

The Speed of Adjustment towards Optimal Capital Structure: A Test of Dynamic Trade-off Model

(Kelajuan Penyelarasan terhadap Struktur Modal Optima: Satu Ujian Model Dinamik Trade-Off)

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ABSTRACT

Capital structure remains to be a highly debated topic and the number of researches on the dynamic version of capital structure in Indonesia is very small. Besides, the inclusion of macroeconomic factors is even harder to locate. This paper analyzes the financing behaviour of non-financial firms in Indonesia. The objective is to measure the adjustment speed of the firms toward the optimal capital structure. Partial Adjustment Model (PAM) was used to analyze the data. It is expected that non-financial firms in Indonesia possess a target leverage and make partial adjustments toward the target over time. The empirical findings from 250-panel data observation revealed that tangibility and firm's size had a positive and significant relationship with target leverage. In addition, macroeconomic variables (GDP growth and inflation rate) were found to be negatively correlated with the firm's speed of adjustment. Finally, the result shows that non-financial firms in Indonesia readjusted toward their target leverage at a speed rate of approximately 57.44% a year. These evidences conclude that the financing behaviour of non-financial firms in Indonesia tended to follow the dynamic trade-off theory.

Keywords: Dynamic Capital Structure; target leverage; speed of adjustment; dynamic trade-off theory

ABSTRAK

Struktur modal tetap menjadi topik yang hangat dibicarakan dan jumlah penyelidikan mengenai struktur modal versi dinamik di Indonesia sangatlah kecil. Selain itu, penggunaan faktor-faktor makroekonomi dalam topik penyelidikan ini lebih sukar untuk dicari. Kajian ini menganalisis tentang tingkah laku pembiayaan firma bukan kewangan di Indonesia. Objektif kajian ini adalah untuk mengukur kelajuan penyelarasan firma ke arah struktur modal yang optimum. Partial Adjustment Model (PAM) digunakan untuk mencapai objektif tersebut. Firma bukan kewangan di Indonesia dijangkakan mempunyai sasaran leverage dan membuat sebahagian penyesuaian ke arah sasaran dari semasa ke semasa. Penemuan empirikal daripada 250-data panel mendedahkan keketaraan dan saiz firma mempunyai hubungan positif dan signifikan dengan leverage sasaran. Di samping itu, pemboleh ubah makroekonomi (pertumbuhan KDNK dan kadar inflasi) didapati mempunyai pengaruh negatif dengan kelajuan penyelarasan firma. Akhir sekali, hasil penyelidikan menunjukkan bahawa firma bukan kewangan di Indonesia menyesuaikan dengan leverage sasaran mereka pada kadar laju kira-kira 57.44% setahun. Kesimpulannya, dibuktikan bahawa tingkah laku pembiayaan firma bukan kewangan di Indonesia cenderung mengikuti teori trade-off dinamik.

Kata kunci: Struktur modal dinamik; leverage sasaran; kelajuan penyelarasan; teori trade-off dinamik

INTRODUCTION

Capital structure is one of the highly debated topics in financial researches. Firm's capital structure includes decisions on how to finance their assets, operations, and investment opportunities through several sources of funds. Debt is one of the financing sources available in the capital market (e.g. bonds). The main advantage of debt financing is the tax deductibility feature. However, by taking on more debt, firms face a higher risk of bankruptcy and financial distress. Equity financing, on

the other hand, comes in the form of common stock, preferred stock, and retained earnings. This financing option does not require interest expense or monthly payment. However, it is more expensive than debt, especially during a period with low-interest rate. Further, common stock is prone to cost associated with asymmetric information. Previous researches have shown mixed results, and no exact answer to the best debt-to-equity ratio is found until today. Rodrigues et al. (2017) even found the determining factors of capital structure to be different in companies from different countries.



Studies of capital structure remain important for decades because appropriate financing decisions can enhance the firm's value.

The debates on firm's financing behaviour have been started since the first proposition of Modigliani and Miller irrelevance theory. They argued that firm's value is independent of financing decisions. Hence, decisions regarding firms' allocation of debt and equity financing in capital structure does not enhance their overall value. However, the development of their proposition was made by assuming perfectly efficient markets in which firms do not pay taxes and the information available in the market is symmetric. In reality, firms are obliged to pay taxes and the market is imperfect. Therefore, their proposition is deemed to be unrealistic. Several prominent theories, such as trade-off, pecking order, and market timing theory are developed to explain the financing behaviour in different but more realistic assumptions. Static trade-off theory posits that firms pursue their target leverage which balances marginal benefit and costs of debt financing. Thus, firms can stay on their target leverage over time. The firms observed leverage is assumed to be the same as their target leverage. However, in reality, the firms are faced with adjustment cost. (e.g legal and transaction costs of issuing and repurchasing stocks and bonds). They will only converge toward the target leverage when the benefits exceed the costs of adjustments. Hence, they cannot always fully readjust toward the optimal capital structure. Besides, managers must carefully consider both the economy state and their own business risks (Baum et al. 2017). On the basis of this shortcoming, the dynamic version of trade-off theory is developed. The theory argues that the degree of deviation from target leverage and adjustment costs affect the firm's speed of adjustment (Byoun 2008; Flannery & Hankins 2007). Hence, firms readjust partially toward their target leverage. Speed of adjustment - the speed at which firms converge toward their target leverage - is used to measure how long it takes for the firms to complete the adjustment.

Several decades ago, Jalilvand and Harris (1984) perceived the firm's target capital structure as a long term but a static financial target. However, capital structure in a static framework was not able to adequately address questions on the firm's dynamic refinancing behaviour. Thus, researchers had started to develop a dynamic capital structure model to explain the firm's financing behaviour better. One of the early models can be found in a paper written by Fischer et al. (1989). They developed a capital structure model in a continuous framework in the presence of recapitalization costs. Besides, they also found a single period-capital structure model to ignore the firm's possibility of restructuring in response to fluctuations in asset values over time.

In Indonesia, there are only few researches on the dynamic capital structure. However, most studies

did not incorporate macroeconomic variables into the predictors of firm's speed of adjustment. The exclusion of macroeconomic variables and the limited number of this research in Indonesia left a room for further research. Hence, to fill the study gap, the authors of this research include both macroeconomic (inflation rate and GDP growth) and microeconomic factors (profitability, tangibility, the firm's size, non-debt tax shield, and growth opportunities) as the independent variables that are predicted to bring influence upon target leverage and speed of adjustment. The objective of this research is to measure the adjustment speed of non-financial firms in Indonesia toward their optimal capital structure. This study is written as follows: section 2 provides previous theories and empirical findings on capital structure. Besides, it offers information on the development of hypotheses that are going to be addressed. Section 3 describes the sampling method, variables and model specification used in this research. Section 4 contains the result of data analysis and the discussion on each hypothesis. Finally, section 5 provides the summary and conclusion of this research.

LITERATURE REVIEW

CAPITAL STRUCTURE THEORIES

Capital structure is the firm's mixture of debt and equity in their financing decisions. Since the development of irrelevance theorem, several prominent theories (trade-off, pecking order, and market timing) had been proposed in an attempt to address the capital structure problem. However, in this research, the dynamic trade-off theory serves as the basis for hypothesis development and statistical result analysis. The dynamic version is expected to be able to explain the firm's partial adjustment behaviour and their adjustment speed toward target leverage better.

The first MM proposition assumes that any change in capital structure would not affect firm's value (Modigliani & Miller 1958). However, five years later, the two professors revised their proposition by including tax into their assumptions. The revision suggests the firms to utilize the benefit of tax shield from debt financing as it leads to a reduction in the amount taxable income (Modigliani & Miller 1963). They also developed their second proposition which aims to deal with the weighted average cost of capital (WACC). The MM II with corporate taxes concludes that firms could reduce WACC by increasing the proportion of debt in their capital structure.

Trade-off theory posits that firms should have a target leverage that can balance the benefits and costs of debt. According to the static trade-off theory, firms continuously readjust their capital structure toward the target leverage (Leary & Roberts 2005). However,

this condition is only possible when the adjustment process is costless. In reality, some costs must be paid when the firms attempt to alter the composition of their capital structure.

The dynamic version of trade-off theory, on the other hand, recognizes a change in the firm's target capital structure when the assets value fluctuates. However, as adjustment costs exist, the firm's leverage at the end of the year does not necessarily depict its target capital structure. For instance, the existence of costs associated with stock issuance and repurchase may prevent the firm's attempt to adjust its equity to debt ratio. Thus, the firms adjust toward their capital structure only when the benefits of eliminating the deviation exceed the costs (Fischer et al. 1989). Otherwise, there is nothing could be gained through the adjustment. The dynamic trade-off theory also suggests that, sometimes, firms let their leverage rate to fluctuate within a specific predetermined range (Drobotz et al. 2007). Although the rate has deviated from the range, several firms are not going to readjust their capital structure directly. Beside adjustment costs, both firm-specific factors and macroeconomic variables also affect the firm's decision in determining its target capital structure.

Pecking order theory proposes different assumptions on the firm's financing behaviour. The basic idea of this theory is asymmetric information problem would increase the firm's financing cost. As investors do not possess the same level of information as managers do, the former often believe that the firms tend to issue shares when it is overvalued. Thus, they frequently place a lower value on the firm's newly issued stock. Therefore, equity is the last resort that will be chosen by the firms when they are forced to take an external financing (Myers & Majluf 1984). Donaldson (1961) argued that firms preferred internal to external source of funding as the former did not incur asymmetric information problem. Among alternatives in external financing, most firms prefer debt to equity since the debt financing provide tax shield benefit.

PREVIOUS EMPIRICAL FINDINGS

Many kinds of researches on capital structure have been conducted by experts all around the world. One of the most recent and famous studies that support firm's partial readjustment behaviour is a paper by Flannery and Rangan (2006). They revealed that typical non-financial U.S firms converged toward their long-run target at a speed rate of more than 30% a year. One of the noticeable differences between this and the previous research is on the measurement of target leverage. Flannery and Rangan (2006) employed the firm's market debt ratio as a measure of target leverage. This research, in contrast, uses several firm-specific factors to estimate the value of target leverage. The estimation is conducted by utilizing a computer software named Eviews.

Another research conducted by Jalilvand and Harris (1984) also found the existence of market imperfection which led to interdependencies among decisions and caused the firms to adapt only partially to their long-run but static financial targets. Large firms were found to adjust faster than small firms did. The former tended to use a long-term debt in response to their remaining financing needs. However, there was an exception when the stock price was higher than its historical standards. During this condition, the firms used equity to fulfill their financing needs, regardless of its size. Thus, the result is in line with the market timing theory. One thing that distinguishes this and the previous research is on the way target leverage is perceived. The former treats the firms target leverage as a long-term but a static financial target. This research, in contrast, considers the target leverage as a variable that changes in response to changes in the firm's specific factors and macroeconomic variables.

A research conducted in Indonesia by Syahara and Soekarno (2015) showed the existence of optimum leverage in Indonesian firms. By incorporating firm-specific factors into the analysis, it was found that the average speed of adjustment in the firms was 38.15% per year. Nosita (2016) found an adjustment speed of 40.15% in Indonesian firms. However, both researches shared the same limitations which was the omission of macroeconomic variables (e.g. inflation and interest rate). The omitted variables were expected to bring influence on the speed of adjustment. Further, Pennings et al. (2018) concludes that capital structure decisions of form business are not only determined by firm specific characteristics, but also the macroeconomic environment. Based on the previous empirical findings, it is known that firms possess a target capital structure, regardless of the country in which it is originated. The only difference that exists between those firms is the speed of adjustment. It may happen due to the difference in the tax rate, market conditions, and government regulations.

HYPOTHESES DEVELOPMENT

The static trade-off theory suggests that firms can maximize their value through debt financing. The use of debt can reduce the firm's taxable income. However, it can increase the firm's exposure to financial distress and bankruptcy. Thus, the firms attempt to pursue an optimal point where their value is maximized to the extent. The dynamic version of trade-off theory argues that the firm's target capital structure change over time and they readjust partially toward their target leverage. Besides, the dynamics of both microeconomic and macroeconomic factors would affect the firm's decisions in adjusting its capital structure. Fischer et al. (1989) pioneered the dynamic capital structure choice in the presence of recapitalization costs.

There are also quite many researches which attempt to prove the existence of target leverage. Graham and

Harvey (2001) conducted a survey which found that 81% of firms included in the 1998 Fortune 500 list possessed a target debt ratio or target range. Studies in several countries also showed that firms readjusted their capital structure at various adjustment speeds. Getzmann et al. (2015) found an annual adjustment speed between 25% and 45% in Asia, 41% and 65% in Europe and between 39% and 60% in the USA. Leary and Roberts (2005) and Byoun (2008) showed the firms consideration of transaction cost in their decision to readjust. Research conducted by Sardo and Serrasqueiro (2017) also shows that small and medium-sized Portuguese firms adjust both short and long term debt ratios toward the target ratio. By adjusting the capital structure, the firms can get the benefit from a reduction in tax level with a minimized level of risk. As a country with the largest economy in South East Asia, Indonesian firms are also expected to maximize their value through the use of debt and readjust its capital structure over time.

H₁: Non-financial firms in Indonesia readjust partially toward their target capital structure.

According to the trade-off theory, there are three factors which encourage highly profitable firms to increase their proportion of debt in their capital structure. First, firms with high profitability take on more debt to gain the benefit of tax shield. Second, Jensen (1986) found that the use of debt could force managers to pay out excess cash in the firm, thus reducing the level of free cash flow and agency cost of equity. Last, these firms were more likely to be imposed with cheaper financing costs as creditors put more trust in their ability to repay. Besides, in central and eastern European firms, profitability and age of firms were found to be the two main determinants of target capital structure (Haas & Peeters 2006). Furthermore, Hovakimian et al. (2001) revealed that the firm's target leverage ratio might change over time depending on the profitability and changes in company's share price. Therefore, it is expected that there will be a positive relationship between the two variables.

H_{2a}: Profitability is positively correlated with the firm's target leverage.

Firms with a high amount of fixed assets tend to have a higher leverage as they can obtain a cheaper financing cost. In case of insolvency, the collateralized fixed assets can protect them from falling into bankruptcy. Based on the trade-off theory, tangible assets are easier to liquidate, hence reducing the cost of financial distress. Without collaterals, the creditors might impose higher interest rate and stricter conditions. Hence, the firms with a low amount of fixed assets are discouraged from pursuing a high target leverage. Etudaiye et al. (2015) found that high amount of tangible assets allowed firms to take on more debt. Therefore, the variable is expected to be positively correlated with the target capital structure.

H_{2b}: Tangibility is positively correlated with firm's target leverage

The trade-off theory suggests that large firms tend to be more trusted by creditors as they are more transparent and less likely to be in financial distress. Besides, those firms are more likely to have a stable cash flow since they possess a higher degree of diversification than small firms do. Several previous studies found that large firms were more diversified (Titman & Wessels 1988), had better access to the capital markets and cheaper borrowing costs (Ferri & Jones 1979) than small firms did. Grinblatt and Titman (1998) also showed that the agency costs in small firms were higher because the managers tended to be substantial shareholders. Thus, they could switch from one investment project to another. Another reason for the positive relationship might be caused by a diluted ownership in large firms. To reduce the possibility of personal loss resulting from bankruptcy, the managers in large firms issued a higher debt than the one in small firms (Friend & Larry 1988). A survey conducted by Marsh (1982) found that large firms preferred a long-term debt to a short-term debt. Thus, size is expected to be positively correlated with a target leverage.

H_{2c}: Firm size is positively correlated with target leverage.

The trade-off theory suggests that growing firms are unlikely to take on a higher debt because they can signal excellent investment opportunities (Chen 2004). They prefer to raise funds through the issuance of the company's shares because the positive signal allows them to sell the shares at a high price. Hence, their need for debt financing is decreased. Further, Lang et al. (1996) argued that leverage and growth opportunities were negatively correlated only for the firms whose growth opportunities were not recognized by the capital market. Jensen (1986) found the evidence that the firms with high growth opportunities had less need for debt financing as a means of reducing agency problem. It was because most of their excess funds were used to finance their investments. Finally, it is expected that there will be a negative relationship between growth opportunities and firms target leverage.

H_{2d}: Growth opportunities are negatively correlated with the firm's target leverage.

One of the examples of this variable is fixed assets depreciation. DeAngelo and Masulis (1980) proposed that firms might have deductibles other than debt to reduce their corporate tax burden. Hence, in term of obtaining tax shield benefit, Non-debt tax shield (NDTS) could act as a substitute for debt financing. The firms with a high level of fixed assets depreciation used less debt in their capital structure Titman and Wessels (1988). It was because the debt financing resulted to interest expense and the risk of suffering from financial distress cost. The NDTS, on the other hand, did not subject to such charges. Furthermore, most researches also conclude that a negative relationship to exist between leverage and NDTS (de Miguel & Pindado 2001; Zabri 2012). Therefore, the two variables are expected to be negatively correlated.

H_{2c}: Non-debt tax shield is negatively correlated with the firm's target leverage.

The trade-off theory also posits that highly profitable firms are more likely to take on more debt to minimize the agency cost and reduce taxable income. Besides, an increase in profitability can mitigate the risk of bankruptcy. Dang et al. (2012) argued that profitable firms could issue security at low cost and less likely to suffer from financial constraint due to the availability of retained earnings (internal funds). Flannery and Hankins (2007) also postulated the degree of firm's financial flexibility which could be measured with profitability. Thus, a high profitability provided the firms with sufficient funds and removed the internal constraints (Myers 1977) and it might boost the speed of adjustment (Hovakimian et al. 2001). Those advantages allowed the firms to readjust at higher speed rate. As a result, a positive relationship is expected to exist between profitability and speed of adjustment.

H_{3a}: Profitability is positively correlated with firm's speed of adjustment.

As growing firms possess a high number of excellent investment opportunities, they can send a positive signal to the capital market. Drobetz and Wanzenried (2006) argued that growing firms were regularly in needs of funds. Thus, it was easier for them to alter the composition of their capital structure. Besides, those firms faced a lower degree of information asymmetric due to their capability to send a signal on its prospects and the value of growing firms remained the same, even if they were under pressure from information asymmetry. The non-growth firms, on the other hand, had a lower capability to alter its capital structure since they could only readjust by swapping equity against debt. Finally, Drobetz et al. (2007) revealed that large and growing firms possessed a higher financial flexibility which led to a higher adjustment speed. Hence, a positive relationship is expected to exist between the firm's growth opportunities and its rate of adjustment.

H_{3b}: Growth opportunities are positively correlated with the firm's speed of adjustment.

The GDP of a country represents its economy size. A high GDP growth rate indicates an economic boom, while a negative GDP growth rate indicates an economic recession. An economic boom represents an increase in business activities which result in rising national output, demand, productivity, and income. It implies that, during the period, businesses can generate more profits. Thus, according to the trade-off theory, they should be able to get cheaper financing. Besides, Hackbarth et al. (2006) suggested that the firms had a bigger debt capacity during the expansion as the default risk was lower than recession. A higher debt capacity is associated with a higher flexibility for firms in adjusting their capital structure. Several previous researches also revealed a positive relationship between the GDP growth and the

firm's adjustment speed (Cook & Tang 2010; Haas & Peeters 2006; Mahakud & Mukherjee 2011). Hence, the GDP growth and adjustment speed are expected to be positively correlated.

H_{3c}: GDP growth is positively correlated with firm's speed of adjustment.

Inflation is the increase in the general price of goods and services. According to the Fisher effect, a real interest rate equals the nominal interest rate minus the inflation rate. An increase in inflation rate results in rising nominal interest rate. In other words, the higher the inflation rate, the higher the borrowing cost. Lenders may require a higher interest rate during the high inflation periods to maintain the level of real return (Gaud et al. 2003).

A rise in inflation rate represents a reduction in the purchasing power of money. Besides, workers may demand higher wages as the cost of living increases. Thus, the firms have to spend more money to finance their expenses. Those impacts will ultimately lead to a reduction in profitability. The firms with low profitability may find it harder to find cheap financing source, thus reducing the firm's adjustment speed toward their target capital structure. Therefore, the inflation rate and adjustment speed are expected to be negatively correlated.

H_{3d}: Inflation rate is negatively correlated with firm's speed of adjustment.

METHODOLOGY

This paper was written based on numerical data collected and analyzed thoroughly in statistical techniques (a quantitative approach). The main objective of this paper is to measure the adjustment speed of non-financial firms in Indonesia, as explained in the dynamic trade-off theory. Therefore, a quantitative approach was the most suitable design to be used.

SAMPLE

This paper employed a purposive sampling method, where the researchers selected samples considered representative for the population. The research objects were non-financial firms listed on Kompas 100 index during 2010-2014 whose financial statements were available for five consecutive years. Financial institutions were exempted from the sample since they had a high level of leverage generated from the customer's savings. Besides, tight regulations imposed by the government also reduced the flexibility of financial firms to rebalance their capital structure.

VARIABLES

Target leverage (L^*_i, t) would be the first dependent variable in this study. As it was an unobservable variable,

its value is estimated with several variables which were going to be explained in the next section. The second dependent variable was the speed of adjustment (δ_i, t) at which firms converge toward their target leverage. It was a measure of how long it took for the firms to finish their adjustment process. Firms with adjustment speed of 50% a year took about two years to reach their target leverage.

The first predictor of target leverage was the ratio between firm's annual EBIT and its total assets. According to the trade-off theory, the direction of this variable should be positive because creditors put more trust on profitable firms. Thus, it reduced their financing costs. The second independent variable that influenced the target leverage was measured with the proportion of fixed asset in the firm's total assets. It was predicted that the firms with a high amount of tangible assets could take in more debt since they could minimize bankruptcy risk by collateralizing fixed assets.

The third explanatory variable which affected target leverage was the natural logarithm of the firm's total assets. Based on the previous empirical evidence, large firms were found to possess a higher target leverage than small firms did. It was because the large firms were well diversified so that it bore the low risk and imposed with low financing cost in return. The fourth explanatory variable for target capital structure was measured by the percentage change in total assets from the previous to current year. Growing firms had less need for debt financing as a means of reducing agency problems. Besides, their financing needs could be covered through equity. The last independent variable for the target capital structure was measured with the ratio between depreciation and total assets. According to the trade-off theory, in term of obtaining tax shield benefit, the NDTs could serve as a substitute for debt financing.

The ratio between EBIT and total assets was one of the explanatory variables predicted to bring influence on the firm's speed of adjustment. Previous empirical findings had shown that highly profitable firms maintained a higher financial flexibility, lower default risk, and lower adjustment cost. Therefore, they were expected to possess a higher speed of adjustment.

The second explanatory variable for the speed of adjustment was the change in total assets during the period of t-1 to period t. The variable was expected to positively affect the speed of adjustment because growing firms were regularly in needs of substantial funds to finance their investments. Thus, it was easier for them to alter their capital structure. The change in the GDP from the previous to current year was the third independent variable that might impact the speed of adjustment. Based on the previous studies, firms possessed a higher debt capacity during the economic boom than those in recession. It implied that those firms possessed a higher flexibility in adjusting capital structure during the economic boom.

The inflation rate was the last independent variable that potentially affected the speed of adjustment. According to the Fisher effect, an increase in the inflation rate would be followed by the rise in the nominal interest rate. In other words, a high inflation rate was associated with a high borrowing cost. Thus, the firms adjusted slower during the period.

MODEL SPECIFICATION

This research used the Partial Adjustment Model (PAM) as found in the literature by Hovakimian et al. (2001) and de Miguel and Pindado (2001) to estimate the firm's speed of adjustment. The use of PAM was preferred to GMM because the latter might be sensitive to parameters or models normalizations. The GMM estimates could be biased and inefficient in small samples. Besides, there was no speed in the GMM. Finally, an instrumental variable was necessary in GMM estimates. If the assumption of a perfect market was held, then the firm's current leverage should equal its target leverage. The assumption is modelled as follows:

$$L_{i,t} - L_{i,t-1} = L^*_{i,t} - L_{i,t-1} \quad (1)$$

However, the market imperfections might hinder the occurrence of such a condition. Obstacles such as adjustment costs and asymmetric information would surely slow down the firm's adjustment speed toward its target leverage. Therefore, the previous model should be rearranged as follows:

$$L_{i,t} - L_{i,t-1} = \delta(L^*_{i,t} - L_{i,t-1}) + \varepsilon_{i,t} \quad (2)$$

Where:

$L^*_{i,t}$ = firm i's target leverage at period t

$L_{i,t}$ = firm i's actual leverage at period t, measured with the ratio between long-term debt and total assets.

$L_{i,t-1}$ = firm i's actual leverage at period t-1

δ = firm's speed of adjustment. If the value of $\delta=1$, then the firm has achieved its target capital structure. Any value above 1 and less than 1 represents over adjustment and partial adjustment process, respectively.

$\varepsilon_{i,t}$ = error term

An adjustment toward target leverage could only be made when the information from the previous period was available. Thus, the model must be rearranged once again as follows:

$$L_{i,t} = (1 - \delta)L_{i,t-1} + \delta(L^*_{i,t}) + \varepsilon_{i,t} \quad (3)$$

As the target leverage was an unobservable variable, its value should be estimated based on following function.

$$L^*_{i,t} = \beta_0 + \beta_1 \text{PROFIT}_{i,t} + \beta_2 \text{TANG}_{i,t} + \beta_3 \text{SIZE}_{i,t} + \beta_4 \text{GROWTH}_{i,t} + \beta_5 \text{NDTS}_{i,t} + \varepsilon_{i,t} \quad (4)$$

Where:

- PROFIT_{i,t} = firm i's profitability at period t, measured with EBIT/total assets.
- TANG_{i,t} = firm i's asset tangibility at period t, measured with fixed asset/total assets.
- SIZE_{i,t} = firm i's size at period t, measured with the natural logarithm of total assets.
- GROWTH_{i,t} = firm i's growth opportunities at period t, measured with the percentage change in total assets from the previous year to the current year.
- NDTS_{i,t} = firm i's non-debt tax shield at period t, measured with the ratio between depreciation and total assets.

The speed of adjustment was affected by several variables which might either boost or slow down the speed rate. The variables were profitability, growth opportunities, GDP growth, and inflation rate.

$$\delta_t = \beta_0 + \beta_1 \text{PROFIT}_{i,t} + \beta_2 \text{GROWTH}_{i,t} + \beta_3 \text{GDPG}_{i,t} + \beta_4 \text{INFLA}_{i,t} + \varepsilon_{i,t} \quad (5)$$

Where:

- δ_t = firm's speed of adjustment at period t
- PROFIT_{i,t} = firm i's profitability at period t, measured with EBIT/total assets.
- GROWTH_{i,t} = firm i's growth opportunities at period t, measured with the percentage change in total assets from the previous year to the current year.
- GDPG_{i,t} = Indonesia's GDP growth, measured with $\text{GDP}_t - \text{GDP}_{t-1}$. The data was taken from the official website of the World Bank.
- INFLA_{i,t} = Indonesia's inflation rate, taken directly from the official website of Bank Indonesia.

RESULTS AND DISCUSSION

RESULTS

Hypotheses testing in this paper was done through panel data regression. This paper employed samples of 50 firms for 5 years which result in 250 observations. The regression model was determined based on Chow and Hausman test result. The former was conducted for determining whether to use pooled least square or fixed effect model. The latter, on the other hand, served as a basis for choosing between fixed effect and random effect model. By using E-views to conduct the Chow test, the p-value of cross-section chi-square is found to be 0.0000. In the Chow test, if the value is found to be less than 0.05, then fixed effect model is preferred. Further, the result of Hausman test generates p-value of 0.0001 (less than 0.05). By the rule of the Hausman test, the fixed effect model is preferred if the p-value is less than

TABLE 1. Regression on Model-4

Variable	Coefficient	t-Statistic	P-value
C	-1.8155	-6.6056	0.0000
Profit.	0.0547	0.9720	0.3322
Tang.	0.1527	2.3477	0.0199
Size	0.1208	7.3306	0.0000
Growth	-0.0350	-1.1665	0.2448
NDTS	-0.0212	-0.1886	0.8505
Effects Specification			
F-statistic	17.2952	R ²	0.8272
Prob (F)	0.0000	Adj. R ²	0.7794

0.05. The result concludes that the fixed effect model, or usually called as Least Square Dummy Variable, is the most appropriate estimation method for this research. The model assumes that individual differences can be accommodated by differences in the intercept. The slope, on the other hand, is the same across individuals.

Table 1. shows the relationship between the firm's target leverage and its predictor variables (profitability, tangibility, firm's size, growth opportunities, and non-debt tax shield). The results are shown to be in line with what has been expected in the hypotheses development. Profitability, tangibility, and size are found to be positively correlated with the firm's target leverage. Meanwhile, the growth opportunities and non-debt tax shield are shown to be negatively correlated with the target leverage. The value of adjusted R-squared indicates that 78% of the variability in target leverage can be explained by the linear relationship between the target leverage and the independent variables. The remaining 22% can be explained by other variables not included in the model. There are only two independent variables that have a significant effect on target leverage, namely tangibility and size. It means the firm's target leverage depended mostly on firm's tangibility and size.

Table 2 provides the result of regression on the partial adjustment model. The results confirm that there was a firm's partial readjustment behaviour in Indonesia, as suggested in the dynamic trade-off theory. The coefficient of leverage at the previous period ($Li, t-1$) is shown to be 0.425. The value indicates that,

TABLE 2. Partial Adjustment Model

Variable	Coefficient	t-Statistic	P-value
C	-0.0328	-1.4205	0.157
$Li, t-1$	0.4256	6.8999	0.000
Li, t^*	0.7538	6.3966	0.000
Effects Specification			
F-Stat.	23.99885	R ²	0.860
Prob (F)	0	Adj. R ²	0.824

on average, the adjustment speed of non-financial firms in Indonesia is approximately 57.44% ($1 - 0.4256$). It implies that those firms took about 21 months (less than two years) to adjust toward their target leverage fully. The value of adjusted R-squared indicates that the model is a good fit for the data. About 82% of the variability in current leverage can be explained by the linear relationship between the current leverage and its predictors. Table 1, which is generated from the test on model 4 shows the determinants of target leverage in the non-financial firms in Indonesia. The results serve as a base in conducting the test on Partial Adjustment Model (shown on Table 2.). The authors used these findings to accomplish the main objective of this research which is to measure the adjustment speed of the non-financial firms in Indonesia.

Table 3, provides the result of regression between the speed of adjustment and its predictors. The result shown on the table confirm the validity of hypothesis 3a (the positive relationship between profitability and speed of adjustment), 3b (the positive relationship between growth opportunities and speed of adjustment), and 3d (the negative relationship between inflation rate and speed of adjustment). Meanwhile, the coefficient of GDP growth is found to be not in line with what has been expected. The value of the adjusted R-squared indicates 80% of the variability in the firms' speed of adjustment (SoA) can be explained by the linear relationship between SoA and the independent variables. The two macroeconomic variables in the model are shown to be highly significant. Profitability and growth opportunities, on the other hand, possess a positive but insignificant value. Therefore, the firm's speed of adjustment depended mostly on GDP growth and inflation rate.

TABLE 3. Regression on Model-5

Variable	Coefficient	t-Statistic	P-value
C	0.6948	38.5678	0.0000
Profit	0.0082	0.4596	0.6461
Growth	0.0000	0.0062	0.9951
GDP	-0.3027	-17.2799	0.0000
Inflation	-9.1399	-31.3775	0.0000
Effects Specification			
F-stat.	252.2082	R ²	0.8046
Prob (F)	0.0000	Adj. R ²	0.8014

DISCUSSION

The dynamic trade-off theory postulated that firms possessed an optimal capital structure that changed over time in accordance with the fluctuations in internal and external factors. Besides, they readjusted partially toward the target leverage due to the existence of adjustment cost. The evidence of the firm's partial adjustments and

the adjustment speed can be inferred from Table 2. Based on the empirical result, $L_i, t-1$ is shown to possess a coefficient of 0.4256. It implies that the non-financial firms in Indonesia converged toward its target leverage at a speed rate of 57.44% ($1 - 0.4256$) a year. A full readjustment (at 100%) would take 1.74 years (100% divided by 57.44%) or approximately 21 months (1.74 times 12). Meanwhile, Syahara and Soekarno (2015) found an adjustment speed of 38.15% in their research. Nosita (2016) concluded that the firms in Indonesia possessed an adjustment speed of 40.15%.

The difference in speed of adjustment of this research with previous researches might be caused by two reasons. First, the period in which the sample was taken. Syahara and Soekarno (2015) employed a sample from LQ45 index from 2005 to 2014. Meanwhile, this research incorporated a sample from the non-financial firms listed on Kompas 100 index during 2010–2014. For these reasons, it could be inferred that the development of Indonesia economy allowed the firms to adjust faster. Second, it was because the index used as research sample. Nosita (2016) used a sample from firms listed on Indonesia stock exchange. This research, on the other hand, incorporated a sample from Kompas 100 index. The sample employed in this research could adjust faster because they possessed the highest financial performance, liquidity, and market capitalization during the selection period. Finally, the financing behaviour of non-financial firms in Indonesia was confirmed to follow the dynamic trade-off theory.

The empirical result shows that a positive but statistically insignificant relationship exists between profitability and target leverage. This result is in line with trade-off theory which argued that highly profitable firms pursue higher target debt ratio to reduce taxable income and the degree of the agency problem. Jensen (1986) found that the excess cash in firms might lead to the possibility of interest conflict between the managers and shareholders. By taking on more debt, the managers were not able to take suboptimal investments because of the obligation to repay creditors. Yang et al. (2015) also revealed that profitability had a positive but insignificant effect on target leverage. They argued that the development of the capital market in China had allowed the firms to generate funds without having to rely on profit. Based on those facts, it could be inferred that profitable firms might pursue a higher target debt ratio. However, it was not one of the core determinants.

Referring to Table 1, a positive and significant relationship is shown to exist between tangibility and target leverage. This finding strongly supports the trade-off theory which argued that firms that possessed a high amount of tangible assets could take on more debt. It was because the collateralized fixed assets could protect the firms from falling to bankruptcy state. Thus, it reduced the cost of financial distress. Previous empirical researches

had written by Chen (2004) and Rajan and Zingales (1995) which also found the same result. They argued that tangible assets could mitigate the agency cost of debt and was easy to collateralize. Therefore, by owning a high amount of tangible assets, the firms could pursue a higher target leverage.

A positive and significant relationship is shown to exist between firm size and target leverage (refer to Table 1). This result strongly supports the trade-off theory which posited that large companies tended to be more diversified and less likely to suffer financial distress. It was because of the high degree of diversification results in a stable cash flow and thus, led to a reduction in financial risk. Ferri and Jones (1979) argued that large firms had a better accessibility to the capital market and cheaper borrowing cost. Besides, Drobetz and Wanzenried (2006) found a positive relationship between size and target leverage. It indicated that the large firms tended to possess a lower default risk. Frank and Goyal (2009) also found that the larger firms had a relatively higher debt. They argued that the large firms had a better reputation in the market in it led to a lower agency cost of debt. Therefore, it could be concluded that large non-financial firms in Indonesia pursued a higher target debt ratio than the small firms did.

A negative but statistically insignificant relationship is found between growth opportunities and target leverage (refer to Table 1.). The negative coefficient of this variable is in line with the trade-off theory that argued that the firms with excellent investment opportunities had less need for debt financing. It was because the capability to send a positive signal to the capital market allowed them to issues shares at a high price. Besides, the degree of agency cost was lower in growing firms because most of their excess funds were used to finance their investment opportunities. Ozkan (2001) argued that the negative relationship might occur due to a high amount of intangible assets in growing firms. Those assets were not able to support a high leverage ratio as it was illiquid and could not be collateralized. However, the relationship is insignificant; and further interpretation of the relationship cannot be made.

The coefficient of non-debt tax shield (NDTS) is shown to be negative but insignificant (refer to Table 1.). It indicates that the firms which possessed tax deductibles other than debt had less need for debt financing as a means of obtaining tax shield benefit. The direction of the coefficient is in line with the trade-off theory which argued that the firms with a high proportion of debt in their financing decisions possessed a higher bankruptcy and financial distress risk. Meanwhile, the NDTS such as depreciation, depletion allowances, and investment tax credit did not subject to such risk. Getzmann et al. (2015) revealed a negative and significant relationship to exist between the NDTS and target leverage by using a panel data from 2.706 companies listed in Asia, Europe and America. The difference in significance level might

be caused by sample size, sample period and estimation method. However, the negative coefficient of this variable is still able to confirm that the firms which possessed the NDTS pursued a lower target debt ratio.

The empirical results reveal a positive but statistically insignificant relationship to exist between profitability and firm's speed of adjustment (refer to Table 3.). The trade-off theory stated that highly profitable firms could readjust at a higher speed rate. It was because the availability of retained earnings resulted in a higher financial flexibility. Hence, it might be easier for highly productive firms to alter their capital structure composition. Overleveraged but highly profitable firms could pay off their current debt to reduce their leverage. Meanwhile, the underleveraged firms could obtain additional funds from creditors since they had a lower default risk. Kamau and Ali (2017) also found a similar result from a sample consisting of 42 companies listed on Nairobi Securities Exchange (Kenya). They revealed that highly profitable firms could obtain debt capital easily. However, as a positive relationship is shown to be insignificant, further interpretation cannot be made.

The coefficient of growth opportunities is shown to be positive but statistically insignificant. Growing firms found it easier to readjust because they were regularly in the needs of the additional fund. Hence, they could easily change the composition of capital structure by issuing bonds or shares. The non-growth firms, in contrast, could only alter their capital structure by swapping debt with equity. Drobetz et al. (2007) also found a similar result by using a panel data from 706 non-financial firms in Germany, France, Italy, and the United Kingdom. They revealed that faster-growing firms possessed a higher financial flexibility from the increase in external growth financing. As a result, they adjusted more readily. Again, the insignificant relationship between the growth opportunities and the firm's adjustment speed did not allow for further interpretation.

A negative and significant relationship is found to exist between GDP growth and the firm's speed of adjustment (refer to Table 3.). It indicates that the firms adjusted faster during a recession. One possible reason that might be able to explain this phenomenon was the change in interest rate. During recession, the central bank was more likely to cut interest rate to stimulate the economic growth. Thus, the firms might find it cheaper to make an adjustment toward their target leverage. By using a real GDP growth as a measure for macroeconomic conditions, Mahakud and Mukherjee (2011) also found similar results in India. However, Cook and Tang (2010) revealed that the US firms readjusted faster during a good economic condition. Therefore, the relationship between the GDP growth and speed of adjustment was somewhat inconclusive. Further researches on the relationship between the two variables are suggested to verify this result.

The relationship between the inflation rate and the firm's speed of adjustment is shown to be negative and significant (refer to Table 3.). It indicates that the firm's adjustment speed was slower during the high inflation period. This result is in line with the predicted direction on the hypothesis development. According to the International Fisher Effect, an increase in the inflation rate would be followed by a rising interest rate. In other words, the firm's cost of capital increased during the high inflation period. Besides, higher expenses put the firms at disadvantages. As a result, they were more likely to suffer from financial constraint, which might hinder the adjustment process. Further, this finding is supported by Öztekin and Flannery (2012) who revealed a similar result. Therefore, it was concluded that a small adjustment cost during low inflation period allowed the firms to adjust faster.

CONCLUSION

The empirical findings in this research confirm that, on average, the non-financial firms in Indonesia were not always on their target leverage. Statistical results have shown that those firms readjust partially at a speed rate of 57.44% a year. Hence, these firms would need approximately 21 months to finish the adjustment process. Further, these findings also confirm that the financing behaviour of the non-financial firms in Indonesia could be explained by the dynamic trade-off theory. Besides, the increase in the speed of adjustment compared to similar previous research might be caused by two reasons. First, as Indonesia economy was developing over time, the firms could complete their adjustment at a faster pace. Second, the sample incorporated in this sample was the non-financial firms whose size, liquidity and financial performance were the highest during the selection period. Thus, it allowed them to adjust more readily.

The regressions conducted on Model 4 (Table 1) and Model 5 (Table 3) confirms the validity of 8 hypotheses. The relationship between the target leverage and its predictors (profitability, tangibility, size, growth opportunities and non-debt tax shield) is found to be in line with the trade-off theory. It was revealed that highly profitable, large, mature, and those with high amount of tangible assets to possess higher target leverage. The NDTS, in contrast, reduced the firm's target leverage. Meanwhile, the relationship between speed of adjustment and three out of four predictors (profitability, growth opportunities, and inflation rate) are revealed to coincide with the hypotheses. The influence of GDP growth on a firm's adjustment speed turned out to deviate from the expected direction. Hence, it could be inferred that a decrease in inflation rate could enhance the speed of adjustment as it led to a lower interest rate. Finally, these findings were expected

to make a contribution toward the current research of capital structure and shed new light on the relationship between the macroeconomic variables and the firm's speed of adjustment.

This research possesses several limitations that might serve as suggestions future research. First, this research does not discuss adjustment costs (e.g. transaction and legal fee), so that the comparison between the benefits and costs of readjusting cannot be explained. Second, the adjustment speed discussed in this research is limited to the context of Indonesia. Hence, it cannot represent the speed of adjustment in other emerging market condition. Third, this research does not compare the implementation of the dynamic trade-off model in developing and developed countries. Thus, it is still uncertain whether the model is a better fit for the former or the latter. Lastly, the test was conducted by employing only public firms with high trading liquidity, so that the adjustment speed for private firms with lower liquidity in the market might differ. Further, future researches may consider adding data from several countries to compare the adjustment speed and financing behaviour of firms in different countries.

Based on the empirical results, the non-financial firms in Indonesia with a high amount of tangible assets should aim for higher target leverage. The positive direction of this variable's coefficient indicates that the collaterals allowed the firms to reduce taxable income with minimized risk. Besides, the authors also suggest the large firms to pursue a higher target leverage. The stability of cash flows and a lower degree of information asymmetry provide them with an easy access to the capital market.

The GDP growth and inflation rate are found to bring negative and significant influence toward the firm's adjustment speed rate. Hence, firms should adjust faster during the recession period since the central banks may cut the interest rate to stimulate the economic growth. However, this result must be interpreted cautiously since the movement of interest rate does not depend solely on the central bank. Meanwhile, during the high inflation period, the study suggests the firms to slow down their adjustment speed since the cost of adjustment might increase.

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