

Leverage Determinants of Manufacturing Firms: Evidence From Indonesia

by Hersugondo Hersugondo

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Leverage Determinants of Manufacturing Firms: Evidence From Indonesia

Imam Ghozali, Eka Handriani, Hersungodo

Abstract- This research aims to explore the most significant leverage determinants of manufacturing firms in Indonesia and to provide an explanation on this issue by using a multiple regression model. Modigliani and Miller and pecking order theory were used to formulate propositions that could examine the determinants of financial distress of manufacturing firms. LISREL software was used to analyse the multiple regression model as a statistical tool to investigate the most significant profitability determinants of 300 manufacturing firms listed in Indonesia Stock Exchange in the period of 2010-2018. The results found that profitability, agency cost, and non-debt tax shield (NDTS) variables had a negative influence on the debt ratio, while bankruptcy cost, firm size, firm growth, and risk variables had a positive influence on the debt ratio. These results led to a negative influence on the asset growth rate toward the debt ratio at an above-average asset growth rate which had a low debt ratio. This also explained that the results supported the pecking order theory where the higher the firm growth, the more the firm to prefer to fund the firm expansion with internal capital, and vice versa. In addition, the results found also indicate that Indonesian manufacturing firms with a high asset growth rate would prefer internal funding for their investment projects.

Keywords - Profitability, Agency Cost, Bankruptcy Cost, Firm Size, Leverage, Firm Growth, Risk

1. Introduction

The leverage condition of manufacturing firms in Indonesia is predicted to be stable during 2019. Along with moderate profit growth of 4% and despite of the pressure from rising interest rates, depreciation of the rupiah (IDR) against the US dollar (USD), and post-election political, social and economic risks the presidential election, an increase in the credit quality of firms will be limited by their high leverage-financed capital expenditures and the fact that manufacturing firms in Indonesia operate in a developing regulatory environment. The condition of increasing debt ratios and funding costs has caused interest coverage to weaken in general, although still within modest limits. Risk conditions for refinancing can still be managed in 2019, but will increase in 2021-2022, led by issuers with high performance in the mining and property sector, and large oil and gas sector capital expenditure will be the key. Manufacturing firms will hold back their expansion, so that the search for funding sources will also be reduced. One of the causes of reduced expansion and collection of corporate funds is due to political factors. Business actors are waiting for certainty regarding the results of the election. The description above shows that the leverage conditions of manufacturing firms in Indonesia are strongly influenced by many things, starting from internal to external conditions and even post-election politics. This study is directed at explaining and exploring models that show how funding decisions are focused on the optimal efforts of corporate investment to obtain additional funds to support investment policies based on the foundation of Modigliani and Miller (MM) and pecking order theory. The main problem in

optimizing funding decisions is to establish an optimal capital structure, as a basic assumption in deciding how much funds are added to support the firm's investment policies and operations, so that the firm's financial performance can grow healthy in the complexity of the competitive environment with small bankruptcy risk. The organization's success in obtaining internal or external funds depends on the integration of macro and micro factors as contingency variables. This view is called as a contingency approach. The contingency approach seeks to understand various interrelationships within and between organizations and their environment. The argument from the perspective of contingency theory is intended to provide a foundation for the reasons why firms make capital structure decisions with managerial actions that are most suitable for overcoming the complexity of competition by building the power of financial leverage. There are several factors that influence funding decisions including, **first**, profitability. Modigliani and Miller (1958) with their static theory explained that firms with high profitability would use leverage as a funding option to obtain the benefits of a tax saving facility. Results that are consistent with the static theory show that firms that had profitability above the industry's average profitability tended to choose leverage as a funding priority. Likewise, Jensen (1986) argued that the presence of asymmetrical information was a positive signal for firms that were profitable for leveraging up, which meant that profitability was positively related to leverage. **Second**, it is agency costs. Agency problems occur because of the existence of asymmetrical information between owners and managers where one party has information that is not owned by the other party. This can lead managers to behave in moral hazard and make expenditures on investments under capital costs (overinvestment) when the free cash flow appears. This expenditure can reduce shareholder wealth. **Third**, it is bankruptcy cost. There is a trade-off between tax benefits of leverage financing and expected bankruptcy costs. The optimum debt ratio is achieved when the marginal income tax from leverage financing equals the expected marginal bankruptcy cost. Increasing funding by leverage will increase the chances of bankruptcy and bankruptcy costs. **Fourth**, it is firm size. Big firms that have the ability to repay

- **Imam Ghozali** is a lecturer at Faculty of Economics and Business, Diponegoro University, Jl. Prof. Soedarto, Tembalang, Semarang, Central Java, Indonesia, email : ghozali.imam@yahoo.com
- **Eka Handriani** is lecturer at Faculty of Economics and Business, University of DarulUlum Islamic Centre Sudirman, Jl. TentaraPelajar No. 13, Ungaran, Central Java, Indonesia, email: ekahandriani@gmail.com
- **Hersungodo** is lecturer at Faculty of Economics and Business, Diponegoro University, Jl. Prof. Soedarto, Tembalang, Semarang, gondooarum65@gmail.com

their leverages will get the trust of creditors to issue large amounts of leverage. Big and more diversified firms are easier to access the capital market, receive high credit ratings, and pay low interest rates. **Fifth**, it is growth rate. Firms with high growth rates are likely to have the ability to fund their business internally rather than externally. Firms that have high growth rates are expected to have a low debt ratio, in the context of the relationship of opportunities for growth with the presence of asymmetrical information. It is explained that the growth rate of the firm is a positive signal for the opportunity to invest in the firm. Excess cashflow in the form of retained earnings is reallocated into certain investment projects. **Sixth**, it is non-leverage tax shield. A non-leverage tax shield capital structure acts as a proxy for leverage benefits because the tax savings and substitution of interest costs are reduced when calculating corporate tax. Therefore, firms that are subject to high taxes, to a certain extent, should use a lot of leverage. **Seventh**, it is business risk. Risk in a business has a negative relationship with debt ratio. This shows that firms that have high business risks tend to have a low debt ratio. The greater the business risk, the more the use of high leverage which will make it difficult for firms to repay their leverages. The trade-off theory implies that firms with high business risks should use smaller leverage than firms that have low business risks. This study aims to examine seven factors that influence manufacturing firms' leverage consisting of profitability, agency costs, bankruptcy costs, firm size, growth rates and non-leverage tax shields and business risks to firm leverage. This study may contribute to better academic insights on the funding role of manufacturing firms in Indonesia by using LISREL test on a sample of 300 firms listed in the IDX financial report. This paper is written as follows: the second section develops hypotheses about the effect of profitability, agency costs, bankruptcy costs, firm size, growth rate and non-leverage tax shield variables on firm leverage; the third section discusses about the sample and methodology used; the fourth section presents descriptive statistics, test results and hypotheses before discussion; and the last section provides the conclusions of this study.

2. Background Theory and hypotheses development

2.1. Capital Structure in Theoretical Context

Selection of financial structure is a problem that concerns the composition of funding to be used by the firm. This refers to determine how much leverage the firm will use to fund its assets. Funding structure is a permanent funding consisting of long-term leverage, preferred stock, and shareholder capital. If all funds to finance firm assets are from the owner in the form of ordinary shares, the firm is not bound by a fixed obligation to pay interest on the leverage obtained in the context of corporate funding. Interest is a fixed financial cost that must be paid and added to the fixed operating costs regardless of the level of corporate profits. Therefore, firms that use leverage will be more at risk than those without leverage, because besides having business risks, firms that use leverage also have financial risks. Business risk refers to the variability of expected earnings before interest and tax (EBIT). Business risk is a direct result of the firm's investment decisions reflected in the

structure of its assets. The cost structure, especially the firm's operating leverage, the nature of product demand, competition between industries, growth prospects, firm size, and etc., influence the form of business risk. While financial risk refers to the variability of net income. Determining capital structure policies must involve a trade-off between risk and return. Addition of leverage increases the volatility of the total cash flow or the firm's business risk, but also increases the expected returns. Risks that are getting higher because of increasing leverage tend to reduce stock prices, but the expected increase in return because using leverage optimally will increase stock prices. An optimal capital structure is a capital structure that balances risk and return so as to maximize stock prices.

2.2. Modigliani and Miller (MM) Theory

Modern capital structure theory that houses the condition of firm leverage is Modigliani and Miller (MM theory). They argue that leverage is an instrument that is very sensitive to changes in corporate value determined by capital structure (Modigliani & Miller, 1958). The higher the proportion of leverage, the higher the stock price. However, at a certain point, the increase in leverage will reduce the value of the firm because the benefits obtained from the use of leverage are less than the costs incurred. This theory is used as the basis of funding theory which provides an operational definition of funding sources used in firm operations that explicitly recognizes uncertainty and the importance of maximizing market value, assuming that 1) the firm controls all physical assets; 2) there are no fees for transacting in the capital market, such as no corporate tax or personal income tax, cost of buying or selling securities, and bankruptcy fees; 3) the firms can only issue 2 types of securities such as risky equity and risk free leverage; 4) individuals and firms can borrow and lend funds at risk free interest rates; 5) investors have homogeneous expectations regarding the future movements of firm profits; 6) there is no growth, so that all cash flow patterns are annuities to an unlimited period of time; and 7) all firms can be classified into one of the same number of return classes so that the returns of all firms in the same class are proportional and perfectly correlated with other firms in their class. This theory also recognizes the irrelevance between funding and investment. Related sources of funds to finance investments, whether using their own capital or using external funds, Modigliani Miller (1958) explained that as long as the amount of cash flow of the firm remains, the value of the firm will not change. Modigliani Miller (1958) believed that investment funding sources through leverage and own capital will not affect the value of the firm, with the presence or absence of a protective agreement with a fixed cash flow, the lost profit from the bondholder will be lost to shareholders and vice versa.

2.3. Pecking Order Theory

This theory was popularized by Myers (1984) by assuming that, first, dividend policy is rigid. Managers will try to maintain a constant level of payment and it will not increase or decrease dividends as a response to current temporary earnings fluctuations. **Second**, firms should prefer internal funding (retained earnings and depreciation) compared to external funding such as leverage and shares. **Third**, if the

firm obtains external funding, the firm will first choose the leverage. **Fourth**, if the firm has to use more external funding, the firm will choose to use safe leverage, followed by risky leverage, convertible securities, preferred stock and finally public shares. The pecking order theory model shows that firms that have large investments tend to have high funding decisions, where the greater the investment opportunity, the greater the possibility for the firm to use external funds, especially leverage if internal funds are insufficient. In its simplest form, the actual pecking order theory has existed for several years ago, but many modern economists reject it because it is considered irrational. The simple concept of pecking order theory assumes that there is a bad influence from market imperfections such as high transaction costs, information-less investors, and managers who are very insensitive to market valuations of firm stocks that are difficult to accept as accurate images of modern capital markets. Myers (1984) explained the views of this theory by using the **first** asymmetrical assumption where firm managers were more aware of current corporate earnings and investment opportunities than outside investors. **Second**, managers act based on the best interests of existing shareholders. The asymmetrical assumption explained by Myers (1984) implies that managers who develop or find good investment opportunities with a positive net present value (NPV) will not convey the information to investors because the statement will not be trusted. Then, all of the management teams try to announce a new project that is being carried out by the firm, aiming to increase the share purchase price. Thus, that they can sell shares at a higher price and because the investors are unable to verify the claim for a long period of time, they will give a low average value to all shares of the firm that will buy new shares issued only at a large discount from the equilibrium value.

2.4. Firm Leverage

Leverage as a source of external funding is something attractive for firms to recapitalize or restructure capital and develop their business operations in addition to their own capital. In the context of financial management, leverage is useful because it provides financial leverage that can increase revenue per share. However, a too high leverage will increase the financial risk and may lead to cost of financial distress. On the basis of these two philosophies, it is very important for firms to consider the benefits and costs of selected funding sources in making funding decisions, which indicate the proportion of leverage and equity issued by the firm. The static theory claims that the higher the proportion of leverage, the higher the value of the firm as reflected in the stock price. However, to a certain point, the increase in the proportion of leverage will reduce the value of the firm. The value of the firm is determined by how funds / cash are obtained and invested, so that the value of the firm is influenced by the way managers combine the equity and leverage. The combination of firm funding between equity and leverage is called as a capital structure.

2.4.1. Profitability and Firm Leverage

Results that are consistent with the pecking order theory prove that the debt ratio is inversely related to profitability (Handriani, 2018). Their studies reveal that the more

profitable a firm is, the more likely it is to have higher internal funding sources. The validity of the pecking order hypothesis will be confirmed when a profitable firm is more likely to use internal funds (Myers, 1984). Panda and Nanda (2018), Abel (2018) and Alarussi and Alhaderi (2018) showed that the greater the firm's profitability, the lower the firm's debt ratio. Likewise, an empirical study conducted by Gebauer et al. (2018) found the validity of pecking orders where a firm would only adjust its optimal capital structure to the average level of industrial leverage when the level of corporate leverage was above the average debt ratio of the industry. Conversely, a firm, with a debt ratio below the average debt ratio of its industry, did not consider the use of leverage as its main priority funding source. Therefore, profitability has a negative relationship with the level of leverage. This opinion is also supported by the results of the empirical study by Jouida (2018) who examined vector panel autoregression (PVAR) for 412 French financial institutions for ten years and the results indicated that profitability had a negative effect on the debt ratio. Referring to the opinions and findings of the studies above that are consistent with pecking orders, then the first hypothesis that can be proposed is as follows:

Hypothesis 1: Profitability level has a negative influence on firm's debt ratio.

2.4.2. Agency Cost and Firm Leverage

One of the implications of the free cash flow of agency problem is that the firm's financial performance will be bad and have an impact on the stock market valuation. To reduce agency problems, shareholders can limit the activities of agents who deviate through the provision of appropriate incentives such as through increasing share ownership by management (Jensen & Meckling, 1976), and suggesting the importance of funding through leverage in addition to supervising deviant activities from management. Leverage funding has the potential to reduce agency conflict because management has an obligation to pay the main loan along with the interest. Therefore, the excess cash flow (free cash flow) of the firm can be used for leverage repayment. Thus, managers will use leverage optimally. Myers (1984), with a pecking order theory, explained that the effect of asymmetrical information tended to encourage the pecking order behaviour, so that firms that were profitable and faced high agency costs tended to use retained earnings as their main funding priority, consequently reducing the firm leverage. Likewise, Jensen and Meckling (1976) and Handriani (2018) argued that if agency costs were high, the debt ratio would decrease. The results of a study by Jensen et al. (1992) showed that share ownership by management had a negative relationship with the use of leverage. Based on the above explanation, the second hypothesis that can be proposed is as follows:
Hypothesis 2: Agency costs have a negative influence on firm's debt ratio.

2.4.3. Bankruptcy Cost and Firm Leverage

Besides agency costs, the existence of bankruptcy costs is also believed to be able to maximize the funding structure. An increase in leverage will also result to an increase in financial risk and opportunities for financial failure. In line

with this financial risk, a study by Dhankar (2019) showed that financial risk and the opportunity for financial failure had a positive relationship, indicating that the more the increase in financial risk, the less the priority of funding with leverage. The empirical evidence by Boubaker et al. (2018) showed that there was a risk of positive leverage for firms with high leverage which led to bankruptcy opportunities to have a positive effect on optimal leverage, while bankruptcy costs had a negative effect on leverage. This confirmed that funding decisions depended on the chances of bankruptcy and expected bankruptcy costs. Furthermore, Boubaker et al. (2018) also showed that the optimal debt ratio could be achieved when the marginal income tax from leverage financing equalled the expected marginal loss from bankruptcy costs. This implies that the higher the cost of bankruptcy, the lower the level of leverage. Increased leverage will increase financial risk and the chance of financial failure. Studies by Dhankar (2019) and Boubaker et al. (2018) showed that financial risk and opportunities for financial failure were positively correlated with equity issuance, indicating that the higher the financial risk, the less the priority of making funding with leverage. Boubaker et al. (2018) also found that bankruptcy opportunities were positively correlated with optimal leverage, while bankruptcy costs proxied by risk as financial distress negatively affected leverage (George, & Hwang, 2010; Ibrahim & Lau., 2019; Shah, et al., 2019). It emphasized that funding decisions depended on the chances of bankruptcy and bankruptcy costs. The structure of corporate leverage was negatively affected by financial distress. Based on the results by Dhankar (2019), Boubaker et al., (2018), George, & Hwang, (2010), Ibrahim & Lau (2019) and Shah et al. (2019), the third hypothesis that can be proposed is as follows:

Hypothesis 3: Bankruptcy costs have a negative influence on firm's debt ratio.

2.4.4. Firm Size and Firm Leverage

Dang, et al. (2018) suggested that big and diversified firms tended to take advantage of high leverage capacity. Therefore, it can be estimated that there is a positive relationship between firm size and debt ratio. A study by Ibhagui and Olokoyo (2018) proved that big firms tended to issue bigger leverage than small ones. Other empirical evidence supporting the Ibhagui and Olokoyo's (2018) study are demonstrated by Balfoussia and Gibson (2019), Memon et al. (2018), Li et al. (2018), and Ramli et al. (2019) which showed that firm size had a positive effect on leverage. Other similar empirical evidence is shown by Homaifar et al. (1994), Rajan and Zingales (1995), Ibhagui and Olokoyo (2018), Dang et al. (2018), and Nanda and Panda (2018). Therefore, the fourth hypothesis that can be proposed is as follows:

Hypothesis 4: Firm size has a positive influence on firm's debt ratio.

2.4.5. Growth Rate and Firm Leverage

Pawlina and Renneboog (2005) argued that firms with high growth rates were likely to have the ability to fund their business internally rather than externally. Firms that have

high growth rates are expected to have a low debt ratio. This argument is presented by Pawlina and Renneboog (2005) in the context of the relationship of growth opportunities with the presence of asymmetrical information and found that the firm growth rate was a positive signal for the opportunity to invest in the firm. Anton (2019) found that access to various sources and types of financing was the main problem to support the firm growth, therefore repairs to financial resources were a must thing to do. Furthermore, it is explained that the macroeconomic environment and characteristics of the banking sector are important determinants of corporate growth. Economic growth positively influences sales and growth in total assets, while the influence of financial and economic developments varies with the size of the firm growth used. Anton's (2019) exposure proved that leverage had a negative effect on firm growth. A similar study was also conducted by Tsuruta (2015), Aktas et al. (2015), Brown et al. (2017), and Bae et al. (2017) which showed the evidence of a negative relationship between growth in firms and leverage. Thus, the fifth hypothesis that can be proposed is as follows:

Hypothesis 5: Firm growth rate has a negative influence on firm's debt ratio.

2.4.6. Non-Debt Tax Shield and Firm Leverage

Modigliani-Miller's (1958) proposition of capital structure becomes relevant when incorporating tax elements, because interest paid due to using leverage can reduce tax shields. DeAngelo and Masulis (1980) stated that in a non-leverage tax shield, capital structure act as a proxy for leverage benefits because the tax savings and substitution of interest costs are reduced when calculating corporate tax. Therefore, firms that are subject to high taxes, to a certain extent, should use a lot of leverage. Similar researches have been conducted by Fischer and Jensen (2019), Abadi et al. (2016), Norbäck et al. (2018), Nguyen (2017), Sharma (2018), and Öhman and Yazdanfar (2017). They found that the non-debt tax shield had a positive effect on leverage. Thus, the sixth hypothesis that can be proposed is as follows:

Hypothesis 6: Taxes have a positive influence on firm's debt ratio.

2.4.7. Risk and Firm Leverage

Studies by Hsu et al. (2016), An et al. (2015), Sila et al. (2016), and Lundqvist (2015) found that business risk had a negative relationship with debt ratio. This shows that firms that have high business risks tend to have a low debt ratio. The greater the business risk, the more difficult the firms which use high leverage to repay them. The implication of the trade-off theory, according to Bringham et al. (1999), is that firms with high business risks should use smaller leverage than firms that have low business risk. Their opinion was based on the argument of Modigliani and Miller (1958) who claimed that the addition of leverage to a high condition of return variability would result in bankruptcy and lead to higher firm capital costs and lower corporate value. The agency theory perspective provides a different explanation of the relationship between business risk and debt ratio. The value of the firm is determined by how cash

is invested and obtained. Therefore, firm value is influenced by the way managers combine equity and leverage. Firm value is the sum of leverage value and net income discounted at the desired rate of return. In firms that have high business risks, the market value of the firm will decline when the firm adds the number of outstanding shares through the issuance of equity. The issuance of these new shares will increase the equity agency costs, thereby increasing the firm's capital costs. Increasing the cost of capital will further increase business risk and reduce the market value of the firm's equity. In conditions of high business risk, leverage financing by firms that face high asset growth will provide a lower level of risk compared to the emission of new shares. Research results by Bhagat et al. (2015) found that there was a relationship between risk taking of financial institutions and they also found that firm size was positively correlated with risk-taking steps where the decomposition of key risk measures revealed that there were financial firms involved in excessive risk taking, especially through increasing leverage. Furthermore, they concluded that banking firms made risky investments compared to commercial banks. The firm's business risk determines the size of the floatation cost of issuing new equity. When the business risk of a firm increases due to the effect of equity market timing on the common stock of less diversified firms, the shareholders will substitute assets so that their wealth does not decrease. Asset substitution that may be carried out by shareholders is to encourage management to repurchase outstanding shares of the firm whose cash needs are funded by leverage. Shareholders

will want to increase the risk as long as leverage produces a substantial increase in income. This logic is similar to the economic rule of Adam Smith's principle of efficiency. The pecking order theory perspective explains that firms with high business risk will reduce the desire to invest in physical assets. High retained earnings are invested in financial assets such as buying back shares of low value firms. To reduce high business risk, retained earnings are used to pay off leverages in addition to capital gains. By repurchasing shares, making capital gains, and maintaining a low level of leverage, it will result in lower risk of bankruptcy and the firm's total capital costs. This theory also explains that business risk is negatively correlated with the debt ratio. Based on the research results by Hsu et al. (2016), An et al. (2015), Sila et al. (2016) and Lundqvist (2015), the seventh hypothesis that can be proposed is as follows:

Hypothesis 7: Business risk has a negative influence on firm's debt ratio.

3. Research Methods

3.1. Population and Sample

The data was obtained from Indonesian Capital Market Directory (ICMD) observed from 2011 to 2018. This study used a sample of 300 financial statements. Table 1 shows the data used in this study.

Table 1
Research Data

No.	Industry	Companies	Observation
1	Food and Beverage	10	30
2	Customer Good	4	13
3	Metal and Allied Product	9	18
4	Cables	6	25
5	Paper and Allied Product	3	5
6	Cement	3	10
7	Ceramic and Porcelain	6	20
8	Chemicals	10	25
9	Plastic and Packaging	7	22
10	Cattle Fodder	4	10
11	Automotive and Components	12	45
12	Textile and Garment	10	30
13	Cigarette	3	15
14	Pharmacy	7	32
Total		94	300

Source: Processed research data

Descriptive statistics of this study present the descriptions of minimum, maximum, average and standard deviation values of exogenous variables such as profitability (Pro), agency cost (AC), bankruptcy cost (BC), firm size (Fs), firm growth (Fg), non-debt tax shield (NDTS), risk (Risk), and an endogenous variable which was firm leverage (Lev). Table 2. below presents complete descriptive statistics.

3.3. Method

This study used path analysis to understand and analyze the influence of exogenous variables on endogenous variables. Path analysis aims to explain direct and indirect consequences of a set of variables, as a causal variable, to

a set of other variables which are consequent variables. Several requirements that must be met in the procedure of processing data using path analysis can be stated as follows: 1) the relationship between variables is linear and additive; 2) all residual variables do not correlate with each other; 3) the relationship pattern between variables is recursive where the causal relationship is unidirectional and not reciprocal; and 4) the level of measurement of all variables is, at least, intervals. Hair et al. (1998) stated that there are four steps that must be taken to use this path analysis: 1) developing the model, which must be done based on theory; 2) developing path diagrams to show causality; 3) converting path diagrams into a series of structural equations and measurement model specifications; and 4) selecting input matrices and

estimation techniques for the models developed. Next, the regression equation can be formulated as follow:

lev (Y1):

$$Y1 = \beta_0 + \beta_1 \text{ Pro} + \beta_2 \text{ Ac} + \beta_3 \text{ BC} + \beta_4 \text{ FS} + \beta_5 \text{ GF} + \beta_6 \text{ NDTs} + \varepsilon_1$$

3.4. Operational Variable Definition

Table 3
Research Variables

Variable		Measurement
Profitability	Pro	Earnings before interest, taxes and depreciation over total assets.
Agency Cost	AC	Annual sales ratio to total assets.
Bankruptcy Cost	BC	Annual sales ratio of total assets fixed cost difference ratio with EBIT to earnings standard deviation.
Firm Size	Fs	Natural logarithm of total asset.
Firm Growth	Fg	TGA = Δ Total Assets / Total Assets.
Non-Debt Tax Shield	NDTS	Tax payment.
Risk	Risk	Coefficient of Variation of first difference in EBIT.
Leverage	Le	Total leverage/Total Asset.

Source: Previous studies

Table 2.
Descriptive Statistics of Research Data in 2010 – 2018

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Pro	300	71,18026512	-15,3619131	55,81835202	17,12977138	13,02118074
AC	300	271,0543682	21,6156839	292,6700521	107,3887446	59,22993322
BC	300	41,61773532	-3,637245075	37,98049025	13,19913388	7,774508005
Fs	300	3,342290596	4,533556001	7,875846597	6,23596948	0,67361628
Fg	300	23,84565078	0,634025977	24,47967676	1,584458188	1,861215162
NDTS	300	1265,329856	-283,3111383	982,0187178	34,58651717	75,98589753
Risk	300	28,51369682	1,063757694	29,57745451	6,481971077	5,135824397
Le	300	0,952837293	0,005238462	0,958075755	0,420189164	0,223784656
Valid (listwise)	N 300					

Source: Processed research data

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Non-Debt Tax Shield	NDTS	Tax payment.
Risk	Risk	Coefficient of Variation of first difference in EBIT.
Leverage	Le	Total leverage/Total Asset.

Source: Previous studies

3.7. Goodness of Fit Results

Goodness-of-fit measures the suitability of the observation input (covariance matrix or correlation) with predictions from the proposed model. In this analysis, several measures of

goodness-of-fit will be used which consist of: **first, Chi-Square** which shows the size of the bad fit of a model. The chi-square value of 0 indicates that the model has a perfect fit. The probability of a deviation between the sample covariance matrix chi square is expected to be insignificant.

A significant chi-square value (less than 0.05) indicates that the empirical data that has differences with the theory that has been developed, and if the probability value is not significant, it shows that the empirical data is in accordance with the model. If the assumption of normality is met, it will produce two types of Chi-Square such as Minimum Fit Function and Normal Theory Weighted Least Squares Chi-Square. **Second, Goodness of Fit Indices (GFI)** which is a measure of model accuracy. This GFI test consists of: **(1) Adjusted Goodness of Fit Index (AGFI)** referring to the GFI which has adjusted the influence of the degrees of freedom of a model. The AGFI value is 1.; **(2) Root Mean Square Error of Approximation (RMSEA)** measures the deviation of the values of meters in a model with a population covariance matrix. The RMSEA value of less than 0.05 indicates a fit model. Confidence intervals to assess the accuracy of the RMSEA estimates must be small, which indicates that RMSEA has good accuracy.; **(3) Expected Cross Validation Index (ECVI)** is used to assess the tendency that a single sample model can be

cross-validated if the sample size and population are the same. If the ECVI model value is lower than the saturated ECVI model value and the independence model, it shows that the model is fit.; **(4) Akaike's Information Criterion (AIC) and CAIC** assess Parsimony's problems in assessing fit models. If the value of AIC is higher and CAIC is lower than AIC, the saturated and independence model means to have a better fit model.; and **(5) Fit Index** is used to determine the model fit. NFI and CFI values range between 0 and 1. A model is considered fit if it has NFI and CFI value greater than 0.9. No-Normed Fit Index (NNFI) is used to overcome problems that arise due to the complexity of the model. Incremental Fit Index (IFI) is used to solve Parsimony problems and sample sizes, and is related to NFI. The IFI cut-off limit is 0.9. While the Relative Fix Index (RFI) is used to measure fit, whose value ranges from 0 and 1, and if the value is greater, it indicates a superior fit. The results of testing the model's goodness of fit are presented in Table 4

Table 4.
Test Results of Goodness of Fit Model

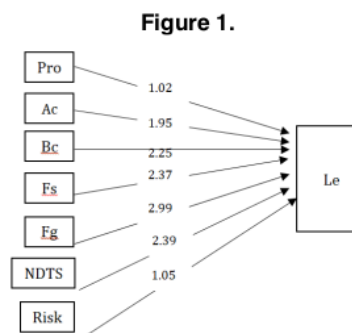
Test	Value	Cut-off Value	Conclusion
Chi-Square dan Probability:	P = 0.028	P > 0,005	Fit
1. Minimum Fit Function Chi Square			
2. Normal Theory Weighted Least Square Chi Square	P = 0.023	P > 0,005	Fit
Goodness of Fit Indices (GFI)	2.10	P ≥ 0,90	Fit
1. Adjusted Goodness of Fit Index (AGFI)	0.88	P ≥ 0,90	Fit
2. Parsimony Goodness of Fit Index (PGFI)	0.99	P > 0,05	Fit
1. Root Mean Square Error of Approximation (RMSEA)	0.0001	< 0,050	Fit
2. P-Value for Test of Close Fit (RMSEA)	0.0001	< 0,050	Fit
1. Expected Cross Validation Index (ECVI)	0.23	1. ECVI (0,24) < ECVI for Saturated (0,25) Model	Fit
2. ECVI for Saturated Model	0.25	2. ECVI (0,27) < ECVI for Independence Model (2,75)	Fit
3. ECVI for Independence Model	2.75		
Akaike's Information Criterion (AIC) dan CAIC:		1. AIC Model (70.99) < Independence AIC (580) and AIC Model (200) < Saturated AIC (311,35)	Fit
1. AIC Model	70.99	2. CAIC Model (76,99) < Independence (984) and CAIC Model (200) < Saturated AIC (300)	Fit
2. Independence AIC	580		
3. Saturated AIC	90.00		
4. CAIC Model	200		
5. Independence CAIC	984		
6. Saturated CAIC	300		
Fit Index: Normed Fit Index (NFI) Comparative Fit Index (CFI) Incremental Fit Index (IFI) Relative Fit Index (RFI)	P > 0,90 P > 0,92 P > 0,90 P > 0,90	0,99 0,98 0,99 0,97	Fit Fit Fit Fit

Source: The result of processed data by LISREL

4. Research results

4.1. Survey results

Based on the test through path analysis, the exogenous variables are profitability, agency cost, bankruptcy cost, firm size, firm growth, non-debt tax shield, and risk, and the endogenous variables is firm leverage. The next step was to examine the hypotheses proposed. The hypotheses result can be seen based on the t-value on the following Figure 1.



Source: The result of processed data by LISREL

A complete direct effect between variables is presented in table 5.

Table 5
Direct effect of
Profitability, Agency Cost, Bankruptcy Cost, Size Firm, Firm Growth, Non-Debt Tax Shield, and Risk

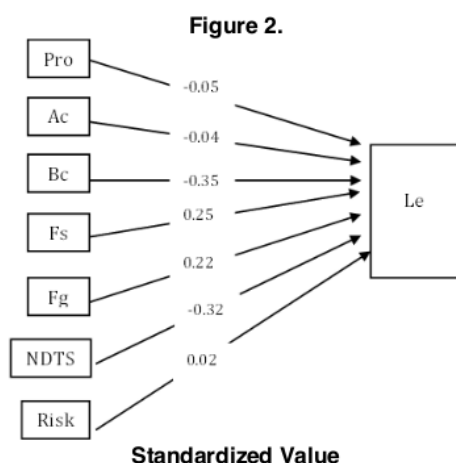
Variable	Unstandardized Estimate	Standardized Coefficient	t-Value
Pro → Le	0.31	- 0.05	1.02
Ac → Le	0.23	-0.04	1.95*
Bc → Le	0.21	0.35	2.25*
Fs → Le	0.32	0.25	2.37*
Fg → Le	0.30	0.22	2.99*
NDTS → Le	0.22	-0.32	1,39
Risk → Le	0.30	0.02	1,05

Source: The result of processed data by

LISREL

Notes: *) Significant at $\alpha = 5\%$

The SEM structure of this study is presented in Figure 2.



Source: The result of processed data by LISREL

4.2. Results hipotesis test

Based on the result of LISREL analysis, the results of testing the seven hypotheses are as follows:

The first hypothesis aims to examine the influence of profitability on firm's debt ratio. The results indicate that profitability has a negative standardized coefficient (-0.05) and a t-value of 1.02 which is smaller than 1.96 at a significance level of 5%. Thus, the first hypothesis, stating that profitability has a negative influence on firm's debt ratio, is supported and proven empirically. The second hypothesis aims to examine the influence of agency cost on firm's debt ratio. The results indicate that agency cost has a negative standardized coefficient (-0.04) and a t-value of 1.95 which is smaller than 1.96 at a significance level of 5%. Thus, the second hypothesis, stating that agency cost has a negative influence on firm's debt ratio, is supported and proven empirically. The third hypothesis aims to examine the influence of bankruptcy costs on firm's debt ratio. The results indicate that the bankruptcy cost has a negative standardized coefficient (-0.35) and a t-value of 2.25 which is greater than 1.96 at a significance level of 5%. Thus, the third hypothesis, stating that bankruptcy cost has a negative influence on firm's debt ratio, is supported

and proven empirically. The fourth hypothesis aims to examine the influence of firm size on firm's debt ratio. The results indicate that firm size has a positive standardized coefficient (0.25) and a t-value of 2.37 which is greater than 1.96 at a significance level of 5%. Thus, the fourth hypothesis, stating that firm size has a positive influence on debt ratio firm, is supported and proven empirically. The fifth hypothesis aims to examine the influence of firm growth on firm's debt ratio. The results indicate that firm growth has a positive standardized coefficient (0.22) and a t-value of 2.99 which is greater than 1.96 at a significance level of 5%. Thus, the fifth hypothesis, stating that firm growth has a positive influence on leverage firm level, is not supported and not empirically proven. The sixth hypothesis aims to examine the influence of NDTS on firm's debt ratio. The results indicate that NDTS has a negative standardized coefficient (-0.32) and a t-value of 1.39 which is smaller than 1.96 at a significance level of 5%. Thus, the sixth hypothesis, stating that NDTS has a positive influence on firm's debt ratio, is not supported and not empirically proven. The seventh hypothesis aims to examine the influence of risk on firm's debt ratio. The results indicate that risk has a negative standardized coefficient (0.02) and a t-value of 1.05 which is smaller than 1.96 at a significance level of 5%. Thus, the seventh hypothesis, stating that risk has a positive influence on firm's debt ratio, is not supported and not proven empirically.

4. Conclusion

The results of testing the first hypothesis found that profitability has a negative effect on the level of firm leverage, meaning that profitability has a significant negative direction. Thus, profitability had negative implications for the level of leverage. The results of this study emphasized on the pecking order theory that if a firm is more profitable, the funding comes from internal sources. Profitable firms generally borrowed in small amounts. While firms that were less profitable tended to have high debt ratios due to inadequate internal funds and leverage became the preferred source of external funds rather than their own capital. Baskin (1989) argued that the more profitable the firm, the more the possibility for the firm to have higher internal funding. It was why the pecking order theory explains that profitability has a negative relationship with debt ratio (Myers, 1984). Consequently, when managers were faced with leverage agreement contracts with creditors or leverage holders with similar cultural characteristics, the parties (managers and creditors) better

understood each other's views and relational procedures between them. This situation made it easier for firms to obtain large amounts of leverage funds. The second hypothesis, stating that agency cost has a negative influence on firm leverage, turned out to be empirically proven. The agency costs in this study were proxied by the asset utilization ratio (AUR) which showed how effective the management used firm assets in an effort to obtain the firm's annual sales. This asset management ratio was related to controlling the use of excess cashflow by management (agents) on investment projects with negative NPV that caused management inefficiencies. Firms that had high asset utilization ratios reflected a good firm asset management. The use of free cash flow for productive investment projects caused efficiency. Based on this explanation, the asset utilization ratio was inversely related to agency costs. The second hypothesis supports that agency costs have a negative influence on firm's debt ratio. In other words, the asset utilization ratio had a positive influence on the firm's debt ratio. To increase the asset utilization by management when problems arise regarding excess cashflow, funding is needed through leverage. Jensen and Meckling (1976) stated that funding through leverage had the potential to reduce agency conflict because the management had an obligation to pay the main loan along with the interest (the agency cost of leverage was high). Thus, the management would use the leverage optimally. In the context of agency costs, it could be seen that leverage agency costs were positively correlated with debt ratios. Therefore, the increase in the effectiveness of asset management to reduce agency conflict was positively correlated with the firm's debt ratio (Mao, 2003; Chung et al., 2005), and negatively correlated with the agency costs. The third hypothesis shows that bankruptcy cost has a negative effect on firm's debt ratio and it turns out to be empirically proven. The bankruptcy cost was proxied by earnings volatility. The reason for using earnings volatility was related to the expectations of bankruptcy costs that affected agency and leverage costs. A high corporate earnings volatility was considered by the market as a result of poor management performance. Therefore, firms were difficult to obtain external funds. A high earnings volatility would increase the leverage agency cost, so that the leverage used to control the equity of agency costs would decrease. The results of this test provide an evidence that bankruptcy costs have a negative influence on leverage. This confirmed that capital structure decisions depended on the expectations of bankruptcy costs. Based on the trade-off and pecking order theory, it is stated that poor management performance results due to increased volatility of earnings would result in the firms experiencing difficulties in obtaining additional leverage because of increased financial failure opportunities. The results of this study also support the pecking order theory. This means that manufacturing firms in Indonesia in particular were able to reduce their debt ratios when earnings volatility (bankruptcy costs) increased. The fourth hypothesis, stating that firm size has a positive influence on firm's debt ratio, turns out to be empirically proven. This was based on the condition where firms with larger and more complex asset sizes had no difficulty in obtaining external funding sources (loans). On the other hand, firms

with smaller asset sizes only obtained little external funding. Therefore, based on the trade-off theory, the amount of assets (size) has a positive influence on the firm's debt ratio. Handriani (2018) stated that large firms that had the ability to repay their debts would get the trust of creditors to issue large amounts of leverage. This empirical evidence supports the findings of Fama and French (2002) which showed that there was a tendency in Indonesia where large-scale domestic firms, such as the ones using leverage as a source of long-term funding, were greater than the multinational ones. This phenomenon might occur for four reasons. *First*, the large-scale domestic firms had a low profitability to support the firm's operations, therefore, they used leverage as an alternative source of external funding compared to the share issuance costs (Myers & Majluf, 1984). *Second*, based on the trade-off theory, a high profit power allowed domestic firms to borrow in large amounts (borrow as much as they could), because high profits signalled the ability of the firm to repay all main loan along with its interest when it was due or when the firm was liquidated. *Third*, it was because tax-saving facilities for large assets of domestic firms that issued large amounts of leverage. Firms that were burdened with high tax rates would get a tax savings on interest costs when using leverage (Modigliani & Miller, 1958). The fifth hypothesis, stating that firm growth has a negative influence on firm's debt ratio, is not proven empirically. It was based on the support for the pecking order theory which uses asset growth rate as a proxy to examine the consistency of the pecking order theory. The results of this study concluded that firms with high growth rates had the ability to fund their business internally, so they were not too tempted to seek external sources. Kallapur and Trombley (1999) showed that growing firms had lower debt ratios than the ones which did not, aiming to minimize their business risk to avoid financial failure. This indicated that a growing firm that had a profitable opportunity to fund its investment internally was a firm that adhered to the pecking order theory (Myers & Majluf, 1984). The descriptive statistics illustrate that the consistency of the firm's pecking order theory is described by the negative relationship between the asset growth rate and the firm's debt ratio. These results show that differences in the debt ratio of the firms that had high asset growth with low asset growth. The results of this test resulted to the consequences on the asset growth rate that negatively affected the debt ratio at the above asset growth rate in the industry which had a low debt ratio. This descriptive evidence supports the pecking order theory where the higher the firm growth, the more the company to prefer to fund their expansions with internal capital, and vice-versa. The results indicated that manufacturing companies in Indonesia which had a high asset growth rate preferred internal funding sources in funding their investment projects. Conversely, firms that had low asset growth tended to choose external funding sources (leverage) to fund their investment opportunities. Most of the profits earned were used as a source of funding to invest when they faced a high asset growth, but would rely on leverage issuance when they faced a low asset growth. The sixth hypothesis, stating that tax has a positive influence on firm's debt ratio, is not proven empirically. Although it was not significant, it appears that the firm's tax

regression coefficient is negative. This gives an indication that the presence of corporate tax was still seen as a negative signal by firms in Indonesia to leveraging up. However, the actual presence of corporate taxes (although not significant, the regression coefficients are positive) still gave the possibility of firms in Indonesia to optimize their capital structure through an increased use of leverage. The seventh hypothesis states that business risk has a negative influence on firm's debt ratio. Based on the conditions, the higher the business risk, the higher the leverage market value required to fund the firm's operations and investment projects. This empirical evidence shows that the firm management preferences in Indonesia were risk-seekers or risk-neutral. The selection of funding sources originating from leverage still provided greater additional benefits compared to the cost of capital needed due to business uncertainty. In a condition of a high business uncertainty, investment portfolios that could provide high returns would be chosen by the risk-seekers. For profitable firms which had a high profit variability, the increased risk of capital costs would have an impact on decreasing real investment and increasing desire to invest in financial assets through the issuance of shares and / or capital gains. Increasing stock emissions when there was a high business risk would further increase the uncertainty and cost of the firm's capital due to increased equity agency costs, thereby reducing stock prices or firm value. In such conditions, the firm's choice was to issue debt rather than issuing shares, because leverage agency costs were lower than the equity agency costs, and the benefits of adding leverage to firm value were higher than the benefits of issuing equity. The use of leverage provided a higher degree of certainty of return than issuing shares. Leverage was needed to fund the firm's financial investment such as to buy low-value shares (repurchase of stocks) or obtain short-term capital gains, while retained earnings were used to meet the real investment needs in the context of the firm's expansion. Meanwhile, the risk-neutral preference could be seen from its relation to international diversification by the firm on stocks expected to provide returns where the diversification of common stocks of firms with diversification costs was getting lower because of the benefits of leverage reduction which would make the management's footing to leverage lower. In conditions of such a business uncertainty, the manager's preference for risk was neutral as long as the diversification of common stocks still provided a higher return. Thus, a low business risk due to the effect of diversification had an influence on the reduction of the firm's debt ratio.

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