

## Stock Price Model in Manufacturing Companies

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### ABSTRACT

This study aims to analyse and answer the phenomenon of Stock Price (SP) with its determinants; Return On Assets (ROA), Dividend Pay-Out Ratio (DPR), Firm Size (SIZE) and Leverage (DER). The model of this study formula is a theoretical framework to find out the factors that influence SP through DER. First model results; ROA has a significant effect on DER. The same results also apply to SIZE, while DPR has no significant effect on DER. The results of the second model; ROA has a significant effect on SP. The same results also apply to SIZE, but they are negatively correlated. The results are different for DER and DPR, both of which have no significant effect on SP so that DER as an intervening variable does not function to mediate SP. The most dominant or sensitive variable in the two research models occurs in ROA. This research can be used as a guide for capital market players in Indonesia to detect what will happen to SP if the variables in this research experience movement. The value of this research is that the SP model formulation via DER is not appropriate for the manufacturing sector.

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## **INTRODUCTION**

The company's main goal in the long term is to maximize the company's value as proxied by the share price. The higher the share price indicates the higher the level of welfare of the owner. The increase in the owner's welfare will be reflected in the increase in the value of the company in the market (Fama, 1978). According to Jensen (2001) to maximize the welfare of company owners, it is more about the value of their equity. Therefore, appropriate funding decisions are needed in order to maximize company value.

Funding decisions for companies are an important part of financial management because they will be related to other financial decisions, namely investment decisions and dividend policies and have an impact on company value (Fama and French, 1998). The company's decision to determine funding must receive important attention from management, because it involves how to obtain funds to finance investment and how to determine the optimal capital structure for the company related to internal or external funding sources. Therefore, the use of debt for determining company funding must also consider the company's internal financial factors and macroeconomic factors, so that the company's decision to manage capital structure can increase the welfare of company owners to manage the capital structure which is reflected in share prices.

There are several studies on capital structure and share value where the results of their research show that there is inconsistency between one researcher and another. The current study was conducted on the industrial sector on the Indonesia Stock Exchange to re-examine whether the results would be consistent with existing theory.

In the studies by Murni and Andriana (2007), Amirya and Atmini (2008) and Larasati (2011), there is a significantly negative correlation between dividend policy and capital structure, while the Masdupi study (2005) gives different results that there is a significant negative correlation between dividend policy and capital structure. significant with a positive correlation between dividend policy and the company's capital structure. Very different research results were produced by Sudarno (2006) that there was no significant effect between dividend policy and capital structure.

Other studies on dividend policy on firm value have been carried out by Wardhani and Marlyn (2005) and Wahyudi and Pawestri (2006) with the result that there is no significant effect between dividend policy on firm value. Hasnawati (2008) conducted different results with the result that there is a significant influence with a positive correlation between dividend policy and firm value. The same thing was produced by Suyati (2010), there was a significantly positive correlation to stock prices.

In Darminto and Manurung (2008), Soliha and Taswan (2002), Mulianti (2010), Susilawati, Agustina and Tin (2012) found that company size has a significant effect and is positively correlated to debt policy. In other words, the greater the company size, the higher the level of leverage. These results are very different in Arrayani (2003), Sudarno (2006), and Daulay (2009) which cannot explain the effect of company size on capital structure.

The results of another study conducted by Soliha and Taswan (2002) produced a significant effect with a positive correlation between firm size and firm value. Ediningsih and Nilmawati (2010) conducted different results with insignificant results between firm size and firm value.

In the study of Mayangsari (2001) and Susilawati (2004) it was found that the variable profitability significantly influences external funding policies with a positive correlation, while Santika and Sudiyatno (2011), Susilawati and Haryanto (2012), Agustina and Tin (2012) produce profitability has a significant effect with a negative correlation to debt policy, which indicates that the higher the profitability, the lower the leverage to avoid or reduce the level of risk.

Gitman's study (2004) suggests that the company's goal is not only to maximize profit, but to maximize wealth for shareholders as reflected in the increase in share price. The results from Rappaport (1986) show that profitability is an important and determining value driver in creating company value. Increased profitability can be achieved through economies of scale, reducing costs related to suppliers and distribution flows, and minimizing non-value-added overhead costs. Research conducted by Spivey and Macmillan (2000) states that the profitability or ability of a company to generate profits can significantly explain the value of shares. Other results by Skinner and Sloan (2000) also show that profitability can explain company value with a positive correlation. The same empirical findings were also produced by Cho and Pucik (2005), Ghosh (2007), Kalcheva and Lins (2007), Peyer, et al (2007), and Ye and Yuan (2008). While the study of Nurmala and Yuniarti (2007) found a significant negative effect of return on assets on stock prices. This is different from research conducted by Mukhtaruddin and Romalo (2007) which found an insignificant negative effect on stock prices.

Research on capital structure on company value, which includes share prices, has been carried out by several previous researchers, Soliha and Taswan (2002) could not explain company value. These results are different from Wahyudi and Pawestri (2006), Amirya (2008), Safrida (2008), and Mulianti (2010) who stated that there is a significant influence between capital structure and company value.

## **LITERATURE REVIEW**

Agency problems in companies arise due to the separation of ownership and management of the company. This separation allows the emergence of conflicts of interest between stakeholders as owners and company management as company controllers. Jensen and Meckling (1976) state the agency relationship as a contract in which a person or more and is referred to as the principle who employs other people referred to as agents to provide services for their interests. In Crutchley and Hansen (1989) it is clearer that the separation between the principal and the agent can occur because there are stockholders who are scattered in various places and do portfolio diversification. To make it easier for them to manage their business so as to delegate authority and decision making to company management or referred to as agents.

Company control by professional managers is expected to achieve the main goal of maximizing the prosperity of stockholders. In this way, management as an agent has the authority to make the best decisions that are profitable for the company owner. This is closely related to how management can increase stock price appreciation in the capital market and what determinants follow.

There are many things that determine stock prices, such as leverage. In the theory of irrelevant capital structure, Modigliani and Miller (1958) stated that assuming a perfect capital market, capital structure does not affect the stock price of a company, because in the previous investment determination, the investment funding cost between issuing shares was the same as using debt. Meanwhile, research conducted by Hirshleifer (1996) and Siglitz (1999) states that capital structure policy is irrelevant because financial markets are very complex.

A follow-up study by Modigliani and Miller (1963) included tax elements in the calculations. The results show that the use of debt is more profitable because the cost of debt is lower than the cost of shares, and there are tax benefits from using debt. However, companies must pay attention that determining the funding of companies that use sources of funds from large amounts of debt will lead to an increase in interest costs and credit instalments so that it will have an impact on increasing the risk of the inability of cash flows to cover the company's obligations. This is known as the Trade-off Theory which states that the use of debt will result in tax savings, but on the other hand it will cause financial distress.

Research conducted by Fama and French (1998), analysed the relationship between taxes, financing decisions and firm value, finding that debt does not provide tax benefits. However, companies using large amounts of debt will have a negative relationship between leverage and company profitability. This will have a negative impact on share appreciation in the capital market. The same thing was also produced by Megginson (1997: 306) that the determination of corporate funding financed from debt (leverage) is inversely related to profitability, because profitable companies have fewer loans.

In companies using greater debt in the company's capital structure will cause greater interest costs, so that the profit per share that becomes the right of shareholders is also greater due to income tax savings. In this case the company must be more careful in the decision to determine the funding of companies that use debt, because the amount of debt that is too high will pose a risk of financial distress so that the stock price will fall. Thus the use of debt is a trade-off between profits and taxes because the use of debt with the costs involved in it will have an impact on financial distress and have implications for the level of degradation in stock prices in the capital market.

In the Pecking Order Theory there is a hierarchy of funding selection related to the problem of transaction costs from those originating from external funding. This theory has an important role in the company's capital structure. In this theory, companies are more interested in using internal funds than debt, Emery and John (1998). The same thing also by Donaldson (1961) that company

management has a tendency to prioritize internal funding in paying dividends and financing an investment opportunity. Even if it requires external funds, it is prioritized to issue bonds rather than equity. This is done so that companies can avoid floatation costs which are usually attached to the issuance of securities. If a company prioritizes debt over external equity, the reason is none other than because the floatation costs of debt are smaller than the floatation costs of external equity. Broadly speaking, this theory states that companies are more interested in internal financing, which is funding from the company's operating results that are formed into retained earnings. Even if the source of funding comes from external financing, the company's management will issue the safest securities first, starting with the issuance of bonds, then followed by securities with option characteristics such as convertible bonds, and if still not sufficient, the last effort is to issue shares.

In the context of this research, the consideration of floatation costs to increase profitability is a determinant of leverage, which is also related to the risks that will be faced by the company if it does not optimize its capital structure or leverage.

In Brigham and Houston (1999), that signal is an action taken by company management that gives instructions to investors about the company's prospects. Companies with favourable prospects will try to avoid selling shares and seek any new capital needed by other means, including the use of debt that exceeds the normal capital structure target. Companies with less profitable prospects will tend to sell their shares. Announcement of stock issuance by a company is generally a signal that management views the company's prospects as not prospective. If a company offers new shares more often, the company's value will decrease because issuing new shares means giving a negative signal which can then suppress the company's value even though the company's prospects are bright.

Ross (1997) and Leland and Pyle (1977) developed signalling capital which explains the company's capital structure based on the problem of asymmetric information between well-informed managers and poorly-informed outside investors. This model is based on the idea that managers who have good information about the company will try to convey this information to outside investors so that the company's corporate value increases. However, because there is a problem with asymmetric information, managers cannot just announce good information because managers of other companies may also announce the same thing, thereby making outside investors less confident. Investors have to wait some time to prove the truth of the manager's statements, Ellili (2011).

One solution that can be used by managers who really have good information about their company is to give a signal to investors by taking an action that cannot be imitated by companies that do not have information as good as their company's information. Signals according to financial literature are actions that will cost the signalling company large costs or deadweight costs to be able to make other people who have less information believe. Ross (1977) shows that a company's good performance can signal a high portion of debt in

its capital structure. Companies whose performance is not good will not dare to use large amounts of debt because if they do, the chances of bankruptcy will be high. By using this assumption, a separating equilibrium will emerge where companies with poor performance will use higher debt while companies with good performance will use more equity. Investors will be able to distinguish which companies are performing well and which are not by looking at the company's capital structure. Investors will give a higher value to companies that have a large portion of debt. Considering that it is difficult for companies whose performance is not good to imitate by increasing the debt portion, the balance point will tend to be stable.

Intuitively, the signalling model is quite good, but this model is sometimes difficult to use to predict capital structure patterns found in reality. The signalling model predicts that companies that have high profitability will signal by using a large portion of debt, meaning there is a positive correlation between leverage and profitability. Apart from that, the signalling model also predicts that companies in industries that have high growth rates and have more intangible assets will use more debt compared to companies that are already in the mature stage and use more tangible assets. The first company has a bigger asymmetric information problem so it needs more to provide signals.

The signalling model has provided a fairly good explanation regarding differences in market response to different types of securities issued by companies. Issuance of debt is a signal of good news, where managers are sure of the company's performance in the future so that share prices have increased with the announcement of an increase in debt. Meanwhile, the issuance of shares is considered as bad news, where there is a possibility of decreasing earnings in the future so that the value of the company decreases with the announcement of the issuance of new shares, Arifin (2005).

In Asymmetric Information Theory, it is a condition where one party has more information than the other party, Atmaja (1999). Because of asymmetric information, company management knows more about the company than investors in the capital market. If the company's management wants to maximize the value of new shares, then there are several things that need to be analyzed, namely if the company has good prospects, then management will not issue new shares but use retained earnings, but if the company is not prospective, then management issues new shares as a sources of obtaining funds. This will benefit current stockholders because their responsibilities are reduced. The problem is that new investors know this trend, so they see new stock offerings as a bad news signal, so the company's value tends to fall. This can cause the cost of equity to be high.

Another thing in Donaldson (1961) that about asymmetric information theory is a condition where one party has more information than another party because company management knows more about the company than investors in the capital market, Atmaja (1999). Another thing also in Brigham and Houston (2001) states that asymmetric information is a situation where managers have different information about the company's prospects than that owned by investors.

The level of asymmetric information will have a real effect on the company's financial decisions, because it is in accordance with the company's objectives based on a financial perspective, namely maximizing the prosperity of stockholders. Therefore, managers are generally motivated to convey good information about the company as quickly as possible. However, parties outside the company do not know the truth of the information conveyed. If the manager can provide a convincing signal, the public will respond to it, which will be reflected in security prices. Dividend payments are a classic example of conveying information as signalling.

Information asymmetry will influence company financial policies related to determining the company's capital structure. In Donaldson (1961) concluded that companies prefer to use funds using several priorities, namely first, retained earnings and depreciation, second, using sources from debt, third, using sources of funds from issuing new shares. If you combine trade-off theory and asymmetric information theory, it can result in company management behavior related to funding decisions with the explanation that the use of debt provides benefits because of the reduction in tax payments resulting from debt interest. Therefore, companies should use debt in their capital structure, however, on the other hand, financial distress and agency costs limit the use of debt to avoid reducing the level of profitability.

### **Hypotehsis**

Studies conducted by Mayangsari (2001) and Susilawati (2004) showed that profitability had a significant effect on external funding policies with a positive correlation. Different things were produced by Santika and Sudiyatno (2011), Susilawati and Haryanto (2012), Agustina and Tin (2012) that profitability has a significant effect and is negatively correlated with debt policy.

**H<sub>1</sub>** : There is a profitability effect on leverage

The results of studies conducted by Murni and Andriana (2007), Amirya and Atmini (2008) and Larasati (2011), show that dividend policy has a significant effect on capital structure, Pidianti & Murtianingsih (2023).

**H<sub>2</sub>** : There is an effect of dividend policy on leverage

Studies conducted by Darminto and Manurung (2008), Soliha and Taswan (2002), Mulianti (2010), Susilawati, Agustina and Tin (2012), that the level of company size has a significant effect on debt policy.

**H<sub>3</sub>** : There is an influence of company size on leverage

The results from Spivey and Macmillan (2000) show that profitability or the company's ability to generate profits can significantly explain share value. The same result in a different way was produced by Skinner and Sloan (2000) that profitability can explain the value of the company which includes the share price. Other empirical findings were produced by Cho and Pucik (2005), Ghosh (2007), Kalcheva and Lins (2007), Peyer, et al (2007), and Ye and Yuan (2008), Nurmala and Yuniarti (2007).

**H<sub>4</sub>** : There is a profitability effect on stock prices

Study by Hasnawati (2008) with the result that there is a significant influence with a positive correlation between the dividend policy on firm value in which there is a stock price. The same thing was produced by Suyati (2010), there was a significantly positive correlation to stock prices.

**H<sub>5</sub>** : There is an effect of dividend policy on stock prices.

The results of research from Soliha and Taswan (2002) show that company size has a significant effect on firm value in which there is a share price, Ainun, Baqir (2019).

**H<sub>6</sub>** : There is an effect of company size on stock prices.

In the research results of Wahyudi and Pawestri (2006), Amirya (2008), Safrida (2008), and Mulianti (2010) explained that capital structure has a significant effect on company value, which includes share prices.

**H<sub>7</sub>** : There is an influence of leverage on stock prices

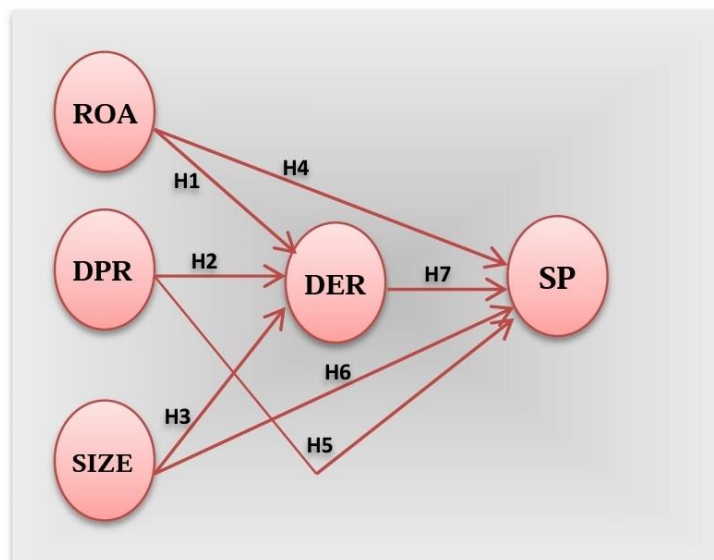


Figure 1. Framework of Relationships between Variables

## METHODOLOGY

The approach in this research is qualitative and quantitative descriptive with a panel data multiple regression analysis method that uses a combination of 3 year time series data (2019-2021) and a cross section of 18 manufacturing companies as research objects.

### Operational Variables:

$$[i] \text{ Return on asset (ROA)} = \frac{\text{Earnings After Tax}}{\text{Total Asset}}$$

$$[ii] \text{ Dividend Payout Ratio (DPR)} = \frac{\text{Dividend Per Share (DPS)}}{\text{Earnings Per Share (EPS)}}$$

$$[iii] \text{ Leverage} = \frac{\text{Total Debt}}{\text{Total Own Capital}}$$

$$[iv] \text{ Company Size (Size)} = \text{Natural Logarithm of Total Assets (Ln TA)}$$

[ v ] Stock Price = Closing price at the end of the year

**Panel Data Multiple Regression Estimation**

The analysis of this study uses multiple regression panel data which is a combination of time series data and cross section data. Approaches that can be taken in conducting multiple regression analysis of panel data are:

*Common Effect Model*

Structural equations can be formulated:

$$Y_{i,t} = \alpha + \beta X_{i,t} + \epsilon_{i,t}; i = 1,2,\dots,N ; t = 1,2,\dots,T \dots\dots\dots(1)$$

*Fixed Effect Model*

Mathematically it can be formulated:

$$Y_{it} = \alpha + \beta X_{it} + \gamma_2 W_{2t} + \gamma_3 W_{3t} + \dots + \gamma_N W_{NT} + \sigma_2 Z_{it} + \sigma_3 Z_{i3} + \dots + \sigma_T Z_{iT} + \epsilon_{it} \dots\dots\dots(2)$$

Where :

- $Y_{it}$  : Endogenous variable for individual "i" and time "t"
- $X_{it}$  : Exogenous variable for individual "i" and time "t"
- $W_{it}$  : Is a dummy variable
- where  $W_{it}$  : 1 for individuals "i",  $i = 1,2,\dots,N$  and a value of 0 for the others
- $Z_{it}$  : Is a dummy variable
- where  $Z_{it}$  : 1 for period "t", "t" = 1,2,...T and a value of 0 for the others

*Random Effect Model*

Structural equations can be formulated:

$$Y_{it} = \alpha + \beta X_{it} + \epsilon_{it}; \epsilon_{it} = U_i + V_t + W_{it} \dots\dots\dots(3)$$

Where :

- $U_i$  : cross section errors
- $V_t$  : time series errors
- $W_{it}$  : combined error

**Model Selection Test**

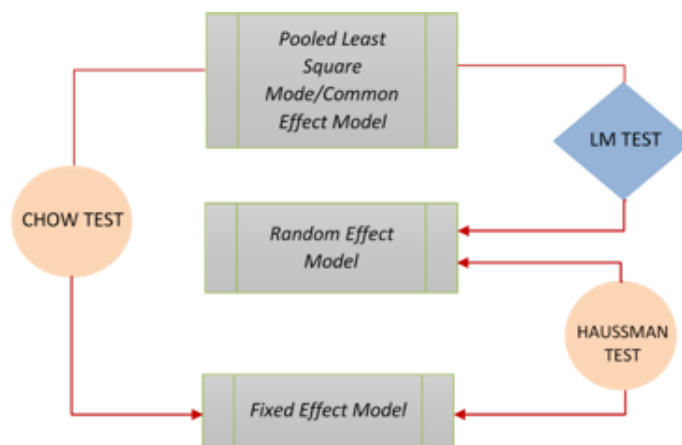


Figure 2. Model Fit Test

### Chow Test

Test formula:

$$CHOW = \frac{(RRSS - URSS)/N - 1}{URSS/(NT - N - K)}$$

Where :

RRSS : restricted residual sum square

URSS : unrestricted residual sum square

N : number of cross-sectional data

T : amount of time series data

K : number of explanatory variables

Criteria at the level of  $\alpha = 5\%$ :

Calculated F test (prob.) < F table; rejects the null hypothesis ( $H_0$ ) and accepts the alternative hypothesis ( $H_a$ ) so that the fit model is Fixed Effect.

F count (prob.) > F table accepts the null hypothesis ( $H_0$ ) and rejects the alternative hypothesis ( $H_a$ ) so that the fit model is Common Effect.

### Hausman Test

The Hausman Test statistic will follow the Chi-Square statistical distribution with a degree of freedom of k, where k is the number of independent variables.

Criteria at the level of  $\alpha = 5\%$ :

Cross-section random (prob.) < table; reject the null hypothesis ( $H_0$ ) and accept the alternative hypothesis ( $H_a$ ) so that the fit model is Fixed Effect.

Cross-section random (prob.) < table; rejects the null hypothesis ( $H_0$ ) and accepts the alternative hypothesis ( $H_a$ ) so that the fit model is Fixed Effect.

Cross-section random (prob.) > table; accept the null hypothesis ( $H_0$ ) and reject the alternative hypothesis ( $H_a$ ) so that the fit model is Random Effect

### Lagrange Multiplier Test (LM)

Criteria at the level of  $\alpha = 5\%$ :

LM count > Chi-Squares; reject the null hypothesis ( $H_0$ ) and accept the alternative hypothesis ( $H_a$ ) so that the fit model is a Random Effect.

LM statistic < Chi-Square; accept the null hypothesis ( $H_0$ ) and reject the alternative hypothesis ( $H_a$ ) so that the fit model is Common Effect

LM statistics can be calculated with the formula:

$$LM = \frac{nT}{2(T-1)} \left[ \frac{\sum_{i=1}^n (\sum_{t=1}^T \bar{e}_i^2)^2}{\sum_{i=1}^n \sum_{t=1}^T e_{it}^2} - 1 \right]^2$$

Where :

n : Number of individuals or companies

T : Number of time periods

$\sum \bar{e}^2$  : Mean sum of residual squares

$\sum e^2$  : Sum of squared residuals

**Panel Data Regression Model**

**Structural Equation Research Model 1,**

$$DER_{it} = \alpha + \beta_1 ROA_{it} + \beta_2 DPR_{it} + \beta_3 Size_{it} + \varepsilon_{it}; \dots\dots\dots(4)$$

$i = 1,2,\dots\dots,N; \quad t = 1,2,\dots\dots,T$

**Structural Equation Research Model 2,**

$$SP_{it} = \alpha + \beta_1 ROA_{it} + \beta_2 DPR_{it} + \beta_3 Size_{it} + \beta_4 DER_{it} + \varepsilon_{it}; \dots\dots\dots(5)$$

$i = 1,2,\dots\dots,N; \quad t = 1,2,\dots\dots,T$

Where :

DER	= Debt to Equity Ratio	$\varepsilon$	= Error component
ROA	= Return On Assets	$\beta$	= Slope
DPR	= Dividend Payout Ratio	$\alpha$	= Intercept
Size	= Company Size	N	= Lots of observations
SP	= Stock Price	T	= The amount of time
		N x T	= Lots of panel data

**RESEARCH RESULT**

**A. Descriptive Statistics**

Table 1. Statistics Descriptive

	ROA	DPR	SIZE	DER	SP
Mean	0.152306	0.394772	29.44144	0.795759	8.009117
Median	0.136150	0.295550	29.77960	0.691850	7.970100
Maximum	0.415500	1.497100	32.83650	2.753300	11.03570
Minimum	0.062500	0.010800	26.68000	0.144700	4.714000
Std. Dev.	0.074571	0.300093	1.779801	0.581456	1.672358
Skewness	1.401527	1.755343	-0.009344	1.094949	0.065337
Kurtosis	5.498333	6.086494	1.710047	4.033202	2.117389
Sum	8.224500	21.31770	1589.838	42.97100	432.4923
Sum Sq. Dev.	0.294722	4.772952	167.8877	17.91885	148.2294
Observations	54	54	54	54	54

Source: Data processed

The description of statistical data displayed in table 1 consists of mean, median, maximum value, minimum value, standard deviation. Researchers carried out several data transformations to avoid numerical differentiation between variables that have different units.

**B. Testing the Suitability of Research Model I Leverage as an Endogenous Variable**  
**Structural Equation Results (4) Research Model I**

Table 2. Test the First Model Selection

Model Selection I				Fit Model
<b>Chow Test</b> <b>(Fixed Effect Model Vs Common Effect Model)</b>				Reject ( $H_0$ ) Accept ( $H_a$ ) Fixed Effect Model
Effects Test	Statistic	d.f.	Prob.	
Cross-section F	29.604967	(17,33)	0.0000	
Cross-section Chi-square	150.560484	17	0.0000	
<b>Hausman Test</b> <b>(Fixed Effect Model Vs Random Effect Model)</b>				Accept ( $H_0$ ) Reject ( $H_a$ ) Random Effect Model
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.	
Cross-section random	6.111097	3	0.1063	
<b>Lagrange Multiplier Test</b> <b>(Common Effect Model Vs Random Effect Model)</b>				Reject ( $H_0$ ) Accept ( $H_a$ ) Random Effect Model
Test Hypothesis				
	Cross-section	Time	Both	
Breusch-Pagan	42.05377 (0.0000)	0.972857 (0.3240)	43.02663 (0.0000)	

Source: Data processed

**Panel Data Regression Equation Model I:**

Table 3. Panel Data Regression Equation

No.	Cross Section	C + X1 + X2 + X3
1	Y_ARNA	= 3.29 - 1.87 X1_ARNA - 0.132 X2_ARNA - 0.08 X3_ARNA
2	Y_ASII	= 3.98 - 1.87 X1_ASII - 0.132 X2_ASII - 0.08 X3_ASII
3	Y_AUTO	= 3.25 - 1.87 X1_AUTO - 0.132 X2_AUTO - 0.08 X3_AUTO
4	Y_BRNA	= 3.93 - 1.87 X1_BRNA - 0.132 X2_BRNA - 0.08 X3_BRNA
5	Y_DLTA	= 3.02 - 1.87 X1_DLTA - 0.132 X2_DLTA - 0.08 X3_DLTA
6	Y_DVLA	= 2.83 - 1.87 X1_DVLA - 0.132 X2_DVLA - 0.08 X3_DVLA
7	Y_GGRM	= 3.34 - 1.87 X1_GGRM - 0.132 X2_GGRM - 0.08 X3_GGRM
8	Y_GJTL	= 4,2048 - 1.87 X1_GJTL - 0.132 X2_GJTL - 0.08 X3_GJTL
9	Y_HMSP	= 4,2138 - 1.87 X1_HMSP - 0.132 X2_HMSP - 0.08 X3_HMSP
10	Y_INDF	= 3.66 - 1.87 X1_INDF - 0.132 X2_INDF - 0.08 X3_INDF
11	Y_INTP	= 3.08 - 1.87 X1_INTP - 0.132 X2_INTP - 0.08 X3_INTP
12	Y_JPFA	= 3.82 - 1.87 X1_JPFA - 0.132 X2_JPFA - 0.08 X3_JPFA
13	Y_KLBF	= 3.09 - 1.87 X1_KLBF - 0.132 X2_KLBF - 0.08 X3_KLBF

14	Y_MAIN *>	= 4.77 - 1.87 X1_ MAIN - 0.132 X2_ MAIN - 0.08 X3_ MAIN
15	Y_MRAT **>	= 2.51 - 1.87 X1_ MRAT - 0.132 X2_ MRAT - 0.08 X3_ MRAT
16	Y_SMGR	= 3.29 - 1.87 X1_ SMGR - 0.132 X2_ SMGR - 0.08 X3_ SMGR
17	Y_SMSM	= 3.47 - 1.87 X1_ SMSM - 0.132 X2_ SMSM - 0.08 X3_ SMSM
18	Y_UNTR	= 3.51 - 1.87 X1_ UNTR - 0.132 X2_ UNTR - 0.08 X3_ UNTR

Source: Data processed

\*> Highest sensitivity

\*\*> Lowest sensitivity

Table 4. Dependent Variable: Leverage (DER)  
Method: Pooled EGLS (Cross-section random effects)  
Total pool (balanced) observations: 54  
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.513601	4.792153	2.897909	0.0066
ROA?	-1.873345	1.207468	-2.223056	0.0332
DPR?	-0.131599	0.134997	-0.933426	0.3574
SIZE?	-0.080858	0.161400	-2.658515	0.0120
Weighted Statistics				
Root MSE	0.138660	R-squared	0.942059	
Mean dependent var	0.795759	Adjusted R-squared	0.906944	
S.D. dependent var	0.581456	S.E. of regression	0.177374	
Sum squared resid	1.038230	F-statistic	26.82739	
Durbin-Watson stat	1.967922	Prob(F-statistic)	0.000000	

Source: Data processed

### C. Testing the Suitability of Research Model II Stock Price as an Endogenous Variable

#### Structural Equation Results (5) Research Model II

Table 5. Test the First Model Selection

Model Selection II				Fit Model
<b>Chow Test</b>				Reject ( $H_0$ ) Accept ( $H_a$ ) Fixed Effect Model
<b>(Fixed Effect Model Vs Common Effect Model)</b>				
Effects Test	Statistic	d.f.	Prob.	
Cross-section F	37.142355	(17,32)	0.0000	
Cross-section Chi-square	163.710311	17	0.0000	

<b>Hausman Test (Fixed Effect Model Vs Random Effect Model)</b>				Accept ( $H_0$ ) Reject ( $H_a$ ) Random Effect Model
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.	
Cross-section random	8.914642	4	0.0633	

<b>Lagrange Multiplier Test (Common Effect Model Vs Random Effect Model)</b>				Reject ( $H_0$ ) Accept ( $H_a$ ) Random Effect Model
	Test Hypothesis			
	Cross-section	Time	Both	
Breusch-Pagan	37.90270 (0.0000)	1.097096 (0.2949)	38.99979 (0.0000)	

Source: Data processed

**Panel Data Regression Equation Model II:**

Table 6. Panel Data Regression Equation

No.	Cross Section	$C + X1 + X2 + X3$
1	Y_ARNA	= -17.68+ 5.57 X1_ARNA - 0.18 X2_ARNA + 0.86 X3_ARNA - 0.26 X4_ARNA
2	Y_ASII	= -19.46+ 5.57 X1_ASII - 0.18 X2_ASII + 0.86 X3_ASII - 0.26 X4_ASII
3	Y_AUTO	= -17.96 + 5.57 X1_AUTO - 0.18 X2_AUTO + 0.86 X3_AUTO - 0.26 X4_AUTO
4	Y_BRNA	= -17.19 + 5.57 X1_BRNA - 0.18 X2_BRNA + 0.86 X3_BRNA - 0.26 X4_BRNA
5	Y_DLTA	= -19.38 + 5.57 X1_DLTA - 0.18 X2_DLTA + 0.86 X3_DLTA - 0.26 X4_DLTA
6	Y_DVLA	= -17.08 + 5.57 X1_DVLA - 0.18 X2_DVLA + 0.86 X3_DVLA - 0.26 X4_DVLA
7	<b>Y_GGRM</b> <b>**&gt;</b>	= <b>-16.39</b> + 5.57 X1_GGRM - 0.18 X2_GGRM + 0.86 X3_GGRM - 0.26 X4_GGRM
8	Y_GJTL	= -17.97 + 5.57 X1_GJTL - 0.18 X2_GJTL + 0.86 X3_GJTL - 0.26 X4_GJTL
9	Y_HMSP	= -17.37 + 5.57 X1_HMSP - 0.18 X2_HMSP + 0.86 X3_HMSP - 0.26 X4_HMSP
10	Y_INDF	= -18.67 + 5.57 X1_INDF - 0.18 X2_INDF + 0.86 X3_INDF - 0.26 X4_INDF
11	Y_INTP	= -17.40 + 5.57 X1_INTP - 0.18 X2_INTP + 0.86 X3_INTP - 0.26 X4_INTP
12	Y_JPFA	= -17.43 + 5.57 X1_JPFA - 0.18 X2_JPFA + 0.86 X3_JPFA - 0.26 X4_JPFA
13	<b>Y_KLBF</b> <b>*&gt;</b>	= <b>-19.65</b> + 5.57 X1_KLBF - 0.18 X2_KLBF + 0.86 X3_KLBF - 0.26 X4_KLBF
14	Y_MAIN	= -17.19 + 5.57 X1_MAIN - 0.18 X2_MAIN + 0.86 X3_MAIN - 0.26 X4_MAIN
15	Y_MRAT	= -16.94 + 5.57 X1_MRAT - 0.18 X2_MRAT + 0.86 X3_MRAT - 0.26 X4_MRAT
16	Y_SMGR	= -17.83 + 5.57 X1_SMGR - 0.18 X2_SMGR + 0.86 X3_SMGR - 0.26 X4_SMGR
17	Y_SMSM	= -17.14 + 5.57 X1_SMSM - 0.18 X2_SMSM + 0.86 X3_SMSM - 0.26 X4_SMSM
18	Y_UNTR	= -17.26 + 5.57 X1_UNTR - 0.18 X2_UNTR + 0.86 X3_UNTR - 0.26 X4_UNTR

Source: Data processed

\*> Highest sensitivity

\*\*> Lowest sensitivity

Table 7. Dependent Variable: Stock Price (SP)  
Method: Pooled EGLS (Cross-section random effects)  
Total pool (balanced) observations: 54  
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-17.77690	3.344869	-5.314679	0.0000
ROA?	5.574213	1.537524	3.625449	0.0007
DPR?	-0.183748	0.190508	-0.964520	0.3395
SIZE?	0.856508	0.111268	7.697704	0.0000
DER?	-0.260433	0.198850	-1.309694	0.1964
Weighted Statistics				
Root MSE	0.250727	R-squared	0.599980	
Mean dependent var	1.238221	Adjusted R-squared	0.567326	
S.D. dependent var	0.400147	S.E. of regression	0.263209	
Sum squared resid	3.394657	F-statistic	18.37350	
Durbin-Watson stat	1.490376	Prob(F-statistic)	0.000000	

Source: Data processed

#### D. Research Results Models I and II

- [1] Profitability Return on Assets (ROA) has a significant effect on Leverage (DER) at a probability level of  $0.0332 < 0.05$  with a negative correlation, [Table 4]
- [2] Dividend Pay-Out Ratio (DPR) has no significant effect on Leverage (DER) at the probability level of  $0.3574 > 0.05$ , [Table 4].
- [3] Company Size (SIZE) has a significant effect on Leverage (DER) at a probability level of  $0.0120 < 0.05$  with a negative correlation, [Table 4].
- [4] Profitability Return on Assets (ROA) has a significant effect on Stock Price (SP) at a probability level of  $0.0007 < 0.05$  with a positive correlation, [Table 7].
- [5] Dividend Payout Ratio (DPR) has no significant effect on Stock Price (SP) at the probability level of  $0.3395 > 0.05$ , [Table 7].
- [6] Firm size (SIZE) has a significant effect on Stock Price (SP) at the probability level of  $0.0000 < 0.05$  with a positive correlation, [Table 7].
- [7] Leverage (DER) has no significant effect on Stock Price (SP) at the probability level of  $0.1964 < 0.05$ , [Table 7].

#### DISCUSSION

- [1] The results of the first test are partial (t-test) and theoretically that Return On Assets (ROA) Profitability has a significant effect on Leverage (DER) with a negative correlation. Theoretically, the increasing trend in Return On Assets will have an impact on reducing debt in the debt structure. This can be interpreted that the increase in profitability will be maximized by company management preferring to use internal funds, retained earnings rather than external sources in the form of debt to finance its investment or in carrying

out business expansion. These results support the research results of Santika and Sudiyatno (2011), Susilawati and Haryanto (2012), Agustina and Tin (2012).

- [2] The results in the second hypothesis are partial (t-test) and theoretically contradictory because they cannot explain the effect of dividend policy (DPR) on leverage (DER). This is unlike the results of studies conducted by Murni and Andriana (2007), Amirya and Atmini (2008) and Larasati (2011), that dividend policy has a significant effect on capital structure.
- [3] The results of testing the third hypothesis on the variable Company Size (SIZE) partially (t-test) show that this variable has a significant effect with a negative correlation on Leverage (DER) with a negative correlation. This can theoretically be explained that the greater the size of the company, the more careful it is in handling risks by reducing the level of leverage. In this case, company management is not interested in using debt or external funding sources but is more interested in using internal sources in the form of retained earnings.
- [4] Partial testing of the fourth hypothesis (t-test) and theoretically can explain the effect of the Return On Assets (ROA) Profitability variable on Stock Price (SP) with a positive correlation. Investors or the market will appreciate the signal from the company's performance results regarding ROA profitability. These results are as produced by Spivey and Macmillan (2000), Skinner and Sloan (2000), Cho and Pucik (2005), Ghosh (2007), Kalcheva and Lins (2007), Peyer, et al (2007), and Ye and Yuan (2008), Nurmala and Yuniarti (2007).
- [5] In partial testing of the fifth hypothesis (t-test), it shows that between the exogenous variable, Dividend Pay-out Ratio (DPR) and the endogenous variable, Stock Price (SP) cannot explain statistical significance. With these results, it is not like the results of Hasnawati (2008), Suyati (2010).
- [6] The results of partial testing of the sixth hypothesis (t-test) show that the Company Size (SIZE) variable can explain its influence significantly on Stock Price (SP) and is positively correlated. The greater the size of the company, the more investors or the market will appreciate the company's growth from the profitability it produces. These results are as in the study conducted by Soliha and Taswan (2002).
- [7] Partial testing of the seventh hypothesis using the t-test shows that the Leverage variable (DER) cannot explain its effect on the Stock Price (SP). This theoretically contradicts the results of studies by Wahyudi and Pawestri (2006), Amirya (2008), Safrida (2008), and Mulianti (2010). Thus, DER as an intervening variable cannot mediate the determinant of leverage on Stock Price (SP).

## CONCLUSIONS AND RECOMMENDATIONS

Leverage as an intervening variable does not function to mediate on the Stock Price so that the exogenous variables Profitability and Firm Size can only explain their direct effect on Stock Price without going through Leverage, although the two exogenous variables can explain their effect on Leverage.

Among the exogenous variables that are dominant or have a high level of sensitivity are the Profitability to Stock Price variables. Among the cross sections in model I, the one with the highest level of sensitivity is Malindo Feedmill Tbk. with the trading code MAIN while the one with the lowest level of sensitivity is Mustika Ratu Tbk. with trading code MRAT. The cross section in model II with the highest level of sensitivity is Kalbe Farma Tbk. with the trading code KLBF while the one with the lowest level of sensitivity is Gudang Garam Tbk. with trading code GGRM.

### **ADVANCED RESEARCH**

To improve the results of this research in the future, it would be better to add the determinant variable Corporate Social Responsibility. This is closely related between manufacturing companies and environmental aspects.

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