

# Analysis of Factors Affecting Capital Structure in Food and Beverage Manufacturing Company

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**Abstract**—The purpose of this research to analyze the influence of firm size, liquidity, growth opportunities, tangibility asset, and business risk to the capital structure of listed food and beverage manufacturing companies in Indonesia and Vietnam Stock Exchange from 2010 to 2016. The result shows that the fixed effects model should be appropriate for this study as compared to the random effect model. Capital structure significantly differences between the two countries. Firm size has a positive but insignificant influence on the capital structure in Indonesia, whereas it has a positive and insignificant influence on the capital structure in Vietnam. Liquidity has a negative and significant influence on the capital structure both in Indonesia and Vietnam. Growth opportunities have a negative but insignificant influence on the capital structure both in Indonesia and Vietnam. Asset tangibility has a positive but insignificant influence on the capital structure in Indonesia, but it has the negative but insignificant influence on the capital structure in Vietnam. Ultimately, the business risk has a negative and significant influence on the capital structure in Indonesia but has a positive and insignificant influence on the capital structure in Vietnam.

**Keywords**—*Firm size; liquidity; growth opportunities; tangibility asset; business risk; capital structure*

## I. INTRODUCTION

The business world is currently entering an era of globalization that leads to increasing competition so that every company is always required to produce efficiently [1]. Food and beverage companies are high growth companies and have a high demand for their products as population growth over the years. The high demand is not only to basic food but also to prepared food because it has a growing pattern of community life that is more concerned with the practicality of consuming products that are ready [2]. With the high increase in consumer demand as well as company growth, the company deals with the problem of adding capital whose purpose is to expand the scale of production and expand the market to achieve more efficient operational levels [3].

The phenomenon occurs in the capital structure of food and beverage companies lately, the food and beverage manufacturing companies have a small capital structure after the global economic crisis, but after 2013 the industrial capital structure of the food and beverage subsector tends to increase. When a company's capital structure is too high, it can adversely affect the company's performance because it can lead to higher interest

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expense and will reduce the company's profit. Moreover, according to Trade-off theory, companies that rely on funding derived from debt can lead to potential bankruptcy [4], [5]. The company must know the factors that influence the capital structure to keep the capital structure of food and beverage companies optimally. Factors affecting the capital structure can be used as a reference company in determining the capital structure of the company.

The decision of capital structure is the most controversial subject in corporate finance and has been extensively researched by many researchers since the publication of Modigliani and Miller papers in 1958, so there is a great deal of financial literature that assumes Modigliani and Miller's papers. From the paper, start forming some theories about the selection of capital structure [6].

Prior research by Cuong and Thang [7] suggests that the larger size of firms tend to rely on debt in their capital structure than small firms. However, companies with high liquidity tend to use internal funding sources to finance the company's operational activities. Also, business risk is also found to be an essential effect on capital structure. Research conducted by Karayeet al. [8] suggests that companies with high growth rates and high tangible assets have higher debt ratios. If these five factors are considered as determinants of capital structure, then these factors can be used to improve the company's performance so that can maximize company value and lower the cost of capital [7]. Moreover, in practice, corporate managers who can identify optimal capital structure are considered capable of minimizing the company's financial costs and can maximize the company's revenue [9]. So the primary objective of the company can be achieved to get profit from the company's operational activities [10].

Food and beverage sub-sector industry have a substantial impact on the economies of Southeast Asian countries, especially members of ASEAN. Most of ASEAN member countries are heavily dependent on the food and beverage sector for economic growth, trade, and investment. In addition to increasing national GDP, based on ASEAN statistics, food and beverage industry directly contributes 38% to reducing unemployment of its 620 million people or 235 million people. The productivity of the food and beverage industry in ASEAN should be increased to achieve sustainable growth and development of the food and beverage sector in ASEAN [11]. The capital structure of each country, industry sector and place of business have a difference. Therefore, the practical arrangement of capital structure is the primary objective of corporate financial management. A decision on the proportion of financing from internal and external sources is critical to further business development [12]. Therefore, it is necessary to regularly assess and effectively manage the capital structure and its determining factors.

There is a large volume of research on these issues. Some previous research has also shown different results in each of the variables that led to the presence of a research gap. Some studies indicate capital structure has a positive influence on firm [13]–[18]. However, some other studies revealed that capital structure has negative influences to firm size [19]–[24]. Research conducted by Akinlo [15] states that the level of corporate liquidity has a

positive effect on capital structure. However, some other studies revealed that liquidity has negatively affected capital structure [14], [19], [25]–[28]. Some previous studies also revealed that growth opportunities have a positive effect on capital structure [8], [14], [16], [18], [21], [29], but others indicated negative effect [15], [22], [30]. It is revealed by some studies that there is a positive relationship between tangible assets and capital structure [8], [19], [21], [22]. Conversely, some other studies revealed that there is a negative relationship between tangible assets and capital structure [15], [26], [27], [29], [31]. It is investigated by some studies that there is a positive relationship between business risk and capital structure [13], [17], [30], [32]. However, some other studies found a negative relationship between business risk and capital structure [16], [20], [26]. In accordance with empirical investigation, it is revealed that most of the firm-specific factors affecting capital structure are firm size, liquidity, growth opportunities, tangibility assets, and business risk [7], [8], [24]. Hence, the objective of the paper is to examine the influences of the selected variables that relate the capital structure theories in Indonesia and Vietnam listed companies.

## II. LITERATURE REVIEW

There are several theories about the pattern of corporate financing obtained through research conducted by previous researchers to verify the existence of the optimal capital structure for the company. Among Modigliani, Millier theories explain that in a perfect capital market found irrelevant conditions where the capital structure does not affect the value of the company. While the theory of Modigliani Miller II that improve the theory of Modigliani I explained with the tax factor on the interest it can cause the value of the company increased in line with the debt [33]. The Trade-Off Theory states, however, that the optimal capital structure occurs when the balance between tax savings from increases in debt capital and the increased probability of financial pressures such as financial distress and bankruptcy [18]. However, according to Pecking Order theory, firms tend to use internal financing sources, i.e. retained earnings then switch to debt and last equity [34]. The studies that have been done by previous researchers have primarily determined the factors that affect the company's capital structure but have not found the effect of the company's capital structure or whether the firm has an optimal capital structure [18].

### A. Firm Size

Previous researchers find that size is one of a common factor that determinants of capital structure of a company [24]. The size of a company is a scale that can be classified as a small company by various means, including total assets, log size, stock market value, and others [35]. Accordingly, a positive dependence is expected to be observed between capital structure and firm size. Firm size can be considered as a proxy for information asymmetries between the firm the market. It is thought that the larger

company is more available to get information and lower cost caused by information asymmetries. Mature firm able to issue debt at lower costs due to their better reputation in the financial market. According to trade-off theory and agency cost theory, there is a positive relationship between company size and debt ratio. These theories assume that large companies can borrow more debt and diversify risks to protect companies from financial difficulties [36].

Nevertheless, it contradicts with pecking order theories that suggest a larger firm has a lower degree of information asymmetry, more retained cash than they use less debt. Titman and Wessels[37] argued that a larger firm tends to be more diversified than smaller counterparts and are therefore prone to collapse. Previous paper illustrated that firm size has a positive relationship with capital structure [18], [25], [38]–[41].

Liquidity is the ratio used to measure a company's ability to pay short-term liabilities[42]. Companies that have high levels of liquidity will use their short-term assets to cover their short-term debt and not rely on long-term debt. Thus, companies tend to borrow less and tend to rely on internal financing, resulting in stronger asset liquidity [25]. According to the pecking order theory, if the company has high liquidity, then the company will choose funding that comes from internal because companies that have considerable current assets can pay more debts. With considerable current assets, the company will choose to fund its business activities from internal funding. It is found that there is a negative relationship between liquidity and capital structure[14], [19], [25]–[28]. Nevertheless, trade-off theory believes that a positive relationship between capital structure and liquidity because higher liquidity ratio can support a relatively higher debt ratio due to a higher ability of a firm to satisfy short-term contractual obligations on time.

Growth opportunities are opportunities that the company has to grow and include the opportunity to invest in the future, while the higher the chances of growing companies tend to use substantial debt levels in capital structure[4]. Empirical studies and theories provide contrast predictions in the relationship between growth opportunities and capital structure. The growth of a company will result in higher internal demand for funds, so companies need to find ways to keep borrowing. So companies with high growth opportunities will use high debt ratios. When a company appears to grow from micro, small, medium and large scale, companies tend to move from internal sources of financing to external sources [8].

Moreover, according to the pecking order theory, the relationship between the growth opportunities of firms with capital structure can be positive. When companies have high growth opportunities companies can make external funding (debt funding) rather than funding internally (equity capital) when internal funding is insufficient[18]. It is contrasted by Myers [43] who argued that a company with high growth would have less capital structure. Companies that have high growth rates would tend not to increase debt due to underinvestment and asset-substitution issues. Companies with low growth rates tend to increase their debt. However, Myers [43] indicated that the agency problem could be mitigated if short-term debt replaces long-term debt. It could that the short-term debt ratio might be positively related to

growth rate if growing firms substitute short-term financing for long-term financing.

### *B. Tangible assets*

Tangible assets are part of fixed assets used for the operational activities of the company and are not used for sale to consumers [44]. The company's tangible assets show the high liquidity value of the company and the company that has a high amount of tangible assets if lending to the lender (creditors) will earn less interest if they pledge their tangible assets to their lending [8]. According to the trade-off theory, firms have more tangible assets can use them as collateral to obtain debt financing so that the debt costs obtained are lower [24]. Some studies found the positive impact of tangibility on the company's capital structure [19], [22], [39], [41], [45]. However, according to the pecking order theory, companies with more tangible assets faced asymmetric information then companies are more likely used as equity for funding and less to take debt finance [24].

### *C. Business risk*

Business risk is the uncertainty in the expected future operating income of the company. Companies with high volatility in earnings face a higher risk of debt repayment. This implies that companies with high-income volatility will borrow less and prefer internal funds. Thus, there is a negative relationship between business risk or income volatility and capital structure [7]. According to trade-off theory and the pecking order theory, there is a negative relationship between risk and debt ratio. Companies are at risk of using internal financing rather than external financing such as debt to protect companies from bankruptcy [46]. On the other hand, Jaffe and Westerfield [47] stated that this relationship may not be monotonic and that under certain conditions this relationship will instead be positive.

Nevertheless, some studies have found a positive dependence. Wahomeet al. [32] found that the more volatile cash flows so that, the higher the probability of default. Agency theory supports that the problem of underinvestment will decrease when the volatility of the company return increased. Hence, firms use more debt. An empirical study by Barton and Gordon [38]; Kale et al. [48]; [49]; Rafiq [50] also indicate a positive relationship between business risk and capital structure.

## III. METHODOLOGY

### *A. Data and period of research*

This research employs panel data. Following standard practice, food and beverage sub-sector listed in Indonesia and Vietnam stock Exchange. Sampling technique conducted is purposive sampling technique. The final sample of firms consists 12 Indonesian firm and 16 Vietnams firms for the period of 2010-2016.

### B. Variable Measured

Despite having vast literature on various researches of capital structure, there is no clear-cut definition of Capital structure. Capital Structure can be measured differently. Rajan and Zingales[39] mention that the relevant measure of capital structure is inconclusive and depends on each research objective. Lakshmi [27], Alnajjar[16], Hussain, et al.[24], Suhendra[51] used Total Debt divided by Total Equity to measure capital structure.

Based on previous studies, five independent variables are used in this research, namely firm size, liquidity, growth opportunities, tangibility assets and business risk. Firm size is measured by natural logarithm of total assets [20], [24], [30]. Liquidity is measured by (Current Asset/Current Debt) x100% [7], [20], [24]. Growth Opportunities is measured by (Total assets– Total assets-1/Total assets-1)x100% [8], [24], [30]. Tangibility Assets measured by Fixed assets/Total Assets)x100% [7], [8], [24], [26]. Business Risk measured by  $\alpha$  ROE[52]–the [54]

### C. Research Design

Since the sample contains data across firms and over time, the panel data method is employed. This research implemented the stages of regression analysis of panel data. Independence sample test in this research is used to identify the difference between average data between Indonesia and Vietnam. If the results show the difference, then the panel regression model used is different between Indonesia and Vietnam. Selection of Model (Estimation Technique) of Panel Data Regression is considered the best model selection test according to data characteristic.

Furthermore, the model selection test was conducted with three (3) test is a Chow test[55], Hausman test [56] and LM test[57]. Chow test is performed to choose between the fixed effect model and the common effect while the Hausman test is performed to choose between random effect and fixed effect. LM test is done to choose between random effect and common effect. Multicollinearity test in this research aims to identify a solid relationship between two independent variables[58]. The implication is that other variables form a variable. This study used panel data analysis model to test the hypothesis. The regression equation can explain the relationship between the independent variable (independent variable) to the dependent variable (dependent variable):

$$Y = \alpha + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + e$$

Where :

Y: Debt to Equity Ratio

$\alpha$ : Constants

$\beta_1, 2, 3, 4, 5$ : Assessment of regression coefficients

X1: Company Size (Size)

X2: Liquidity (Current Ratio)

X3: Growth Opportunities

X4: Tangible Assets

X5: Business Risk

e: Residual Variable (error rate)

#### IV. RESULT AND DISCUSSION

##### A. Results

This section provides the average value of the capital structure of food and beverage companies in Vietnam, which is higher than in Indonesia. It indicates that food and beverage companies in Vietnam prefer to use external capital compared to Indonesia. The size of food and beverage companies in Indonesia is more prominent than in Vietnam. This indicates that the total assets of companies in Indonesia are more significant than in Vietnam. The details of the results of this study are shown in Table 1 below.

TABLE I  
DESCRIPTIVE STATISTICS

Statistics	Der	Size	Liq	Growth	Tang	Risk
Mean						
Indonesia	0.968	19.259	2.122	18.358	0.382	8.619
Vietnam	1.138	16.912	1.865	13.945	0.26	7.109
Median						
Indonesia	0.979	18.831	1.705	15.675	0.385	3.529
Vietnam	0.931	16.912	1.478	10.098	0.233	3.731
Maximum						
Indonesia	3.029	22.659	7.604	85.363	0.784	141.696
Vietnam	3.847	20.978	5.857	116.361	0.759	73.992
Minimum						
Indonesia	0.183	16.913	0.51	-10.516	0.08	0.144
Vietnam	0.142	13.485	0.901	-67.486	0.06	0.259
Standard deviation						
Indonesia	0.53	1.515	1.359	18.197	0.16	21.358
Vietnam	0.872	1.445	0.93	25.404	0.144	11.694
Koefisien variants						
Indonesia	54.734	7.866	64.033	99.121	41.86	247.809
Vietnam	76.563	8.544	49.877	182.182	55.488	164.483

Table 1 above also shows the level of liquidity of food and beverage companies in Indonesia is higher than in Vietnam. Variable growth opportunity (growth) of Indonesia is more prominent than Vietnam. The

tangible asset symbolized by TANG in the above table fluctuated both in Indonesia and in Vietnam. Business risk (risk) is the variable with the most substantial fluctuation rate compared to other variables in Indonesia.

*B. Discussion*

After getting the best model that is a fixed effect, the process continued to the estimation of panel regression model. The data used in this panel regression model were food and beverage companies in Indonesia and Vietnam. The details of the data in this study are presented in the following Table 2.

TABLE II  
CAPITAL STRUCTURE REGRESSION IN INDONESIA AND VIETNAM

	Indonesia		Vietnam	
	Koefisien	Probabilitas	Koefisien	Probabilitas
Konstanta	-3.061375	0.3462	-12.28801	0.0000
Size	0.230217	0.1683	0.817621	0.0000**
Liquidity	-0.180451	0.0196**	-0.177738	0.0171**
Growth	-0.001584	0.4654	-0.000996	0.5878
Tangible	0.163641	0.8468	-0.632280	0.2005
Risk	-0.006402	0.0143**	0.005855	0.2438
R-squared		0.722321		0.8431
Adjusted R-squared		0.656010		0.8086
Durbin-Watson stat		1.994431		1.278
Prob (F-statistic)		0.0000		0.0000

*1) Analysis of Company Size on Capital Structure in Indonesia and Vietnam*

In this study, firm size variables positively affect the capital structure of food and beverage companies in Indonesia and Vietnam, but the level of significance differs between Indonesia and Vietnam. In Indonesia, firm size has no significant effect on DER at alpha level 5 percent (5%) while in Vietnam significant effect. The positive relationship between company size and DER shows that there is a positive trend that higher-sized firms prefer to use external financing.

The size of companies in Indonesia based on descriptive statistics in this study is higher than companies in Vietnam so that companies in Indonesia have easier access to the capital market. Moreover, according to research conducted by Sari (2016), the company's size factor is not significant in food and beverage companies in Indonesia because investors who would buy

shares or invest in a company not only consider the size or size of the company but also pay attention to other factors such as the prospect, the nature of the company's current management and others. This study is in line with research conducted by Angeliend[3]and Suhendra[51]states that firm size does not affect capital structure.

While in Vietnam, there is a positive and significant influence of firm size with the capital structure according to research conducted by Khoi and Ramachandran [13]explaining that different stakeholders (commercial banks, clients, suppliers) in the market are more familiar with larger companies. So that larger companies have higher bargaining power than small company when dealing with credit providers so that larger companies have more opportunities to get bank loans, trade credit from suppliers, or other debt networks.

### *2) Analysis of Liquidity on Capital Structure in Indonesia and Vietnam*

From the above analysis, the level of liquidity both in Indonesia and Vietnam in this study have a negative and significant effect on capital structure. So that H2 in this study is by the hypothesis. Companies that have high levels of liquidity will use their short-term assets to cover their short-term debt and not rely on long-term debt[25]. Thus, the company tends to borrow less and tend to rely on internal financing, resulting in stronger asset liquidity. The company in Vietnam with high liquidity would maintain a relatively high amount of current assets so that the company can maintain high cash inflows[7]. As a consequence, they can use cash inflows to finance their operations and funding activities. Thus, they do not use much funding from debt compared to companies that are not so profitable, so they prefer to use internal funds rather than funding from debt.

### *3) Analysis of Growth Opportunities on Capital Structure in Indonesia and Vietnam*

In this research, growth variable or growth opportunity has coefficient marked negative and not significant to the capital structure of food and Beverage Company both in Indonesia and Vietnam. The company's growth variable as measured by the growth of the company's assets can be an indicator of future growth opportunities. According to research conducted by Myers (1977), companies that have high growth rates will tend not to increase debt due to underinvestment and asset-substitution issues. Companies with low growth rates tend to increase their debt. Because if a company that has high corporate growth with high debt levels will increase the risk of corporate ruin, the company should restrict the use of debt to limit the risk facing the company [31].

The increase in the growth of assets acquired by the company does not affect the management in making funding decisions in meeting the financing needs of the company[59]. Since an increase in profits does not follow asset growth it will not have an impact on the company's capital structure. This condition shows that firms in high assets tend to utilize these assets to conduct the company's operational activities. In contrast, in Vietnam,

growing companies that would increase shareholder returns managers often choose risky projects[60]. Thus, its make creditors reluctant to provide credit unless offered compensation for their additional risk. This makes the company decide to use internal financing. In addition, financing with debt will require extra costs, so the higher the company's growth not to use debt but use equity. Moreover, according to the Pecking Order theory[61], growing companies have more internal financial resources to use, so companies prioritize funding from internal sources. The results of these empirical studies suggest that managers do not take growth factors when making decisions about capital structure in Vietnam.

#### 4) *Analysis of Tangibility Assets on Capital Structure in Indonesia and Vietnam*

Tangible assets are differences of research results betweenIndonesia and Vietnam. The results of this study indicate that tangible asset variables have a positive and insignificant effect on the capital structure of food and beverage companies in Indonesia is different from that in Vietnam which shows an insignificant negative effect on capital structure.

Research conducted by Karaye et al.[8] is in line with the research results of food and beverage companies in Indonesia explains that the tangible assets of the company show the value of liquidation of very high companies. A companywithhigh amounts oftangible assets borrows to the lender (creditor)would earn less interest on loans if they pledge their tangible assets to their lending. The bank or other financial institution will provide loans if the tangible assets of the company are pledged as collateral to their lending so that if the company fails to fulfill its obligations, the tangible assets will be confiscated by the lender to pay off the corporate liability,but the firms will avoid bankruptcy.

Previous research by Kanita [62]on food and beverage companies listed on IDX revealed that fixed asset variable has no significant effect because food and beverage companies use more specific fixed asset such as individual machines. Thus, it is less suitable to be made guarantees on loans because fixed-type fixed assets are difficult to resell by banks when they could not repay their debts so that lenders are challenging to lend and the company may use its capital to fund its asset needs.Consequently, the results of this study are in line with research conducted by Aulová and Hlavsa[12]that tangible assets have no significant effect on capital structure.

The bond market in Vietnam is still relatively small and only in developing level, making the company rely on bank debt[26]. In addition, banks in Vietnam prefer short-term loans with lucrative terms rather than risky long-term borrowing that allows firms to finance long-term investments using short-term loans.According to the results of research conducted by Hamidah[31] tangibility does not affect to capital structure because companies tend to use its assets for operational activities and not used to influence the decision to reduce or increase debt.

#### 5) *Analysis of Business Risk on Capital Structure in Indonesia and Vietnam*

From the results of the research that has been described above states that business risks have a negative and significant effect with food and beverage

companies in Indonesia but have a positive and insignificant effect on the capital structure of food and beverage companies in Vietnam. Trade-off theory and the pecking order theory sustain that there is a negative relationship between risk and debt ratio [63]. Companies that have high volatility in earnings face a higher risk in repaying corporate debt. So companies that have high-risk levels should not borrow more debt or increase leverage because of the risks it poses are likely to be high and likely to face significant bankruptcies or financial difficulties.

Unlike the results of the analysis in Indonesia, business risk variables have a positive and insignificant effect on the capital structure of food and beverage subsector companies in Vietnam. The results of this study are confirmed from the facts in Khoi and Ramachandran [13] studies in Vietnam that there is a positive relationship between business risk and capital structure. Furthermore, the credit market in Vietnam is still regulated, and interest rates are set by the Central Bank of Vietnam, not by market forces. Commercial banks are only allowed to offer predetermined interest rates. As a result, companies with high business risks can still get bank loans with low interest rates. This is the main reason why companies in Vietnam with high risk can also maintain high debt ratios [26].

The government is currently vigorously lowering lending rates, but market reactions are different in Indonesia and Vietnam. Reporting from [www.bbc.com](http://www.bbc.com) states that in Indonesia companies that have a risk of reluctance to borrow to the bank because it will cause the company's burden of interest on the loan arising. In addition, the consumption pattern of the lower middle-class people experienced a decrease in purchasing power while the upper middle class experienced a change in consumption patterns, so they preferred to save because of anxiety about the economic condition in the future.

In contrast, companies in Vietnam still rely heavily on bank loans [64]. Moreover, it is supported by the Vietnamese government by lowering interest rates to make business loan interest to be lower. Banks only look at the loan will be used for what to avoid bad credit. Furthermore, with the market still regulated by the government, investors become risk takers, so they are more interested in investing in the company. Therefore, the level of business risk cannot show definitively about the element of the capital structure that the firm chooses.

## V. CONCLUSION

The firm size variables show a positive influence on the capital structure of food and beverage companies in Indonesia and Vietnam but not significant in Indonesia. The liquidity variable shows the negative and significant effect on the capital structure of food companies in Indonesia and Vietnam. The growth variable shows negative and not significant coefficients in food and beverage companies in Indonesia and Vietnam. Tangible asset variable shows negative not significant effect to the capital structure of food company in Indonesia and significant positive influence on food and drinking company in

Vietnam. Business risk variables show a significant negative in Indonesia is different from food and beverage companies in Vietnam that have a significant positive effect. For the next researcher, it is expected to increase the number of countries in the ASEAN region as well as more extended research periods, so expect to get better results. In addition, it is expected to add other research variables that are expected to have more influence on the capital structure and increase the number of samples to provide more valid results or results close to the actual conditions.

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