RESEARCH ARTICLE

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Equity Market Price and Its Effect on Capital Structure and Equity Issue

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Equity market timing is one of several theories of capital structure. Equity market timing refers to the practice of issuing shares at high prices and repurchase it at low prices. The purpose of this study is to examine whether the equity market timing has an effect on capital structure. The sample in this study is non-financial companies listed on the Indonesian Stock Exchange over the period of 2001 to 2011. The research model used in this study is a distributed-lag regression model. This model uses current period as dependent variable and lagged (past period) as independent variable. The first hypothesis of this study is lagged equity market price has a negative effect on capital structure. The second hypothesis is lagged equity market price has a positive effect on equity issue. The lagged variable is used to measure the lagged equity market prices and leverage is used to measure capital structure. With panel data, hypothesis test results show that lagged market-to-book ratio has a negative effect on change of leverage. Thus, when lagged equity market price increase leverage will decrease. The next result, shows that lagged market-to-book ratio has a positive effect on net equity issue. When lagged equity market price is high, leverage will decrease due to equity issuance. Therefore, based on these results, it can be concluded that the equity market timing has a short run effect on the firms' capital structure in Indonesia.

Keywords: Equity Market Price, Capital Structure, Equity Issue, Short Run Effect.

1. INTRODUCTION

Equity market timing is one of several theories of capital structure. Equity market timing theory is different from the previous two capital structure theory, which are trade-off theory and pecking order theory. Equity market timing demonstrates the practice of issuing shares equity when the price is high and repurchase it when the price is low.[1] It indicates that firms tend use the temporary fluctuation of equity price, which is relatively less expensive rather than the other type of financing. In an inefficient or segmented stock exchange, market timing is beneficial for the stockholders when investor is buying or reselling stock in the stock exchange. When the managers think and concerning about the stockholders, they will have an incentive to allow market timing on the firms finance decisions.[1]

There is a methodology that introduces the short-run effect caused by lagged/past phenomenon.[2,3] The methodology plays an important role in economics. Moreover, it describes three factors of lag usage, which are psychological factor, technology factor, and institutional factor. The psychological factor refers to a condition when people do not change their consumption habit all of a sudden to cope with either price decreases or income increases. The technology factor can be illustrated as the condition when the assets (technology) are relatively cheaper than manpower, it is economically possible that the assets (technology) could substitute manpower. Nevertheless, the substitution would require some time which will cause a lag. The institutional factor refers to contractual obligation which could hinder to intervene firm decision to immediately replace their resources with other resources. These factors could be used to analyze the effect of market timing equity on leverage or capital structure.

In Indonesia, there are several studies about the effect of market timing on capital structure of firms, however the results are inconsistent. A study shows that firms in Indonesia do not follow the market timing theory in their finance management and do not consider the overvalued market-to-book ratio in issuing new stock,[4] but other studies, market timing in Indonesian firms has a negative effect on the change of leverage or firms' capital structure.[5] Despite the limited data, a study shows that the market-to-book ratio has a negative effect on capital structure of Indonesian firms.[6,7] Based on the argument above, the research question proposed on this research is whether lagged stock market price has negative effect on leverage which is caused by the equity issue. The results of this research will contribute in: (1) Theoretical, empirical, and practical benefits for firms management, investor, economic analyst, and academician that will explain which capital structure theory applies on Indonesian firms, and (2) Science development especially about market timing theory work mechanism on capital structure. Based on the research question, the literature review and hypothesis development, which is presented below, is related with market timing and its short run effect on firms' capital structure.

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2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

In order to understand equity market timing and its effect on capital structure, through the possible negative effect of lagged equity market price on capital structure which is caused by the equity issuance, there are two developed hypothesis in this research. The research model used in this study is a distributed-lag regression model. This model uses current period as a dependent variable and lagged (past period) as an independent variable.[2] The lagged used in this research is one year lag. Currently, the distributed-lag model is intensively used in econometric analysis and plays an important part in economic analysis.[3] Moreover, there are three underlying factor about lag usage, which are psychological factor, technology factor, and institutional factor.

Before equity market timing theory exists, firms with high market-to-book ratio often related with the high growth and capable of issuing equity or debt. In equity market timing, market-to-book ratio is used to represent the value (price) of stock equity. The study examines whether lagged equity market price affects capital structure, which is caused by equity issue as implication of market timing.[1] The capital structure is measured by change of leverage. The result shows that lagged equity market price has negative effect on the change of leverage. The tendency to issue equity is caused by the opportunity to obtain market timing benefit that leads to a decrease in firms' leverage after the equity issue.[8–11] Based on the argument above, this research propose the first hypothesis (H_1) as follow:

H_1: The lagged equity market price has negative effect on the capital structure.

The change ini leverage is equal to minus the change in equity divided by total assets $[(E/A)_t - (E/A)_{t-1}]$.[1,9] In additional to that minus $[(E/A)_t - (E/A)_{t-1}]$ is explained into three parts, which are:

(1) Decrease in net equity issued,
(2) Decrease in retained earnings, and
(3) Decrease in residual change on leverage.

The residual change on leverage depends on total assets growth which comes from the combination of equity issue, debt issue, and current retained earnings.[1] Based on the argument above, lagged equity market price has negative effect on leverage change, which is caused by the positive effect of lagged equity market price on equity issue.[1,9]

Therefore, we can elaborate it further that equity market timing also affects leverage in short-run, and then in the regression model, the first part of the above, net equity issue is used the dependent variable. The market-to-book ratio as the proxy of equity market price is hypothesized to have positive effect on net equity issue.[1,8–11] Based on the argument above, this research propose the second hypothesis (H_2) as follow:

H_2: The lagged equity market price has positive effect on the net equity issue.

Based on the background theory, literature review, and hypothesis development described above, the outline of this research design is summarized in a research model presented in Figure 1.

3. RESEARCH METHODOLOGY

The data used in this research is panel data. The sample in this research is 246 firms registered in Indonesia Stock Exchange from 2001 to 2011, which excludes finance firms. The sample is chosen using non-probability sampling and using purposive sampling in form of judgment sampling.[12] Variables, operational definition, notation and variable formulas used in this research are described as follows:

1. Leverage

Capital structure is measured by leverage. This is the main variable because every market timing test is conducted to understand the effect of equity market timing on capital structure or leverage. This variable is mainly used as dependent variable. While firms add more equity, its leverage will decrease and vice versa.[1] The leverage in this research is measured using book leverage (BL) as the ratio of total book debt (D) divided by total assets book (A). Book debt is calculated by adding long-run debt to the current debt. Book total assets is defined as the sum of total book debt (D) and total book equity (E). Equity book is the equity of shareholders and retained earnings presented in the balance sheet. The lagged book leverage (leverage on $t-1$) is used as control variable to test the short and long run effect of equity market timing on capital structure. The lagged leverage

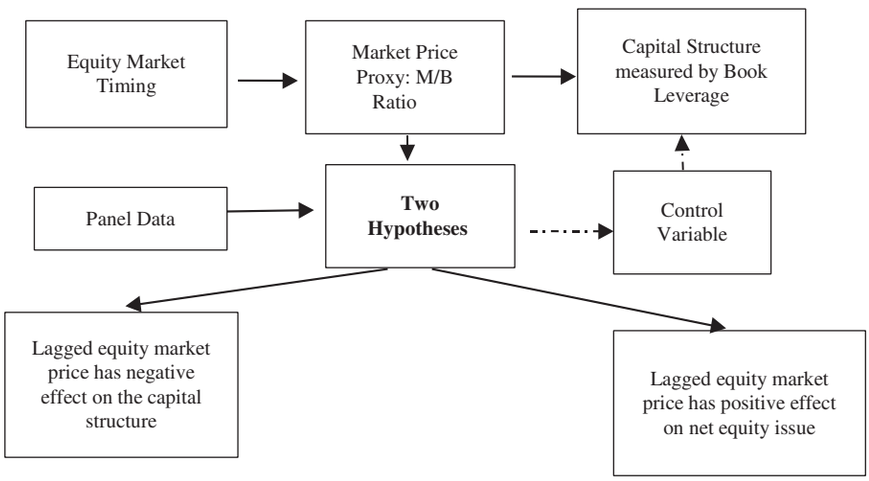

Fig. 1. Research Model consists of two hypotheses. The first hypothesis (H1), H_1: Lagged equity market price has negative effect on capital structure, and the second hypothesis (H_2): Lagged equity market price has positive effect on net equity issue.

has negative effect on the change of capital structure or present leverage (t period).[1,9]

2. Market-to-Book Ratio

The lagged market-to-book ratio (M/B ratio) as the lagged equity market price value is used to test the short-run effect of equity market timing on capital structure. The notation of M/B ratio is (M/B). M represents the equity market value and B represents the equity book value.

3. Net Equity Issue

In order to test market timing, net equity issued is required as the dependent variable regarding the short-run effect test of equity market timing on capital structure. This variable is defined as (e/A), the change in book value of equity minus the change in retained earnings (e) and divided by total assets (A). The lagged M/B ratio has positive effect on net equity issue.[1,8,9]

4. Asset Tangibility

Asset Tangibility is net plant, property, and equipment divided by total assets (PPE/A). Lagged PPE/A is expected to have positive effect on capital structure because it could be used as collateral for debt.[13] In the hypothesis test model, lagged PPE/A is used as control variable.

5. Profitability

Profitability refers to earnings before interest, taxes, and depreciation, divided by total book assets (EBITDA/A). Lagged EBITDA/A is expected to have negative effect on capital structure, which is in accordance with the pecking order theory.[13–15] In this research, lagged EBITDA/A is used as control variable.

6. Size

Size is measured by the log of net sales (log S). This variable is expected to have positive effect on capital structure so that it could be the proxy to decrease the loss and probability failure.[13] This variable is used as control variable.

Lagged equity market price is measured by lagged market-to-book ratio. H_1 test model use the change of book leverage as dependent variable ($BL_{i,t}$–$BL_{i,t-1}$) and H_2 test model use net equity issue ($e_{i,t}/A_{i,t}$) as dependent variable. The distributed lag model in this study is a model for panel data in which a regression equation is used to predict current values of a dependent variable based on the lagged (past period) values of this explanatory variable.[2] With panel data model, the model of regression equations are as follows:[1,9]

$$BL_{i,t} - BL_{i,t-1} = \alpha_0 + \alpha_1\left(\frac{M}{B}\right)_{i,t-1} + \alpha_2\left(\frac{EBITDA}{A}\right)_{i,t-1} + \alpha_3 \log(S)_{i,t-1} + \alpha_4\left(\frac{PPE}{A}\right)_{i,t-1} + \propto_5 BL_{i,t-1} + \epsilon_{i,t} \quad (1)$$

H_1 test model will be statistically supported if $\alpha_1 < 0$.

$$\left(\frac{e_{i,t}}{A_{i,t}}\right) = \alpha_0 + \alpha_1\left(\frac{M}{B}\right)_{i,t-1} + \alpha_2\left(\frac{EBITDA}{A}\right)_{i,t-1} + \alpha_3 \log(S)_{i,t-1} + \alpha_4\left(\frac{PPE}{A}\right)_{i,t-1} + \propto_5 BL_{i,t-1} + \epsilon_{i,t} \quad (2)$$

H_2 test model will be statistically supported if $\alpha_1 > 0$.

4. RESULTS AND DISCUSSION

There are three panel data regression estimator, such as, common effect, fixed effect, and random effect. Through Restricted F test and Hausman test, the best and chosen estimator for H_1 and H_2 is fixed effect.

The summary of regression result with fixed effect to test H_1 is presented in Table I. The table presents the regression result of H_1 test with book leverage change as the dependent variable. The regression coefficients of lagged M/B ratio, lagged EBITDA/A, lagged log (S), lagged PPE/A, and lagged BL are respectively −0.00644, −0.08592, −0.02633, 0.00615, and −0.2970. Based on t test result, by significance level of 5%, the regression coefficients that is statistically significant are lagged M/B ratio, and lagged BL. By significance level of 10%, the regression coefficient that is statistically significant is lagged EBITDA/A.

The H1 t-test result based on lagged M/B ratio regression coefficient shows that statistically the lagged M/B ratio has negative effect on the change in book leverage, because the variable has a p-value of 4.04%, which is smaller than significance level of 5%. The first hypothesis which states that equity market price, which represented by lagged M/B ratio, has negative effect on the change of book leverage, is statistically proven and significant. The other independent variables other than lagged M/B ratio are control variable. Based on t test result, the control variables regression coefficients which are significant statistically are lagged EBITDA/A, and lagged BL. As the coefficient of lagged EBITDA/A is negative (−0.08592), it means that when lagged EBITDA increases, book leverage decreases. Based on pecking order theory, the decrease of book leverage is mainly because when lagged EBITDA increase, retained earnings will also increase, and vice versa. The coefficient of lagged log of Net Sales (S) is negative (−0.02633), which means that when lagged log of Net Sales (S) increases, book leverage will decrease, and vice versa. The coefficient of lagged BL is negative (−0.2970), which means that lagged BL has negative effect on the book leverage change. With smaller sample, a research also finds that a negative effect of the lagged market-to-book ratio has a positive effect on the change in leverage on Indonesia firms listed in Indonesia Stock Exchange.[16] Their research results are relevant to this research.

Table I also shows the results of regression to test H2, with a net equity issue (e/A) as the dependent variable. In the fixed effect method is chosen, the regression coefficients of lagged M/B ratio, lagged EBITDA/A, lagged log (S), lagged PPE/A, and lagged BL are respectively 0.01160, −0.0350, 0.00201, −0.00360, and 0.07733. Based on t test, the lagged M/B ratio statistically has positive effect on the net equity issue, because the regression coefficient of the variable has a p-value of 0%, which is smaller than significance level of 1%e. Since H_1 is supported, it means that there is a negative effect of the lagged M/B ratio on the change in book leverage caused by the net equity issue.

On the regression formula, the independent variables other than the lagged M/B ratio are the lagged EBITDA/DA, the lagged log (S), the lagged PPE/A, and the lagged book leverage. Based on t test result, the p-value of regression coefficients of the lagged EBITDA/A is greater than significance level of 10% which is 42.45%. Therefore it indicates that the lagged EBITDA/A, statistically does not have significant effect on equity issue. The p-value of regression coefficient of the lagged log (S) is 83.71% which is greater than significance level

Table I. This table presents the regression estimation result summary with panel data to test H_1 and H_2. There are three panel data regression estimator, such as, common effect, fixed effect, and random effect. Through Restricted F test and Hausman test, the best and chosen estimator for H_1 and H_2 is fixed effect. The probability value on t test is that *** = supported statistically on 1% significance, ** = supported statistically on 5% significance, and * = supported statistically on 10% significance. The +/− coefficient marks show the expected sign of regression coefficients.

	H_1 test fixed effect			H_2 test fixed effect		
Independent variable	Coef. mark	Coefficient (α)	Probability value	Coef. mark	Coefficient (α)	Probability value
Constant		0.29907	0.0000***		−0.04465	0.4232
$(M/B)_{i,t-1}$	−	−0.00644	0.0404**	+	0.01160	0.0000***
$(EBITDA/A)_{i,t-1}$	−	−0.08592	0.0943*	−	−0.03650	0.4245
$(LOG\ S)_{i,t-1}$	+	−0.02633	0.0166**	−	0.00201	0.8371
$(PPE/A)_{i,t-1}$	+	0.00615	0.6747	−	−0.00360	0.7826
$(BL)_{i,t-1}$	−	−0.29700	0.0000***	+	0.07733	0.0003***
Adjusted R^2		0.12475			0.05723	
Statistical F		2.43484	0.0000***		1.60996	0.000212***
Observation number		1,058			1,058	

of 10%, it means that it is statistically does not have significant effect on equity issue. Moreover, the t test result for the p-value of the lagged PPE/A is 78.26% which is greater than significance level of 5% and 10%. Thus, it can be concluded that the lagged PPE/A does not have significant effect on equity issue statistically. Lastly, the p-value of regression coefficient for the lagged BL is 0.03% which is smaller than significance level of 1% and it has a positive sign as expected. It means that it is statistically has a significant positive effect on equity issue.

The H2 test result is consistent with results of previous studies.[1,8,9,11,17] In overall, the results of this result show that H_1 and H_2 are statistically significant. When the lagged M/B ratio is high, firms' leverage decreases because of the net equity issued by firms. Therefore, based on the test result, it could be concluded that equity market timing has a short-run effect on leverage or capital structure.

In regards to the research purpose, robustness test is conducted by adding independent variable, retained earnings, which also used as control variable.[1] Through Restricted F and Hausman test, the best and chosen estimator is fixed effect method. Even when the lagged RE/A is added as control variable, based on t test result, the lagged M/B ratio as regression coefficient remains statistically significant since its probability (p-value) is 0% which is smaller than significance level of 5%. Hence, H_1 and H_2 test results are robust.

5. CONCLUSION

The results of this research could be concluded as follows: First, the results show that the lagged market price represented by the lagged market-to-book ratio has negative effect on the change in leverage. H_1 is supported which means that when the lagged equity market price increases, it caused the leverage to decrease, and vice versa. Second, the results show that the lagged market price has positive effect on the net equity issue which indicates that the negative effect of the lagged equity market price on the change in leverage is triggered when firms do funding by issuing net equity. H_2 is supported which means that when the increase in lagged equity market price is proven to be the trigger of the decrease of leverage by net equity issue. The decreasing of leverage means that the proportion of debt on total assets will decrease as well. Therefore, based on these results, it can be concluded that the equity market timing has a short run effect on the firms' capital structure in Indonesia.

Based on the results of this research, researcher provide a suggestion to academician for future research development. This research does not examine whether market timing has long-run effect on firms' capital structure in Indonesia. In order to obtain more comprehensive insight about equity market timing and its effect on firms' capital structure, for future research, a research which examine historical equity market price and its effect on capital structure of firms in Indonesia is needed.

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