothesis:

H<sub>0</sub>: The model follows the Common Effect Model (CEM) if the probability F and chi-square section  $> \alpha$  (0.05).

H<sub>a</sub>: The model follows the Fixed Effects Model (FEM) if the Cross-section Probability F and the Chi-square Cross-section  $< \alpha$  (0.05).

**Hausman test**

The Hausman test is used to select the model used whether to use the Random Effects Model (REM) or the Fixed Effects Model (FEM) ([Eksandy, 2018](#)). Therefore, testing can be seen at the value of Probability (Prob.) By random cross section with the following hypothesis:

H<sub>0</sub>: The model follows the Random Effects Model (REM) if the value is Probability (Prob). Random cross section  $> \alpha$  (0.05).

H<sub>a</sub>: The model follows the Fixed Effect Random (FEM) if the value is Probability (Prob). Random cross section  $< \alpha$  (0.05).

**Lagrange's Multiplier Test**

The Lagrange Multiplier test is used to select the model used whether it is better to use the Random Effects Model (REM) or the Common Effects Model (CEM) ([Eksandy, 2018, p. 75](#)) This test can be seen in the Breush-pagan Probability value with the following partial hypothesis:

H<sub>0</sub>: The model follows the Common Effects Model (CEM) if the Breush-pagan Breush-pagan Cross-section Probability value  $> \alpha$  (0.05).

H<sub>a</sub>: The model follows the Random Effects Model (REM) if the Breush-pagan Cross-section Probability value is  $< \alpha$  (0.05).

**Classic assumption test**

The classical assumption test is a statistical requirement that must be met in regression analysis using the Ordinary Least Squared (OLS) approach in the estimation technique. In the panel data regression model based on the Ordinary Least Squared (OLS), there is a Common Effect Model (CEM) and Fixed Effects Model (FEM), so it is necessary to test classic assumptions if the regression model used is a Common Effect Model (CEM) or Fixed. Effects Model (FEM).

The classical assumption test consists of Linearity, Autocorrelation, Multicollinearity and Normality tests. However, not all tests are carried out in panel data regression, only Multicollinearity and Heterosdasticity Tests are needed ([Eksandy, 2018, p. 77](#)).

**Multicollinearity Test**

A multicollinearity test needs to be carried out on regressions that use more than one independent variable, this is to determine whether there is an interaction between the independent variables studied ([Eksandy, 2018, p. 78](#))

## Heteroscedasticity Test

The heteroscedasticity test needs to be done to determine whether there is an inequality of variants of the panel data regression model residuals ([Eksandy, 2018, p. 79](#)). This test can be seen in the Breush-Pagan LM Probability value with the following hypothesis:

H0: If the value for Prob. Breush-pagan LM  $> \alpha 0.05$ .

Ha: If the value is Prob. LM pagan brush  $< \alpha 0.05$ .

## Hypothesis test

### F test

The F test is used to explain whether all the independent variables included in the model jointly have an influence on the dependent variable, or in other words, the fit of the model or not. If the F test has no effect, the research is not feasible to continue because the research model is unable to explain the relationship between the independent variable and the dependent variable ([Eksandy, 2018, p. 81](#)).

The hypothesis in the F test is as follows:

- Based on the comparison of F-statistics with F Table

H0: If the value of F-Stastik  $< F$  Table

Ha: If the F-Stastic  $> F$  Table

If the F-statistic  $< F$  Table, then H0 is accepted, which means that the independent variable (X) together has no effect on the dependent variable (Y). On the other hand, if the F-statistic  $> F$  Table, then Ha is accepted, meaning that the independent variable (X) jointly affects the dependent variable (Y).

- Based on probability

H0: If the value of Prob (F-statistic)  $> \alpha 0.05$ .

Ha: If the value for Prob (F-statistic)  $< \alpha 0.05$ .

If Prob (F-statistic)  $> \alpha 0.05$ , then H0 is accepted, which means that the independent variable (X) together has no effect on the dependent variable (Y). On the contrary, if Prob (F-Statistics)  $< \alpha 0.05$ , then Ha is accepted, meaning that the independent variable (X) jointly affects the dependent variable (Y).

### R2 test (coefficient of determination)

The results of the coefficient of determination explain to what extent the ability of the regression model to explain the variation in the independent variables affecting the dependent variable. The greater the R-squared result, the better because it identifies the better the independent variable explains the dependent variable ([Eksandy, 2018, p. 83](#)). The R-squared value is between 0 and 1 with the following explanation:

- The R-squared value must be in the range 0 to 1.
- If the R-squared value is equal to 1, it means that the increase or decrease in the dependent variable (Y) is 100% influenced by the free variable (X).
- If the R-squared value is 0, it means that there is no relationship at all between the independent variable and the variable.

**T test**

The results of the t test explain significance the influence of independent variables partially on the dependent variable. The hypothesis in the t test is as follows:

- Based on the comparison of t-statistics with t table

H0: If the t-statistic value < t table

Ha: If the t-statistic value > t table

If the t-statistic value < t table, then H0 is accepted, which means that the independent variable (X) partially has no effect on the dependent variable (Y). on the other hand, if the t-statistic value > t table, then Ha is accepted, it means that the independent variable (X) partially affects the dependent variable (Y).

- Based on Probability

H0: If the value Prob >  $\alpha$  0.05

Ha: If the value for Prob <  $\alpha$  0.05

Prob >  $\alpha$  0.05, then H0 is accepted, which means that the independent variable (X) partially has no effect on the dependent variable (Y). On the other hand, if the value of Prob <  $\alpha$  0.05, then Ha is accepted, which means that the independent variable (X) partially affects the dependent variable (Y).

**Panel Data Analysis**

Panel data analysis is a combination of cross-sectional data and time series data, where the same section unit is measured at different times. So in other words, panel data is data from several individuals (samples) observed within a certain period of time ([Eksandy, 2018, p. 45](#))

$$Y_t = \alpha + \beta_1 X1_1 + \beta_2 X2_2 + \beta_3 X3_3 + \beta_4 X4_4 + \beta_5 X5_5 + e_1$$

Information:

Y<sub>i</sub> = Capital Structure

$\alpha$  = Constant

X1<sub>i</sub> = Profitability

X2<sub>i</sub> = Liquidity

X3<sub>i</sub> = Business Risk

X4<sub>i</sub> = Sales Growth

X5<sub>i</sub> = Asset Structure

e<sub>i</sub> = Component Error

**RESULTS AND DISCUSSION**

Based on the table above, it can be explained that the asset structure (DER) as the dependent variable (y) has the lowest value of 0.11 and the highest value of 5.44, the average value (mean) is 1.1 with a standard deviation of 0.97. The average score is 1.1 (110%) of the total earnings quality. The standard deviation of 0.97% indicates that the asset structure (DER) of the sample companies studied has a relatively large difference.

The profitability of the independent variable (X1) has a minimum value of 0.04 and a maximum value of 0.16, an average value of 0.05 and a standard deviation of 0.04. This shows that an average of 5% of the profitability used to generate profits from the companies studied has a relatively small difference.

	DER	ROA	QR	PP	BEPR	TANG
Mean	1.138580	0.049881	157.9664	0.162057	0.162057	0.415978
Median	0.931200	0.042600	100.4727	0.141500	0.141500	0.379100
Maximum	5.442600	0.164600	757.6433	0.858900	0.858900	0.953800
Minimum	0.109200	0.000400	29.17060	-0.236800	-0.236800	0.031200
Std. Dev.	0.971848	0.038394	132.1398	0.198649	0.198649	0.211490
Skewness	1.901617	0.995519	1.927777	1.222167	1.222167	0.413183
Kurtosis	7.688327	3.577322	7.358864	5.158746	5.158746	2.414386
Jarque-Bera	123.0019	14.50418	114.2944	35.89298	35.89298	3.462152
Probability	0.000000	0.000709	0.000000	0.000000	0.000000	0.177094
Sum	92.22500	4.040400	12795.27	13.12660	13.12660	33.69420
Sum Sq. Dev.	75.55910	0.117930	1396874.	3.156899	3.156899	3.578235
Observations	81	81	81	81	81	81

**Table 1.**  
Descriptive  
Statistical  
Analysis  
Results

Source: Eviews 9.0, data processed (2019)

The independent variable Liquidity (X2) has a minimum value of 29.2 and a maximum value of 757.643, an average value of 157.966 and a standard deviation of 132.1. This shows that the average liquidity of 158% of the companies used as research samples has a relatively large difference. The standard deviation of 758% in the sample companies studied has a relatively large difference.

The independent variable Sales Growth (X3) has a minimum value of -0.24 and a maximum value of 0.86, an average value of 0.16 and a standard deviation of 0.19. This shows that the average sales growth of 16% of the sample companies has a relatively small difference. The 19% standard deviation of the sample companies studied has a relatively small difference.

The independent variable Business Risk (X4) has a minimum value of -0.30 and a maximum value of 0.22, an average value of 0.07 and a standard deviation of 0.05. This shows that the average Business Risk of 7% of the sample companies has a relatively small difference. The 5% standard deviation of the sample companies studied has a relatively small difference.

The independent variable Asset Structure (X5) has a minimum value of 0.03 and a maximum value of 0.95, an average value of 0.42 and a standard deviation of 0.21. This

shows that the average asset structure of 42% of the companies sampled has a relatively large difference. The standard deviation of 21% in the sample companies studied has a relatively large difference.

**Panel Data Regression Estimates**

**General Effects Model**

The Common Effect Model is the simplest panel model approach because it only combines time series and cross section data. The Common Effect Model estimation form is as follows:

Dependent Variable: DER				
Method: Panel Least Squares				
Date: 10/20/19 Time: 14:19				
Sample: 2016 2018				
Periods included: 3				
Cross-sections included: 27				
Total panel (balanced) observations: 81				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.383192	0.271550	8.776263	0.0000
ROA	10.18822	11.34535	0.898008	0.3721
QR	-0.002305	0.000776	-2.968448	0.0040
PP	0.715001	0.467898	1.528112	0.1307
BEPR	-10.82475	8.409369	-1.287225	0.2020
TANG	-1.873235	0.444156	-4.217512	0.0001
R-squared	0.355296	Mean dependent var		1.138580
Adjusted R-squared	0.312316	S.D. dependent var		0.971848
S.E. of regression	0.805922	Akaike info criterion		2.477527
Sum squared resid	48.71322	Schwarz criterion		2.654893
Log likelihood	-94.33983	Hannan-Quinn criter.		2.548688
F-statistic	8.266504	Durbin-Watson stat		0.508301
Prob(F-statistic)	0.000003			

Source: Eviews 9.0, data processed (2019)

Figure 2.  
Common  
Effect Model

**Fixed Effects Model**

The Fixed Effect Model assumes that differences between individuals can be accommodated by different interceptions. The form of Fixed Effect Model estimation is as follows:

Dependent Variable: DER				
Method: Panel Least Squares				
Date: 10/20/19 Time: 14:18				
Sample: 2016 2018				
Periods included: 3				
Cross-sections included: 27				
Total panel (balanced) observations: 81				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.537056	0.453136	3.392042	0.0014
ROA	17.73340	10.35944	1.711811	0.0933
QR	0.000605	0.000977	0.619124	0.5387
PP	0.920083	0.576489	1.596011	0.1169
BEPR	-15.26113	7.673901	-1.988705	0.0523
TANG	-1.213939	0.992820	-1.222717	0.2273
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.856951	Mean dependent var		1.138580
Adjusted R-squared	0.766451	S.D. dependent var		0.971848
S.E. of regression	0.469664	Akaike info criterion		1.613897
Sum squared resid	10.80863	Schwarz criterion		2.559852
Log likelihood	-33.36282	Hannan-Quinn criter.		1.993426
F-statistic	9.469050	Durbin-Watson stat		1.832596
Prob(F-statistic)	0.000000			

Source: Eviews 9.0, data processed (2019)

Figure 3.  
Fixed Effect  
Model

**Random Effect Model**

The Random Effects Model will estimate panel data where the disturbance variables may be interrelated over time and between individuals. In the Random Effect Model, the difference in intercept is accommodated by the error terms of each company. The advantage of using the Random Effect Model is the elimination of heteroscedasticity. The form of Random Effect Model estimation is as follows:

Method: Panel EGLS (Cross-section random effects)				
Date: 10/20/19 Time: 14:15				
Sample: 2016 2018				
Periods included: 3				
Cross-sections included: 27				
Total panel (balanced) observations: 81				
Swamy and Arora estimator of component variances				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.905559	0.315155	6.046418	0.0000
ROA	19.48199	8.785608	2.217489	0.0296
QR	-0.000671	0.000765	-0.876917	0.3833
PP	0.997717	0.449188	2.221157	0.0294
BEPR	-17.08631	6.469633	-2.641002	0.0101
TANG	-1.561202	0.566060	-2.758016	0.0073
Effects Specification				
			S.D.	Rho
Cross-section random			0.649878	0.6569
Idiosyncratic random			0.469664	0.3431
Weighted Statistics				
R-squared	0.209345	Mean dependent var	0.438437	
Adjusted R-squared	0.156634	S.D. dependent var	0.527641	
S.E. of regression	0.484559	Sum squared resid	17.60977	
F-statistic	3.971608	Durbin-Watson stat	1.159937	
Prob(F-statistic)	0.002997			
Unweighted Statistics				
R-squared	0.292590	Mean dependent var	1.138580	
Sum squared resid	53.45125	Durbin-Watson stat	0.382147	

Source: Eviews 9.0, data processed (2019)

Figure 4. Random Effect Model

**Model Selection Model Estimation**

**Chow test**

The chow test results are as follows:

Redundant Fixed Effects Tests			
Equation: EQ01			
Test cross-section fixed effect			
Effects Test	Statistic	d.f	Prob.
cross-section F	6.609121	(26,49)	0.0000
cross-section Chi-square	121.954021	26	0.0000

Source: Eviews 9.0, data processed (2019)

Table 2. Chow Test Results

In the table above, it can be seen that the profitability value of Cross-section F is  $0.00 < \alpha (0.05)$  and Cross-section chi square is  $0.00 < \alpha (0.05)$ , so it can be concluded that the Fixed Effect Model (FEM) is more feasible to use than the Common Effect Model (CEM).

**Hausman test**

In the table bellow, it can be seen that the random cross section profitability value is  $0.08 > \alpha (0.05)$ , it can be concluded that the Random Effect Model (REM) is more feasible to use than the Fixed Effect Model (FEM).

The Hausman test results are as follows:

**Table 3.**  
Hausman Test  
Results

<b>Correlated Random Effects – Hausman Test</b>			
<b>Equation: EQ01 Test cross-section random effect</b>			
<b>Test Summary</b>	<b>Chi-sq.Statistic</b>	<b>Chi-sq. d.f</b>	<b>Prob.</b>
<b>cross-section random</b>	9.832354	5	0.0801

*Source: Eviews 9.0, data processed (2019)*

**Lagrange Multiplier Test**

The Lagrange Multiplier test results are as follows:

**Table 4.**  
Lagrange  
Multiplier  
Test Results

<b>Lagrange Multiplier Tests for Random Effect</b>			
<b>Null hypotheses : No effects</b>			
<b>Alternative hypotheses : Two-sided (Breusch-Pagan) and one-sided (all Other) Alternatives</b>			
	<b>Cross-section</b>	<b>Test Hypothesis</b>	<b>Both</b>
<b>Breusch-Pagan</b>	26.61574	1.386028	26.00177

*Source: Eviews 9.0, data processed (2019)*

Based on the results of the calculation above, the profitability value of the Breusch-Pagan Cross-section  $< \alpha (0.05)$ , it can be concluded that the Random Effect Model (REM) is more feasible to use than the Common Effect Model (CEM).

**Model Conclusion**

The test results are presented in the following table:

**Table 5.**  
Conclusion  
Test

<b>No.</b>	<b>Metode</b>	<b>Pengujian</b>	<b>Hasil</b>
<b>1.</b>	<i>Uji Chow</i>	CEM vs FEM	FEM
<b>2.</b>	<i>Uji Hausmen</i>	REM vs FEM	REM
<b>3.</b>	<i>Uji Langrange Multiplier</i>	CEM vs REM	REM

Sumber : *Data processed, (2019)*

Based on the results of the tests that have been done, it is known that the Chow test was chosen by FEM because of its Prob value.  $0.00 < \alpha (0.05)$ , in the Hausman test REM was chosen because the random cross section was  $0.08 > \alpha (0.05)$  and the Langrange Multiplier was selected by REM with a Breusch-Pagan Cross-section value  $< \alpha (0.05)$  . So from the three tests that have been carried out, the Panel Data Regression Model that will be used in the Hypothesis Test and the Panel Data Regression equation is the Random Effect Model (REM), so there is no need for a Classical Assumption Test in this lesson.

**Hypothesis testing**

Based on the table below, it can be seen that the value of the Adjusted R-Squared Test is 0.156634, meaning that the variations in changes in the ups and downs of disclosure of Capital Structure can be explained by Proditability, Liquidity, Sales Growth, Business Risk, Asset structure 15.6 percent, while the remaining 84.4 percent is explained. Other variables were not examined in this study.

Method: Panel EGLS (Cross-section random effects)  
 Date: 10/20/19 Time: 14:15  
 Sample: 2016 2018  
 Periods included: 3  
 Cross-sections included: 27  
 Total panel (balanced) observations: 81  
 Swamy and Arora estimator of component variances

R-squared	0.209345	Mean dependent var	0.438437
Adjusted R-squared	0.156634	S.D. dependent var	0.527641
S.E. of regression	0.484559	Sum squared resid	17.60977
F-statistic	3.971608	Durbin-Watson stat	1.159937
Prob(F-statistic)	0.002997		

Figure 4. Adjusted R-Squared Test

Source: Eviews 9.0, data processed (2019)

Method: Panel EGLS (Cross-section random effects)  
 Date: 10/20/19 Time: 14:15  
 Sample: 2016 2018  
 Periods included: 3  
 Cross-sections included: 27  
 Total panel (balanced) observations: 81  
 Swamy and Arora estimator of component variances

R-squared	0.209345	Mean dependent var	0.438437
Adjusted R-squared	0.156634	S.D. dependent var	0.527641
S.E. of regression	0.484559	Sum squared resid	17.60977
F-statistic	3.971608	Durbin-Watson stat	1.159937
Prob(F-statistic)	0.002997		

Figure 5. F-Test

Source: Eviews 9.0, data processed (2019)

Based on the table above, it can be seen that the F-statistic value is 3.971608, while the F Table with a level of  $\alpha = 5\%$ ,  $df_1 (k-1) = 5$  and  $df_2 (nk) = 75$ , then the F table value is 2.34. Thus the F-statistic ( $3.97 > 2.34$ ) and the Prob value (F-Statistic)  $0.002977 < 0.05$ , it can be concluded that  $H_a$  is accepted, which means that the independent variable in this study consists of profitability, liquidity. the addition of sales, business risk and asset structure together (simultaneously) have an influence on the capital structure.

Method: Panel EGLS (Cross-section random effects)  
 Date: 10/20/19 Time: 14:15  
 Sample: 2016 2018  
 Periods included: 3  
 Cross-sections included: 27  
 Total panel (balanced) observations: 81  
 Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.905559	0.315155	6.046418	0.0000
ROA	19.48199	8.785608	2.217489	0.0296
QR	-0.000671	0.000765	-0.876917	0.3833
PP	0.997717	0.449188	2.221157	0.0294
BEPR	-17.08631	6.469633	-2.641002	0.0101
TANG	-1.561202	0.566060	-2.758016	0.0073

Figure 6. t-Test

Source: Eviews 9.0, data processed (2019)

Based on the results of the t test above, the hypothesis can be concluded as follows:

**H1: Profitability affects the capital structure**

The t-statistic value is 2.217489, while the t-table value is  $\alpha = 5\%$ ,  $df (n-k) = 75$ , the t table value is 1.66543. Thus the t-statistic of Profitability (ROA) ( $2.217489 > 1.66543$ ) and the Prob value.  $0.0296 < \alpha (0.05)$ . Because the significance level is smaller than  $\alpha (0.05)$ , H1 is accepted. So it can be concluded that the profitability variable has a positive effect on the capital structure.

**H2: Liquidity affects the Capital Structure**

The t-statistic value is -0.876917, while the t-table value is  $\alpha = 5\%$ ,  $df (n-k) = 75$ , the t-table value is 1.66543. Thus the Liquidity t-statistic (QR) ( $-0.876917 < 1.66543$ ) and the Prob value.  $0.3833 > \alpha (0.05)$ . Because the level of significance is greater than  $\alpha$



(0.05), H2 is rejected. So it can be concluded that the liquidity variable has no effect on the capital structure.

### **H3: Sales growth affects the capital structure**

The t-statistic value is 2.221157, while the t-table value is  $\alpha = 5\%$ ,  $df (n-k) = 75$ , the t table value is 1.66543. Thus the t-statistic of sales growth (PP) (2.221157) > t Table (1.66543) and the Prob value.  $0.0294 < \alpha (0.05)$ . Because the significance level is smaller than  $\alpha (0.05)$ , H3 is accepted. So it can be concluded that the sales growth variable has an effect on the capital structure.

### **H4: Business Risk affects the Capital Structure**

The t-statistic value is -2.641002, while the t-table value is  $\alpha = 5\%$ ,  $df (n-k) = 75$ , the t table value is 1.66543. Thus the t-statistic for Business Risk (BEPR) (-2.641002) < t Table (1.66543) and the Prob value.  $0.0101 < \alpha (0.05)$ . Because the significance level is smaller than  $\alpha (0.05)$ , H4 is accepted. So it can be concluded that the Business Risk variable affects the capital structure.

### **H5: Asset structure affects the capital structure**

The t-statistic value is -2.758016, while the t-table value is  $\alpha = 5\%$ ,  $df (n-k) = 75$ , the t-table value is 1.66543. Thus the t-statistic Asset Structure (TANG) (-2.758016) < t Table (1.66543) and the Prob value.  $0.0073 < \alpha (0.05)$ . Because the level of significance is smaller than  $\alpha (0.05)$ , H5 is accepted. So it can be concluded that the Asset Structure variable has an effect on the Capital Structure.

## **Interpretation of Results**

### **Effect of Profitability on Capital Structure**

Profitability shows a positive coefficient of 19.4819 with a significance level of  $0.0296 < \alpha (0.05)$ . Because the significance level is smaller than  $\alpha (0.05)$ , H1 is accepted. The results of this study are in line with previous research, namely (Wijaya & Utama, 2014) and research (Deviani & Sudjarni, 2018) which show that profitability affects Capital Structure.

These results indicate that company profits can carry out various activities and maintain the sustainability of the company in the future. The relationship between profitability and capital structure is if the company has positive profitability (profit), then in terms of meeting capital needs at a later date.

### **Effect of Liquidity on Capital Structure**

Liquidity shows a negative coefficient of 0.000671 with a significance level of  $0.3833 > \alpha (0.05)$ . Because the level of significance is greater than  $\alpha (0.05)$ , H2 is rejected. The results of this study are in line with previous research, namely (Wirawan, 2017). Which shows the results that liquidity has no effect on capital structure.

The results of this study indicate that the high liquidity of the company, the company has internal finance to meet short-term obligations that will have an impact on the capital structure.

### **The Effect of Sales Growth on Capital Structure**

Sales growth shows a positive coefficient of 0.9977 with a significance level of  $0.0294 < \alpha (0.05)$ . Because the significance level is smaller than  $\alpha (0.05)$ , H3 is accepted. The results of this study are in line with previous research, namely research conducted by (Gunadhi & Putra, 2019). Which shows the results that sales growth affects the capital structure.

These results indicate that the higher the level of sales growth of a company, the company is said to be successful in executing its strategy.

### Business Risk Against Capital Structure

Business Risk shows a negative coefficient of 17.08631 with a significance level of  $0.0101 < \alpha (0.05)$ . Because the significance level is smaller than  $\alpha (0.05)$ , H4 is accepted. The results of this study are supported by previous research, namely ([Puspita & Dewi, 2019](#)) which shows the results that business risk has an effect on capital structure.

These results indicate that companies that have high profitability which at the same time will have high business risk will try to reduce their taxes by increasing their debt ratios, so that the additional debt will reduce taxes.

### Asset Structure Against Capital Structure

Asset structure shows a negative coefficient of 1.5612 with a significance level of  $0.0073 < \alpha (0.05)$ . Because the level of significance is smaller than  $\alpha (0.05)$ , H5 is accepted. The results of this study are supported by previous research, namely ([Nopando, 2015](#)). Which shows the results that the Asset Structure affects the Capital Structure. These results indicate that companies with high asset structures tend to be more dependent on debt financing.

## CONCLUSION

Based on the data analysis carried out in chapter four, the results obtained can be concluded as follows: Profitability (X1) states that it has a positive effect on capital structure, Liquidity (X2) states that it has no influence on capital structure, Sales growth (X3) states that it has a positive influence on capital structure, Business risk (X4) states that it has a negative effect on capital structure, Asset structure (X5) states that it has a negative effect on capital structure. Some of the limitations in this study are as follows: 1) This study only uses the population of companies in the basic and chemical sectors listed on the Indonesia Stock Exchange (BEI), 2) The observation period in this study is very short, spanning 3 years from 2016-2018, 3) In collecting data, several companies listed on the Indonesia Stock Exchange experienced losses.

From the research and exposure described above, here are suggestions that you want to give both for further research. It is hoped that it can be used as information material and knowledge contribution for further research in the future, especially on financial accounting. Future research is expected to include other variables that can affect the capital structure or include factors that can strengthen or weaken the capital structure. And in order to increase the observation period or use other sectors that are the object of research, in order to obtain a different sample. In order to support and provide better research results. Subsequent research aims to increase the number of samples so that the sample used can represent all the characteristics in the population.

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