

TEST OF SPEED OF ADJUSTMENT TOWARDS THE CAPITAL STRUCTURE IN INDONESIA TELECOMMUNICATION INDUSTRY

**Riko Hendrawan
Dwipanca Adi Nugraha**

Magister Manajemen Universitas Telkom
Jl. Gegerkalong Hilir No.47 Bandung, 40152, Indonesia

Abstract

The purpose of this research was to test whether or not the pecking order theory occurred in telecommunication industry in Indonesia and also in its speed of adjustment. Using the purposive sampling method and taking 7 years period of data collection from 2006 up to 2012, the data were gathered from the companies' financial statement. The data were analyzed using the random effect model of Hausman test with interest bearing debt as its dependent variable and deficit as its independent variable. Finding from this research showed that pecking order theory was not applied in the telecommunication industry in Indonesia and it was quite different from the finding of Huang & Ritter (2009) that publicly traded firms in US adjusted to their target leverage at a moderate speed with a period of 3.9 years. It also discovered that the fastest growth of the speed of adjustment was shown by XL Axiata with -493.96% per year, and then Bakrie Telecom with -65.62%. Indosat and Telkom Indonesia showed a different behavior with a slower speed of adjustment Indosat with 13.22%, and Telkom Indonesia with 274.14% slower.

Keywords: capital structure, pecking order theory, speed of adjustment

In maximizing its value, the manager should made a lot of critical decisions in order to make every single activities could add the value to the company. The decision making for capital structure is also have a significant role in financial management of the company, because of its impacts towards the risk and the level of rate of return for the shareholder. Deciding to choose more

funding from the debt will causing a heavy interest cost, decreasing profit, and pushing the income per capita, and the most important is it puts the company into a danger of bankruptcy. On the other hand, the conservative policy by using a lot of owner is equity could decrease the profit which is earned by the company on improving the rate of return to the shareholder where the higher compo-

Korespondensi dengan Penulis:

Riko Hendrawan: Telp. +62 22 201 1388/ +62 22 201 13887

E-mail: riko_hendrawan@yahoo.com

nent of equity causing a lower share per piece. A company should decide which one is the most suitable source of funding for every of its activity to maximize the value of the company.

The funding decision of a company could be explained by the capital structure theory. In a company, a capital structure is the amount of specific mixed between debt and equity of a company to fund its operational activities. The theory about capital structure was firstly introduced by Modigliani & Miller (1958), the basic theory is that the value of a company is not influenced of the capital structure of the company (assuming that there is no tax, no bankruptcy cost, no asymmetric information, and is running on an efficient market). Moreover, on the next period, there are some prove that appear and state that the theory is not relevant to explain the capital structure from the company which is on the real market structure. There are three theories that are usually being used to explain the capital structure of the company, *pecking order theory*, *market timing model*, and *static trade off*.

Those three theories are the theories that commonly used to measure the capital structure of one company. The pecking order theory predicts that the external equity is based as the last funding resource. Under the market timing theory, equity issuance are not necessarily more expensive than debt issue, and in the previous empirical capital structure literature the dynamic trade-off theory has found strong support and argues that firms do have a target which balances the costs and benefits leverage. But the key issues is how fast companies adjust their capital structure to achieve their target?.

Graham & Harvey (2002), concluded that 81 percent of company have target leverage for making decision on their capital structure. Fama & French (2002) and Lemmon *et al.* (2008), confirmed that company have capital structure adjustment around 17-30 percents. Huang & Ritter (2009) dis-

cussing about testing the theories of capital structure and estimating the speed of adjustment in the publicly traded U.S. firms. Output of this research found out that the speed of adjustment in US publicly traded firm adjusts in a moderate speed and the firms tend to fund a larger proportion of their financing deficit with net external equity when the expected equity risk premium is lower.

Tayo (2012) is explaining about the ongoing adjustment and reform efforts of Nigeria, and the recent crisis in the nation's capital market that have brought to the fore the importance of finding optimal adjustment path that will maximize the inter-temporal social welfare function of the country, subject to capital structure constraints.

Sunder and Myers Model

Sunder and Myers Model (1999), show the way how company fund its flow of funds deficit will be identified when during that moment the company needs the external source of funding whether it is from a debt or equity issuance. The authors will regress the flow of funds deficit towards the increase of the long term debt, the model will be shown as follows:

$$\Delta D_{it} = a_t + b_t DEF_{it} + \mu_{it} \dots \dots \dots (1)$$

Where the ΔD_{it} is the change in book debt as a percentage of beginning of year assets for firm I at the end of the fiscal year ending in calendar year t, and DEF_{it} is the change in assets minus the change in retained earnings as a percentage of beginning of year assets.

According to pecking order theory, it is stated that the equity issuance is the last option a company will choose as the source of funding, so that Sunder and Myers (1999) concluded that the most substantial portion from a debt can be explained by a flow of funds deficit variable. By as-

Test Of Speed Of Adjustment Towards the Capital Structure in Indonesia Telecommunication Industry

Riko Hendrawan & Dwipanca Adi Nugraha

suming that the theory was right then the coefficient value of a should be approximate to zero (0) and the coefficient of b should be approximate to one (1). Furthermore, as a majority the deficit funding will be more funded by the long term debt, otherwise if the b is approximate to zero the company will prefer to fund its deficit by using the equity issuance where this result will be far deviated from the pecking order theory.

Speed of Adjustment

Tayo (2012), the speed of adjustment can be formulated as:

$$SOA = \frac{LEV_{it}^* - LEV_{it-1}}{LEV_{it} - LEV_{it-1}} \dots \dots \dots (2)$$

Where:

SOA = Speed of Adjustment

LEV* = Target Leverage

LEV_{it} = Leverage of firm (i) at time (t)

-1 = Leverage of firm (i) at time (t) previous year

Tayo (2012). examines speed of adjustment of Nigeria listed firms to target capital structure. This study made use of panel data from secondary sources collated mainly from annual financial statements and reports of sampled companies quoted on the Nigerian Stock Exchange (NSE) over a study period of 10 years covering 2000-2009. Samples of 85 non-financial manufacturing listed companies were purposively selected for analysis. The findings of the study show that firms adjust toward target leverage at a moderate speed, with a half-life of 3.9 years for book leverage, even after controlling for the determinants of capital structure and firm fixed effects. However, if projects appear with much higher frequency, and if they need to be financed quickly, even this adjustment seems slow.

Mwangi *et al.* (2012) provide conflicting assessment about how firm choses their capital structures, with the trade off, pecking order and market timing hypothesis all receiving some empirical support. The study's objectives were to determine whether firms in Kenya have an optimal target leverage, whether an adjustment towards this target takes place and finally to ascertain the speed of adjustment towards this target leverage. Secondary data was collected from the records maintained at NSE. From these records financial statements for 12 years starting from the year 1999 to 2010, were extracted. Out of the 30 firms targeted, only 23 firms met the criteria of having complete data for at least ten years. Analysis was done using descriptive statistics together with a partial average however, a typical firm closes about 5.3% of the gap between the current and the desired leverage within one year. At this rate, it takes about 10 years to close half of the gap between a typical firms current and desired leverage ratios. The slow adjustment is consistent with the hypothesis that the other considerations such as market timing or pecking order outweigh the costs of deviating from the optimal leverage.

Mahakud & Mukherjee (2011), identify the determinants of adjustment speed to target capital structure for 891 Indian manufacturing companies over the period of 1993-94 to 2007-08. Using a dynamic panel data analysis and more specifically generalized method of moment's technique they found out that financial constraints, external financing cost, distress cost, ownership and macro-economic conditions affect the speed of adjustment to target capital structure significantly.

Getzman *et al.* (2010) providing an econometrically robust and geographically comprehensive analysis of the determinants of capital structure and the speed of adjustment towards the target capital structures in Asian Capital markets. The authors used a homogenous panel of 1301

companies with market capitalizations of at least 1 billion US Dollar, listed on fourteen Asian stock exchanges. Their main findings are based on GMM-estimation for the determinants of capital structure, respectively system-GMM-estimation for the speed of adjustment. Robustness is provided by a modification of the regression model as well as by reporting OLS and TSLS-estimations. They contribute to the existing literature by finding strong evidence that Asian companies pursue target capital structures during the period 1995-2009. The convergence towards target capital structures in Asian firms is estimated at a speed ranging from 27% to 39%, consistent with international evidence on the speed of adjustment to target capital structures. Additionally, their results provide evidence that industry-fixed effects do influence capital structure choices in Asia.

Drobetz & Wanzenried (2006) investigate the determinants of a time-varying optimal capital structure. Because firms may temporarily deviate from their optimal capital structure in the presence of adjustment costs, they also endogenize the adjustment process. In particular they analyze the effect of firm-specific characteristics as well as macroeconomic factors on the speed of adjustment to the target leverage. Our sample comprises a panel of 90 Swiss firms over the years 1991 to 2001. They found that faster growing firms and those that are further away from their capital structure adjust more readily.

METHOD

In conducting this research, the authors are taking the population from the listed telecommu-

nication company in Indonesia that was operating since 2006 until 2012. Panel Data regression is a model that combines the relationship of independent variable to its dependent variable by cross section and time series. The Hausman test is the test to find out whether the model of analysis is running on the common constant model, fixed effect model or random effect model. The fixed effect model indicates that the variables in the function are distinguished into some differences and the differences lied on each variable itself. The random effect model is the model of analysis that indicate the variables in the function are different but the difference lied on the external of the variable, that is why in the random effect model must using the dummy variable to help the result getting unbiased.

RESEARCH FINDINGS

Research Findings and Analysis

To do the statistical analysis to find out which method to be used, whether fixed effect or random effect method, the Hausman Test should be carried out.

Table 1. Hausman Test Result

Chi-Sq Statistic	3.860760
Chi-Sq d.f.	2
Prob.	0.1451

From the Table 1 above we can find out that the probability value of the Chi-sq is 0.1451. With 95% confidence level it means that the probability lies on the area that is failed to reject H0. It means

Table 2. Regression Result of Panel Data Model Sunder and Myers

	All Samples			
	Coef.	t-stat	Prob.	Significance
Constant	0.726119	2.887882	0.0079	√
b_{PO}	0.716165	2.532960	0.0180	√
b_I	-0.409712	-0.575820	0.5699	-

Test Of Speed Of Adjustment Towards the Capital Structure in Indonesia Telecommunication Industry

Riko Hendrawan & Dwipanca Adi Nugraha

the method that is going to be used in this model data analysis is random effect.

From the Table 2 above, we can find out the coefficient of the constant, pecking order, and also interest rate. The coefficient of interest rate can be used to explain the cost of debt for the long term debt. The increase of the interest rate will impact on the increase on the cost of debt. The raise of the cost of debt in the long term debt will decrease the intention of choosing the funding from it, so the negative value on the interest coefficient is already expected. But the interest rate does not significantly impact to the decision of funding using long term debt. From the above table we also can see that the coefficient value of pecking order, represented by *bPO*, is closer to zero and the constant value is closer to one. From the null hypothesis stated before, we can find out that the pecking order mechanism happened when the value of constant is closer to zero while the *bPO* closer to one.

It means that the result of analysis failed to reject the null hypothesis and can be concluded that the funding of the deficit in the telecommunication industry in Indonesia is more funded by using the equity issuance rather than using interest bearing debt. It means that the telecommunication industry in Indonesia is not following the pecking order mechanism.

To find out the differences between one and other company in the telecommunication industry so the analysis of the capital structure will be broken down into each of the company.

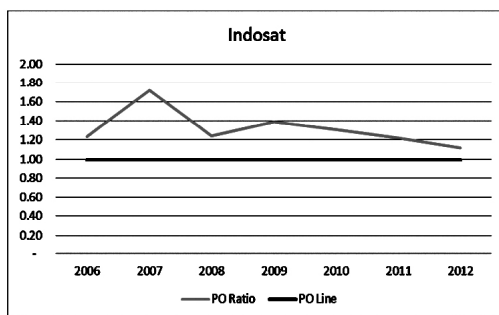


Figure 1. Indosat Debt over Equity Ratio

The above chart shows trend of the ratio of debt over equity ratio of Indosat between 2006 until 2012. The statistic shows a relatively stable trends even though it was slightly fluctuates in 2007 until 2009. The ratio of debt over equity of Indosat from 2006 until 2012 always lies over the pecking order line. It means that the pecking order mechanism was applied in this company.

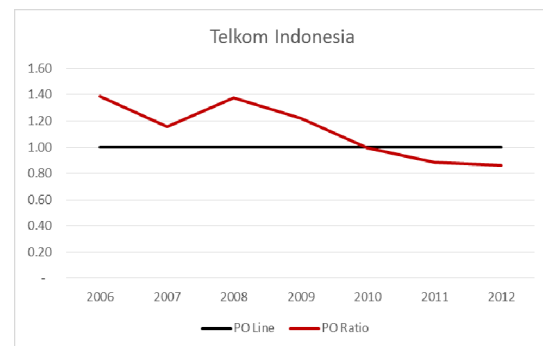


Figure 2. Telkom Debt over Equity Ratio

The above chart shows trend of the ratio of debt over equity ratio of Telkom Indonesia between 2006 until 2012. The statistic shows a declining trends with a slightly fluctuation in 2006 until 2009. The ratio of debt over equity of Telkom Indonesia in 2006 until 2009 always lies over the pecking order line. But the ratio is keep declining since then that in 2010 the value of the ratio reached below the pecking order line until 2012 hit its lowest point with 0.86. It can be concluded that Telkom Indonesia is not following the pecking order

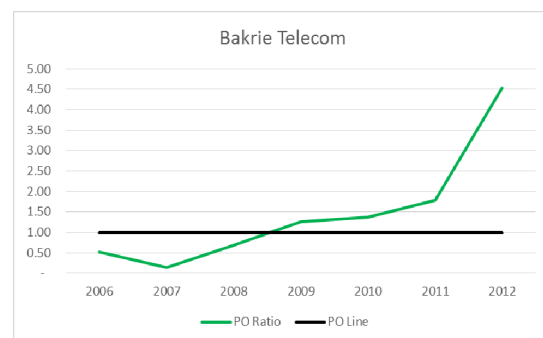


Figure 3. Bakrie Debt over Equity Ratio

mechanism since there are some results that lies below pecking order line which is not suitable with the pecking order theory.

The above chart shows trend of the ratio of debt over equity ratio of Bakrie Telecom between 2006 until 2012. The statistic shows an increasing or climbing trends with a slightly fluctuation in 2006 until 2009. The ratio of debt over equity of Bakrie Telecom in 2006 until 2008 always lies under the pecking order line. But the ratio is keep increasing since 2007 that in 2009 the value of the ratio reached over the pecking order line for the first time an significantly climbing until 2012 hit its highest point with 4.53 debt over equity. But, still it can be concluded that Bakrie Telecom is following the pecking order mechanism because during the observation all of the result lies over pecking order line.

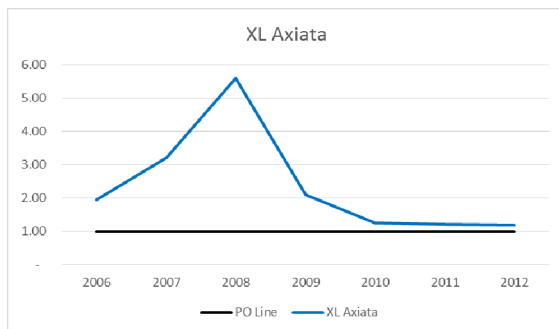


Figure 4. XL Debt over Equity Ratio

The above chart shows trend of the ratio of debt over equity ratio of XL Axiata between 2006 until 2012. The statistic shows a declining trends with a significant fluctuation in 2006 until 2009. The ratio of debt over equity of XL Axiata in 2006 until 2012 always lies over the pecking order line. It reaches its highest value in 2008 with 5.59 debt over equity. After reaching its highest point it keeps declining until 2012, but the ratio is still slightly above the pecking order line. It can be concluded that XL Axiata is following the pecking order mechanism since there are some results that is not suitable with the pecking order theory.

The speed of adjustment on telecommunication industry in Indonesia towards target capital structure obtained from Tayo (2012) formula, the results below:

Table 3. The Speed of Adjustment on Telecommunication Industry in Indonesia

SOA	Indosat	Telkom	Btel	XL Axiata
2006	-0.7040	24.8672	-	0.9206
2007	0.1675	1.2441	-	-0.0385
2008	0.8384	-0.2520	1.3294	-1.2270
2009	0.4591	1.8383	0.5898	1.1248
2010	0.9827	0.4765	-	0.1741
2011	-0.0159	-0.9525	-	-13.6262
2012	-0.8027	-8.0316	-	-21.9053
AVG	0.1322	2.7414	-	-4.9396

DISCUSSION

From the Table 3 above the speed of adjustment of Indosat during 2006 until 2012. In 2006 Indosat made a faster adjustment speed for 70.4% compared to the previous year. After that the adjustment speed fluctuated and getting slower for 16.75% in 2007, 83.4% in 2008, 45.91% in 2009, and 98.27% in 2010 which was the lowest adjustment speed during the period. In 2011 the SOA was getting faster for 1.59% and 80.27% in 2012 which was the highest adjustment point during the period. From the period of 2006 until 2012 Indosat made averagely 13.22% slower adjustment speed towards its capital structure.

The speed of adjustment of Telkom Indonesia during 2006 until 2012. In 2006 Telkom Indonesia made a greatly slower adjustment speed for 2486.72% compared to the previous year. After that the adjustment speed fluctuated for a bit and in 2007 the SOA was 124.41, 25.2% faster in 2008, and then getting slower again in 2009 for 183.83% and also 47.65% in 2010. In 2011 the SOA was getting faster for 95.25% and 803.16% in 2012 which was the highest adjustment point during the period. Telkom Indonesia made averagely 274.14% slower

Test Of Speed Of Adjustment Towards the Capital Structure in Indonesia Telecommunication Industry

Riko Hendrawan & Dwipanca Adi Nugraha

adjustment speed towards its capital structure which was the slowest adjustment among other companies.

The speed of adjustment of Bakrie Telecom during 2006 until 2012. In 2006 Bakrie Telecom made a faster adjustment speed for 43.71% compared to the previous year and then 74.7% faster in 2007. After that the adjustment speed fluctuated and getting slower for 132.94% in 2008, 58.98% in 2009. The highest adjustment speed marked in 2010 with 317.89% faster and 132.39% faster in 2011. In 2012 the speed of adjustment shows 82.59%. From the period of 2006 until 2012 Bakrie Telecom made averagely 65.62% faster adjustment speed towards its capital structure.

The speed of adjustment of XL Axiata during 2006 until 2012. In 2006 XL Axiata made a slower adjustment speed for 92.06% compared to the previous year and then 3.85% faster in 2007. After that the adjustment speed getting faster for 122.7% in 2008, 58.98% in 2009. The highest adjustment speed marked in 2010 with 317.89% faster and 132.39% faster in 2011. In 2012 the speed of adjustment shows 82.59%. From the period of 2006 until 2012 XL Axiata made averagely 493.96% faster adjustment speed towards its capital structure.

We found that the average adjustment of Indosat is 13.22%, Telkom Indonesia 274.14%, Bakrie Telecom for -65.62%, and XL Axiata for -493.96%. The fastest growth of the speed of adjustment showed by XL Axiata with -493.96% per year, and then Bakrie Telecom with -65.62%. Indosat and Telkom Indonesia show a different behavior with a slower speed of adjustment. Indosat with 13.22%, and Telkom Indonesia with 274.14% slower. From the analyzed data we can find out that most of the company adjust towards its target leverage at a faster speed.

The negative sign on the value of speed adjustment means that a company made a faster adjustment speed and the positive sign means a slower adjustment (Mahakud & Mukherjee, 2011)

and It is quite difference with the finding of Huang & Ritter (2009) that publicly traded firms in US adjusted to their target leverage at a moderate speed with a period of 3.9 years. This research also confirmed that the speed adjustment in Indonesian Telecommunication industry has different result with Fama & French (2002) and Lemmon *et al.* (2008).

CONCLUSION AND SUGGESTION

Conclusion

Through some sort of analysis and discussion that had been conducted, the conclusion that can be made to explain the capital structure behavior of telecommunication industry in Indonesia during 2006 to 2012 are as follows: (1) As seen on the result of analysis the telecommunication companies in Indonesia prefer to use equity issuance rather than long term debt. This is not following the pattern on the pecking order mechanism which is using the equity as the least option for source of funding. (2) The average adjustment of Indosat is 13.22%, Telkom Indonesia 274.14%, Bakrie Telecom for -65.62%, and XL Axiata for -493.96%. The fastest growth of the speed of adjustment showed by XL Axiata with -493.96% per year, and then Bakrie Telecom with -65.62%. Indosat and Telkom Indonesia show a different behavior with a slower speed of adjustment. Indosat with 13.22%, and Telkom Indonesia with 274.14% slower. From the analyzed data we can find out that most of the company adjust towards its target leverage at a faster speed. It is quite difference with the finding of Huang & Ritter (2009) that publicly traded firms in US adjusted to their target leverage at a moderate speed with a period of 3.9 years

Suggestion

The pecking order theory that was stated by Myers & Majluf (1984) is basically observed through the behavior of the governance of the

company. To get deeper understanding about the policy and the behavior about the capital structure it would be best to do a direct interview so that the result and the understanding about the goal of the existed capital structure would be well explained since the capital structure has many dynamic variables and each company put different concern to it.

For practical basis, this research shows that each company has different point of view to reach its capital structure, sooner the company adjust their capital structure, it will increase their firm value.

REFERENCES

- Drobetz, W., & Wanzenried, G. 2006. What Determines the Speed of Adjustment to the Target Capital Structure. *Journal of Finance*, 57(1): 1-30.
- Fama, E.F & French, K.R. 2002. Testing Trade-Off and Pecking Order Prediction about Dividends and Debt. *Review Financial Studies*, 54(4): 1-33.
- Getzmann, A., Lang, S., & Spremann, K. 2010. Determinants of the Target Capital Structure and Adjustment Speed - Evidence from Asian Capital Market. *European Financial Management Association, Asian Finance Symposium 2010 paper*, 1-31.
- Graham, J.R. & Harvey, C. 2002. How Do CFOs Make Capital Budgeting and Capital Structure Decisions? *Journal of Applied Corporate Finance*, 15(1): 8-23.
- Huang, R., & Ritter, J. R. 2009. Testing Theories of Capital Structure and Estimating the Speed of Adjustment. *Journal of Financial and Quantitative Analysis*, 44(2): 237-271.
- Lemmon, M.L., Robert M.R., & Zender, J.F. 2008. *Back to Beginning: Persistence and The Cross-Section of Corporate Capital Structure*. *The Journal of Finance*, 63(4): 1019-1043
- Mahakud, J., & Mukherjee, S. 2011. Determinants of Adjustment Speed to Target Capital Structure: Evidence from Indian Manufacturing Firms. *International Conference on Economics and Finance Research*, 67-71.
- Modigliani F. & Miller, M.H. 1958. The Cost of capital, Corporation Finance and The Theory on Investment. *The American Economic Review*, 48(3): 261-297.
- Mwangi, C. I., Anyango, O. M., & Ameyia, S. 2012. Capital Structure Adjustment, Speed of Adjustment and Optimal Target Leverage among Firms Quoted on the Nairobi Stock Exchange. *International Journal of Humanities and Social Science*, 3(2): 81-90
- Myers, S. & Majluf, S. 1984. Corporate Financing and When Firm Have Information That Investor Do Not Have. *Journal of Financial Economics*, 13: 187-221.
- Sunder, L.S. & Myers, S.C. 1999. Testing Static Tradeoff against Pecking Order Models of Capital Structure. *Journal of Financial Economics*, 51: 219-244
- Tayo, A. G. 2012. Speed of Adjustment towards the Target Capital Structure by Nigerian Listed Firms. *Journal of Emerging Trends in Economics and Management Sciences*, 3(5): 491-494