

TESTING ON PECKING ORDER THEORY AND ANALYSIS OF COMPANY'S CHARACTERISTIC EFFECTS ON EMITTEN'S CAPITAL STRUCTURE

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ABSTRACT

Pecking Order Theory (POT) states that hierarchy fundings based on the cheapest cost coming from internal fund, followed by external fund are needed to determine the capital structure. The research objectives were to examine the concept of POT in agriculture companies listed on Indonesia Stock Exchange in order to decide the capital structure policies as well as to analyse the effects of company's characteristics to the emitten's capital structure. The research used regression analysis with pooled least square (PLS) method in order to test POT, while the fixed effect model (FEM) was applied to analyze the effect of company's characteristics on capital structure. Regression analysis in evaluating pecking order theory's concept shows that internal funding deficit significantly gives positive influence to the change of long term debts. Regression analysis resulted from company's characteristics (profitability, size, growth, tangibility and liquidity) shows that the company's size and growth have significant positive effects on capital structure (leverage), whereas company's profitability and liquidity have significant negative effects on capital structure (leverage). By contrast, company's assets structure (tangibility) do not give significantly influence on capital structure (leverage) in 10% level of significance. The research shows that issuers in agricultural sector have implemented the concept of POT through the hierarchy usage of the cheapest financing from the internal as a priority followed by the external financing (debt).

Keywords: Pecking Order Theory, capital structure, company's characteristics, PLS, FEM

ABSTRAK

Pecking Order Theory menyatakan bahwa penentuan struktur modal yang optimal didasarkan pada keputusan pendanaan secara hirarki berdasarkan biaya modal yang paling murah yang bersumber pada dana internal, baru kemudian menggunakan sumber dana eksternal. Penelitian ini bertujuan menguji penggunaan konsep Pecking Order Theory pada emiten di sektor pertanian yang terdaftar di BEI dalam menentukan kebijakan struktur modal serta menganalisis pengaruh karakteristik emiten di sektor pertanian terhadap struktur modal. Penelitian ini menggunakan analisis regresi dengan metode pooled least square (PLS) untuk pengujian konsep Pecking Order Theory, sedangkan dalam menganalisis pengaruh karakteristik emiten di sektor pertanian terhadap struktur modal digunakan metode fixed effect model (FEM). Hasil pembuktian konsep pecking order theory menunjukkan bahwa defisit pendanaan internal berpengaruh positif secara signifikan terhadap perubahan utang jangka panjang. Sedangkan hasil analisis regresi antara karakteristik perusahaan (profitability, size, growth, tangibility dan liquidity) menunjukkan bahwa size dan growth memiliki pengaruh positif signifikan terhadap struktur modal, profitability dan liquidity memiliki pengaruh negatif signifikan terhadap struktur modal, dan tangibility tidak memiliki pengaruh yang signifikan terhadap leverage pada tingkat signifikansi 10%. Hasil analisis menunjukkan emiten di sektor pertanian telah mengikuti kaidah pecking order theory melalui jenjang pemanfaatan sumber pembiayaan dari urutan termurah yaitu pendanaan internal dan kemudian pembiayaan eksternal yang paling murah (utang).

Kata kunci: Pecking Order Theory, struktur modal, karakteristik perusahaan, PLS, FEM

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INTRODUCTION

The agricultural sector in Indonesia is one of the sectors with a strategic roles in national development. Natural resources richness and its diversity are considered as the aspect that boosts the role of agricultural sector in the national economic growth through its contribution to the national gross domestic product (Solahuddin, 2009). Agricultural industry is deemed quite promising. However, the risk of uncertainty makes it hard to obtain the access of funding sources from the financial institutions.

According to the loan portfolio data of commercial banks released by Bank Indonesia, it was found that the amount of lending from commercial banks for agricultural business was still low, with the average of 7,54% per year during the period of 2008–2013 (Bank Indonesia, 2014). Kuncoro and Yulianita (2012) stated that the leverage ratio trend in agricultural sector during the period 2001–2009 was declining. This indicates that the use of external funds through debt instrument is still low.

One of the fundamental and important problems faced by the company is capital structure determination. In order to fulfill the needs of funding, companies must be able to search for alternative funding sources through optimum capital structure policy. Martono and Harjito (2005) states that the optimum capital structure occurs when the specified capital structure can minimize the overall cost of capital usage or average capital cost. Company's capital structure can be seen by the composition of long-term debt, short-term debt, preferred stocks, and common shares used to fund the operations of the company.

Pecking order theory states that hierarchy fundings based on the cheapest cost coming from internal fund followed by external fund are needed to determine the capital structure (Myers, 1984). Pecking order theory assumes that company's funding decisions are based on logical preferences of investors on company's prospects, in which the management will be consistent on the company's goal to maximize shareholder's profit (Myers and Majluf, 1984). The utilization of pecking order theory by a company is considered as a signal from the management that the company has good prospects after optimizing the capital structure.

According to pecking order theory, companies will prioritize the fulfillment of internal funds derived from retained earnings. In regards to company's growth, it needs more funding from external sources, both from debts and shares. Funding needs fulfillment using debt instrument alone may increase the financial risks while, if the fund is filled from the sales of shares only, the company has to pay very expensive cost. Therefore, it requires a balance in using both funding sources.

Frank and Goyal (2003) states that internal funding deficit appears when the cash is insufficient to fund the activities of the company in the future. In addition, Sham-Sunder and Myers (1999) in his research found that internal funding deficit significantly affects the change of company's debt level moreover, companies will make loan from debt instruments. In this case, internal funding deficit will positively influence on the company's debt level.

Policies related to optimum capital structure for a company have been researched in many countries. Furthermore, this encourages researchers to analyze the use of pecking order theory in determining company's capital structure policy in agricultural sector. The influence of company's characteristics against the company's capital structure in agricultural sector was analyzed in this research as well, because the policy of the company's capital structure would directly affect on company's financial.

This research needed to be conducted in order to address the following problems: Do agricultural companies in Indonesia use the pecking order theory in determining the capital structure policies? What does the influence of corporate characteristics on the company's capital structure?

The research objectives were to prove the implementation of pecking order theory in determining company's capital structure policy. To analyse the influence of company's characteristics on the capital structure.

This study was limited to the analysis of companies in the agricultural sectors, listed on the Indonesia Stock Exchange (BEI) before 2009 and had financial reports fully published, during the period of 2009 to 2013. The framework used in this research is described in Figure 1.

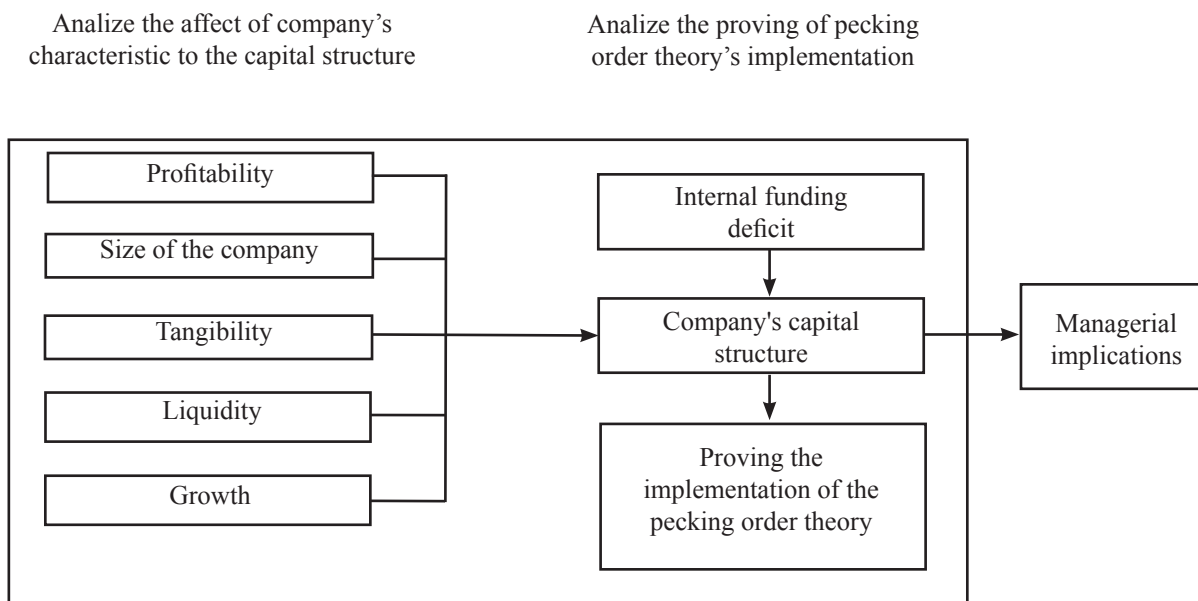


Figure 1. The research framework

METHODS

The data used in the research were secondary data, derived from agricultural emitten's financial reports from 2009 to 2013, comprising of balance sheets, cash flow reports, equity changes, profit/loss, and notes to the financial reports and other information supporting this research.

The research objects included twelve listed companies, namely PT Astra Agro Lestari Tbk; PT Gozco Plantation, Tbk; PT PP London Sumatra Indonesia Tbk; PT Sampoerna Agro Tbk; PT Sinar Mas Agro Resources and Technology Tbk; PT Tunas Baru Lampung Tbk; PT Bakrie Sumatera Plantation, Tbk; PT Central Proteinprima, Tbk; PT Dharma Samudera Fishing Industries Tbk; PT Inti Agro Resources, Tbk; PT Bisi International, Tbk; and PT Bumi Teknokultura Unggul, Tbk.

In terms of proving the pecking order theory implementation, the dependent variable was long-term debt changing (ΔLTD) and the independent variable was internal funding deficit (DEF). Meanwhile, to analyse the influence of company's characteristics on the emitten's capital structure, leverage (Lev) is used as a dependent variable and the independent variables included profitability, company size, growth, tangibility and liquidity. Measurement and hypotheses used in this research are described in Table 1.

The research used simple regression analysis for panel data. Processing and statistical data analysis were accomplished by Eviews 6, SPSS, and Microsoft Excel. The research model used to determine whether the implementation of pecking order theory had or had not been implemented was derived from an equation developed by Shyam-Sunder-Myers (1999), as follows:

$$\Delta LTD_{it} = \alpha_0 + \alpha_1 DEF_{it} + \epsilon_1$$

Information:

- ΔLTD_{it} : The magnitude of changes in long-term debt of issuers to-i in year t
- DEF_{it} : Internal funding deficit emitten to-i in year t
- α_0 : Constanta/intercept
- α_1 : Regression coefficient which is a coefficient pecking order theory
- ϵ_1 : Error term

This model was used to identify funding needs over the company's internal financing deficits. In these conditions the company will require external financing that can be either debt or equity issuance. Regression analysis will be conducted by the criteria: if the regression coefficient value of internal funding deficit is near to zero, the company uses the equity issuance for its funding deficit, and vice versa. Moreover, it means that the implementation of pecking order theory has not been proven within the scope of this research.

Table 1. Variables used in proving the concept of the pecking order theory and analysis of company's characteristics influencing the capital structure

Variables	Measurement	Hypothesis
A. Proof of concept pecking order theory		
Dependent Variables		
Long term changing	$\Delta LTD = LTD_{it} - LTD_{it-1}$	
Independent Variables		
Deficit cash flow	$DEF_t = DIV_t + X_t + \Delta W_t + R_t - C_t$	H1: internal deficit funding has positive significant influence on long term debt changing.
B. Analysis of effects on corporate characteristics to the level of debt		
Dependent Variables		
Leverage	$Lev = \text{Total Debt/Total Asset}$	
Independent Variables		
Profitability	$Pro = EBIT/\text{Total Aktiva}$	H2: Profitability has negatively influenced the capital structure
Company size (Size)	$Size = \ln(\text{sales})$	H3: Size has positively influenced the leverage
Company growth (Growth)	$Gro = \% \text{ change in total assets}$	H4: Growth has positively influenced the leverage
Aktiva Structure (Tangibility)	$Tan = \text{Fixed Asset/Total Asset}$	H5: Tangibility has positively influenced the leverage
Liquidity	$Liq = \text{Current asset/Current liabilities}$	H6: Likuidity has negatively influenced the leverage

The research model used to determine the relationship between company's characteristics and level of leverage is as follows:

$$Lev_{it} = \beta_0 + \beta_1 PRO_{it} + \beta_2 SZE_{it} + \beta_3 GRO_{it} + \beta_4 TAN_{it} + \beta_5 LIQ_{it} + \varepsilon_2$$

Information:

- Lev_{it} : The amount of debt level from emitten to-i in year t
- α_2 : Constanta/intercept
- $\beta_2 - \beta_6$: Regression Coefficient
- PRO_{it} : Profitabilitas emitten to-i in year t
- SZE_{it} : Company size of emitten to-i in year t
- GRO_{it} : Company growth of emitten to-i in year t
- TAN_{it} : Tangibility of emitten to-i in year t
- LIQ_{it} : Liquidity of emitten to-i in year t
- ε_2 : Error term

The research used some classical assumption test that must be fulfilled before doing the regression analysis including normality test, autocorrelation test and test heterokedastisitas to produce BLUE (Best Linear Unbiased estimators) (Gujarati, 1993).

Statistical criteria test was conducted through several tests including t test to know whether each independent variable partially affected the independent variable. F test was conducted to see whether the independent variables simultaneously generated significant effects on the dependent variable, and Test Coefficient of Determination (R^2) to analyse how far the independent variable was able to explain the diversity of dependent variable. R^2 was used to measure successful level of regression models used to predict the value of dependent variable.

RESULTS

The Proof of Pecking Order Theory's Concept

The results of model estimation using pooled least square (PLS) showed that the independent variable (internal funding deficit) had a positive significant influence on long-term debt changeing. It is evident from the t-statistic probability value (0,0000) which was less than the value of alpha (5%) (Table 2). The regression equation in regression analysis proved the pecking order theory, is as follows:

$$\Delta D_{it} = -20271 + 0.37118 \text{ DEF}_{it}$$

The equation showed that if the regression coefficient value of each variable was considered to be zero, the magnitude of changes in the company's long-term debt would decrease by Rp20.271. Moreover, Table 2 showed a R² value of 0,6814. Indicating that the model is able to explain the diversity of variables used in the model i.e 68,14% and 31,86% was explained by other variables.

Table 2. Results of model estimation method of Pooled Least Square (PLS)

Variable	Coefficient	t-stat	Prob
Constanta	-20.271,94	-1,1471	0,2560
DEF	0,3712	11,1400	0,0000 (*)
R ²	0,6814	F-stat	124,0997
Adj R ²	0,6760	Prob (F-stat)	0,0000

Information: (*) significant at the level $\alpha = 0,05$

F-test was used to determine influence of independent variables on the dependent variable. F-statistic value was equal to 124,0997 with a probability value of 0,000 smaller than alpha ($\alpha=5\%$). This means independent variables had significantly influenced the dependent variable. Meanwhile, t-statistic showed that the value of the variable DEF was 11,140 and probability value (0,0000) was less than alpha ($\alpha = 5\%$) indicating. That the internal funding deficit (DEF) had a significant positive effect on long-term debt changing (Delta LTD) at the significance level of 5%. This is consistent with the initial hypothesis that internal funding deficit had a significantly positive effect on long-term debt change.

Some studies related to the pecking order theory showed different results, depending on the sample. The results are consistent with the research conducted by Ruslim (2009) which indicated that the variable of internal funding deficit had a significantly positive effect on the company's capital structure while Jibrán et al. (2012) showed that internal funding deficit was positively influential but did not show a significant effect on capital structure of non-financial companies listed on the Karachi Stock Exchange (KSE). The research conducted by Atiyet (2012) also showed that the internal funding deficit was positively influential but did not show a significant effect on capital structure of companies listed on the French stock exchange and incorporated in the SBF 250 Index in the period of 1999 to 2005. Hsu et al. (2013) in his study of multinational

and domestic companies in the USA also showed that both multinational and domestic companies applied the concept of pecking order theory in determining the funding structure of company, where companies tend to close their internal funding deficit by using debt.

Company Overview

Debt to equity ratio (DER) is the ratio of debt to company equity that demonstrates the power of company owner to cover the obligations from outside parties. The level of debt in company's capital structure is very important in measuring corporate risk, because debt will lead the company to the interest payments and periodically principal payments. The average DER of agriculture companies during the period of 2009 to 2013 was 2,16% –1437,67%.

SMAR, TBLA, UNSP, CPRO and DSFI are emitten with DER value of more than 100%. CPRO is emitten with the highest average DER value per year compared to other companies in the agricultural sector, accounted for 1437,67%, which means that the company's capital derived from debt is 14,38 times larger than that coming from equity.

In contrast, AALI, GZCO, LSIP, SGRO, IIKP, BISI and BTEK are emitten with DER value of less than 100%. IIKP is emitten with the lowest average DER value per year compared to other emitten in the agricultural sector, accounted for 2,16%, which indicates that the company's capital derivedng from debt is lower than that coming from equity (Figure 2).

Leverage ratio of agricultural emitten listed on the Stock Exchange tended to increase during the period of 2009 to 2013. Indicating that there were yearly additions of emitten debt level during the period of 2009 to 2013. This condition also illustrates that the level of confidence from banking sector or lender to the emitten in the agricultural sector is higher.

As stated by Andati et al. (2012), banking credit is an investment decision effecting the value of company. This condition the concern by company's management in determining the company's capital structure. CPRO, DSFI and UNSP were three emitten with the highest average leverage ratio accounted for 0,81, 0,74 and 0,57 respectively while, IIKP emitten is the emitten with the lowest leverage ratio (0,024) as seen in Figure 3.

The Effects of Company's Characteristics on Capital Structure

Results of model estimation using Fixed Effect Model (FEM) can be described in Table 3. Base on Table 3, profitability and liquidity have probability value of t-statistic less than the value of alpha ($\alpha = 10\%$), so it can be concluded that the profitability and liquidity had a significant negative effect on the capital structure (leverage) while the size of the company (size) and growth (growth) had a significant positive effect on the capital structure (leverage). Meanwhile, the structure

of assets (tangibility), had a probability of t-statistic greater than the value of alpha ($\alpha = 10\%$), so that the structure of assets (tangibility) did not have a significant effect on the capital structure (leverage).

The regression equation between company's characteristics and the capital structure (leverage) is as follow:

$$\text{Lev}_{it} = -1,112 - 0,427\text{PROF}_{it} + 0,107\text{SIZE}_{it} + 0,198\text{GRO}_{it} + 0,083\text{TAN}_{it} + 0,004\text{LIQ}_{it}$$

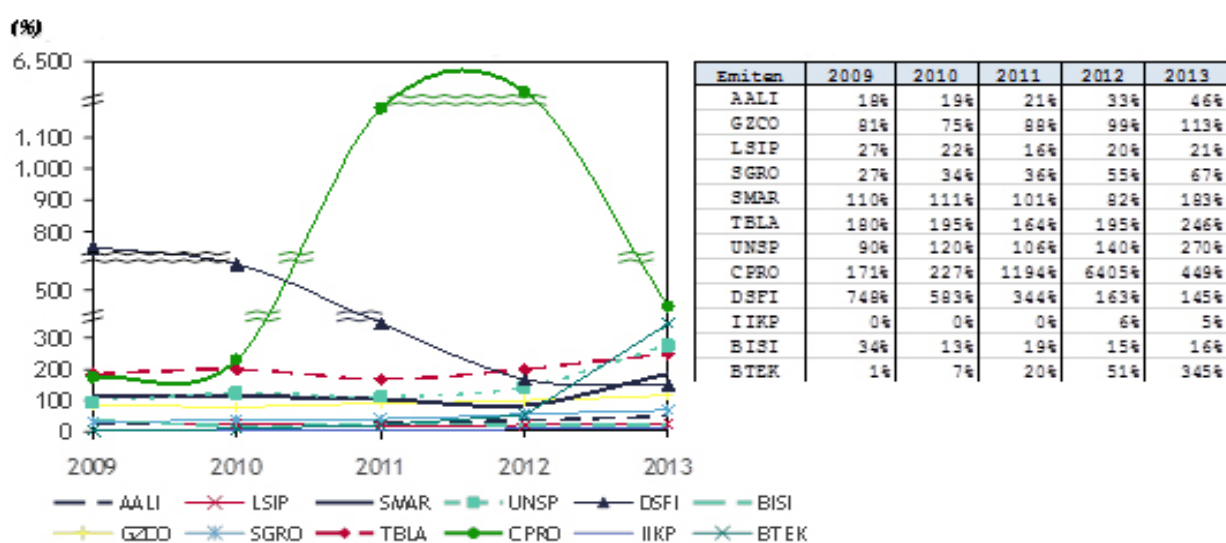


Figure 2. Debt to equity ratio in agricultural companies from 2009 to 2013

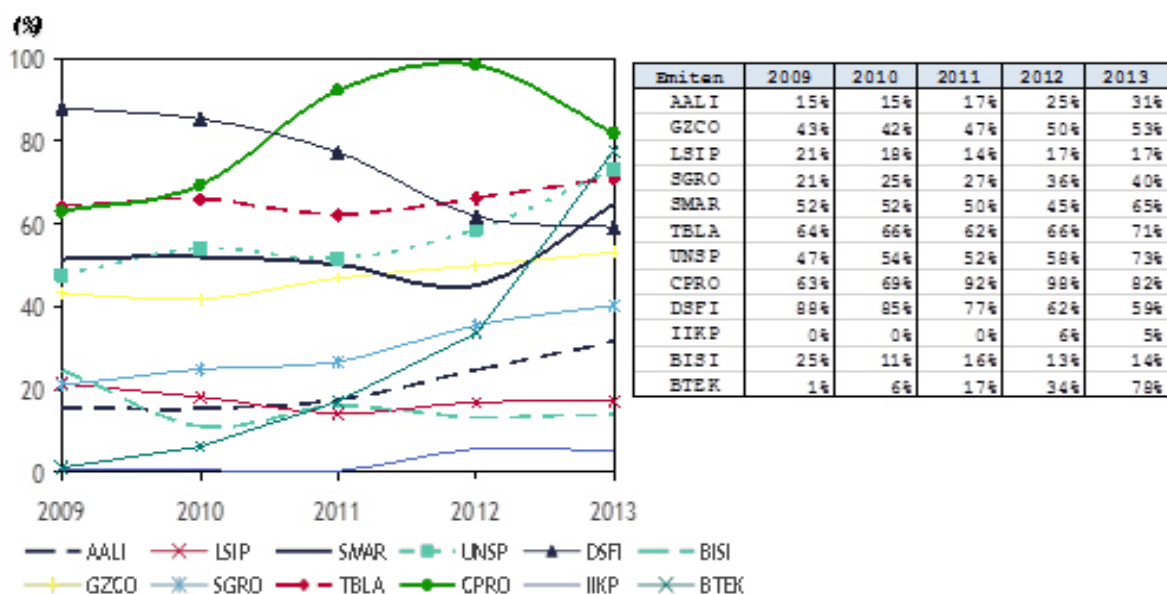


Figure 3. Debt-to-Asset Ratio (DAR) 2009–2013 agricultural sector issuers

Table 3. Results of descriptive statistics using a fixed effect model

Variable	Coef	t-stat	Prob
Constanta (C)	-1,1123	-1,5611	0,1258
PRO	-0,4267	-3,2753	0,0021**
SZE	0,1072	2,1955	0,0336**
GRO	0,1979	1,9679	0,0555*e
TAN	0,0830	0,3171	0,7527ee
LIQ	-0,0039	-1,9073	0,0632*e
R ²	0,9004	F-stat	24,3076
Adj R ²	0,8634	Prob (F-stat)	0,0000

Information:

*significant at the level $\alpha=0,1$;

** significant at the level $\alpha=0,05$

The equation indicates that if the value of the regression coefficient of each independent variable is considered to be zero, then the magnitude of debt level (leverage) in agricultural sector will decrease of by 1,112. R-squared value of 0,9004 indicates that the model used is able to explain the variance in the model, with independent variables of 90.04% and the rest of 9,96% is explained by other variables outside the model. F-test shows the value of 24,308 and probability value of 0,0000 (less than the value of alpha ($\alpha=10\%$)). This means independent variable are significantly influenced by dependent variable.

Some researches analysing the influence of company's characteristics on capital structure policy showed different results, depending on the sample used in the study. Hossain and Ali (2012) that used a sample of 39 companies listed on the Dhaka Stock Exchange

during 2003–2007 shows that profitability, tangibility, liquidity, and managerial ownership have significant negative effect on leverage, while the growth opportunity and non-debt tax shield have significant positive effects on leverage. Furthermore, Pahuja and Sahi (2012) indicates that liquidity and growth have significant positive effect on the determination of company's capital structure, while size, profitability and tangibility do not have significant effects on the determination of company's capital structure. Interestingly, Seftianne, and Hand (2011) studied about manufacturing companies listed on Indonesia Stock Exchange in the period of 2007 to 2009 and their results indicate that growth opportunity has significantly negative effect on the company's capital structure, and variable size has a positive effect on the company's capital structure while variables such as profitability, liquidity, business risk, asset structure, and managerial ownership have no significant effects on company's capital structure.

In Comparison between company's earning after tax and total debt agricultural emitten from 2011 to 2013 (Figure 4), there is a tendency for agricultural companies to increase the company's debt when the profit has decreased, and when the profit of the company has increased the amount of company's debt decreases. This is relevant with the studies showing that profitability has a significant negative effect on leverage. It occurs because when the company applies the concept of pecking order theory induring the period of internal funding deficit, it will use its funding sources derived from the debt.

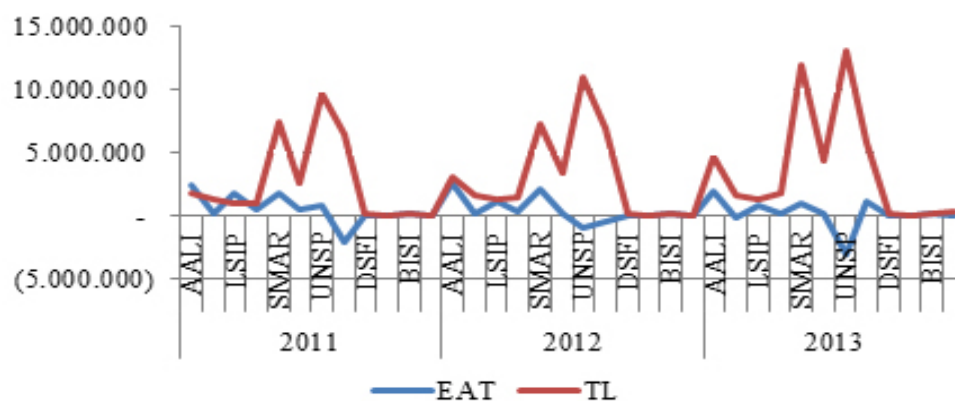


Figure 4. Earnings after tax and total debt of agricultural emitten

Base on the description of comparison between sales used in determining the variable size, the higher level of sales will be followed by the rising debt of the company. Companies with their highest will require greater capital and increase of investment in order to meet the production capacity. Therefore, companies applying the concept of pecking order theory will choose external sources of financing to fulfill capital needs and investment when internal funding sources are insufficient.

Managerial Implications

Base on the analysis in proving of pecking order theory and analysis of company's characteristics influence capital structure, a number of managerial implications for corporate managers, investors and potential investors, as well as banks and other financial institutions can be formulated, as follows: (1) for the managers of agricultural companies, the results of this study indicate that the company has followed the rules of the pecking order theory which utilize the cheapest sources of funding to fulfill corporate financing. However, company also needs to consider the sources of debt financing exceeding the equity, because financial distress will be appearing in the future. It happens because the debt interest will burden the company, so that the company will undergo financial difficulties leading to bankruptcy or default; (2) The company will also have to be concerned with the characteristics of the company such as profitability, size, growth and liquidity which have significant influences on the capital structure and tangibility has not significant effects on capital structure. Positive and negative influences of these characteristics should also be known by managers in order to maximize the company's capital structure to achieve efficiency of capital cost (3) for investors and potential investors, the research gives a description of the company's capital structure in agricultural sector. There were seven listed companies with the value of debt to equity ratio above 100% in 2013 (SMAR, UNSP, CPRO, TBLA, GZCO, BTEK and DSFI) and five other emittens with the value of debt to equity ratio below 100% (AALI, LSIP, SGRO, IIKP and BISI). Investors are able to get information on emittens with theirs potentials to grow and risk of default.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The results of regression analysis in proving the pecking order theory indicates that the internal funding deficit has a significantly positive effect on the company's long-term debt changing. This indicates that in determining the company's capital structure policy, agricultural companies have implemented the concept of the pecking order theory; results of regression analysis on the company's characteristics (profitability, size, growth, tangibility and liquidity) by using a fixed effect model shows that at the 10% significance level, profitability and liquidity have a significantly negative effect on the capital structure (leverage), and size and growth have significantly positive effects on the capital structure (leverage), while the tangibility has not significant effects on the capital structure (leverage).

Recommendations

Some suggestions that can be used as a reference for subsequent scientific writings related to the proof of pecking order theory and the relationship of company's characteristics to the company's capital structure, are as follows; (1) the emittens management in the agricultural sector is advised to keep on following the rules of pecking order theory by using fund from the cheapest source and tax savings. However, management is expected to be cautious with the increasing debt because it can increase the risk of default; (2) in order to establish a good policy on the company's capital structure, management needs to control the characteristics of particular factors of profitability, size, growth, tangibility and liquidity; (3) the Indonesian government institutions should establish a regulation in requiring financial institutions, both banks and non-state owned banks (BUMN) to delivering business credit for agricultural sector in a particular portion; (4) regard to obtain more comprehensive research related to pecking order theory proving, further research can be conducted by using other data of agricultural companies that have not been listed on Indonesia Stock Exchange or other industrial companies as comparison; (5) the results of the study shows that variable characteristics of company is only able to explain the variety in models of 90,04%. Therefore further research can be conducted with the addition of other variables, such as the addition of external variables, in order to see how far these variables affect the capital structure.

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