How Companies At Mature Stages Choose Their Capital Structure? Evidence From Indonesian Data Panel

Misbach Fuady, Julia Safitri, Maria Rio Rita, Irene Rini Demi Pagestuti, Sugeng Wahyudi

Abstract— Capital Structure Decisions under consideration of the company's life cycle are important in financial studies. We examine two of the most prominent capital structure theories, namely the Trade-off Theory and the Pecking Order Theory by incorporating the Firm's Life Cycle factors to see how companies at mature stages choose their type of capital structure. We use mature stage dummy variables classified from the concept of the Firm's Life Cycle, and include them in three models, namely the Partial Target Adjustment Model, Deficit Financing Model, and Nested Model, to capture the dominance of Trade-Off Theory and Pecking Order Theory in explaining capital structure decisions. We collected sample of non-financial company from the Indonesia Stock Exchange (www.idx.co.id) purposively with a range from 2004 to 2013, and pool it into balanced panel data. The test results show that companies in mature stages have a tendency to consider minimum Cost of Capital (CoC) in their capital structure decisions, while still maintaining small-scale capital cost optimization. The test results show that the consideration based on pecking order theory is more dominant than the trade-off theory in the capital structure decisions of companies in the mature stage, although both theories play a complementary role.

Keywords — Capital Structure Decisions, Firm's Life Cycle, Trade-off Theory, Pecking Order Theory, Cost of Capital, Partial Terget Adjustment, Mature Stage.

1 INTRODUCTION

RECENT empirical studies have reached the stage how corporate behavior shapes its capital structure. Most empirical studies on capital structure, presents two theories are mutually exclusive of each other and have been tested, either separately or together using different methodologies in a variety of samples in different countries. Studies on the necessity of both Pecking Order Theory (POT) and Trade-off Theory (TOT) are tested together with a dynamic model to see the overall financing behavior finally done since the late 1990s to the present. Recently, researchers have tried to discuss the speed of adjustment of optimal capital structure and its combination with POT since the publication of research results Shyam-Sunder and C. Myers (1999). Some researchers other than Sham-Sunders and Myers who have conducted research on it include Fama and French (2002), Bontempi (2002), Flannery and Rangan (2006), Huang and Ritter (2009), Serrasqueiro and Nunes (2010), Mukherjee and Mahakud (2012), and Dang (2013).

Theoretically, the characteristics of the business problems that companies face in investing and financing their operations vary at every stage of their life cycle (Bandyopadhyay and Barua 2016, Bhaird and Lucey 2011, Castro et al. 2016, Dickinson 2011, Faff et al. 2016, La Rocca, La Rocca, and Cariola 2011) Therefore, understanding the character of the company and how they set their capital structure in the context of its life cycle becomes important to understand their financial performance.

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2 LITERATURE REVIEW

2.1 Trade-off Theory (TOT)

Nowadays researchers have talked about two rapidly developing theories of capital structure, which attempt to accommodate and bridge between business and academic dynamics. The first theory is the trade-off theory that is the enrichment of Modigliani and Miller theories. This theory completes Modigliani and Miller's propositions by adding tax factors, costs of financial distress, bankruptcy costs, agency costs, and transaction costs (Jensen and Meckling 1976, Myers 1977, 1984). Various studies have been conducted to examine the validity of this theory including research that incorporating personal taxes (Miller 1977), the role of non-debt tax shields (DeAngelo and Masulis 1980), the role of asymmetric information on TOT (Myers 1984), and negative influences profitability, liquidity, and growth opportunities against corporate debt (Ozkan 2001), is making this theory even more complicated.

According to trade-off theory, the starting point of the firm's capital structure decision is on the debt-target ratio in which tax protection against debt is maximized and the cost of bankruptcy related to debt is minimized. Trade-off theory illustrates that the optimal capital structure can be determined by balancing profit on the use of tax (tax shield benefit of leverage) with cost of financial distress and agency problem.

2.2 Pecking Order Theory (POT)

Other studies have seen a phenomenon gap in the TOT that triggered the emergence of a second theory of capital structure that is pecking order theory (POT). This theory begins with the observation that large corporations in the USA have relatively small debts that are judged against the TOT hypothesizing that the larger the company, the more debt it owes (Donaldson 1961). This emergence of POT was in the form of debt capacity theory, where the theory states that companies issue debt not by making debt targets, but based on their debt capacity. Initially this theory lacked theoretical support and empirical evidence. Furthermore, after the support of asymmetric information theory, tax advantages, and transaction cost significance (Myers 1984, Myers and Majluf 1984), POT became widely recognized. Subsequent tests such as those conducted by Baskin (1989) who conducted tests in America, gave more empirical support to pecking order theory.

Shyam-Sunder and C. Myers (1999) examined the trade-off theory and pecking order theory and found out that pecking order is an effective key explanation for corporate financing behavior. Although if the partial target adjustment model is tested individually well enough as an explanation, but pecking order has a greater degree of confidence in the research. Therefore, Syam-Sunder and Myers stated that the issuing of equity by the company is generally motivated by the behavior that follows the POT. However, in circumstances where the company has a high debt level, it will be difficult to distinguish whether a company's behavior follows a POT or TOT. Although not yet testing, Syam-Sunder and Myers argue that if the financial distress costs in the company are too heavy, less optimistic managers will consider issuing equity to finance real investment or reduce debt repayment.

Fama and French (2002) tested, and found that more profitable firms and less-investment firms would have higher dividend payout ratios. This is in accordance with the trade-off and pecking order theory. But in terms of debt (leverage) both theories are contradictory. Profitable companies will have a smaller leverage. This is in accordance with pecking order theory, but contrary to trade-off theory. Companies with high investment have a lower market leverage. This is consistent with both models, both pecking order theory, and trade-off theory. Companies with high investment also have lower long-term dividend payouts, but the dividends do not vary to accommodate short-term variations in investment. As predicted on the POT, short-term variations in investment and income are mostly absorbed to repay debt.

2.3 Firm's Life Cycle (FLC)

Studies of previous capital structure theory do not include Firms' Life Cycle as a factor to be considered. In fact, as a business entity the company experienced a lot of dynamics problems are quite diverse in accordance with the stages of life since birth, grow, mature, until finally decline (Dickinson 2011).

Althought it has been understood that capital structure must be placed in the context of business dynamic that incorporating FLC as an important factor, only a few research adress this in depth. One of a few recent study that discusses the influence of FLC on financial management reviews is done by Castro et al. (2016), where they tested the significance of financial decisions following the TOT pattern using the target leverage and speed adjustment models in the three stages of the Firm's life cycle of introduction, growth, and mature. The results showed that the highest speed of adjustment was obtained at the introduction stage, and gradually decreased at the growth stage, then the mature stage. This shows that the influence of the financing decision pattern according to TOT is strongest in the introduction stage.

3 Research Method

3.1. Measurement of the Life Cycle Stage

At each stage of the life cycle of the company, investors are expected to use financial information (in this sense are earnings and cash flow components) are different. This is because at every stage of firm's life cycle has different characteristics. So, investors must use different information to make decisions that are in accordance with the stage of the firm's life cycle. Black (1998) tested the value relevance of earnings and cash flow associated with life cycle stages referring to Anthony and Ramesh (1992), and Pashley and Philippatos (1990). Earnings and cash flow components (operating cash flows, investment cash flows and cash flow expenditures) are part of the financial statements that are useful for assessing the company's performance. Users of financial statements are expected to use different information at each stage of the firm's life cycle. Each stage of the firm's life cycle affects the use of financial information, thus impacting the value relevance or usefulness of earnings and cash flow (Black 1998).

According to Pashley and Philippatos (1990), life cycle stages consist of pioneering, expansion, maturity and declines. Anthony and Ramesh (1992) use three life cycle stages, namely growth, mature and stagnant. Testing each stage using stock prices is reflected in cumulative abnormal return (CAR). Anthony and Ramesh (1992) suggest that (1) changes in sales growth and capital expenditure are a signal of corporate strategy (eg market share and capital cost increase or cost trimming); And (2) cost effectiveness strategies, both as a function of the life cycle stage. Pashley and Philippatos (1990) state pioneering as an introduction characterized by low sales, small liquidity and no dividend payout. The next stage is the expansion which is the stage of growth (growth) with characteristics of high sales growth, high liquidity and start paying dividends. At this stage, the company starts to develop product, so the capital expenditure for research and development becomes high. Next is the stage of maturity (maturity), where the level of sales began to decline, market share declined and dividend payouts higher than the growth stage. Conversely, in the decline stage, dividend payments begin to decline, sales and capital expenditures also decline. This concept of firms' life cycle is applied by Mueller (1972) which explains the framework of growth hypothesis in relation to profit maximization and is associated with stockhoders. Mueller (1972) views emerging companies facing an uncertain state of operational and operational survival.

This research reviews the mature stage which is one of the corporate life cycle steps according to the FLC framework, to see the company's behavior when they make decisions of capital structure. Measurement of mature stage using dummy

variables with criteria proposed by Dickinson (2011). These criteria use the cash flow as a determinant to classify the existence of a company in the FLC stage, whether in the introduction, growth, mature, shake-out, or decline stages.
Table 1 shows the results of a Dickinson study in which the columns in the table clearly group the criteria of a company based on the flow of funds. The fourth column shows the criteria of mature company classification i.e. cash flow from positive operating activities, cash flow from negative investment activity, and cash flow from negative financing activities. Each company in the dataset to be studied will be given a dummy score of 1 if it meets the criteria, while the rest will be given a score of 0.

TABLE 1
CRITERIA OF FIRMS' LIFE CYCLE CLASSIFICATION

Predicted Sign	1 Introduction	2 Growth	3 Mature	4 Shake-Out	5 Shake-Out	6 Shake-Out	7 Decline	8 Decline
Cash Flows from operating activities	-	+	+	-	+	+	-	-
Cash Flows from investing activities	-	-	-	-	+	+	+	+
Cash Flows from financing activities	+	+	-	-	+	-	+	-

Source: Dickinson (2011) pp.1974.

3.2. Modified Partial Target Adjustment Model

The first regression model used is Partial Target Adjustment model. This model is commonly used to measure variables that have lag in the year calculations. In the partial target adjustment model, the $\beta_{(TO)}$ coefficient value is used to estimate the speed of adjustment model. The value of the regression coefficient is in the range of 0 and 1, where if the coefficient value is close to 1 and significant, it can be concluded that the sample tested has the speed of adjustment of debt to high debt target. In other words, the sample shows the behavior following the TOT financing decision pattern. If coefficients close to zero indicate a low adjustment speed, which means the financing decision pattern is less likely to follow the TOT. The regression equation can be written in the following equation 1.

$$\Delta D_{i,t} = \alpha + \beta_{(TO)}\, \Delta D^{*}_{(i,t)} + \gamma_{mat} Dum_{mat(i,t)} + \upsilon_{i,t} \quad (1)$$

$$\Delta D_{i,t} = \alpha + \beta_{(TO)} \left(D^{*}_{(i,t)} - D_{(i,t-1)}\right) + \gamma_{mat} Dum_{mat(i,t)} + \upsilon_{i,t} \quad (1a)$$

To measure the true value of the intercept and target debt coefficients, an interaction model can be written as follows.

$$\Delta D_{i,t} = \alpha + \beta_{(TO)}\, \Delta D^{*}_{(i,t)} + \gamma_{mat} Dum_{mat(i,t)} + \delta_{mat} \left(\Delta D^{*}_{(i,t)} \times Dum_{mat(i,t)}\right) + \upsilon_{(i,t)} \quad (2)$$

The symbol $\Delta D_{i,t}$ is the net debt of firm i in year t, $\propto$ is the intercept, $\beta_{(TO)}$ is the partial target adjustment coefficient, $D^{*}_{(i,t)}$ is the firm's target debt, γ_{mat} is the coefficient of dummy value, whereas $Dum_{mat(i,t)}$ is the dummy for the firm in the mature stage . The symbol δ_{mat} is the coefficient of interaction between $\Delta D^{*}_{(i,t)}$ with $Dum_{mat(i,t)}$. The significance of capital structure decisions that follow Trade-off Theory is obtained when $\alpha^{\star} \approx 0$ and $0 < \beta^{\star}_{(TO)} < 1$, where both can be searched by the sum operation $\alpha^{\star} = \alpha + \gamma_{mat}$, and the coefficient $\beta^{\star}_{(TO)} = \beta_{(TO)} + \delta_{mat}$. $\alpha^{\star} \approx 0$ indicates that the firm does not make any debt when there is no debt target, while $0 < \beta^{\star}_{(TO)} < 1$ indicates the speed with which the company adjusts its debt to the planned debt target.

3.3. Target Debt Estimation

Shyam-Sunder and C. Myers (1999), Ozkan (2001), Flannery and Rangan (2006), Byoun (2008), López-Gracia and Sogorb-Mira (2008), and Dang (2013), stated that debt targets can be observed through the company's specific characteristics. The econometric specifications used by the researchers are as follows.

$$D^{*}_{(i,t)} = \sum_{k=1}^{n} \beta_k \cdot x_{(k,i,t)} + e_{(i,t)} \quad (3)$$

The symbols $x_{(k,i,t)}$ in equation 3 are the k-characteristic factors in firm i in year t, and the symbol β_k as coefficients of each of these characteristics, and $e_{(i,t)}$ is an error component.

Generally, the researchers identify the characteristics of the company by using measurable characteristics obtained from the company's financial statements. Some commonly used characteristics are firm size, growth opportunities, non-debt tax shield, profitability, and liquidity. Therefore, in this study, the above characteristics will be used to find the estimated value of the debt targets of the firm $D^{*}_{i,t} = \widehat{D}_{i,t}$, which can be expressed in equation 4.

$$\widehat{D}_{i,t} = \alpha + \acute{\beta}_1 Size + \acute{\beta}_2 Grow + \acute{\beta}_3 NDTS + \acute{\beta}_4 Prof + \acute{\beta}_5 Liqu + \varepsilon_{i,t} \quad (4)$$

$\widehat{D}_{i,t}$ in equation 4 is the estimated debt target, α is the intercept, and $\acute{\beta}_1, \acute{\beta}_2, \acute{\beta}_3, \acute{\beta}_4, \acute{\beta}_5$ are coefficients for each characteristic. Size, grow, NDTS, prof, liqu are firm size, growth opportunities, non-debt tax shield, profitability, and liquidity (liquidity).

The variables used in equation 4 refer to the research of Shyam-Sunder and C. Myers (1999), (Ozkan (2001), López-Gracia and Sogorb-Mira (2008), Ozkan (2001), and Dang (2013) i.e. (1) Company size is measured by the natural logarithm of total assets (Ln TA); (2) Growth opportunity is measured by market to book ratio (M / B); (3) Non-debt tax shield (NDTS) is measured by the depreciation ratio to total assets (Depr / TA); (4) Profitability is measured by earnings before interest,

tax, depreciation, and amortization to total asset (EBITDA / TA); And (5) Liquidity is measured by the ratio of current assets to current liabilities (CA / CL).

3.4. Modified Deficit Financing Model

This regression equation is used to measure the significance of POT influence on financing decisions. The coefficient value β_{PO} is used to estimate the magnitude of the effect of the internal financing deficit that causes the company to decide to indebted. The value of the regression coefficient is in the range of 0 and 1, where if the coefficient value is close to 1 and significant, it can be concluded that the sample tested decided to owe after a financing deficit. In other words, the sample shows the behavior following the POT financing decision pattern. If the coefficient is close to zero, it indicates that the researched sample still issues debt despite not having a financing deficit, which means that the financing decision pattern is less likely to follow the POT. The regression equation can be written in the equation 5.

$$\Delta D_{(i,t)} = \alpha + \beta_{(PO)}\left(DEF_{(i,t)}\right) + \gamma_{mat} Dum_{mat(i,t)} + \upsilon_{(i,t)} \quad (5)$$

By incorporating the dummy variable interaction factor to the deficit factor, the equation 5 is modified to equation 6

$$\Delta D_{(i,t)} = \alpha + \beta_{(PO)}\left(DEF_{(i,t)}\right) + \gamma_{mat} Dum_{mat(i,t)} + \delta_{mat}\left(DEF_{(i,t)} \times Dum_{mat(i,t)}\right) + \upsilon_{(i,t)} \quad (6)$$

The symbols $\propto$, $\beta_{(PO)}$, $DEF_{(i,t)}$, γ_{mat}, $Dum_{mat(i,t)}$, δ_{mat}, and $\upsilon_{(i,t)}$ in equations 5 and 6 are the intercepts, the financing deficit coefficient, the deficit financing of firm i in year t, the dummy coefficient, the firm's dummy in year t, the interaction coefficient between the dummy and the financing deficit, and the error component respectively. The significance of the capital structure decision following the Pecking Order Theory is obtained when $\alpha^\star \approx 0$ and $0 < \beta^\star_{(PO)} < 1$, where both can be searched by the sum operation $\alpha^\star = \alpha + \gamma_{mat}$, and the coefficient $\beta^\star_{(PO)} = \beta_{(PO)} + \delta_{mat}$. $\alpha^\star \approx 0$ shows that the firm does not make any debt when there is no financing deficit, whereas $0 < \beta^\star_{(PO)} < 1$ indicates that the company issues debt if the financing deficit occurs.

3.5. Deficit Financing

Equations 5 and 6 have a DEF component. These components are Variable financing deficits. The value of this financing deficit is derived from the calculation as follows:

$$DEF = -CF + I + DIV + \Delta C \quad (6a)$$

Component (-CF) is cash flow (CashFlow) after tax. This component is given a negative symbol because the desired final value is the deficit in the positive symbol. Therefore, the value of incoming cash is given a negative symbol to get a positive deficit value. The next component is the investment (I), which is the value of investment issued by the company in the current year.

The third component is the dividend (DIV) distributed by the company in the current year. This dividend value can be zero if the company does not distribute the dividend. The last component is ΔC, that is the change of the company's net cash in the current year. The operational variables for the financing deficit (DEF) component are (1) Dividend is measured by Dividend Payout ratio (DPR); (2) Net Investment (I) is measured by the ratio of Net Property Plant and Equipment to Total Assets (NPPE / TA); (3) Net change in cash (ΔC) is measured by the cash or equivalent ratio in year t minus cash or equivalent in year t-1, against total assets (CASHt - CASH t-1) / TA; and (4) Cashflow (CF) is measured by earnings before interest tax depreciation and amortization to total asset ratio (EBITDA / TA).

3.6. Nested Model

This model is used to measure the significance of the role of both theories of Trade-Off Theory and Pecking Order Theory simultaneously to see the role of both theories in capital structure decisions. This model is a combination of partial target adjustment and deficit financing models. The coefficient $\beta_{(TO)}$ is used to measure the power of influence of capital structure decision based on TOT, while the $\beta_{(PO)}$ coefficient is used to measure the strength of influence of POT-based capital structure decision. Both coefficients have an ideal value of 1. The coefficient value approaching 1 indicates that the effect of the financing decision on the model is strong. The following regression equation is presented in equation 7.

$$\Delta D_{(i,t)} = \propto + \beta_{(TO)}\, \Delta D^*_{(i,t)} + \beta_{(PO)}\, DEF_{(i,t)} + \gamma_{mat} Dum_{mat(i,t)} + \upsilon_{i,t} \quad (7)$$

By integrate the components $\Delta D^*_{(i,t)}$ and $DEF_{(i,t)}$ to $Dum_{mat(i,t)}$, then the equation 8 can be formed.

$$\Delta D_{(i,t)} = \alpha + \beta_{(TO)}\, \Delta D^*_{(i,t)} + \beta_{(PO)}\, DEF_{(i,t)} + \gamma_{mat} Dum_{mat(i,t)} + \delta_{mat}\left(\Delta D^*_{(i,t)} \times Dum_{mat(i,t)}\right) + \theta_{mat}\left(DEF_{(i,t)} \times Dum_{mat(i,t)}\right) + \upsilon_{i,t} \quad (8)$$

The symbol $\Delta D_{i,t}$ is the net debt of firm i in year t, α is the intercept, $\beta_{(TO)}$ is the partial target adjustment coefficient, $D^*_{(i,t)}$ is the firm's target debt, γ_{mat} is the coefficient of dummy value, whereas $Dum_{mat(i,t)}$ is the dummy for the firms in the mature stage . The symbol δ_{mat} is the interaction coefficient between $\Delta D^*_{(i,t)}$ with $Dum_{mat(i,t)}$. The significance of capital structure decisions that follow Trade-off Theory is obtained when $\alpha^\star \approx 0$ and $0 < \beta^\star_{(TO)} < 1$, where both can be searched by the sum operation $\alpha^\star = \alpha + \gamma_{mat}$, and the coefficient $\beta^\star_{(TO)} = \beta_{(TO)} + \delta_{mat}$. $\alpha^\star \approx 0$ indicates that the firm does not make any debt when there is no debt target, while $0 < \beta^\star_{(TO)} < 1$ indicates the speed with which the company adjusts its debt to the planned debt target.

Furthermore, in the deficit component, the significance of the capital structure decision following the Pecking Order Theory is obtained when $\alpha^\star \approx 0$ and $0 < \beta^\star_{(PO)} < 1$, where both can be searched by the sum operation $\alpha^\star = \alpha + \gamma_{mat}$, and the coefficients $\beta^\star_{(PO)} = \beta_{(PO)} + \delta_{mat}$. $\alpha^\star \approx 0$ shows that the firm does not make any debt when there is no financing deficit, whereas $0 < \beta^\star_{(PO)} < 1$ indicates that the company issues debt if the financing deficit occurs.

3.7 The hypothesis

At the mature stage, the company is already in a stable position, its operations and utilization are close to maximum and retained earnings are high and sales are also high. In this position, the company needs only a small amount of extra debt to meet its operational needs (Faff et al. 2016). Managers

tend to take financing decisions with internal funds patterns, then just issue debt if retained earnings are still lacking in financing the company's operations (Bontempi 2002). This is in accordance with POT principles. Thus, we can express hypothesis 1 as follows:

Hypothesis 1: At the Mature stage, the firm's financing decision follows the principles of the Pecking Order Theory (POT)

Although the tendency of very strong financing decisions leads to Pecking Order Theory, but under conditions of underfinancing, or at the behest of shareholders to discipline managers (Jensen and Meckling 1976), the company strives to maximize its debt even in small amounts of needs. It follows the principles of Trade-off Theory (Dang, Kim, and Shin 2012).

Hypothesis 2: At the Mature stage, the firm's financing decision follows the Trade-off Theory (TOT)

Firm Size

Company size is very commonly used in research in finance. In the context of debt financing, Titman and Wessel (1988) argue that larger firms can offer their assets as collateral and offer a smaller risk to creditors in issuing debt. In that sense, the larger the company, the greater the debt issued (Bontempi, 2002).

Hypothesis 2a: The size of the firm is positively related to the size of the company's debt target, based on the principles of Trade-off Theory (TOT).

Growth Opportunities

Companies that have high growth opportunities generally require high financing as well to finance planned projects. But these needs can not necessarily be met. The reason for this is because the creditor does not consider growth opportunities as collateral that can be used in debt issuance (Antoniou, Guney, & Paudyal 2009, Hovakimian, Kayhan, & Titman 2012, López-Gracia & Sogorb-Mira 2008). In addition, the use of debt can limit the manager's ability to take advantage of more diverse growth opportunities, due to various requirements relating to unwanted business risks by creditors (Myers 1977).

Hypothesis 2b: Growth Opportunities is negatively related to the size of the company's debt targets, based on the principles of Trade-off Theory (TOT).

Non-Debt Tax Sheild

Titman and Wessels (1988) State that firms with large non-debt tax shields relative to their expected cash flow include less debt in their capital structures. This can happen because companies that feel they are getting a tax savings benefit without issuing debt, will certainly tend to choose the path (Dang 2013, López-Gracia & Sogorb-Mira 2008, Shyam-Sunder & C. Myers 1999). In the other words, given the various risks that may arise in debt issuance, the company is reluctant to publish it for tax-saving purposes if the tax savings can be obtained from other sources.

Hypothesis 2c: Non-Debt Tax Shield is negatively related to the size of the company's debt targets, based on the principles of Trade-off Theory (TOT)

Profitability

Companies that have high profitability would be very attractive to creditors. On the other hand, companies with high profitability can cause agency problems. Jensen (1986) revealed that agency problems can occur because of free cash flow that is excess cash on the amount needed to fund investment. The presence of too much free cash flow will affect the behavior of managers resulting in the adverse selection that does not reflect the interests of shareholders (Castro et al. 2016, Ozkan 2001, Viviani 2008). To overcome these things is used debt because debt can control the performance of managers and as a threat for managers to work more efficiently (Jensen & Meckling 1976). In addition to minimizing agency problems, the use of debt in companies that have high profitability also to reduce taxes.

Hypothesis 2d: Profitability is positively related to the size of the company's debt target, based on the principles of Trade-off Theory (TOT)

Liquidity

Ozkan (2001) states that companies with high liquidity can more easily reach the debt because it is considered able to pay off credits that mature in the near future. In addition, companies with high liquidity can use some of their current assets to fund their investments.

Hypothesis 2e: Liquidity is positively related to the size of the firm's debt, based on the principles of Trade-off Theory (TOT)

Shyam-Sunder and C. Myers (1999), Bontempi (2002), Fama and French (2002), López-Gracia and Sogorb-Mira (2008), Dang (2013) examined capital structure decisions by involving TOT and POT and found that both theories do not stand alone. Therefore, hypothesis 3 can be constructed as follows:

Hypothesis 3: In the Mature stage, the firm's capital structure decisions still follow the principles of Trade-off Theory and Pecking Order Theory are complementary.

Donaldson (1961) observes that large, old-age mature companies have relatively little debt compared to their total assets. It reflects the role of POT in the decision of the company's capital structure. However, Jensen and Meckling (1976) argue that companies will tend to maximize debt to discipline and force managers to work hard to follow shareholder desires. It shows that TOT-based considerations are still being used to maximize corporate value even in small quantities and with different motivations, and firms in established condition.

Hypothesis 4: At the Mature stage, the principles of the Pecking Order Theory dominate the firm's capital structure decisions

compared to the Trade-off Theory principles.

4 Data, Sample and Statistics Descriptive

4.1 Research Design

This research is aimed at the empirical testing of model buildings developed based on the theories that have been presented in the previous Section of this paper. The

integration and identification of capital structure determinant variables into testing the research hypotheses is done through three empirical research models to answer the research question. Such empirical models include; (1) Partial Target Adjustment which is a capital structure decision model based on TOT, (2) Deficit Financing model which is modeling to test decision of capital structure based on POT, and (3) Nested model which is modeling of decision of capital structure based on TOT and POT. The design of this study is a causal research using explanatory methods, to test the research hypothesis of the relationship characteristics of several factors.

TABLE 3
DESCRIPTIVE STATISTICS

Criteria	DEBT	LNTA	MTOB	DEPR	EBTA	CACL
Mean	0,56	13,66	0,77	0,03	0,11	1,93
Sum	634	1,59e+4	881	35,01	134,8	2196,33
Median	0,54	13,39	0,49	0,02	0,10	1,51
Maximum	1,36	16,83	3,15	0,09	0,33	5,71
Minimum	0,12	11,01	0,07	0,00	0,00	0,31
Sum Sq. Dev.	453	2,14e+5	1408	1,89	24,9	6451,96
Std. Dev.	0,29	1,60	0,79	0,02	0,08	1,39
Observations	1134	1134	1134	1134	1134	1134
Cross sections	126	126	126	126	126	126

4.2 Sample

In principle, this research would like to use all financial report data of public companies in Indonesia Stock Exchange. However, due to various limitations such as regulation as well as availability and consistency of data, it was decided to set some conditions purposively, to obtain the data expected to reflect the circumstances to be studied.

4.3 Data and Data Sources

The data used in this study is the secondary data (archival) so far obtained from the provider of official website data (website) Bursa Efek Indonesia addressed at URL www. Idx.co. id.

Based on the selection of data obtained, there are 126 companies eligible for the study. The companies consist of agriculture sector (6 companies), mining (6 companies), basic and chemical industries (40 companies), various industries (35 companies), consumer goods industry (22 companies), infrastructure and transportation (10 companies), And trade (7 companies). Table 2 presents the process of data treatment resulting in the number of companies as mentioned above.

TABLE 2
DATA SELECTION

No	Data Treatment	Data Elimination	Number of Companies
1	Original data	-	431
2	Sorting of data by industry type	-	431
3	Elimination of banking and financial institution data	95	336
4	Incomplete data elimination	210	126
5	Total Sample		126

Furthermore, winsorizing on some data outliers to minimize the bias on the data set to be processed. The way of processing is to rank (rank) data on each variable, then calculate the percentile data 1% and 99% on each variable. Furthermore, all data that has the value below 1% percentile is converted to as big as data value at 1 percentile. In this way, all data with values above 99 percentile, converted to equal to the value of data at 99 percentiles. The results obtained in the form of data sets in the form of balanced panel data ready to be processed. Table 3. shows descriptive statistics about the data of companies that have been selected and have been winsorizing in this study. In the table shows that the number of observations of each variable of 1134. The value is a multiplication of 126 companies and 9 years of observation. The mean (mean) of all variables (except Growth Opportunities / MTOB) looks bigger than the standard deviation value. This indicates that the data relatively not contain many fluctuations or fluctuations. In addition, the average variable ratio of debt to total asset (DEBT) of 0.560 shows that the observed companies have considerable debt.

4 Empirical Test Result

TABLE 4
ESTIMATION OF DETERMINANT FACTORS OF TARGET LEVERAGE

Variable	CE	FE	RE
Firm Size (LNTA)	-0.0002	-0.0247[b]	-0.0110
p-value	*0.9659*	*0.0301*	*0.1570*
Growth Opportunity (MTOB)	-0.0532[a]	-0.0271[a]	-0.0349[a]
p-value	*0.0000*	*0.0088*	*0.0004*
NDTS (DEPR)	1.4104[a]	0.3873	0.5906[b]
p-value	*0.0001*	*0.1523*	*0.0238*
Profitability (EBTA)	-0.0666	0.2106[b]	0.1478[c]
p-value	*0.5682*	*0.0194*	*0.0882*
Liquidity (CACL)	-0.1083[a]	-0.0566[a]	-0.0686[a]
p-value	*0.0000*	*0.0000*	*0.0000*
Constant	0.7782[a]	-	0.8340[a]
p-value	*0.0000*	-	*0.0000*
Observations	1134	1134	1134
R-squared	0.3637	0.7594	0.7199
Number of firms	126	126	126

a, b, and c, denote level of significance at 1%,5%, and 10% respectively

4.1 Target Leverage Estimation

Model selection begins by working on the OLS regression in the model according to equation 4, called the restricted model. Furthermore, regression is done on the same model, using the FEM method, that is by adding the puppet variable of some of its cross sections data, and called an unrestricted model. The regression model yields the regression coefficient (R2) of each model. The first model (PLS) produces a restricted regression coefficient (R2r) of 0.364. The second model (FEM) yields unrestricted regression coefficient (R2ur) of 0.759.

Furthermore, the F test is performed to determine the better model with the following test.

$$F = \frac{(R^2_{ur} - R^2_r)/m}{(1-R^2_r)/(n-k)} \quad (9)$$

Where m is the number of dummy variables = 125, n is the number of observations per variable = 1134, and k is the number of constants, independent variables, and dummy variables = 131.

The model selection hypothesis can be explained as follows.

H_0: PLS model selected

H_1: FEM model selected

By entering the above values, the formula F becomes:

$$F = \frac{(0{,}759 - 0{,}364)/125}{(1 - 0{,}759)/(1134 - 131)}$$

The formula yields F count = 13,199. By matching table F (nominator 125, denominator 1003) at 5% significance level, obtained F table value of 1,234. The value of F arithmetic is greater than F table, so H0 is rejected and it can be concluded that the FEM model is used in the next process.

REM regression is then followed by Hausman test using both models (FEM and REM) to get the value of chi-square and p-value calculation. The easiest way is to compare the value of p-value calculated with the significance of 1%, 5%, or 10% which respectively indicates the strength of significance. The hypothesis used is if p-value <significance value, then H_0 is rejected, or FEM model is better. Conversely, if p-value > significance values, then H_0 is accepted, or a better REM model for further use. Table 4 shows the calculated chi-square and p- values. Based on the table it is seen that p-value is 0.000. The value is smaller than 1% significance, which means that H_0 is rejected, or in other words, the FEM model is better to use.

TABLE 5
THE COEFFICIENT OF ESTIMATION VARIABLE OF DEBT TARGET

Variable	Coefficient		Std. Error	t-Statistic	Prob.
	expected	Result			
Firm Size (LNTA)	(+)	-0.025[b]	0.011	-2.172	0.030
Growth Opp. (MTOB)	(-)	-0.027[b]	0.010	-2.624	0.009
NDTS (DEPR)	(-)	0.387	0.270	1.433	0.152
Profitability (EBTA)	(+)	0.211[b]	0.090	2.341	0.019
Liquidity (CACL)	(+)	-0.057[a]	0.006	-9.801	0.000

Denote a, b, and c, are level of significance at 1%,5%, and 10% respectively

Company size (LNTA) shows a 5% significance, but with a negative value. This indicates that the firm size variable in this research is closer to pecking order theory, where companies tend to use retain earnings first to finance its operations before issuing debt, so the size of the company is not automatically in line with the size of the company's debt. Growth opportunity (MTOB) shows a strong (1%) significance with a negative sign. This indicates that the variable corresponds to the trade-off theory as described previously. Non-debt tax shield (NDTS) does not show enough significance, either in the 1%, 5%, or 10% levels. It can be indicated that in this research the variable has no real influence on the model. The cause of this is alleged because companies in Indonesia do not use non-debt tax protection as a substitute for tax protection against debt (Dang 2013, DeAngelo & Masulis 1980). Profitability (EBTA) indicates significant significance (5%) with a positive sign, indicating that the variable is in accordance with the trade-off theory as described previously. Liquidity (CACL) shows a strong (1%) significance with a negative sign. As with total assets, liquidity is often ambiguous. On the one hand, liquidity can be a supporter of high debt because of its ability to pay off debts due (in accordance with trade-off theory). But on the other hand, liquidity can be used directly to finance investment, which means it can reduce the use of debt (in accordance with pecking order theory). Therefore, the negative sign on liquidity shows its tendency towards pecking order theory. Furthermore, the debt target is estimated using the coefficients in table 5, so we get the value for each company to be analyzed further by using Partial Target Adjustment model.

4.2 Deficit Financing Model Testing Results

Table 6 shows all significant estimators at the 1% level which means that explanatory variables are very significant in influencing corporate debt. The constant value of -0.099 can be considered small enough (close to zero) to be in line with model expectations, where it is assumed that no debt is issued when the firm does not have a financing deficit. The Deficit Coefficient looks very ideal at around 1. This shows the strong influence of the minimum capital cost consideration in capital structure decisions on mature companies. It can be stated here that mature companies will only issue debt if they have a financing deficit or in other words, follow the Pecking Order Theory. R-squared of 0.918 shows the strength of the model in which the model is able to explain the behavior of selecting the

TABLE 6
DEFICIT FINANCING MODEL ANALYSIS RESULTS

VARIABLE	RESULT	FINAL
Deficit	0,644[a]	0,854
p-value	*0,008*	
Deficit x Dummy (mat)	0,21[a]	
p-value	*0,003*	
Dummy (mat)	-0,126[a]	-0,099
p-value	*0,007*	
Constant	0,027[a]	
p-value	*0,003*	
R-squared (Adjusted)	0,918	

a, b, and c, denote level of significance at 1%,5%, and 10% respectively

capital structure of firms at the mature stage well. Thus hypothesis 1 has been supported where it is stated that at the Mature stage, the financing decision of the company follows the principles of the Pecking Order Theory (POT).

4.3 Partial Target Adjustment Model Testing Results

Table 7 displays various significance values. Constants have very small and insignificant values. It shows that constants can even be ignored so that it can be said that mature companies are not known whether to issue debt when they do not have a debt target. R-squared of 0,259 shows the strength of the model in which the model's ability to explain the behavior of firms' capital structure selection at the mature stage is still under the strength of the financing deficit model. The speed of Adjustment coefficient (SOA) shows a fairly convincing value of 0.288 and is at the level of significance of 1%. This value can be said to show enough that mature companies still consider the optimum debt in meeting the need for debt targets set. Thus hypothesis 2 states that at the Mature stage, the financing decision of the company follows the principles of Trade-off Theory (TOT) has been supported.

TABLE 8
NESTED MODEL ANALYSIS RESULTS

VARIABLE	RESULT	FINAL
ΔD*	0,253[a]	0,134
p-value	0,011	
ΔD* x Dummy (mat)	-0,121[a]	
p-value	0,033	
Deficit	0,602[a]	0,843
p-value	*0,008*	
Deficit x Dummy (mat)	0,241[a]	
p-value	*0,031*	
Dummy (mat)	-0,135[a]	-0,101
p-value	*0,006*	
Constant	0,034[a]	
p-value	*0,002*	
R-squared (Adjusted)	0,930	

a, b, and c, denote level of significance at 1%,5%, and 10% respectively

Table 8 describes more comprehensively the role of POT and TOT in the decision-making behavior of the company's capital structure at the mature stage. All estimators indicate their significance at the 1% level, which indicates that the independent variables in the model significantly affect the company's debt. The constant on the 0.034 model indicates a value close to zero, so it corresponds to the initial prediction that when all variables are constant, no debt is issued. In other words, the debt is only issued due to a financing deficit, or a defined debt target. SOA value on the model is very small that is equal to 0.134 while the value of deficit coefficient reaches 0.843. This clearly shows that the behavior of decision-making capital structure in mature companies is dominated strongly by Pecking Order Theory, while Trade-off Theory complements with its role in the consideration of debt optimization toward its target when the company must issue debt due to financing deficit. Thus Hypothesis 3 is supported, ie at the Mature stage, the decision of the company's capital structure still follows the principles of Trade-off Theory and Pecking Order Theory are complementary. Similarly, hypothesis 4 states that in the Mature stage, the principles of the Pecking Order Theory dominate the decision of the capital structure of the firm compared with the principles of Trade-off Theory is also supported.

5 CONCLUSION

TABLE 7
PARTIAL TARGET ADJUSTMENT MODEL RESULTS

VARIABLE	RESULT	FINAL
ΔD*	0,476[a]	0,288
p-value	0,034	
ΔD* x Dummy (Mat)	-0,188[a]	
p-value	0,001	
Dummy (Mat)	0,036[b]	0,037
p-value	0,017	
Constant	0,001[a]	
p-value	0,008	
R-squared (Adjusted)	0,259	

a, b, and c, denote level of significance at 1%,5%, and 10% respectively

In this paper, we have investigated capital structure by testing the trade-off and pecking order theory using new models in capital structure literature. We make at least 2 contributions to the literature. First, we include consideration of the effect of the firms' life cycle as key drivers in the capital structure selection model. Secondly, we show that capital structure decision at maturity stage is more influenced by minimum capital cost consideration while maintaining argumentation of optimum cost of capital (CoC), where the company tries to optimize its debt toward debt target.

Our findings also show that the actual rate of adjustment of debt toward debt targets in mature companies tends to be low. This indicates that the company's financing targets are not responded by using debt first, but earlier by using the internal fund to meet financing needs, then further consider debt optimization when needed.

Finally, we suggest that in the next study a better model can be made to give a more comprehensive picture of the effects of various life cycles on the decision-making of capital structure. Besides that, it is also necessary to test the support method by comparing the DCS (Dickinson's' Classification Scheme) classification method with other classification methods such as MLDA life-cycle classification proposed by Faff et al. (2016).

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