

DOI: <https://doi.org/10.38035/dijefa.v5i4>

Received: 10 August 2024, Revised: 21 August 2024, Publish: 19 September 2024

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Analysis The Determinants of Capital Structure and The Measurement of Speed of Adjustment in Manufacturing Firms Listed on Indonesia Exchange Stock

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Abstract: The goal of this study is to analyze the factors affecting capital structure and the measurement of speed of adjustment of capital structure. The factors used were profitability, business risk, and investment. Financial leverage was used as a dependent variable proxied by debt-to-equity ratio. The sampling technique used was purposive sampling with 35 manufacturing firms listed on Indonesia Stock Exchange from 2017-2023. This study used panel data regression as an analytical method. The results of this study show that profitability positively affects financial leverage. Manufacturing firms of consumer goods subsector could adjust the optimal leverage less than a year. The study is expected to be a reference for management and academics.

Keyword: Business Risk, Capital Structure, Investment, Profitability, Speed of Adjustment.

INTRODUCTION

The manufacturing sector become one of the drivers in economic sectors. In 2014 to 2022, the average contribution of gross domestic product (GDP) of manufacturing industry is 19,9 percent (indonesia.go.id). According to Indonesian Ministry of Industry (Kemenperin), in 2023 the manufacturing sector made a high contribution compared to other sectors in global economic downturns. In Q1-2024, Central Berau of Statistics (BPS) cited manufacturing industry contributed to 19,2 percent of GDP. The manufacturing sector allowed a multiplier effect potency to other sectors, such as increasing in the transportation sector, moreover enhancing output of the agricultural sector, plantation sector, maritime sector, and other sectors being the input of the manufacturing sector.

Manufacturing sector companies are divided by some subsectors, one of the subsectors is consumer goods. Consumer goods have a crucial role in sustainability in fulfilling the basic needs of the community. Consumer goods also became one of the subsectors growing in economic uncertainty, such in the pandemic in 2020. When pandemic in 2020, manufacturing sector index turned down with the greatest decline occurred in various industrial subsector of 41,62 percent and other basic industry and chemicals subsector of 33,85 percent (year-to-

date). The least decline happened to the consumer goods subsector of 16,96 percent year-to-date (www.investasi.co.id). Based on Indonesia Exchange Stock (idx.go.id), some shares of consumer goods subsector included blue chip share, such as PT Indofood CBP Sukses Makmur (ICBP), PT Diamond Food Indonesia (DMND), PT Garudafood Putra Putri Jaya (GOOD), PT Mayora Indah (MYOR), dan PT Nippon Indosari Corpindo (ROTI).

According to Kythreotis et al., (2017) the companies must have any preparations to face any crisis happening or will happen, for both financial crisis and non-financial crisis. Global crisis happening can cause firm's bankruptcy if the firms do not make any preparations. Rajan and Zingales (1995) cited the companies could use capital structure to face the crisis. Capital structure is used as one of the indicators to know if the companies can manage the debts and the equities optimally and effectively (Manurung, 2012, 2022; Winoto et al., 2022). The firms can manage the capital structure to have the debt from external financing (Manurung et al., 2022). Stated by Kythreotis et al., (2017), capital structure management of firms must notice some factors, such as profitability, business risk, and investing policy. In addition, the firms must also pay attention to speed of adjustment in managing capital structure because the failure can lead to costs increasing. However, considering the speed of adjustment, investors can lower the risks of investment portfolio instead of the firms which have high speed of adjustment.

Kythreotis et al., (2017) studied about the effect of profitability, business risk, investment on capital structure and measuring speed of adjustment in capital structure in two countries, Iran and Australia. The findings showed the profitability inversely affects the capital structure in both countries. The business risk adversely affects capital structure in Iran but positively affects in Australia. The investment has a positive influence in Iran but has no significant effect in Australia. Kythreotis et al., (2017) also found the companies in Iran and Australia used capital structure adjustment in a high speed to get the optimal capital structure. Financing decision becomes an important thing for the firm's wealth because the failure in decision-making will lead to financial distress and bankruptcy (Alipour et al., 2015).

According to Modigliani & Miller proposition II (M&M proposition II), firm's financing should be fully funded by issuing obligation because of tax shield so the firms will not be expended by taxes. Found by Kraus & Litzenberger (1973), increasing of debt-weight on capital structure would raise bankruptcy risk because the inability to repay the principal and the interest yearly. Based on trade-off theory (TOT), the firms had to estimate the proportion of the leverage considering the benefits of tax shield and the costs of bankruptcy caused by the inability to repay the debt (Kythreotis et al., 2017). In accordance with pecking order theory (POT), the firms decided the fund with the determined sorts (Myers, 1984). The companies should prioritize internal financing from retained earnings because of the least costs. When the internal financing had not sufficed, the firms could use the external funding the obligation prior issuing stocks. Ross, (1977) explained the firms also estimated the signal to fund for maximizing the profits. As mentioned, the firms must notice the capital structure beside need the capital to run the business (Manurung et al., 2020b). Capital structure is crucial because it reflects financial condition (Putri & Willim, 2023). Rajan dan Zingales (1995) said leverage is financing decision measured by some methods, such as the ratio of total debts and total assets (DAR), the ratio of total debts and net assets (assets – liabilities), the ratio of EBIT and interest expense, or the ratio of total debts and total assets (DER). From those measurements, many researchers used DER as the proxy of capital structure (D'Amato, 2021; Kythreotis et al., 2017; Seetanah et al., 2014; Sheikh & Wang, 2012; Winoto et al., 2022). DER aims to investigate the comparison of external funding to the capital as well as the internal funding the firms have. In other words, investors could interpret the value of the firms from the comparison of total debts and total capitals (Kythreotis et al., 2017).

Profitability is one of the variables affecting the capital structure. Profitability is proxied by the ratio of net income and total assets (Maina et al., 2018). Return on asset (ROA) calculates the efficiency of using the assets (Pointer & Khoi, 2019). The more efficient assets used the more profits the firms gained. Doku et al., (2022). Pacheco & Tavares, (2017) dan Yinusa et al., (2016) studied profitability has a positive effect on capital structure. The result was relevant to trade-off theory that the more profits the firms have, the more debts the firms have (Doku et al., 2022). The other finding was claimed by Alipour et al., (2015), Kythreotis et al., (2017), dan Yang et al., (2010) that profitability affects adversely capital structure. The finding was relevant to pecking order theory that the more profitable the firms is, the less debt the firms take because of internal financing decision.

Risk management can influence the financing policy (Amelot et al., 2021). Johnson & Soenen, (2003) claimed business risk is also one of the important variables influencing the capital structure. Business risk is affected by income volatility when there is uncertainties (Alnajjar et al., 2015). Based on trade-off theory, the firms with high risk or have high possibility to be default should not take high leverage (Alipour et al., 2015). In other words, the firms in high volatility is possible to be default and accused by the creditors (Kythreotis et al., 2017). The similar principles can be applied to pecking order theory, the firms with high volatility will have incapacibilities to repay the principals and the interest (Kythreotis et al., 2017). In this circumstance, the firms is suggested to choose internal financing. Zarebski & Dimovski, (2012) dan Kythreotis et al., (2017) calculated business risk with comparing standard deviation of operation profits divided by total assets. Sheikh & Wang, (2011), Alnajjar et al., (2015) dan Kythreotis et al., (2017) found an inverse effect on capital structure. Managers tend to lessen the debts when the revenue is unstable so the firms can avoid bankruptcy as if managers was risk avoider. The different study found by Chen et al., (2014) claimed that business risk positively affects capital structure. The more business risk the firms have, the more leverage the firms have.

Investment is manager's decision about the firm's assets (Setiawan & Sudiro, 2019). The assets can be forms as tangible and intangible assets. Investment tends to be defined as tangible assets that have economical value more than a year and called as fixed assets. Fixed assets usually are bought by the debts and used as collateral for the creditors when the firms are in liquidation (Alipour et al., 2015). The signaling theory explains that investment decision will give the positive signal of growth in the future (Setiawan & Sudiro, 2019). Sheikh & Wang, (2011), Abu Mouamer, (2011), and Yang et al., (2010) formulated investment by the ratio of tangible fixed assets and total assets. This study will modified the formula of investment becoming the ratio of the incremental value of net tangible fixed assets and total assets. Kythreotis et al., (2017) stated investment has a positive influence on capital structure as trade-off theory claiming higher fixed assets will enhance the firm's credit rating so it will make lesser cost of debt. In other words, the firms with more fixed assets will be able to get the liabilities because of the capability of repaying the debts. The different study from Sheikh & Wang, (2011) emphasized investment has a negative effect on capital structure. The result means the companies decide the fixed assets as a liquidation collateral to finance the operations so the firm will lessen the debts. This result also relates to pecking order theory emphasized internal financing prior external financing.

In addition, speed of adjustment of capital structure is defined as how fast the firms change the capital structure become optimal capital structure (Supra et al., 2016). Speed of adjustment concept is based on dynamic trade-off theory (Ghose, 2017). Supra et al., (2016) said the firm's activity is in incomplete market and cause the deviation of capital structure targeted. Nonetheless, adjustment costs like transaction cost, make imbalance capital structure target (Serrasqueiro & Caetano, 2015). Hence, when the firms deviate from the target, they will have some alternatives. If the leverage is excess, the managers can lower the

leverage as the target by issuing stocks or quitting the debts, and if the leverage is less than the target, the managers can buy back the stocks or issuing new obligation to gain tax shield (Kythreotis et al., 2017). Because of high costs, the firms adjust leverage rate to optimal leverage in different speed, depend on the characteristics (Ghose, 2017). The difference of cost and benefit of speed of adjustment is enhanced by the fact of the variance of cost and benefit from reforming the capital structure depending on the characteristics. It means the firms assuming the higher benefits of speed of adjustment than the costs tend to have high speed and vice versa (Lemma & Negash, 2014).

Based on the explanations, this paper aims to analyze the determinants of profitability, business risk, investment in affecting capital structure and emphasize the speed of adjustment of capital structure in manufacturing firms of consumer goods subsector listed on Indonesia Exchange Stock during 2017 to 2023.

METHOD

This research aimed to emphasize the determinants affecting capital structure and analyze speed of adjustment of capital structure in the manufacturing firms of consumer goods subsector listed on Indonesia Exchange Stock over period 2017 to 2023. The consumer goods firms listed in 47 companies and had been determined the sampling criteria in which not included the firms listed prior 2017. Thus, the study got 35 companies listed so there were 245 units observed. This study used secondary data sourced Indonesia Exchange Stock and company legal cites. Moreover, it used panel data model as the analytical method by Eviews 12.0 (Manurung, 2024). The conceptual framework of the study is following.

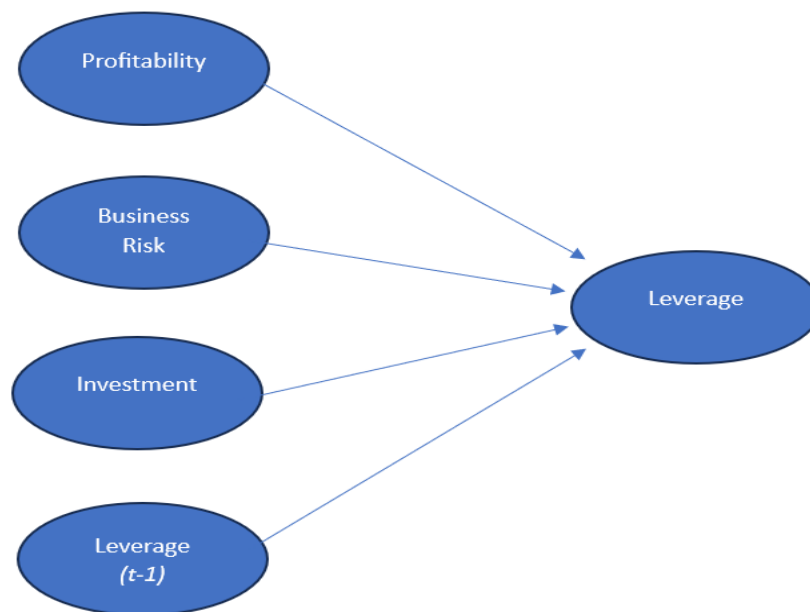


Figure 1. Conceptual Framework

The dependent variable used capital structure proxied by financial leverage, and the independent variables are profitability, business risk, investment, and leverage lagged-1. The measurements of the variables explained as following Table 1.

Table 1. Variables and Measurements

Variable	Measurement	Source
Dependent Variable		
Financial Leverage (DER)	Total Debts / Total Equity	Winoto et al., (2022)
Independent Variables		
Profitability (ROA)	Net Income / Total Assets	Kythreotis et al., (2017)
Business Risk (RISK)	Standard Deviation of Operation Profits / Total Assets	Kythreotis et al., (2017)
Investment (INV)	(Net Fixed Assets year t less Net Fixed Assets year t-1) / Total Assets	Kythreotis et al., (2017)
Leverage t-1 (DER t-1)	Total Debts / Total Equity	Kythreotis et al., (2017) dan Manurung, (2012, 2022)

RESULTS AND DISCUSSION

The data testing used panel data analysis divided by three models, which are common effect model (CEM), fixed effect model (FEM), and random effect model (REM). The model selection should be done by three steps, which are Chow test, Hausman test, and Lagrange Multiplier test. The model selection goals to determine the best model to interpret and analyze the results. The model selection is shown as following Table 2.

Table 2. The Model Selection

Model Testing	Probability	Decision	Conclusion
Chow Test			
Leverage	0,1782	H ₀ accepted	CEM
Lagrange Multiplier Test			
Leverage	0,8115	H ₀ accepted	CEM

Source: Processed data by Eviews 12.0

Based on the result of the model selection as Table 2., the Chow test result has a p-value less than α 0,05 which means H₀ is accepted and the model chosen is CEM. The Lagrange Multiplier test must be done to fix the model chosen and in accordance with the results, p-value is less than α 0,05 which means H₀ is accepted and the best model chosen is CEM (Manurung, 2024).

Panel data regression used to analyze the effect of profitability, business risk, investment, and leverage lagged-1 on financial leverage. The equation can be mentioned as following.

$$DER_{it} = \alpha + \beta_1 ROA_{it} + \beta_2 RISK_{it} + \beta_3 INV_{it} + \lambda DER_{it-1} + e_{it}$$

where:

DER_{it}: financial leverage firm *i* year *t*; ROA_{it}: profitability firm *i* year *t*; RISK_{it}: business risk firm *i* year *t*; INV_{it}: investment firm *i* year *t*; DER_{it-1}: financial leverage firm *i* year t-1; α is constant; β_{1-3} is coefficient; λ is coefficient of DER Lag-1; e_{it} is error firm *i* year *t*.

Then, this study will analyze the speed of DER to be the optimal DER using calculation (1- λ) known as speed of adjustment (Manurung et al., 2022; Winoto et al., 2022 dan Kythreotis et al., 2017).

Descriptive statistics explains the results briefly seen as some values which are minimum value, maximum value, mean value, and standard deviation. The minimum value is the least value of each variable and the maximum value is the highest value of each variable. The mean describes average value of each variable, while the standard deviation describes the distribution of the data to show the heterogeneity. The results of descriptive statistics is shown in Table 3.

Table 3. Descriptive Statistics

Variable	N	Min.	Max.	Mean	Std. Dev
Leverage	245	-235,215	17,037	-0,058	15,160
Profitability	245	-0,359	0,9440	0,094	0,144
Business Risk	245	0,0003	6,689	0,203	0,768
Investment	245	-2,013	0,542	0,014	0,152

Source: Processed data by Eviews 12.0

Based on Table 3., the interpretation of data process emphasized leverage has the mean value of -0,058 and the standard deviation value of 15,160. Profitability has the mean value of 0,094 and the standard deviation value of 0,144. Business risk has the mean value of 0,203 and the standard deviation value of 0,768. Investment has the mean value of 0,014 and the standard deviation value of 0,152.

Table 4. The Results

Independent Variable	Dependent Variable		
	Leverage		
	Coefficient	P-value	Conclusion
Constant	-2,730	-	-
Profitability (ROA)	21,188	0,0037	H ₁ accepted
Business Risk (BR)	0,085	0,9463	H ₂ rejected
Investment (INV)	6,629	0,3213	H ₃ rejected
Leverage lag t-1 (DER t-1)	-0,040	0,5365	H ₄ rejected
Adj. R ²	0,0164		
F-prob	0,0105		
			H ₀ rejected

Source: Processed data by Eviews 12.0

This study used panel data regression to analyze the effect of independent variables, which are profitability, business risk, and investment on financial leverage. The equation in this study was shown below.

$$DER_{it} = -2,730 + 21,188 ROA_{it} + 0,085 RISK_{it} + 6,629 INV_{it} - 0,040 DER_{it-1} + e_{it}$$

Based on Table 4., ROA has a p-value less than α 0,05 and a coefficient value of 21,188 which means ROA has a positive effect on DER. This finding is relevant to Doku et al., (2022). Pacheco & Tavares, (2017) dan Yinusa et al., (2016) that the more profitable the firms are, the more the debts the firms enhance. This study relates to the trade-off theory that firms will have a tendency to enhance the debts or the obligations because they ensure the capability of repayments. Moreover, the firms will have the tax shield when they take the debts so there will no tax expense deducting the profits. Otherwise, RISK and INV have no significant impact on DER. It means when the firms want to add their debts, they will not consider the operation profits as well as the net fixed assets they have. The value of λ leverage year t-1 is -0,040 which means the speed of adjustment of the manufacturing firms of consumer goods subsector in Indonesia has a value of 100,04% (1-(-0,040)). The manufacturing firms reach the leverage target in less than a year (100 : 100,04 = 0,996). As a result, it emphasizes the ratio of the debts and the capitals will always turn back to the target if the value is not optimal (Winoto et al., 2022).

CONCLUSION

This study aims to analyze the effect of profitability, business risk, and investment on capital structure also emphasize the speed of adjustment of capital structure in manufacturing firms of consumer goods subsector listed on Indonesia Exchange Stock over period 2017 to 2023. This study used Eviews to process and analyze the data. The results showed only

profitability has an effect on capital structure. This study is in line with the trade-off theory claiming the firms will raise the debts when they are more profitable. Consequently, the implication research is when the firms want to enlarge or lessen the debts they ought to see their gaining profits. The value of λ leverage year t-1 is -0,040 which has a meaning the speed of adjustment of the manufacturing firms of consumer goods subsector in Indonesia is 100,04%. This research has limitations. First, the study only reaches 35 manufacturing firms categorized consumer goods subsector listed on Indonesia Exchange Stock period 2017 to 2023. Second, the independent variables investigated only reach profitability, business risk, and investment.

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