Company’s Supply Chain Strategy in Internal Factors to Predict Capital Structure and Profitability on Manufacturing Sector

Evelyn Wijaya¹, Nur Fadjrih Asyik², Budiyanto³, Teddy Chandra⁴, Priyono⁵

¹, ⁴Pelita Indonesia School of Business
², ³Indonesia School of Business
³ Universitas Bina Darma Palembang,
evelyn.wijaya@lecturer.pelitaindonesia.ac.id.

Abstract—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. Capital structure based on the supply chain strategy is one of the important decisions for financial managers who are able to describe the overall cost of capital and have an impact on increasing the profitability of the company. The aim of this research was (1) to analyze the influence of internal factors including company size and tangibility on capital structure and profitability and (2) to analyze the influence of internal advertising factors on profitability. This study’s samples were 117 manufacturing companies in Indonesia Stock Exchange for period 2010-2016. The data were analyzed by using path analysis with SmartPLS 3.0. The results of the research stated that firm size had a significant effect on capital structure and profitability, tangibility did not have a significant effect on capital structure but had a significant effect on profitability. Meanwhile, advertising did not have a significant effect on profitability. Furthermore, there is a positive influence between capital structure and profitability. This result is in accordance with signalling theory which states that the addition of corporate debt supported by the achievement of high corporate profits will be a positive signal for investors.

Keywords—capital structure; supply chain strategy; profitability; supply chain strategy, signalling theory.

1. Introduction

Capital structure is one of the important decisions for financial managers in a company. The decision of capital structure obtained is able to provide an overview and determination of the overall cost of company capital [6]. This decision must be taken when the company starts operational activities or when the company needs additional funds to finance new projects. Then, financial managers must make comparisons of various sources of financing owned both short and long term to help companies achieve an optimal capital and minimize the capital costs incurred. So, a reflection of the financial perspective for the company is to minimize the cost of corporate capital.

Indonesia is a country that has a relatively stable economic growth rate or around 4% -5% every year so that it becomes one of the conditions that encourage investors to invest in Indonesia. The economic condition of a country that tends to be unstable or turbulent illustrates the high risks that will be faced by investors. As it is known that rational investors are investors who do not like high risk (risk averter). Indonesia's economic growth rate which is relatively stable has succeeded in building the trust of business people to invest. One form of business expansion is to increase the amount of debt.

Debt can be divided into two types, namely domestic debt and foreign debt. Domestic debt can be obtained by offering securities to the public (bonds), while foreign debt can be obtained through loan funds to foreign financial institutions (international monetary funds). Data on the value of Indonesia's foreign debt show that Indonesia's debt tends to increase every year. In 2010, government debt reached 118,624 million USD and in 2018, debt increased by 56.97% to 186,200 million USD. Meanwhile, private debt in 2010 reached 83,789 million USD and increased by 127.48% to 190,600 million USD in 2018. There was a shift in the position of debt where government debt was slightly greater than private debt in 2017 but in 2018, private debt continued to show an increase in value of 11.06% compared to the previous year. The following is an illustration of the comparison of Indonesia's foreign debt from 2010 to 2018:
This phenomenon explains that Indonesian companies are still relying on external financing sources in the form of debt to carry out the company's operational activities. A sense of optimism for business people about the strong condition of Indonesia's economic fundamentals has encouraged companies to expand their business by increasing debt.

[29] in the pecking order theory state that companies prefer funding sourced from internal companies compared to funding sourced from external companies. Companies that spend internal funding sources can reduce agency costs so that profitability increases in the sense that the capital structure has a negative effect on the profitability of the company. This result is in line with a research by [32] which found that the capital structure had a significant negative effect on the profitability of companies in Vietnam. Companies with high debt will reduce profitability, because high debt can increase the possibility of financial difficulties and potential bankruptcy of the company. Other studies supporting the above statement are the research conducted by [7],[10],[27],[30].

Signalling Theory by [34] states that the addition of corporate debt supported by the achievement of high corporate profits will be a positive signal for investors. This condition indicates a good prospect for the company in the future. Then, a statement contained in MM theory [28] assert that the use of debt will reduce the cost of debt due to tax deductive from interest costs so that it will increase the profitability of the company. Thus it can be concluded that the capital structure has a positive effect on profitability. This result is in line with the research conducted by [18] in service and manufacturing companies in America who found that the capital structure positively influenced the profitability of the company. The higher the debt, the lower the cost of debt will be so that the company's profit increases. However, it does not mean that the company is required to use 100% debt in the implementation of its operations. Companies must consider the risk of bankruptcy due to the excessive use of debt. Other research supporting the above statement are the research by [2],[12],[16].

The objectives of this research were (1) to analyze the influence of the company's internal factors including company size and tangibility on the capital structure and profitability of manufacturing companies and (2) to analyze the influence of internal advertising companies on the profitability of manufacturing companies.

2. Literature Review

The literature reviews that will be used in this study is to analyze the influence of the company's internal factors on the capital structure and profitability of manufacturing sector companies.

Theories on Capital Structure and Profitability

If the supply chain is to be more efficient and the companies are expected to maintain a competitive advantage or even to compete, all the components of the supply chain need to be given proper attention. The initial theory of capital structure can be traced back to 1952 when Durand argued that capital structure is one of the relevant factors in evaluating companies. Since then, theories have emerged regarding capital structures which include Modigliani & Miller Theory, Pecking Order Theory, Trade Off Theory and Signalling Theory.

MM theory [28] asserts that the value of a company will increase due to an increase in debt but the cost of collecting a weighted average capital cost occurs due to the cost of saving taxes because of increased interest costs. In other words, if it is assumed that there are two companies that get the same operating profit in which the first company spends debt to finance its operations while the other does not use debt, the first company will pay a smaller income tax compared to the second company. As a result, the company's profits for each share in the capital market will increase. Companies can increase company value by using 100% funding through debt. Capital costs will
decrease when the company's debt increases to a certain point. Thus, it can be concluded that the use of debt will reduce the cost of debt due to tax deductive from interest costs so that it will increase the profitability of the company.

Pecking order theory was developed by [29] by referring to asymmetric information. This theory assumes that company managers are more aware of the current position of profit and investment opportunities of the company compared to external investors so that there are adverse effects that are felt due to imperfect market conditions. This happens because of the imbalance of information obtained between managers and investors. To overcome this condition, companies that have sufficient financial slack do not use debt in their operational funding. Myers states that companies would tend to use internal funding sources compared to external ones. The use of external funding sources will lead to the occurrence of asymmetric information that can increase capital costs and reduce profitability. Large profitable companies are more likely to be conservative in using debt, while small companies that are less profitable tend to use internal funding first and then make loans in the form of debt to cover the shortage of operational funds. Small companies tend to be less interested in issuing new shares to cover the lack of funding. This is done to minimize the spread of the company's internal information to the general public.

Trade off theory explains that there is a risk factor for bankruptcy of the company which will result in additional costs if the company must experience financial distress. These additional costs can include the cost of selling a company's assets below the market price, the cost of the company's liquidation, and the cost of concern for the management just in case the company does not experience bankruptcy. The cost of bankruptcy will increase in line with the increase in the value of debt by the company. In addition to bankruptcy factors, the trade-off approach also includes the factor of manager's seriousness in managing the company. There are conditions where shareholders and management are suspicious of each other. The management is given the freedom to finance the company by way of debt, but shareholders feel suspicious of the use of the debt to finance dangerous projects. As a result, shareholders perform strict monitoring of the company which causes management to lose the freedom to move. These supervision costs and loss costs are called agency costs. Based on these two factors, it can be seen that the greater use of debt will increase the value of the company. On the other hand, it will also increase financial distress and agency costs which will be greater than the benefits of using debt. Thus it can be interpreted that the use of debt can increase the value of the company, but to a certain extent an increase in debt will actually cause a decrease in the value of the company. The trade off approach recognizes the existence of an optimal capital structure where to get the maximum company value can be achieved with optimal use of debt.

Signalling theory proposed by [34] tries to explore the company's capital structure by making the existence of asymmetric information as the basis for determining the company's capital structure. Asymmetric information occurs when managers as internal parties have more complete information about the condition of the company than investors as external parties who are not directly involved with the management of the company. The implication is that investors cannot know whether the company has good performance or poor performance. To overcome this condition, company executives who have information about the condition of the company tend to give a positive signal to investors, which is realized in the form of dividend distribution to investors. Through this positive signal, it will be used as a guide for investors in making investment decisions. The stock trading volume will be a reflection of the market reaction due to the information submitted by the company. In the end, efficient capital markets are markets where stock prices represent relevant information from the company.

Many previous research were conducted to examine the effect of capital structure on profitability. A research by [36] found that the capital structure has a negative effect on profitability in companies in Malaysia. Many companies use debt in their operations so that they will reduce company profits. This is because the company must periodically make payments on interest costs on debt and principal debt. The results of this study are in line with the research conducted by [7],[5],[8],[9],[10],[27],[30], but are different from the research conducted by [2],[12],[16].

Company Size and Capital Structure

Supply chains can be thought of as a series of linked markets for goods and services. The company size illustrates the size of a company reflected through total assets and total sales [8]. The size of the company affects the capital that will be used for operational activities and measures the company's ability to obtain additional capital from external sources when internal resources are not enough to finance all of its operational activities. A study conducted by [37] in companies in South Africa found a positive influence between company size and capital structure. Larger companies tend to have greater debt because companies have no constraints on obtaining external funding sources and have a lower risk of bankruptcy compared to small companies. This result is in line with the research conducted by [7],[11]. However, it is different from the research conducted by [13],[20],[42].

Company Size and Profitability

The increasing importance of global supply chains challenges the way statistics on trade are collected. The greater a company, the greater
opportunity the company will have to produce high profitability compared to small companies. Investors generally see the size of the company as one of the considerations in investing funds into the company. Research conducted by [38],[39] revealed that company size has a positive effect on profitability. This result is in accordance with the trade off theory which states that large companies tend to use debt as a source of financing in order to utilize tax deductive from taxes so that it will increase profitability. The result of this research is in line with the research by [14],[31],[32], but in contrast to a research by [18],[40] which concluded that company size did not influence the profitability and a research by [23] which found that company size had a negative effect on profitability.

H3: The company size influences the profitability of the manufacturing sector.

Tangibility and Capital Structure
Tangibility reflects a portion of a company's assets which can be used as collateral value of assets. Companies that are partially invested in fixed assets will prioritize their capital fulfillment needs through their own capital while debt functions as a complement. Trade off theory states that companies which have large tangibility require assets that can be pledged to obtain a larger debt. The research conducted by [24] concludes that tangibility of assets has a positive effect on capital structure. Creditors will give debt to the company if there are assets that can be guaranteed so that if the company is unable to pay off its debts, the assets of the company can function as a medium of payment of debt. The results of this study are also supported by research conducted by [19],[41],[43]. Whereas a research conducted by [1],[22],[25] found that tangibility has a negative effect on capital structure.

H4: Tangibility affects the capital structure of the manufacturing sector.

Tangibility and Profitability
Companies that have assets to be used as collateral for debt are seen as positive signals for investors in the sense that the company can still cover the debt by guaranteeing company assets. This will result in an increase in the profitability of the company. A research conducted by [4] confirms that tangibility of assets has a significant and positive effect on profitability in manufacturing companies registered at Muscat Securities Market (MSM). This condition explains that the company's tangibility can be used as collateral that is able to minimize the potential for agency problems between shareholders and creditors. This result is in line with the research by [15],[26] but it is different from the research conducted by [23],[32],[39].

H5: Tangibility affects the profitability of the manufacturing sector.

Advertising and Profitability
Advertising reflects the costs incurred by the company in the context of promotional activities to introduce products or services to market consumers. The more intense the advertisement given by the company, the more curious the consumers will be to try, use and consume the product or service. A research by [15] the S&P BSE 100 Index in India found that advertising had a positive influence on profitability. If the company incurs greater advertising costs, the company can generate higher profits. The results of this study are consistent with the research conducted by [33] which states that advertising has a greater influence on profitability in private banks.

H6: Advertising has a positive effect on the profitability of the manufacturing sector.

3. Methodology

Conceptual Framework
Typically, the design of a supply chain involves generating several alternatives and evaluating them on the basis of benchmark performance measures. These often incorporate considerations of long term strategic planning in a general time frame of three to twelve years. The conceptual framework that can be generated from this research is formulated as follows:
Population and Sample

The population in this study was manufacturing companies listed on the Indonesia Stock Exchange (IDX) for the period of 2010-2016. The samples in the study were chosen by applying non-probability sampling technique with a purposive sampling method. The criteria used in determining the number of samples are:

1. Manufacturing companies which were registered before 2010. Companies that were registered after 2010 were not included in the study sample because of the unavailability of research data.

2. Companies must have financial statements that were expired on 31 December each period. Companies that had financial statements that were not expired on December 31 were not included as research samples. This was intended to avoid misperception of company performance due to reports taken not annual reports.

Based on the sample selection criteria above, the number of samples in this study was 117 companies. The data used in this study were secondary data obtained from financial statements published by each company and through the Indonesia Stock Exchange website (www.idx.co.id). The data collection was conducted from 2010 to 2016.

Research Variables

The research variables include exogenous variables (X) and endogenous variables (Y). The measurement of each research variable is as follows:

1. Exogenous Variables (X)
   - Company Size
     The size of company reflected the size of a company based on Law Number 20 of 2008. This measurement had been applied by [3],[30],[32]. The measurement model can be described as follows:
     \[ \text{Size} = \ln (\text{total assets}) \]
   - Tangibility
     Tangibility described many of the fixed assets that the company could guarantee. This measurement had been implemented by [41],[43]. The measurement model can be described as follows:
     \[ \text{TANG} = \frac{\text{fixed assets}}{\text{inventory} \div \text{total assets}} \]
   - Advertising
     Advertising describes promotional media used by companies to introduce their products or services to market consumers and ultimately attracts consumers to buy and consume the company’s products or services. This measurement had been used by [15]. The measurement model can be described as follows:
     \[ \text{ADV} = \frac{\text{sales expenses}}{\text{operating costs}} \]

2. Endogenous Variables (Y)
   - Capital Structure
     Capital structure describes the ratio between total debt and own capital. The aim was to measure the share of each currency of its own capital which was spent as collateral for the company’s short-term and long-term debt. This measurement had already been used by [2],[8],[17],[21],[27],[32]. The measurement model can be described as follows:
     \[ \text{TD} = \frac{\text{total debt}}{\text{total equity}} \]
   - Profitability
     Profitability described the profit ratio after tax to total assets illustrating the size of the company in generating profits with all assets owned by the company. This measurement had been used by [2],[3],[7],[16],[32],[36]. The measurement model can be described as follows:
     \[ \text{ROA} = \frac{\text{earning after tax}}{\text{total assets}} \]

Techniques of Data Analysis

The data in this study was analyzed path analysis using Smart PLS 3.0. Before designing the regression equation, multicollinearity and FIT models were tested to test the research model used. The structural equations modelling in this study are:

1. \[ \text{CS} = B_1 \text{SIZE} + B_2 \text{TANG} + e \]
2. \[ \text{PROFIT} = B_1 \text{SIZE} + B_2 \text{TANG} + B_3 \text{ADV} + e \]
Agile supply chains are defined through their ability to rapidly, and cost-effectively, respond to change as enabled through the seamless flow of information from the market and across the supply chain.

**FIT Model**

The FIT model was utilized to determine the feasibility of the research model produced by the path analysis model based on predetermined criteria. The results of testing the FIT model are illustrated in Table 1.

### Table 1. FIT Model

<table>
<thead>
<tr>
<th>No</th>
<th>FIT Variables</th>
<th>Model Estimation</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SRMR</td>
<td>&lt; 0.08</td>
<td>Fulfilled</td>
</tr>
<tr>
<td>2</td>
<td>Chi-square</td>
<td>&gt; 895.984</td>
<td>Fulfilled</td>
</tr>
<tr>
<td>3</td>
<td>NFI</td>
<td>&gt; 0.90</td>
<td>Not Fulfilled</td>
</tr>
</tbody>
</table>

Source: Smart PLS, 2018

Based on the results of testing in Table 1, it can be seen that the research model produced was good and feasible to continue the analysis.

**Multicollinearity Testing**

The multicollinearity testing aimed to test whether the regression model found a correlation between the independent variables. In a good regression model, there should be no correlation between the independent variables. This multicollinearity test was tested using Variance Inflation Factor (VIF). If the VIF value produced was smaller than 10 it was concluded that the research model was free from the symptoms of multicollinearity. Conversely, if the VIF value generated was greater than 10, the research model had symptoms of multicollinearity. The results of the multicollinearity testing are displayed in Table 2. Table 2 demonstrates the results of multicollinearity testing which show that company size, tangibility, advertising, capital structure and profitability obtained VIF values <10 so it was concluded that the research data were free from the symptoms of multicollinearity.

### Table 2. The Result of Multicollinearity Testing

<table>
<thead>
<tr>
<th>Variables</th>
<th>VIF</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company Size</td>
<td>6.267</td>
<td>&lt; 10</td>
</tr>
<tr>
<td>Tangibility</td>
<td>2.777</td>
<td></td>
</tr>
<tr>
<td>Advertising</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Capital Structure</td>
<td>1.002</td>
<td></td>
</tr>
<tr>
<td>Profitability</td>
<td>1.229</td>
<td></td>
</tr>
</tbody>
</table>

Source: Smart PLS, 2018

**Determination Coefficient Testing**

The value of $R^2$ confirmed how strong the relationship between the independent variable and the dependent variable. The coefficient of determination ranged from 0 to 1. The closer the coefficient to 1, the better the model applied because uncontrolled errors were getting smaller.

Then, the adjusted R-Square value got a value of 0.003 or 0.3%. This implied that 0.3% of the capital structure was influenced by company size and tangibility while the remaining 99.7% was influenced by other variables outside the research.

The adjusted R-Square value got a value of 0.133 or equal to 13.3%. This meant that 13.3% profitability was influenced by company size, tangibility and advertising while the remaining 86.7% was influenced by other variables outside the research.

**Path Analysis**

Regression analysis was operated to test the hypothesis of the influence of independent variables (Company Size, Tangibility and Advertising) on the dependent variables (Capital Structure and Profitability). Regression analysis was applied because more than one independent variable were examined. Structural equation that was formed in this study:

$$CS = -0.073 \times SIZE + 0.024 \times TANG + 0.277 \times SIZE - 0.156 \times TANG + 0.156 \times TANG + 0.010 \times ADV$$

**Hypothesis Testing (t test)**

This test was conducted to determine the effect between the independent variables and the dependent variables partially. Testing was performed by comparing the value of t count and t table or looking at each p-value so that it could be determined whether the hypotheses were accepted or not.

### Table 3. The Results of Hypothesis Testing

<table>
<thead>
<tr>
<th>Variables</th>
<th>T-Statistic</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company Size</td>
<td>&gt;= Capital Structure</td>
<td>2.041</td>
</tr>
<tr>
<td>Tangibility &gt;&gt; Capital Structure</td>
<td>6.660</td>
<td>0.000 *</td>
</tr>
<tr>
<td>Company Size &gt;&gt; Profitability</td>
<td>0.491</td>
<td>0.624 ***</td>
</tr>
<tr>
<td>Tangibility Profitability &gt;&gt;</td>
<td>3.043</td>
<td>0.002 *</td>
</tr>
<tr>
<td>Advertising Profitability</td>
<td>0.554</td>
<td>0.580 ***</td>
</tr>
<tr>
<td>Capital Structure Profitability &gt;&gt;</td>
<td>4.835</td>
<td>0.000 *</td>
</tr>
</tbody>
</table>

Source: Smart PLS, 2018 (** sig 10%, * sig 5%, sig 1%)}

Based on Table 3, the results of hypotheses testing are concluded to see the effect of independent variables and partially dependent variables as follows:

1. Company size had a significant and positive effect on capital structure with a significance level of 5% and t-table of 1.963.
2. Tangibility had a significant and positive effect on the capital structure with a significance level of 1% and t-table of 2.582.
3. Company size did not have a significant effect on profitability with a significance level of 10% and t-table of 1.647.
4. Tangibility had a significant and positive effect on profitability with a significance level of 1% and t-table of 2.582.
5. Advertising had no significant effect on profitability with a significance level of 10% and t-table of 1.647.
6. Capital structure had a significant and positive effect on profitability with a significance level of 1% and t-table of 2.582.

4. Discussion and Conclusions

Supply Chain Perspectives and Issues

Abstract

Supply chains and trade policy are tightly linked to each other. Trade distorting effects of tariff and non-tariff barriers (which are levied on the gross value of imported goods, rather than value-added) are magnified in global supply chains; it takes many more cross-border transactions to provide a single unit of a final good than before. Global supply chains create new forms of cross-border spillover effects and have therefore generated a demand for deep forms of integration, which could make production-sharing activities less vulnerable to disruptions or restrictions. Firm size had a significant and positive effect on capital structure in manufacturing companies. These results are consistent with the research conducted by [7],[11],[37]. Big companies tend to have greater debt because companies have no constraints to obtain external sources of funds and have a lower risk of bankruptcy. In addition, large companies already have a stable cash flow compared to small companies. However, the results of this study are different from the research [13],[20],[42]. They found that company size does not have a significant effect on profitability in manufacturing companies. The results of this study are in line with the research conducted by [18],[40], in which the company size cannot be used as a guarantee of a high profitability that can be generated by the company. This condition is because the total assets and total sales owned by the company have not been reduced by costs incurred by the company during operational activities. Moreover, the result os this research is different from the research conducted by [14],[23],[31],[32],[39],[44].

Tangibility significantly and positively affects the capital structure in manufacturing companies. These results are consistent with the research from [19],[24],[41],[43]. Large tangibility in companies can be used as collateral to get bigger debt. Creditors want to give debt to the company if there are assets that can be guaranteed. However, this result is different from the research conducted by [1],[22],[25]. They found that tangibility had a significant and positive effect on profitability in manufacturing companies. Moreover, this result is in line with the research from [4],[15],[26]. Tangibility can be used as a way to monitor and provide guarantees to lenders so that this can minimize the occurrence of agency conflicts between companies and lenders. At the end, it can increase the profitability of the company. However, the results of this study are different from the research conducted by [23],[32],[39].

In addition, advertising does not have a significant effect on profitability in manufacturing companies. This result does not agree with the results of the research conducted by [15],[35]. They argue that if the company issues a large advertising fee, it does not provide a guarantee that the resulting profitability will increase. Most manufacturing companies produce similar products which cause a high level of competition. For this reason, a more appropriate corporate strategy is needed to increase profitability.

Most Indonesian manufacturing companies are companies that have long been operating (on average more than 10 years old). In this case, manufacturing companies already have a cash flow that is stable enough to be able to run the company's operational wheels on a daily basis. This condition can be used by companies to increase debt in order to enhance the company's profitability going forward. This is in line with the trade off theory which states that large companies have the opportunity to obtain debt because investors assume that large companies have a low risk of bankruptcy compared to small companies. Companies that have stable finances tend to be more comfortable to obtain debt through collateral for the company's fixed assets. Debtors give more confidence to companies that are able to guarantee their assets to obtain additional funds.

The results of this study also reveal that advertising does not have a significant effect on changes in the value of profitability so that manufacturing companies need to consider the amount of advertising costs needed by the company. The company must be able to read the market interest in the products it produces whether it still needs a large advertising promotion or not. If the product produced has a high interest in the market, the company can take steps to reduce the advertising costs incurred each year. This condition can result in an increase in the value of profitability generated by the company.

The current research is still limited to internal factors of company that can influence the changes in the value of the capital structure and profitability of the company. In reality, changes in capital structure and profitability are also affected by macroeconomic conditions such as inflation, interest rates and exchange rates. For this reason, in the next study, we will look at the influence of the company's internal and external factors with a wider range of research objects.
5. Acknowledgments

Our gratitude was given by the researcher to Indonesia School of Economics (STIESIA) Surabaya and Pelita Indonesia School of Economics Pekanbaru.

References


