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**Dynamic Model of Firm Value: Evidence from Indonesian
Manufacturing Companies**

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Abstract: This study aims to determine the factors that affect to firm value. The data used in this study is secondary data obtained from the Indonesia Stock Exchange which includes financial statements. This research sample uses 45 manufacturing companies, the period 2012-2016. The analysis used is a quantitative approach with panel data regression model, with estimation of fixed effect model. The findings of this study indicate that simultaneously the value of firms is influenced by investment decisions, financial decisions, and financial performance. While partially, financing decision has dominant influence from other variables, namely investment decision dan corporate performance. The conclusions of this study indicate that investment decisions and firm performance have a positive relationship to firm value, while financing decisions have a negative effect on firm value. In addition, the lag of firm value shows the long-term impact on the firm's value model.

Keywords: Investment Decision; Financing Decision; Corporate Performance; Firm Value; Dynamic Model

Introduction

Corporate values reflecting shareholder and corporate wealth are presented by the market price of the stock which is a reflection of investment policy, financing, and asset management (Hermuningsih, 2013). The value of the company is associated with three financial decisions of the company namely investment, financing and dividend decisions (Damodaran, 2006). Horne and Wachowicz (2004) says that the basic principles of financial management can be seen with the company's balance sheet. Allayannis and Weston (2001) states that the financial structure (leverage) is the way assets are financed.

The fund management approach focuses on estimating cash flows and levels of investment before identifying and evaluating the impact of different funding sources in firm value (Qureshi, 2006). The main financial issue is that management aims to achieve the company's expectations for investment achievement, how much debt component in the company, and the share of capital to be funded by profits, dividend policy, and firm value

derived from investment decisions, funding from profitable projects. While (Fama and French, 1997) explains that capital funding management uses a capital structure approach looking at the impact of changes in capital structure on firm values and how different factors can directly or reverse influence, debt and equity components of capital structure.

Various theories explain the importance of capital strengthening in increasing the value of the company. The decision to determine the funding of the capital structure will determine the company in performing its operating activities that will affect the value of the company. There are two views to determine the policy of capital structure, pecking order theory and trade off theory (Berens and Cuny, 1995). The policy of capital structure is influenced by various factors both inside and outside the company. Pecking order theory incorporates a factor of financial deficits as an influence on capital structure policy. While trade off theory incorporates determinant factors of capital structure that is tangibility assets showing the amount of company asset that can be guaranteed. Growth which shows the comparative value of the firm's investment market at the acquisition price to forecast the growth rate of the firm (Ross, 1977). Firm size indicates that firm size can affect a company's ability to affect corporate profits (Rajan and Zingales, 2001) and profitability shows returns on assets managed by a company to get the net income generated by the firm's assets.

The four determinants of the capital structure affect the policy of the firm's capital structure (Rajan and Zingales, 2001). Factors that can influence the company to determine the funding policy on the capital structure of the company are the factors that can affect the proportion of the use of internal funds in the form of equity or external and in the form of long-term debt. The funding policy is aimed at finding alternative sources of funds to be used for financing the company's operations and investments. Sudiyatno and Kartika (2012) explains that the decision on the selection of sources of funding and investment involves the interests of owners, creditors and managers. Gao, Harford and Li (2013) divides the two types of investments: acquisitions and capital expenditures. Acquisitions are another company's purchasing policy by smelting to the parent company.

While capital expenditure is corporate expenditure in financing which aims to build factories, purchase of fixed assets, office supplies, expenses incurred in capital expenditures. According to him, the component of capital expenditure will be enjoyed several years later. Therefore, capital expenditure is an investment policy. The relationship between the decision and the value of the firm is the value of the company reflected in the present value of the expected cash flow, the rate of return reflecting the risk of a company project and the funding mix used to finance the activity (Yuliani, Isnurbadi, and Bakar, 2013; Damodaran, 2006; Ross, 1977). This shows that the management of capital structure can be reflected in the management of investment in the form of productive assets for the company.

Investment decisions are an application in the company's capital expenditures in the form of productive assets. Gao, Harford and Li (2013) explains that investment form such as capital expenditures and productive assets will be able to create firm value. Investment policy in the form of asset management is the company's way of managing resource potentials in the form of tangible assets and intangible assets. Harc (2015) shows that tangible assets have a positive value impact on long-term debt, because tangible assets are a positive signal to financial institutions that can ask for the sale of the asset in the event of bankruptcy. This finding is consistent with the trade-off theory that predicts a positive

relationship between leverage and tangibility, but also with pecking order theory, which is generally interpreted as predicting a negative relationship between leverage and tangibility.

Study by Olakunle and Oni (2014) show that the asset tangibility is characterized by the impact of the value of asset collateral at the level of corporate leverage. Second, the type of assets owned by the company can be considered as an ambiguous factor in the determination of the debt-equity ratio. The cost of financial difficulties depends on the type of assets the company has. If a company maintains substantial investments in land, equipment and other tangible assets, it will have less financial distress costs than firms that rely on intangible assets (Psillaki and Daskalakis, 2009)

Theoretically, Modigliani and Miller (1963) states in capital structure theory and Baxter (1967) in balancing theory explained that the increase of financial leverage has an impact on the increase of company value. While the value of the company will increase only if the company's performance increases. The relationship between financial leverage and firm performance from profitability (ROA). Leland and Pyle (1977) explains that high ROA (return on asset) is a signal for investors that there is hope to get a high return from investment in the company, so investors are willing to pay shares at high prices.

The various theoretical explanations above show that the creation of corporate value should be done with a funding-based approach to the planning of the source of funds through the capital structure, as well as the allocation of funds aimed at investment policy. The capital structure approach becomes the main reference in research on firm value (Sabrin, Sarita and Sujono, 2016, Sudiyatno and Kartika, 2012; Efni, et.al., 2012; Myers, 1984; and Fama, 1980). While research that explains investment decision through asset structure shows the influence of asset structure variable to value (Harc, 2015; Loncan, 2014; Olakunle and Oni, 2014; Harrison and Wicks, 2013; Baert, 2009; Myers, 1984).

This study aims to measure investment decision variables reflected from the asset structure, funding decisions of the capital structure, firm performance from profitability to firm value reflected from price to book value. The next sessions we will describe the research methods that describe the types and sources of data and explain the model specifications to be used. In the third session, we will explain the results and discussion, as well as the implications of the model used, and the fourth session is the conclusion of this study.

Literature Review

Investment Decision

Investment decisions are an application in the corporate capital expenditures of productive assets (Yuliani, et.al., 2018). Investment form such as capital expenditures and productive assets will create corporate value. Investment decisions in the form of asset management is the company's way of managing resource potentials in the form of tangible assets and intangible assets. (Yuliani, Isnurbadi, and Samadi (2013)

Harc (2015) explains that tangible assets are long-term assets that are physically visible. It is not intended for sale as part of normal operations. While intangible fixed assets are long-term assets that are not physically visible. These assets may be patents, copyrights, trademarks, goodwill, and contract value. The basic principles of accounting for intangible assets are the same as other assets. The main focus lies in the determination of (1) the

initial cost, and (2) the amortization or the amount of cost or cost that is transferred to the expense. Amortization is recorded after the passage of time or a decline in the usefulness of intangible assets.

Harc (2015) shows that tangible assets have a positive value impact on long-term debt, because tangible assets are a positive signal to financial institutions that can ask for the sale of the asset in the event of bankruptcy. This finding is consistent with the trade-off theory that predicts a positive relationship between leverage and tangibility, but also with pecking order theory, which is generally interpreted as predicting a negative relationship between leverage and tangibility.

Olakunle and Oni (2014) indicates that the tangibility of an asset is characterized by the impact of the value of the asset collateral at the level of the firm's leverage. Second, the type of assets owned by the company can be considered as an ambiguous factor in the determination of the debt-equity ratio. The cost of financial difficulties depends on the type of assets the company has. If a company maintains substantial investments in land, equipment and other tangible assets, it will have less financial distress costs than firms that rely on intangible assets.

Financial Decision

Many theories explain the importance of capital strengthening in increasing the value of the company. Financial decision to determine of the capital structure will determine the company in performing its operating activities that will affect the value of the company. There are two views to determine the policy of capital structure, pecking order theory (Myers and Majluf, 1984) and trade off theory (Myers, 1958).

The policy of capital structure is influenced by various factors both inside and outside the company. Pecking order theory incorporates a factor of financial deficits as an influence on capital structure policy. While trade off theory incorporates determinant factors of capital structure that is tangibility assets showing the amount of company asset that can be guaranteed. Growth which shows the comparative value of the firm's investment market at the acquisition price to forecast the growth rate of the firm (Ross, 1977). Firm size indicates that firm size can affect a company's ability to affect corporate profits (Rajan and Zingales, 2001) and profitability shows returns on assets managed by a company to get the net income generated by the firm's assets.

The four determinants of the capital structure affect the policy of the firm's capital structure (Rajan and Zingales, 2001). Factors that may affect the company to determine funding decisions on the capital structure of the company are the factors that can affect the proportion of the use of internal funds in the form of equity or external and in the form of long-term debt.

The financing decision is aimed at finding alternative sources of funds that will be used to finance the company's operations and investments. Sudiyatno and Kartika (2012) explains that the decision on the selection of sources of funding and investment involves the interests of owners, creditors and managers. There are two types of investment: acquisitions and capital expenditures. Acquisitions are another company's purchasing policy by smelting to the parent company. While capital expenditure is corporate expenditure in

financing which aims to build factories, purchase of fixed assets, office supplies, expenses incurred in capital expenditures. According to him, the component of capital expenditure will be enjoyed several years later. Therefore, capital expenditure is an investment decision. The relationship between the decision and firm value is the value of the firm reflected in the present value of the expected cash flow, the rate of return reflecting the risk of a company project and the funding mix used to finance the activity (Ross, 1977; Damodaran, 2006).

It shows that the management of capital structure can be reflected in the management of investment in the form of productive assets for the company. Debate over the relationship between funding decisions and investment decisions from the perspective of financial theory remains an interesting issue. The theory that discusses the funding hierarchy is known as the pecking order theory of free cash flow. Myers (1958); Myer and Majluf (1984) revealed that the cost of external capital will be more expensive if there is asymmetric information in the market, so for the purposes of financing the investment should prioritize internal financing company.

The statement is not aligned with free cash flow theory. Jensen (1986) argues that the use of internal capital will be difficult to monitor by owners or shareholders. Utilization of external capital is intended to control the excessive use of free cash flow by management. Differences in the views of both theories suggest that investment finance is an important component in improving company performance and value creation.

Corporate Performance

Several studies have been conducted, such as investment issues (capital expenditure), financial leverage, and manager incentives, among others, have been done by (Aggarwal and Samwick, 2008). The results of Aggarwal and Samwick (2008) found a positive influence between investment and firm performance. Another study conducted by Guo (2006) found that stock bonuses had a negative and significant impact on ROA. Investment has a negative but insignificant effect on the incentive, but on firm value, investment has a positive and significant effect, and leverage has positive but not significant effect on investment. Anuchitworawong (2004) in his research found that after the crisis in 2000 capital expenditure has a negative and significant effect on company performance (ROA), also before the crisis in 1996 capital expenditure has negative and significant effect to company performance). Research conducted by Aivazian, Ge, and Qiu (2005) found that leverage has a negative and significant effect on investment.

The results of this study are in accordance with the results of a study found by Aivazian, Ge, and Qiu (2005), who found that leverage has a negative and significant effect on investment. Similarly, the results of research from Guo (2006), also found that leverage has a negative and significant effect on ROA. However, the findings of this study differ from the findings of pre-crisis research in 1996 that leverage has a negative but not significant effect on company performance (ROA).

Firm Value

Measurement of company value can be done by looking at the development of stock prices in the secondary market, if the stock price increases means firm value increases, because

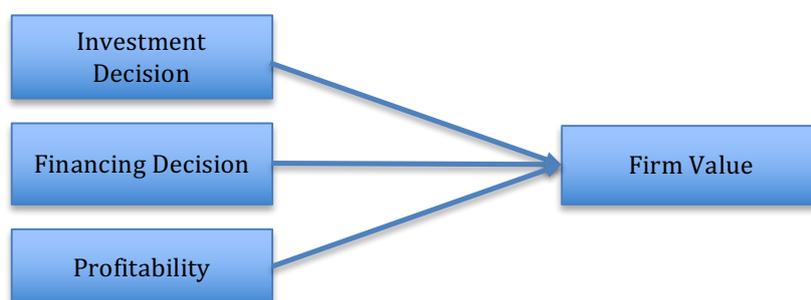
the value of the company is actually the stock market value coupled with the market value of bonds or long-term debt. The stock market has captured the attention of many investor and scholars. It has become one of the most crucial aspects of a modern market economy (Setiawan and Yunus, 2018). The increase in stock prices shows people's confidence in the good company, so they are willing to pay higher, this is in line with their expectation to get high return as well.

Firm value can also be measured by summing the market value of bonds or long-term debt with the stock market value. The market value of bonds is relatively stable, while stock market value is very volatile, as stock market prices move over time. Firm value can be measured by price to book value (PBV), that is comparison between stock price with book value per share. Another related indicator is the book value per share, the ratio of capital (common equity) to the number of shares outstanding (shares outstanding).

Research Model

This study aims to measure the influence of investment decision variables proxied by the asset structure, the financing decision represented by the capital structure variable which is the proxy with the debt to equity ratio (DER), while the corporate performance is measured through the profitability level of the firm with return on assets (ROA). In summary, the research model of this study is shown in the figure. 1

Figure 1. **Research Model**



Hypothesis

Hypothesis is a temporary statement to the problem of research that the truth is still weak (not necessarily the truth) so it must be tested empirically.

The investment decisions represented by tangible asset variables are proxied with the asset structure. Strong asset structure will impact on the performance of the company, which will ultimately affect the firm value. The above assumptions are formulated in the development of hypothesis 1:

H₁: Investment decision has positive sign and significant effect to firm value

The financing decision is represented by the capital structure projected by the debt to equity ratio (DER). The higher DER will result in a decrease in Corporate Value. On the contrary, low DER composition will increase the value of the company. Development of hypothesis 2 as follows:

H₂: Financing decision has negative sign and significant effect to firm value

Corporate performance is one indicator in measuring firm value. The financial performance projected with profitability (ROA) shows that the high value of profitability will have an impact on the increase of company value. It is formulated in Hypothesis 3:

H₃: Corporate performance has positive sign and significant effect to firm value.

Method

The sample in this study was conducted by purposive sampling consisting of 45 manufacturing companies listed in Indonesia Stock Exchange (IDX) from 2012-2016. The technique of analysis using panel data regression by direct relationship between independent variables with dependent variable which is a combination of cross section and time series data. The dependent variable in this study is firm value proxy with Price to Book Value (Mai, 2013, Sudibya and Restuti, 2014; Welley and Untu, 2015). While the independent variable consists of investment decisions as measured by asset structure variable (Campello, 2006; Puspita, 2010; Hanc, 2015).

The second independent variable is the funding decision measured by the capital structure projected with the debt to equity ratio (Chowdhury, and Chowdhury, 2010; Antwi, et.al., 2012; Cotei, Farhat, and Abugri, 2014). While the third independent variable is the company's performance measured from the company's profitability level proxy with return on assets (Jensen et al., 2005; Sudiyatno and Kartika, 2012; Gu and Semba, 2016; Yuliani, Fuadah, and Thamrin, 2018).

Equation in this research is to see the relationship between firm value with independent variable consisting of asset structure, capital structure, and company performance. This equation tests the relationship dynamically to firm value because it incorporates the lag value of the firm's value in the previous period. In this section we present the regression models we estimated. This study employed panel data regressions using the Random Effects estimator (Wooldridge, 2004; Gujarati, 2006). Generally, the equation in this study can be written as follows:

$$FV_{i,t} = \beta_0 + \beta_1 INV_{i,t} + \beta_2 FINC_{i,t} + \beta_3 KINPER_{i,t} + \beta_4 FV_{i,t-1} + \mu_{i,t}$$

Where: $FV_{i,t}$ denotes the firm value for firm i in year t ($i=1, \dots, N$; $t=1, \dots, t$); $INV_{i,t}$, our independent variables of investment decision, measures the asset structure for firm i in year t ; $FINC_{i,t}$, our independent variables of financing decision, measures the debt to equity ratio for firm I in year t ; $KINPER_{i,t}$, our independent variables of corporate performance, measures the return of asset for firm I in year t , $FV_{i,t-1}$ our independent variables of lag firm value, measures the price to book value for firm I in year $t-1$; $\beta_0, \beta_1, \dots, \beta_5$ are parameters to be estimated; μ_i are firm-specific fixed effects; $\varepsilon_{i,t}$ is an idiosyncratic disturbance term.

Table 1. **Data and Source**

Variables	Descriptions	Unit	Source
FV	Firm Value	Ratio	Indonesia Stock Exchange (IDX)
INV	Investment decision	Ratio	Indonesia Stock Exchange (IDX)
FINC	Funding decision	Ratio	Indonesia Stock Exchange (IDX)
KINPER	Company's performance	Ratio	Indonesia Stock Exchange (IDX)
FV (-1)	Firm Value	Ratio	Indonesia Stock Exchange (IDX)

Findings

In table 2 showed a result of panel data regression on dynamic model of firm value indicate that independent variable have significant effect to dependent variable. Selection of panel data regression model showed Random Effect Method based on consideration of Hausman Test result with probability value 0,4792.

Table 2. **Estimation of Panel Data Regression of Firm Value Model**

Variables	Random	Fixed	Pooled
C (constant)	-0.109133*** (0.030351)	-0.380309*** (0.088105)	-0.107635** (0.052606)
INV (Investment decision)	0.001482*** (0.000507)	0.019377*** (0.001792)	0.000719 (0.000793)
FINC (Financial decision)	-0.000578*** (7.06E-05)	-0.001764*** (0.000129)	-0.000323*** (0.000118)
KINPER (Corporate performance)	0.064842*** (0.015279)	-0.057488*** (0.018785)	0.071897** (0.032292)
FV (-1) (Firm value Lag – 1)	0.981546*** (0.008078)	-0.021565 (0.052558)	0.995959*** (0.012402)
Observation	180	180	180
R-Squared	0.952733	0.995973	0.973999
Adjusted R-Squared	0.951653	0.994368	0.973404
F Test	881.8410	620.6723	1638.847
Hausman Test (Chi Square)	0.4792	-	-
Chow Test (Chi Square)	-	0.0000	-
LM Test (Breusch-Pagan)	-	-	0.0000

Notes: *** Significant 1%; ** Significant 5%; * Significant 10%

Regression Analysis

Independent variable consisting of investment decision (INV) has coefficient equal to 0,00148 or 0,15% with significant level equal to 1%. The funding decision (FINC) has a coefficient of -0.00057 or -0.06% with a significant level of 1%, the firm's performance variable (KINPER) has a coefficient of 0.0648 or 6.48% with a significant level of 1%. The dynamic model represented by the independent variable representing the lag of firm value shows the long-term influence of the firm's value of the previous period. Partially lag firm value has coefficient equal to 0,981546 or 98,15% with significant level equal to 1%.

Based on the analysis results in table 1. model of random effects above it can be made multiple linear regression model of the coefficient as follows:

$$FV_{i,t} = -0.109133 + 0.001482 INV_{i,t} - 0.000578 FINC_{i,t} + 0.064842 KINPER_{i,t} + 0.981546 FV_{i,t-1} + \mu_{i,t}$$

The above dynamic regression model can be seen from the investment decision variable, and the company's performance is positive, which means the variables used in the research have a direct relationship with the variable value of the firm which means if the value of the variable increases it will encourage the increase of firm value. While funding decisions marked negative which means the relationship in opposite direction with the company means the more variable it will lower the value of the company.

In table 2 showed a result of panel data regression calculation shows that independent variable able to influence 95% dependent variable that is company value. The analysis results in table 1. above shows the F-Test value of 881.8410, or greater than F Table is 2.42. Independent variables simultaneously affect the dependent variable.

Hypothesis Result

Investment Decision impact to Firm Value

The results obtained from the hypothesis test show that Investment Decision has a significant positive effect on firm value which means if the variable is increased then it will be followed by an increase in the value of the firm. Then H_1 which stated that investment decision has positive sign and significant effect to firm value, accepted.

Financial Decision impact to Firm Value

The results obtained from the hypothesis test show that the funding decision has a significant negative effect on firm value. The higher funding decisions further decrease the value of the firm because the size of the company's debt is paid attention by the investors, as investors are more aware of how the corporate's management uses the funds effectively and efficiently to achieve added value for the firm value. The composition of debt to high capital to finance the company's operations will lead to lower profitability due to high corporate liabilities that must be paid then low profitability affects the value of the firm. Then H_2 stated that financing decision has negative sign and significant effect to firm value, accepted.

Corporate Performance impact to Firm Value

The results obtained from the hypothesis test show that the corporate performance has a significant positive effect on firm value. The financial performance projected by profitability is the overall ability of firms to generate profits based on total assets available within the firm. With high profitability will attract investors to invest in the company and then will result in the value of the company will increase. This is consistent with the signaling theory that signals that indicate high profitability firms can attract investors to invest in such companies. Securities analysts and shareholders are generally very concerned about profitability. The higher the profits generated by the firm, the higher the value of the

firm. Then H₃ that stated that corporate performance has positive sign and significant effect to firm value, accepted.

Theoretical Implication

The results of data analysis show that investment decisions, financial decisions and corporate performance together affect the value of the firm. This means that any change in investment decisions, financing decisions, and corporate performance will affect the value of the firm in the manufacturing company on the Indonesia Stock Exchange.

The results of this study support some previous research. Sabrin, Sarita, and Sujono (2016) said profitability positively affects the value of the firm. While investment decisions and financing decisions have a significant influence on firm value (Drobotz, Janzen, and Meier, 2016). Chowdhury and Chowdhury (2010) explains that the capital structure which is a variable in financing decision has a negative effect on firm value. The result of dynamic model of firm value which gives significant influence to firm value in long term indicates that there is strong influence from every independent variable in firm value formation.

Conclusion

The results of the study explain that the investment decision and performance factors of the corporate is able to give a significant positive impact on the value of the firm. While the financing decisions represented by the capital structure can give a negative effect on the value of the firm. This study provides results that the effectiveness of investment decisions and financing decisions, as well as financial performance has an important role in the formation of firm value. In the long term the value of the firm has a very strong influence on the forming variable. It is expected to provide policy choices for management in the management of corporate performance. And provide an overview for shareholders in performing the corporate performance control.

This study still has limitations on various aspects. The object of research is to use only manufacturing companies that experience a positive level of profitability. This is used for firm value analysis. Future study is recommended to use more complex objects. In addition, it is expected to add independent variables to determine the broader effect. There is one variable that is not included is dividend decision, considering this variable is quite dominant factor in influencing firm value.

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