

# Panel Data Analysis: Supply Chain Strategy Effects on Capital Structure of Companies Listed in the Jakarta Islamic Index

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**Abstract**— The purpose of this research is to analyze the influence of supply chain process, firm size, supply chain strategy, profitability, tangibility, and growth opportunity variables, Leverage, Volatility, Retained Earnings, Non Debt Tax Shield, and Free Cash Flow on capital structure of companies listed in the Jakarta Islamic Index (JII). This research is a development of thesis research ever conducted by researchers by adding independent variables and analysis techniques using panel data analysis. This study uses secondary data in the form of financial statements from each company. The sampling uses purposive sampling. The population in this study is companies listed in JII for the period 2008-2018 with a sample of four companies because there are only four companies that have been listed in JII since 2008 and have complete financial statements in that year. To analyze several variables that affect the capital structure, panel data analysis techniques are used. The results showed that firm size, supply chain strategy, tangibility, growth opportunity, leverage, volatility, retained earnings, non-debt tax shield, and free cash flow simultaneously affect the profitability. The results of this study can be used as an indication, which factors must be remembered by choosing the optimal capital structure for the company through the supply chain strategy.

**Keywords**— Firm size, supply chain strategy, structure modal, data panel, growth opportunity.

## 1. Introduction

Supply chain is crucial in the current highly competitive and fast-changing business environment, in which the optimisation of all resources matters, creating an efficient. To achieve maximum company value, a company can not be separated from the problem of funding used to support the smooth running of its activities. The

issue of capital funding is an important issue for the company, because the capital structure of the company is a reflection of the financial condition of the company. Therefore, companies are expected to be careful in determining the source of funds to be chosen [1, 2].

A good capital structure is needed to support the sustainability of a company. Therefore, every company is required to be able to create an optimal capital structure even though it is difficult in practice. The optimal capital structure is a mixture of debt and equity that can maximize the value of the company [3]. This was also expressed by [4] that good funding is funding that not only uses funds from outside but also funds from within the company.

Some previous studies that examined the variables that affect capital structure there are some differences in research results. This is due to differences in research time, the number of samples and the population studied [5].

Research conducted by [6] shows that company size has a positive effect on capital structure but research from [7] shows that company size has a negative effect on capital structure. The supply chain strategy variable in research from [8] has a negative effect while the [9] study shows that supply chain strategy has no effect on capital structure. Research from [10] states that profitability has a negative effect on capital structure while research from [11] states that profitability has no significant negative effect on capital structure. The tangibility variable in research from [12] has a negative effect on capital structure while research from Corina, [13] states that tangibility has a positive effect. Then, the growth opportunity variable in [14] research shows that growth opportunity has a negative effect, but in [15] shows that growth opportunity has a positive effect on capital structure. Given the differences in the results of the study, the researcher is interested in retesting related variables that affect the capital structure.

Problem Formulation

Based on the background above, it can be formulated that the problem will be examined as follows: how is the influence of firm size, supply chain strategy, profitability, tangibility and growth opportunity on the capital structure of companies listed on the Jakarta Islamic Index?

This chapter reviews the literature on capital structure. First, Modigliani & Miller's theory and capital market imperfections are explained. Second, trade-off theory, pecking order, and agency theory are explained. Based on existing literature and empirical evidence for theories a number of hypotheses were developed to answer research questions. Finally, it is mentioned several influences which are not supported theoretically on capital structure.

### 1. Modigliani & Miller

After the introduction of Modigliani & Miller's theory, studies of optimal capital structure became more popular. According to [16] capital structure can be defined as a source of corporate financing, used to finance assets, operations and future growth. Funding funds from the capital structure are debt and equity. Equity is the amount of money invested in the company by the owner, also called a shareholder, the number of retained earnings from the company. A company's debt can be defined as the amount of money borrowed under certain conditions by a business. Debts must be paid before a certain date to the lender. It is customary that lenders need interest on loans. There are many types of debt, for example, short-term or long-term debt, bonds and liabilities.

### 2. Teori trade-off

In short, the trade-off theory illustrates that companies try to find an optimal capital structure based on the pros and cons of debt loans. As can be quoted from [17] "Companies will borrow to the point where the marginal value of the tax shield on additional debt is only offset by an increase in the present value of the possible costs of financial pressures". Therefore, a company tries to find a balance between the tax shield and the cost of distress created by using debt. This research has tried to investigate, how to measure the effect of tax profits and leverage risk on the company's capital structure. First, the tax benefit is explained and how it must be measured, after that the same thing is done for distress costs.

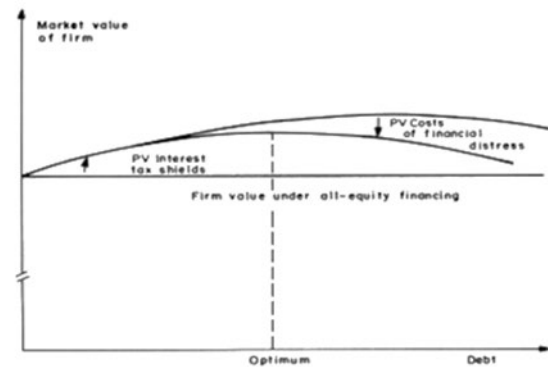


Figure 1: The static trade-off theory of capital structure (Myers, 1984)

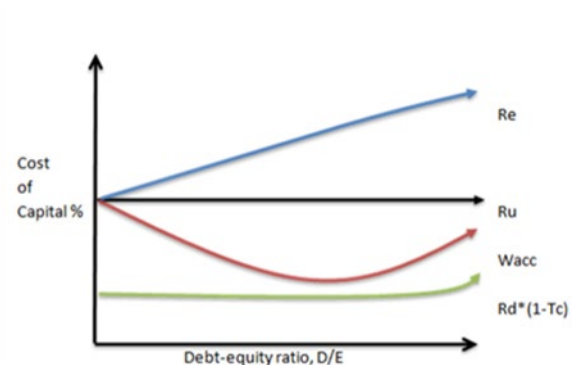


Figure 2: The optimal cost of capital (Hillier, Clacher, Ross, Westerfield, Jaffe & Jordan 2011)

In Figure 2 another example is given for the trade-off theory. WACC decreases, due to tax benefits up to a certain amount of debt. After that, WACC began to rise because of the cost of too much debt. Therefore, companies need to find the optimal amount of debt where the cost of capital is at its lowest. At this point the company has the highest value and the lowest WACC.

### 2.1. Tax Shield

The profit from debt gives the company some tax advantages because the company does not need to pay taxes on the interest paid. It seems very profitable for companies to borrow as much debt as possible, with corporate debt needing to pay less tax, because interest provides a kind of shield against taxes (Myers, 1986). The ultimate goal is to create the highest value for the company. To do this the company can use debt. The tax shield ensures that companies need to pay less tax because of the interest that must be paid. When less tax has to be paid, the amount of cash flow remains higher. Based on the company's cash flow can be assessed. Therefore, with a higher amount of debt, the company's cash flow increases in value because the tax protector is created using debt rather than equity [18].

### 2.2. Distress Cost

Debt not only has benefits but also losses. Too much debt can lead to the risk of higher financial difficulties. These costs occur when the company, which is borrowing debt, is unable to meet loan obligations. Equity has advantages that are owned by the company.

Equity owners only expect a few dividends for the money invested, the debt is borrowed from the debt provider and after a certain period of time, it must be paid back to the lender with a certain amount of interest. Distress costs can be in the form of fees for administrative and legal costs. Also indirect costs can occur related to bankruptcy. For example, when companies cannot run their normal business for longer and opportunities cannot be done.

### 3. Pecking order theory

The pecking order theory explains how companies make decisions about how to finance, and what influence this has on capital structure. This theory plays a role when companies look for additional financing. With funding shortages, companies need to think about what financial resources will be used to fill the gap. Larger companies have more alternatives for diverse funding. They have a better reputation in the market and it is easier for them to borrow money compared to small companies [19]. This theory is based on the fact that there is asymmetry in information between company managers and investors. From this theory it can be stated that companies prefer internal financing over external financing. If the company uses external financing, the company first prefers debt over equity [20]. Now we know that companies prefer internal financing over external because of the asymmetry in information.

### 4. Agency Theory

Another theory that has been discussed is agency theory. In this study, the theory is divided into two parts. One section focuses on conflicts between shareholders and debt and another part on conflicts between company managers and shareholders. The last part of this theory has to deal with conflicts between managers and shareholders because of differences in their interests and motivations about how money should be spent. As can be quoted from [21] 'how the problem is how to motivate managers to withdraw cash rather than invest it under the cost of capital or throw it at the inefficiency of the organization '. This will be the case when the company has a lot of free cash flow. That is why this theory is also called the free cash flow theory. One way to prevent this problem is, according to Jensen (1986), to increase debt. With debt, a company's free cash flow decreases, because interest must be paid. Free cash flow can be described as the amount of excess cash from a fixed company after investing in all positive net present value projects.

### 5. Other influences on capital structure

In most of the literature described above company specific factors are used to measure theory, this can be the size, tangibility of assets, profitability, risk and growth opportunities of a company [22]. Not

only are company-specific factors determining capital structure, but there are also environmental factors that have an influence on capital structure. These factors can be in the form of the country and industry in which the company operates. The state of a company can change the relationship between, for example, tangibility of assets and leverage. Most of the time this relationship is positive, but for example, in Malaysia, the majority of company shareholders are banks and therefore it will be easier to use debt with fewer tangible assets [23]. The article contribution by [24] uses industry as a real factor of capital structure. Most research is using industry as a control variable. This was done because researchers thought the industry only indirectly affected the company's capital structure [25]. It is not the industry that determines the capital structure, but the activities of companies in certain industries. The activities of an industry can require more assets and this affects the capital structure. Several studies have conducted research on this matter. Like [26] who found that the deregulation industry affected the capital structure due to changes in the industrial environment, but also company factors determine the structure through growth opportunities, size, and bankruptcy costs.

## 2. Method

### A. Data collecting method

In this study, the type of data used is secondary data. Secondary data is data obtained from secondary sources that is indirectly or by using intermediary media [27]. The secondary data source used in this study is the financial statements of companies listed on the Jakarta Islamic Index during the 2008-2017 period obtained from [www.idx.co.id](http://www.idx.co.id). This data is used as a means to complete the things needed during the study.

Data collection methods used in this study are by using:

1. Literature Study Method, which is a method of collecting data by reviewing literature, such as journals relating to the research conducted.

2. Documentation Method, which is a method carried out by collecting, recording, and reviewing secondary data in the form of financial statements of companies registered at JII during the period 2008-2017 [28].

The criteria have been determined, including: 1) Companies listed on the Jakarta Islamic Index during the 2008-2017 period, 2) Companies that consistently registered on the Jakarta Islamic Index during the 2008-2017 period, 3) Companies that consistently published financial statements during the period 2008-2017, 4) Companies that include data in full in accordance with the variables needed in research during the period 2008-2017.

No	Criteria	Number of Companies
1	Companies listed on the Jakarta Islamic Index during the period 2008-2017	84
2	Companies that consistently list on the Jakarta Islamic Index during the period 2008-2017	5
3	The company consistently published financial statements for the period 2008-2017	4
4	Companies that include data in full in accordance with the variables needed in research during the period 2008-2017	4
	Number of Samples	4

**Table 1** Sampling

**Table 2** List of Companies Becoming Samples

No	Code	Company Name
1	AALI	Astra Agro Lestari Tbk
2	KLBF	Kalbe Farma Tbk
3	SMGR	Semen Indonesia Tbk
4	UNVR	Unilever Indonesia Tbk

## B. Data analysis method

Types of tests used for panel data research include:

### 1. Descriptive Statistical Analysis

In research, this analysis phase is carried out with the aim to find out the mean (average) value, minimum value, maximum value, and standard deviation value of each research variable [29].

### 2. Model Accuracy Test

There are several methods that can be used to estimate the panel data regression model including,

common effects, fixed effects, and random effects [30].

#### a. Chow Test

The chow test is a test carried out to determine the exact model estimation between the common effect and fixed effect models [31]. In the test results, if the probability value is greater than the value of 0.05, the right approach uses the common effect model. Whereas if the probability value is smaller than the value of 0.05 then the right model is fixed effect [32].

#### b. Hausman Test

Hausman test is used to compare and choose between fixed effects and random effects models, or it can also be said that the Hausman test is done when the results of the chow test are fixed effects. In the test results, if the probability value is smaller than the value of 0.05 then the right approach uses the fixed effect model, but if the probability result is greater than the value of 0.05 then the right model is the random effect model [33].

The classic assumption test on panel data is performed if the selected estimation is fixed effect and common effect, if the chosen estimation is random effect then the classic assumption test is not performed [34].

## 3. Panel Data Regression Model

This study uses panel data regression analysis with data processing using Eviews 9. The equation of panel data model analysis in this study are:

$$Y = \beta_0 + \beta_1 \text{Size it} + \beta_2 \text{LD it} + \beta_3 \text{PRO it} + \beta_4 \text{TANG it} + \beta_5 \text{GO it} + \beta_6 \text{LEV} + \beta_7 \text{VOL} + \beta_8 \text{RE} + \beta_9 \text{NonDebtTax Shield} + \beta_{10} \text{FCF} + \mu$$

Information:

Y : Capital Structure (DER)

$\beta_0$  : Constants

$\beta_1$  to  $\beta_5$  : Regression coefficients of each independent variable

Size : Firm Size (Size)

LD : Supply chain strategy (LD)

PRO : Profitability (PRO)

TANG : Tangibility (Tang)

GO : Growth Opportunity (GO)

LEV : Leverage

VOL : Volatility

RE : Retained Earning

NDTS : Non Debt Tax Shield

FCF : Free Cash Flow

4. Statistical Test T (Test of Significance of Individual Parameters). T test in this study was conducted to test how far or how capable the independent variables explain or explain the dependent variable separately.

#### 5. Hypothesis Test

##### a. Statistical Test F (Simultaneous Significance Test)

The F test was carried out to find out whether the independent variables entered into the model affected simultaneously (together) on the dependent variable.

##### b. Determination Coefficient Test (R2 Test)

In this study, testing the coefficient of determination is done to measure how much the ability of the regression model formed in explaining the variation of the dependent variable [35].

The magnitude of the value of R2 between 0 and 1. If the value of R2 away from number 1 means the ability of the independent variable in explaining the dependent variable is very limited. Conversely, if the value of R2 approaches the number 1, it means that the ability of the independent variable in explaining the dependent variable is very good, namely by providing almost all the information needed to predict variations in the independent variable [36].

### 3. Results and Discussion

Descriptive statistics are part of the data analysis that provides an initial overview of each variable used in the study. Based on appendix 1, it can be explained as follows:

The average value for the debt to equity ratio variable is 0,736 with a standard deviation of 0,738, the value of the standard deviation that is greater than the average value indicates that the debt to equity ratio of the companies being sampled in this study varies greatly. The maximum value is 2,650 and the minimum value is 0,180. The average value of 0,736 shows that the capital structure of the company that is sampled using funding fulfillment mostly comes from internal funds, this can be seen from the average value of debt to equity ratio of less than 1 meaning the proportion of debt is smaller than equity.

The average value for the Firm Size variable (company size) is 21,642 with a standard deviation of 5,790, a standard deviation value greater than the average value indicates that the Firm Size (company size) of the company being sampled in this study varies greatly. The maximum value is 30,440 and the minimum value is 15,690. The average value of 21,642, the higher the size of the company shows

that the company is capable of large assets (the company is in stable condition).

The average value for the Current Ratio variable is 1,974 with a standard deviation of 1,250, the value of the standard deviation greater than the average value indicates that the Current Ratio of the companies sampled in this study varies greatly. The maximum value is 4,510 and the minimum value is 0,450. The average value is 1,250, the greater the current ratio indicates that the higher the company's ability to pay its short-term debts.

The average value for the return on asset variable is 0,269 with a standard deviation of 0,151, a standard deviation value that is greater than the average value indicates that the return on assets of the companies that are sampled in this study vary greatly. The maximum value is 0,610 and the minimum value is 0,040. The return on asset variable has an average value of 0,151. It means that many companies experience an increase / profit in the year of observation so that the net income is positive. The company experiences a profit due to the burden being smaller than income.

The average value for the Tangibility variable is 0,579 with a standard deviation of 0,197, a standard deviation value that is greater than the average value indicates that the Tangibility of the company being sampled in this study varies greatly. The maximum value is 0,890 and the minimum value is 0,270. The average value of 0,579, the higher the Asset Tangibility this indicates the greater the proportion of fixed assets used by the company.

The average value for the Growth opportunity variable is 0,156 with a standard deviation of 0,061, a standard deviation value that is greater than the average value indicates that the Tangibility of the company being sampled in this study varies greatly. The maximum value is 0,350 and the minimum value is 0,030. The average value of 0,156, the more Growth opportunity, the greater the opportunity or opportunity the company has to continue to grow and develop each year

The average value for the Leverage variable is 0,345 with a standard deviation of 0,185, the value of the standard deviation that is greater than the average value indicates that the Leverage of the company being sampled in this study varies greatly. The maximum value is 0,730 and the minimum value is 0,150. The average value of 0,345, the higher the leverage ratio this indicates the greater the proportion of funds from external parties used to fund the company.

The average value for the Retained Earnings variable is 0,576 with a standard deviation of 0,155, a standard deviation value that is greater than the average value indicates that the Retained Earnings of the company being sampled in this study vary greatly. The maximum value is 0,790 and the minimum value is 0,260. The average value of 0,576, the higher the value of Retained

Earnings, the company is able to finance the growth of the company

The average value for the non-debt tax shield variable is 0,223 with a standard deviation of 0,094, a standard deviation value that is greater than the average value indicates that the non-debt tax shield of the companies sampled in this study varies greatly. The maximum value is 0,520 and the minimum value is 0,120. Non-debt tax shield tax savings as a result of the imposition of depreciation of tangible assets that can affect the company's capital structure.

1. Command effect

R-squared	0.963998
Adjusted R-squared	0.953198
S.E. of regression	0.159752
Sum squared resid	0.765622
Log likelihood	22.36137
Durbin-Watson stat	0.591838

Based on the above table, the results are obtained using the common effect approach. The above results obtained Adjusted R-squared value of 0,953.

2. Fixed effect

Effects Specification

Cross-section fixed (dummy variables)	
R-squared	0.975173
Adjusted R-squared	0.962759
S.E. of regression	0.142503
Sum squared resid	0.527981
Log likelihood	29.79394
F-statistic	78.55657
Prob(F-statistic)	0.000000

Based on the table above, the results obtained using the fixed effect approach. The above results obtained Adjusted R-squared value is higher than the common effect approach that is equal to 0.963.

3. Random effects

In this research "Random Effect" cannot be done. According to [35] RE requirements that must be considered are cross data objects must be greater than the number of coefficients (variables). When

viewed in this study there are 4 cross section objects in this study, while the number of coefficients in the data is 10. This is why the estimation of RE cannot be done.

C. Model Selection

The choice of models in this study only uses the Chow test. Chow Test to determine the common effect or Fixed Effect model that is most appropriate to be used in estimating panel data. The hypothesis in the chow test is:

H0: Common Effect Model or pooled OLS

H1: Fixed Effect Model

The basis for rejecting the above hypothesis is to compare the F-statistic calculation with the F-table.

- Comparison is used if the calculated F result is greater (>) than the F table or Prob. <5% (95%), then H0 is rejected, which means the most appropriate model to use is the Fixed Effect Model.

- Vice versa, if F count is smaller (<) than F table or Prob. > 5% (95%), then H0 is accepted and the model used is the Common Effect Model

Following are the results of the Chow test analysis:

Redundant Fixed Effects Tests			
Pool: SERIES			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	3.821236	(3,26)	0.0216
Cross-section Chi-square	14.611046	3	0.0022

Based on the table above, it can be seen that these results indicate the value of Prob. from the F test and chi-square is less than 0.05. Thus it can be said that Prob. <α that is by using a level of α = 5% (0.05), then H0 is rejected and H1 is accepted. This means that the model estimation approach that is feasible to use is fixed effect.

Next, analyze the hypothesis to determine the effect of firm size, supply chain strategy, profitability, tangibility, growth opportunity, leverage, volatility, retained earnings, non debt tax shields and free cash flow on the capital structure of inverential analysis for the regression model, seen in the following table:

1. Simultaneous Influence (Test F)

In the table it can be seen that the test results obtained an F value of 78,556 and a F-test prob value of 0,000. Because the F-test prob value is smaller than 0.05, the hypothesis is accepted, the influence of firm size, supply chain strategy, profitability, tangibility, growth opportunity, leverage, volatility, retained earnings, non-debt tax shields and free cash flow simultaneously on the structure capital.

## 2. Partial Influence (t test)

Partial effect (t test) is used to determine the effect of each variable partially (individually). Based on the calculation table, it can be concluded that:

Partially, Firm Size does not significantly influence the capital structure. This is evidenced by the t value of -0.996 with a significance level of 0.326. Because the t value is smaller than t table ( $0.996 < 2.042$  or  $-0.996 < -2.042$ ) or the significance value is greater than alpha 5% ( $0.082 > 0.05$ ). It can be concluded that the hypothesis is rejected.

Partially, CR (Current Ratio) has no significant effect on capital structure. This is evidenced by the t value of 0.435 with a significance level of 0.667. Because the t value is smaller than t table ( $0.435 < 2.042$ ) or the significance value is greater than alpha 5% ( $0.667 > 0.05$ ). Can be concluded that the hypothesis was rejected.

Partially, profitability has no significant effect on capital structure. This is evidenced by the t value of 1.584 with a significance level of 0.125. Because the t value is smaller than t table ( $1,584 < 2,042$ ) or the significance value is greater than alpha 5% ( $0.125 > 0.05$ ). It can be concluded that the hypothesis is rejected.

Partially, profitability has no significant effect on capital structure. This is evidenced by the t value of 1,976 with a significance level of 0.058. Because the t value is smaller than t table ( $1976 < 2.042$ ) or the significance value is greater than alpha 5% ( $0.058 > 0.05$ ). It can be concluded that the hypothesis is rejected.

Partially, tangible has no significant effect on capital structure. This is evidenced by the t value of 0.418 with a significance level of 0.679. Because the t value is smaller than t table ( $0.418 < 2.042$ ) or the significance value is greater than alpha 5% ( $0.679 > 0.05$ ). It can be concluded that the hypothesis is rejected.

Partially, Growth opportunity has no significant effect on capital structure. This is evidenced by the t value of -1.123 with a significance level of 0.271. Because the t value is smaller than t table ( $1,123 < 2,042$  or  $-1.123 > -2,042$ ) or the significance value is greater than alpha 5% ( $0.271 > 0.05$ ). It can be concluded that the hypothesis is rejected.

Partially, leverage has a significant effect on capital structure. This is evidenced by the t value of 5,385 with a significance level of 0,000. Because the t value is greater than t table ( $5,385 > 2,042$ ) or the significance value is smaller than alpha 5% ( $0,000 < 0.05$ ). Can be concluded that the hypothesis is accepted.

Partially, Volatility has no significant effect on capital structure. This is evidenced by the t value of

-1,940 with a significance level of 0.063. Because the t value is smaller than t table ( $1,940 < 2,042$  or  $-1,940 > -2,042$ ) or the significance value is greater than alpha 5% ( $0.063 > 0.05$ ). It can be concluded that the hypothesis is rejected.

Partially, Retained Earnings have no significant effect on capital structure. This is evidenced by the t value of -0.499 with a significance level of 0.621. Because the t value is smaller than t table ( $0.499 < 2.042$  or  $-0.499 > -2.042$ ) or the significance value is greater than alpha 5% ( $0.621 > 0.05$ ). It can be concluded that the hypothesis is rejected.

Partially, Non Debt Tax Shield has no significant effect on capital structure. This is evidenced by the t value of 0.333 with a significance level of 0.742. Because the t value is smaller than t table ( $0.333 < 2.042$ ) or the significance value is greater than alpha 5% ( $0.742 > 0.05$ ). It can be concluded that the hypothesis is rejected.

Partially, Free Cash Flow has no significant effect on capital structure. This is evidenced by the t value of 1,985 with a significance level of 0.058. Because the t value is smaller than t table ( $1,985 < 2,042$ ) or the significance value is greater than alpha 5% ( $0.058 > 0.05$ ). It can be concluded that the hypothesis is rejected.

## 3. Coefficient of Determination (R<sup>2</sup>)

The coefficient of determination functions to see the ability of independent variables to explain the dependent variable can be known from the magnitude of the coefficient of determination (R<sup>2</sup>). Based on the table above, it can be seen that the simultaneous influence of the regression model I shows how strong the influence of firm size, supply chain strategy, profitability, tangibility, growth opportunity, leverage, volatility, retained earnings, non-debt tax shields and free cash flow on the capital structure. The results obtained by the coefficient of determination)  $R^2 = 0.963$ . This figure can be interpreted that the high and low capital structure is caused or influenced by the pros and cons of firm size, supply chain strategy, profitability, tangibility, growth opportunity, leverage, volatility, retained earnings, non-debt tax shields and free cash flow of 96.3%. While the rest is influenced by other variables not included in the regression model.

## F. Discussion

Based on these results, partially Firm Size (company size) has no significant effect on capital structure. The results of this study are different from the research of [36] with the title Important factors in determining the capital structure of a company. Empirical evidence from Dutch companies that shows that firm size has a significant positive effect on capital structure.

In this study the CR (Current Ratio) partially did not significantly influence the capital structure. The results of this study are not in accordance with [37] study entitled Factors Affecting the Capital Structure in

Textile and Garment Listed in Indonesia Stock Exchange which concluded that the current ratio has a significant effect on capital structure.

Likewise, partial profitability does not have a significant effect on capital structure. This result is not in accordance with the research of [38] with the title Determinants of capital structure: An empirical study of firms in Iran which concluded that profitability has a negative effect on capital structure.

While tangible partially has no significant effect on capital structure. This result is in accordance with the research of [39] with the title Research on capital structure determinants: a review and future directions which show that tangible effect is not significant to capital structure.

Likewise, Growth opportunity partially has no significant effect on capital structure. These results are consistent with research conducted by [40] who concluded that growth opportunity has no significant effect on capital structure.

The partial leverage has a significant effect on capital structure. The results of this study are in accordance with [41] research with the title Determinants of capital structure: an empirical study of manufacturing firms in India which proves that leverage affects the capital structure. However, this study differs from [42] with the title Factors Affecting the Capital Structure in Textile and Garment Listed in Indonesia Stock Exchange which concluded that leverage does not significantly affect the capital structure.

This research proves that Volatility partially does not significantly influence the capital structure. The results of this study are consistent with Windayu's (2016) research which proves that volatility has no effect on capital structure.

Whereas Retained Earnings partially has no significant effect on capital structure. These results are not in accordance with [13] with the title Important factors in determining the capital structure of a company. Empirical evidence from Dutch companies that shows that retained earnings influences capital structure.

Partially, Non-Debt Tax Shield has no significant effect on capital structure. The results of this study are not in accordance with the research of [23] with the title Important factors in determining the capital structure of a company. Empirical evidence from Dutch companies that shows that retained earnings has a negative effect on capital structure.

Partially, Free Cash Flow has no significant effect on capital structure. The results of this study are consistent with [16] research entitled Factors Affecting the Capital Structure in Textile and

Garment Listed in the Indonesia Stock Exchange which concluded that free cash flow does not significantly influence the capital structure.

The results showed the test results obtained prob F-test value is smaller than 0.05 then there is the influence of firm size, supply chain strategy, profitability, tangibility, growth opportunity, leverage, volatility, retained earnings, non-debt tax shields and free cash flow on capital structure simultaneously. Capital structure is influenced by the pros and cons of firm size, supply chain strategy, profitability, tangibility, growth opportunity, leverage, volatility, retained earnings, non debt tax shields and free cash flow of 96.3%.

#### 4. Conclusions

The bargaining theory of capital structure implies that when firms raise their leverage, their suppliers will raise their own leverage in response, so as to maintain strength in negotiations with important customers. Based on trade-offs, pecking orders and agency theory, variables are developed to test which factors are important in determining leverage and therefore to investigate the most important theory for a company's capital structure. Based on the results of the regression analysis, important variables in influencing capital structure are firm size, supply chain strategy, profitability, tangibility, growth opportunity, leverage, volatility, retained earnings, non debt tax shield, and free cash flow.

From the results of correlation analysis and regression models it can be concluded that supply chain strategy is the most important factor in determining capital structure for companies. To conclude, for companies it applies that the factors above are important for the choice between the amount of equity and debt. With more supply chain strategy, companies are more likely to use internal funds rather than debt to finance company activities. For company size it is calculated that the larger the company the faster the company tends to borrow debt.

According to the results of the regression analysis, the leverage variable is the most important factor, measured for the trade-off theory. Other variables are not significant in influencing capital structure. Many researchers also use company size to test trade-off theory, because larger companies are more stable and less risky for borrowing debt. Therefore, the results for leverage confirm the trade-off theory.

Variable retained earnings, supply chain strategy and profitability are not significant derived from the pecking order theory, showing why companies like debt. The conclusion for these variables in this study is



that companies with retained earnings and low supply chain strategy are more likely to finance companies with external financial resources. This is inconsistent with the theory of pecking orders and information asymmetry between people in the company and the capital market, which adds to the need for external financing. When testing the pecking order variable, factor profitability is incompatible with the pecking order theory and is less important than the other two factors. The company understands that it will be more profitable to use more debt, while the pecking theory explains the opposite.

#### B. Suggestions

This research contributes to the existing literature by adding evidence to several important factors in determining capital structure. As mentioned earlier, research on capital structure uses company data. The results contribute because of the more recent data that has been used compared to other studies on companies listed on the Jakarta Islamic Index. Another contribution is that not all variable results are in line with the theory used for capital structure, which provides new insight into the effect of factors on debt. The finding that for Indonesian public companies the leverage factor is the most important, gives a good indication of the company's motives in terms of financing.

For businesses this study contributes with information about important factors that are useful for the choice between debt and equity. All companies are looking for an optimal capital structure for their organization. The results of this study can be used as an indication, which factors must be remembered by choosing the optimal capital structure for the company.

#### Recommendations

This research contributes to the existing literature by adding evidence to several important factors in determining capital structure. As mentioned earlier, research on capital structure uses company data. The results contribute because of the more recent data that has been used compared to other studies on companies listed on the Jakarta Islamic Index. Another contribution is that not all variable results are in line with the theory used for capital structure, which provides new insight into the effect of factors on debt. The finding that for Indonesian public companies the leverage factor is the most important, gives a good indication of the company's motives in terms of financing.

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