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What Determines the Speed of Adjustment to the Target Capital Structure in Indonesia?

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Abstract

The purpose are (1) to test the implementation of the POT or TOT in Indonesia (2) to find out how fast the SOA for companies in adjusting to the direction of the capital structure optimum. The research data are 63 companies with the complete documents within a period of 10 years (2006-2015) that 630 observation units are obtained. Every sector distribution: (1) 18 companies in the field of basic industry and chemistry (28.6%); (2) 13 companies in the field of trade, service, and investment (20.6%); (3) 5 companies in the field of miscellaneous industries (7.9%); (4) 11 companies in the field of consumer goods industry (17.5%); (5) 6 companies in the field of construction (9.5%); (6) 4 companies in the field of infrastructure, utilities and transportation (6.3%); (7) 4 companies in the field of mining (6.3%); and (8) 2 companies in the field of agriculture (3.2%). The Result findings (1) non-financial companies filled the gap of 69.27% between the present leverage and the optimal target equally to 1.44 year to reach the whole target or 0.71 year to reach a half of the target from the present leverage level (2) found that SOA is performed faster if the macro-economic volatility risk happens rather than the business risk does. The macro-economic conditional change is a systematic risk that impacts the speed of adjustment of capital structure. Meanwhile, the business risk is an unsystematic risk that the result may be generalized.

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1. Introduction

Many researches have been conducted to examine the applicability of POT or TOT in different contexts. For example, Shyam-Sunder and Myers (1999) have conducted a research in a developed country as well as Agarwal and Mohtadi (2004), Gwatidzo and Ojah (2009) have also conducted researches in the developing countries or the emerging markets. The researches tend to use a capital structure static design, with the assumption that there is no difference between the target and actual capital structure. Thus, capital structure does not experience changes or adjustments at any time. In fact, the capital structure is not in accordance with the expected targets possibly caused by the high costs in

adjustments and changes due to the different conditional factors in each period. Thus, the

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explanation on capital structure only from the static approach is not enough.

The capital structure adjustment speed test in the developing countries as well as in the western or developed countries is greatly required due to: (1) the existing institutional environment difference as this research is expected to provide the contribution on the theory of capital structure in accordance with the existing conditions in the developing countries, such as Indonesia. (2) It is estimated that the Indonesian GDP is the biggest of 10 ASEAN countries in 2018 (IMF, 2018).

This research shows that the companies in Indonesia have made their adjustments to the capital structure target. The macro-economic risk may rapidly influence SOA than the business risk. It is also found that the economic risk and business risk positively influence SOA.

2. Literature Review / State–of–Arts / Research Background

Since Modigliani and Miller (1958, 1963) have explained the irrelevance capital structure, it triggers the further disputes on the theories of capital structure as mentioned in the major theories of capital structure consisting of: trade-off (TOT) and pecking order (POT); as well as the other theories, such as in market timing, agency, and signalling.

Based on trade-off theory, debt is related to cost and benefit. The higher the debt, the more the benefit obtained from the tax reduction and agency problem. However, the bigger the debt, the more risks on financial difficulty and bankruptcy may arise. Thus, a company will change the debt in capital structure by considering the marginal cost and marginal benefit. Pecking order theory is assumed based on the asymmetric information between manager and investor. Manager as an insider knows information more than the investor does. As a result, the manager will choose the financing sources with less asymmetric information cost. Myers and Majluf (1984), in pecking order theory, state that a company is more preferable to the internal financing when compared to the external one, and if the external financing has become the only choice, the company tends to have debt than equity.

Trade-off theory assumes that the company performs the trade-off in its target capital structure consisting of debt and equity composition to the optimal debt level is to lower its capital cost or bankruptcy risk (Kane *et al.*, 1984). A company always performs a variation or maintains its optimal capital structure composition at any time. The level in which a company moves toward an optimal capital structure is called as speed of adjustment (SOA) from the capital structure.

Many researches have shown different results. For example, Trinh and Phuong (2016) have mentioned that there is no capital structure change in Vietnamese companies caused by the economic crisis. Conversely, Flannery and Rangan (2006), Reinhard and Li (2010), Fuady (2014), Haron and Ibrahim (2012) explain that a company will always perform its capital structure adjustments to the optimal level.

There are some factors which require a company to adjust its capital structure. Kane *et al.* (1984) and Fischer *et al.* (1989) explain that a company's consideration to adjust its capital structure is due to the comparison between the marginal benefit and marginal cost. In fact, marginal benefit and marginal cost continuously experience changes from time to time. Thus, Baum (2010) categorizes

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the speed of adjustment without including model as there is a bias risk.

A company with a financial surplus and capital structure above the target will adjust to its optimal capital structure when the business risk of the company is low and the risk of macro-economy is high. A company with a financial deficit and capital structure below the target will adjust more quickly when the both risk types are low.

Explanation about the capital structure behaviour may not be statically explained that the dynamic explanation develops. A sudden change may cause the company's capital structure away from the target that optimal readjustment is greatly required. This dynamic phenomenon may not be explained by the capital structure standard model which implicitly considers both are similar (Drobetz and Wanzenried, 2006).

The explanation is in accordance with the fact that a company with a high or low growth prefers equity (debt) (Flannery and Rangan, 2006). Frank and Goyal (2009) show two common ideas behind the dynamic trade-off model.

First, the preference on optimum capital structure at any period depends on anything optimum in the next period. Thus, the expected optimum financing option in the next period will determine anything optimum in the previous period. Second, the optimization is determined by comparing the return rate obtained by a company to that received by the investors. Capital must be in a right position to reach the highest return, justifying the company's external financing choice through security problems or back-purchases. In a dynamic context, the company should choose whether/how they want to change their capital structure today based on their assumptions on what will be optimum in the future. Two relevant and dynamic additional instruments when compared to the trade-off static theory are expectation and leverage adjustment transaction cost.

Flannery and Rangan (2006) have conducted an investigation on capital structure target adjustment behaviour. The result shows that the company tends to rapidly adjust its capital structure gap with the average of 30% each year. Negash (2001) explains that the companies in Canada make their actual and target capital structure difference adjustment by 12%.

Reinhard and Li (2010) with the samples of non-financial companies in Indonesia investigate the applicability of POT or TOT in explaining the capital structure dynamic behaviour. The research finding shows that there is no general model (TOT or POT) can explain the capital structure dynamic behaviour. The existing disputes interest the researcher to conduct this research.

The research results in the developing countries as conducted by Fuady (2014) with PAM method explains that non-financial company and investment in Indonesia make the adjustment speed of 42.61% per year; Haron and Ibrahim (2012) with GMM method explains that the sharia companies in Malaysia make their capital structure adjustment by 60.13% for 1.66 years.

It is different from the previous researches that Trinh and Phuong (2016) use the dummy regression and explain that the companies in Vietnam do not make any capital structure adjustment either before or after the crisis.

Review of Capital Structure Adjustment Speed Determinants

The macro-economic condition may influence the debtors' asset value that the company may adjust its capital structure based on the asset

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condition at that time. Similarly, when the business risk gets higher, the payment risk from the debtors is influenced.

Chen (2010), Bhamra *et al.*, (2010) as well as Caglayan and Rashid (2014) in Baum et al. (2017) explain that the macro-economic condition may influence the capital structure speed to its optimum level. When the macro-economic risk is higher, the tax saving present value proportion may decrease. Consequently, the company should reduce debt in its capital structure in a bad condition.

Thus, the formulated hypothesis is: **The economic risk negatively influences the capital structure adjustment speed.**

Castanias (1983) explains a contradictory relationship between business risk and company leverage. The research result shows that the marginal benefit and marginal cost depend on the business risk. A company with higher business risk should reduce its capital structure debt. The researches in the developing countries, for example, in South Afrika conducted by Ramjee and Gwatidzo (2012) revealing that risk is positively related to leverage. As long as there is asymmetric information, the company will continuously prioritize the external financing, such as debt rather than equity.

Thus, the research orientation still cannot be explicitly explained, that the formulated hypothesis is business risk influences the capital structure adjustment speed.

3. Methodology

The research data are 63 companies with the complete documents within a period of 10 years (2006-2015) that 630 observation units are obtained. Every sector distribution: (1) 18 companies in the field of basic industry and chemistry (28.6%); (2) 13 companies in the field of trade, service, and investment (20.6%); (3) 5 companies in the field of miscellaneous industries (7.9%); (4) 11 companies in the field of consumer goods industry (17.5%); (5) 6 companies in the field of construction (9.5%); (6) 4 companies in the field of infrastructure, utilities and transportation (6.3%); (7) 4 companies in the field of mining (6.3%); and (8) 2 companies in the field of agriculture (3.2%).

The research samples are non-financial companies **because:** (1) there is a different regulation within the financial and non-financial company; (2) there is a leverage proportion interpretation difference as high leverage level in non-financial company shows bigger bankruptcy potential. Meanwhile, nothing happens in the financial company.

Variable measurements: (1) Rajan and Zingales (1995) use total debt ratio on total asset (DAR) as the company leverage measurement to determine the speed of adjustment; (2) Jubaedah and Yulivan (2015) have proxied that macro-economic risk = central bank interest rate; (3) Miswanto (2013) has proxied that business risk = operational profit/expected operational profit standard deviation.

The stages and analysis in this research are:

1. Panel data regression model Analysis: common, fixed or random effect regression
2. After the appropriate panel data regression model is obtained, an optimum capital structure calculation is conducted based on the explanatory business risk and macro-economic risk $Lev^* = \alpha + \beta_1\ Macro\ Economy + \beta_2\ Business\ Risk$
3. A capital structure adjustment speed test with partial adjustment model is as follows:

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

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In which γ is the speed of adjustment (SOA), a deviation between target leverage and the previous period target leverage.

4. Hypothetical testing on the tested model:

SOA = α + β_1 Macro Economy + β_2 Business Risk

4. Results and Findings

Panel Data Regression Model Test

Chow Test

Chow test is a test conducted to determine the most appropriate Fixed Effect Model or Common Effect Model for the panel data.

Table 1: Chow Test

Redundant Fixed Effect Tests *Equation: Untitled* *Test cross-section fixed effects*			
Effects Test	*Statistic*	*d.f.*	*Prob.*
Cross-section	*13.535861*	*(62,565)*	*0.0000*
Cross-Section Chi-square	*573.560775*	*62*	*0.0000*

Source: Processed data (2018)

The result of Chow test presented in table 4.2 shows that *Cross--section Chi square* is 0.0000 < 0. It means that the best model to use between the fixed effect and the common effect is the fixed effect. The next step is to determine the most appropriate model between the Fixed Effect and Random effect with Hausman test.

Hausman Test

The panel data regression model testing is conducted to compare the results between the Fixed Effect and Random Effect regression**.**

Table 2: Hausman Test

Correlated Random Effects--Hausman Test Equation: Untitled Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross--section random	0.000000	2	1.0000

Source: Processed data (2018)

The result of Husman test presented in table 4.3 shows that the p-value is< α that is 1.0000 > 0.05. It means that the best model between the fixed effect and Random effect model for the panel data regression is Random effect. Thus, the model to use in panel data regression is Random effect model and Lagrange Multiplier is further conducted.

Lagrange Multiplier Test

Lagrange Multiplier test is a test conducted to figure out the most appropriate model between the Common Effect or Random Effect Model for the panel data regression.

Table 3: Lagrange Multiplier Test

Lagrange Multiplier Tests for Random Effects Null hypotheses: No effects Alternative hypotheses: Two--sided (Breusch--Pagan) and one--sided (all others) alternatives			
	Test Hypothesis Cross-section	Time	Both
Breusch-Pagan	866.7262 05 (0.000)	6.05E- (0.9938)	866.7263 (0.0000)

Source: Processed data (2018)

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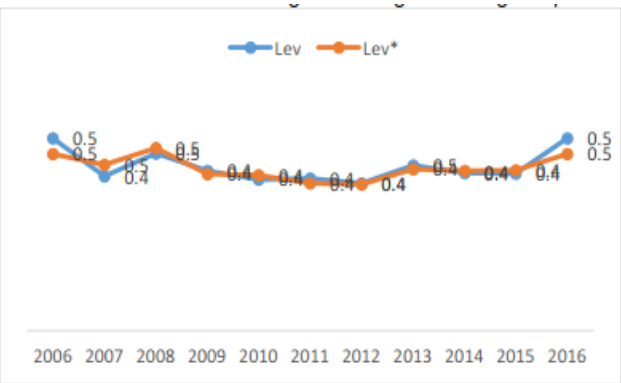
The result of Lagrange Multiplier test presented in table 4.4 shows that the Breusch Paganis profitability value is 0.0000 < 0.05. Thus, the model follows the Common Effects.

Optimum Capital Structure

The deviation between the actual leverage and target leverage is as follows:



The results of speed of adjustment test:
Dependent Variable: SOA
Method: Least Squares

Variable	Coefficient	Std. Error	t-statistic	Prob.
C	0.011150	0.016679	0.668509	0.5041
LEV_T_1_	0.877495	0.016605	47.16328	0.0000
OPTIMAL	0.307356	0.129458	2.374177	0.0179

The optimum leverage estimated coefficient has a significance value of p < 0.05 and shows the target leverage existence for the non-financial companies as the research samples.

These companies have made their adjustment with the long term target leverage from time to time, but less adjusted to the speed of 0.6927 ($\delta = 1 - \lambda_0$, $\delta = 1 - 0.3073$). The speed of adjustment explains how fast a company adjusts with their optimal capital structure (Clark, Francis and Hasan, 2009). To explain further, the speed of adjustment may also be converted in 1.44 years (1/δit) and 0.71 year each [ln 0.5/ln (1--ä) = ln0.5 / ln (0.6927)] (Mukherjee and Mahakud, 2010).

It concludes that the non-financial companies filled the gap of 69.27% between the present leverage and the optimal target equally to 1.44 year to reach the whole target or 0.71 year to reach a half of the target from the present leverage level. A rapid adjustment to the target leverage shows the existence of the dynamic trade-off theory (Mukherjee and Mahakud, 2010).

The slow speed of adjustment is caused by: (a) the fluctuating interest level due to the data used in this research at the sub-prime mortgage crisis time (2008) that the company tends to "wait and see"; (b) the crisis also results in fluctuating business risk.

The Role of Business Risk and Macro-economy in Determining SOA

Table 4: Hypothetical Test

Variable	Coefficient	Std. Error	t-statistic	Prob.
C	0.029150	0.016298	1.788590	0.0742
RATE	0.502396	0.178792	2.809940	0.0051
RISK	0.002180	0.001681	1.297073	0.1952

Table 4 shows that the results of hypothetical test (t test) as follows:

The interest rate (*Rate*) positively and significantly influences the Speed of Adjustment (SOA) of capital structure. Table 4 shows that when the macro-economic condition gets worse, the central bank may increase the interest rate. As a result, the company rapidly adjusts their capital structure. If the macro-economic risk increases by 1%, the average speed of adjustment of capital structure may increase by 0.50 each year.

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The company business risk positively but not significantly influences the capital structure's speed of adjustment. If the business risk increases by 1%, the average capital structure's speed of adjustment also increases by 0.2% each year. However, this result does not influence all companies. The higher the business risk, the company's responses are not the same. The companies used as the research samples may rapidly make their adjustment to their optimum capital structure, yet it has different impact in the other companies.

5. Conclusion

This research discusses two main issues on the capital structure of companies listed in Indonesia Stock Exchange. The first is to figure out the SOA toward the optimal capital structure. The second is to examine the SOA determination.

The analysis is conducted used the panel data balance of 630 observation units or 63 companies within a period of 2006 - 2015. The dynamic adjustment model is conducted using the partial adjustment model. The results show that SOA is performed by the companies in Indonesia.

This research has also found that SOA is performed faster if the macro-economic volatility risk happens rather than the business risk does. The macro-economic conditional change is a systematic risk that impacts the speed of adjustment of capital structure. Meanwhile, the business risk is an unsystematic risk that the result may be generalized.

The existence of limitations may result in inaccurate research results, such as the definition of proxy variable which may result in a false interpretation. The samples selected are based on the balanced panel that those may not be generalized to all companies in Indonesia (either listed or not listed). Besides, this research does not separate the capital structure decision based on its sectors.

The companies in the developing countries have different capital structure adjustment speed to their optimum level when compared to that of the developed countries. Thus, this research used the data of developing markets due to their important aspects. Practically, this research can be helpful in terms of: **first** (a) investors may make a better decision for their investment. For example: By recognizing SOA in company level, the investors can manage their portfolio better by making their investment in a company which has a faster adjustment speed. **Second (b)** the company managers may figure out the relationship between SOA, leverage composition, and company value to help them make better decisions. **Third (c)** The decision makers may know and show the impacts of decision changes (financial, legal, and legislation impacts) on SOA.

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