



## Research Article

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Received: 7 October 2020 / Revised: 27 October 2020 / Accepted: 9 November 2020 / Published: 21 November 2020

# The Determinant of Market-Based Performance: Evidence from Manufacturing Companies in Indonesia

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DOI: <https://doi.org/10.36941/mjss-2020-0060>

## Abstract

*The research aims to explore the determinant of firm's market-based performance in Indonesia manufacturing companies, listed in Indonesia Stock Exchange between 2014 to 2019. The proxies used in this research are Return on Equity (ROE), Leverage, Earning per Share (EPS), Growth, Liquidity (Liquid) and Non-Debt Tax Shield (NDTS). The sampling method employs purposive sampling while the analysis is performed using E-views version 11. The result indicates that in partial, Leverage is negatively significant affect to Firm Performance while the other measured variables, namely Return on Equity, Leverage, Earning Per Share, Liquidity and Non-Debt Tax Shield, prove to be insignificant affect to firm performance. All variables simultaneously affect strongly on Firm Performance. This research implies that the management of the firm should observe Return on Equity (ROE), Leverage, Earning- per Share (EPS), Growth, Liquidity (Liquid) and Non-Debt Tax Shield (NDTS) closely in developing their strategy for better firm performance.*

**Keywords:** *firm performance determinant, Manufacturing, Indonesia*

## 1. Introduction

High performing firm attracts wide ranges of stakeholders with different interest. Typically, there are two performance dimensions that stakeholders observed, which are financial performance and non-financial performance (Santos and Brito, 2012).

Financial performance is measured not only by the growth rate and its profitability, but also by instances such as economic value. On the other hand, non-financial performance is broader with each stakeholder seek for particular company information in accordance to its agenda. In a middling approach, Jensen (2001) reconciled for both social and economic theory to come up with stakeholder satisfaction measurement as a tool for firm's performance measurement.

Following Jensen combined approach, Al-Matari *et al* (2014) developed measurement of firm's performance on the basis of stakeholder's approach comingling accounting measurement with market-based performance to reflect the interest of stakeholders with its long-term view.

Previous studies set ranges of variables as the determinant of firm performance, among others are Firm Size (Al Qaisi *et al.*, 2016; Sharif *et al.*, 2015), Age of the Firm (Al Qaisi *et al.*, 2016), Firm's Growth, Fixed Asset, Working Capital, Leverage (Punchir, 2014; Jafari and Al Saman, 2015; Al Azam, 2014; Al Qaisi *et al.*, 2016), Sales Growth divided by Asset Growth (Jayasiri, 2015 ; Al Azam, 2014)), Return on Asset (Burja, 2011; Al Qaisi *et al.*, 2016), Return on Equity, Book Value per-share, Price Earnings Ratio, Dividend per share/yield, Earning-Per Share (Al Tamimi *et al.*, 2009; Sharif *et al.*, 2015). Furthermore, various variables have reached heterogenous conclusion in contributing firm's performance. Al Qaisi *et al.* (2016) found that ROE does not affect firm performance, while Sharif *et al.* (2014) found that ROE affected firm performance. Al-Qaisi *et al.* (2016) also found that leverage affected firm performance, while Punchir (2014) found otherwise. EPS was also drawn to have positive effect (Al Tamimi *et al.*, 2009) as well as negative effect to firm performance (Sharif *et al.*, 2014).

Furthermore, sales growth did not affect firm's performance, while asset growth told otherwise (Jayasiri, 2015). Meanwhile, liquidity negatively affected performance (Calistus *et al.*, 2018, Anastasia *et al.*, 2014, Mohammad *et al.*, 2019) while other researches found that liquidity positively affect firm's performance (Grace, 2015; Kartal, 2016; Al Nimer *et al.*, 2015). Mixed result was also drawn in the study by Saleem *et al.* (2011).

Among those related variables, Non-Debt Tax Shield has not been explored extensively, with only the work of Sritharan (2015) concluded that there is negative relation between Non-Debt Tax Shield with Firm Performance. Based on the importance of market-based measurement of performance and the variation in result on its effect to performance from previous studies, this research explores the determinant of market-based measurement performance, which represented by Return on Equity (ROE), Leverage, Earning per Share (EPS), Growth, Liquidity (Liquid) and Non-Debt Tax Shield (NDTS) of manufacturing companies listed in Indonesia Stock Exchange between 2014 to 2019.

## 2. Theoretical Review

### 2.1 The Grand Theory: The Agency, Stakeholder and Pecking Order Theory

Agency Theory describes agent relation as consequences of the inability of firm's shareholder to directly execute business plan by themselves, appointing third parties known as management (Berk *et al.*, 2011). The main task of management is to increase firm's value, thus, the management must place their best effort to maximize firm's value, hence, shareholder's value (Brigham and Houston, 2014). On the other hand, stakeholder theory acknowledge the presence of a person or group, such as shareholder, employee, customer, local community or even government, that could influence or could be influenced by activities of firm's profit making (Friedman and Miles, 2006). Given its presence, the management of firm are bound by all interest parties interacted with the firm when running the company. Meanwhile the Pecking Order Theory states that there is a hierarchy in financing decision. First, firm will choose internal source and hope it is precepted as a good news by the investor and when external source needed it must add value for the firm in order to be precepted as a good news either by the investor.

### 2.2 Literatures supported to Dependent Variable

Management success in managing a firm could be observed by both financial and non-financial aspect (Hansen and Mowen, 2007; Santos dan Brito, 2012). The specific measurement to firm's performance recorded by Al-Matari *et al.* (2014) are Accounting Based Measurement (ABM) and Market Based Measurement (MBM). ABM measures performance based on accounting concepts that shows the effective indicator of firm in obtaining profit. It is usually measured by Return on Asset (ROA), Return on Equity (ROE), Return on Sales (ROA) or Return on Investment (ROI) and other profit measurement. Santos dan Brito (2012) argued that these measurements are short term, hence,

has limited capacity to portray firm's performance. Thus, Selvam (2016) suggested the use of multiple measurement in assessing firm performance. Furthermore, MBM measures firm's performance on the basis of its market value, which involves future aspect that reflected shareholder's expectation of firm future performance as well as considers the other stakeholder's interest. This places market value as an indicator of firm performance usually represented by Tobin's Q formula, Market Value Added (MVA), Market to Book Value (MTBV). Among these variables, Tobin's Q formula has been used the most. (Al Matari et al, 2014).

### 2.3 Literatures supports Independent Variables

Return on Equity (ROE) is a portion of net income for shareholder (Titman, Keown, Martin, 2014), both for common and preferred shareholders. High ROE is often considered as better firm performance. The study by Sharif et al (2015) stated that ROE had significant effect on MBM of performance.

Leverage shows the portion of external funding, calculated as a portion of debt to equity or debt to total asset (Titman, Keown, Martin, 2014). According to pecking order theory, leverage will affect firm performance, either positive or negative. This is in line with works by Al Azam (2014), Wydia et al. (2015), Jafari(2015).

Earnings Per Share (EPS) describes net income obtained for every share. It is calculated as net profit after deducted by the portion for preferent share then divided by the amounts of outstanding shares. In general, high EPS is translated into higher firm's performance. This is supported by works of Tamimi et al. (2009) and Rudi (2018), which concluded that EPS significant affected on MBM firm's performance

Growth shows the trend of change, whether increase or decrease from respective year, which usually measured as sales or asset growth. Sales growth is calculated as:

$$\text{Growth}_{\text{sales}} = (\text{sales } t - \text{sales } t-1) / \text{sales } t-1$$

while asset growth calculated as follow:

$$\text{Growth}_{\text{asset}} = (\text{growth year } t - \text{growth year } t-1) / \text{growth year } t-1.$$

High growth leads to better firm performance. This relationship is supported by finding of Jayasiri (2015), Jafari (2015) and Al Azam (2014).

Liquidity refers to the ability of firm in meeting its short- term debt (Titman et al, 2014). It is usually calculated as follow:

$$\text{Current Ratio} = \text{Current Asset} / \text{Current Liability}$$

$$\text{Acid Test Ratio} = (\text{Current Asset} - \text{Inventory}) / \text{Current Liability}.$$

The sound practice of Liquidity gives positive signal to shareholders and an indication of good performance. Thus, Liquidity affect Firm Performance

Non- Debt Tax Shield (NDTS) is related with tax facility from government that firm could use (tax shield), such as depreciation expense. In calculating taxable income, depreciation expense treated as interest expense. This means that higher value of depreciation implies higher tax saving and improves cashflow. With higher cash flow, firm has more space to increase its performance. NDTS affects firm performance in general.

### 2.4 Conceptual framework and hypotheses

The relation between variables (ROE, Leverage, EPS, Growth, Liquidity and NDTS) and Firm performance are shown in Figure 1 below:

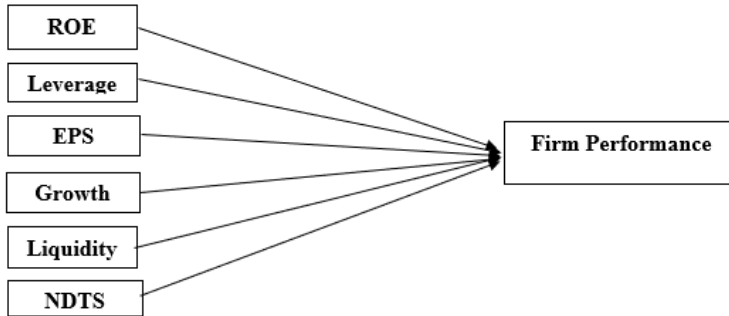


Figure 1. Conceptual Framework

Thus, the hypotheses are constructed as following:

- H<sub>1</sub>: Return on Equity has positive effect on Firm Performance
- H<sub>2</sub>: Leverage affects Firm Performance
- H<sub>3</sub>: Earnings per Share affects Firm Performance
- H<sub>4</sub>: Growth affects Firm Performance
- H<sub>5</sub>: Liquidity affects Firm Performance
- H<sub>6</sub>: Non-Debt Tax Shield affects Firm Performance

### 3. Methodology

#### 3.1 Research Design and Subject

This research adopted a confirmatory research, where the hypotheses are tested on their effect to dependent variables: the relationship between ROE, Leverage, EPS, Growth, Liquidity and NDTS to the dependent variable, which is firm performance. The subject of research is manufacturing companies listed in Indonesia Stock Exchange between 2014 to 2019. The sampling used is purposive sampling subject to the availability of data. Data collected through IDX website and Library research.

#### 3.2 Variable Operationalization

The variables operated in this research is shown in table 1.

Table 1. Operationalization of research variables

Variable	Description	Formula	Scale
Firm Performance (Y)	Firm Performance at a certain year	Tobin's Q = $\frac{\text{Share Market Value}}{\text{Total Asset}}$	Ratio
ROE (X <sub>1</sub> )	Firm's ability in generating profit using equity owned	$\frac{\text{Net Profit}}{\text{Total Equity}}$	Ratio
Leverage (X <sub>2</sub> )	Debt proportion in Financing to Total Asset	$\frac{\text{Debt Total}}{\text{Asset Total}}$	Ratio
EPS (X <sub>3</sub> )	Profit proportion for each share	$\frac{\text{Net Profit}}{\text{outstanding shares}}$	Ratio
Growth (X <sub>4</sub> )	Company's growth by Asset	$\frac{\text{asset year } t - \text{asset year } t-1}{\text{asset year } t-1}$	Ratio
Liquidity (X <sub>5</sub> )	Firm's ability to fulfill short-term debt	$\frac{\text{Depresiascurrent asset}}{\text{current liability}}$	Ratio
Non-Debt Tax Shield (X <sub>6</sub> )	Tax benefit because of the law	$\frac{\text{Depreciation Expense}}{\text{Total Asset}}$	Ratio

Source: 2020, processed data

### 3.3 Analysis Method

The research involves panel data, thus regression analysis used which is supported by 11,0 version E-views through following steps: a) Descriptive Statistic Analysis, b) model estimation, c) model selection, d) classical Assumption Test and e) hypotheses test, comprises : Determination Coefficient Analysis (R<sup>2</sup>), Statistical F Test, t-Test and multiple linear regression analysis.

## 4. Result and Discussion

### 4.1 Descriptive Statistic Analysis

**Table 2.** Statistic Descriptive Test result

	FIRMPER	ROE	LEV	EPS	GROWTH	LIQUID	NDTS
Mean	2.670648	0.235982	0.376615	672.8877	0.123058	2.794531	0.030777
Median	1.547000	0.138563	0.336649	109.9054	0.090054	2.396868	0.028470
Maximum	22.55900	2.244585	0.837462	8101.439	1.050409	8.088936	0.066251
Minimum	0.096000	-0.160562	0.119486	-304.6613	-0.286635	0.605632	0.008569
Std. Dev.	4.038994	0.388049	0.188983	1389.250	0.198208	1.536530	0.014504
Skewness	3.301590	3.535460	0.844028	3.150835	2.256448	0.777157	0.633854
Kurtosis	13.72800	15.55859	2.823432	13.54972	10.25382	3.222380	2.543078
Jarque-Bera	714.1139	934.7228	12.96319	679.5340	328.4287	11.09406	8.171374
Probability	0.000000	0.000000	0.001531	0.000000	0.000000	0.003899	0.016812
Sum	288.4300	25.48603	40.67445	72671.88	13.29025	301.8093	3.323877
Sum Sq. Dev.	1745.541	16.11228	3.821476	2.07E+08	4.203655	252.6189	0.022509
Observations	108	108	108	108	108	108	108

**Source:** 11,0 version, E-views Output

Firm Performance has minimum of 0,096000 own by INAI in 2015 and maximum of 22,55900 on behalf of UNVR in 2017, with the mean of 2,670648 and standard deviation of 4,038994. The mean of Firm Performance > 1, which means that market overvalued manufacturing companies in between 2014 and 2019. This can be interpreted as unmeasured/unrecorded assets within reflected market value.

The minimum value of Return on Equity (ROE) is - 0,160562 possessed by LMSH in 2011 and maximum value of 2,244585 own by MERCK in 2018. The mean value of 0,235982 and deviation standard of standard deviation of 0,388049. The mean of ROE more than 20%, indicated the high return of equity on manufacturing companies between 2014 and 2019 in IDX.

Leverage has minimum value of 0,119486 entitled to EKAD in 2019 and maximum of 0,837462 associated with INAI in 2014. The mean shot at of 0,376615 while the standard deviation rests at 0,188983. The mean value below 50% indicated that Indonesia manufacturing companies practiced a sound financing on their capital structure between 2014 and 2019.

Minimum value of EPS is -304.6613 attached to AMFG in 2019 and maximum of 8101.439 that belong to MERCK in 2014. The mean value is at 672.8877 while the standard deviation is at 1389.250.

Growth has minimum value of -0,286635, owned by MERCK in 2019 and maximum of 1,050409 possessed by ROTI in 2018. The mean value identified at 0,123058 while the standard deviation stayed at 0, 198208. The growth of Indonesian manufacturing companies during 2014 to 2019 quite small.

The Minimum of Liquidity is at 0,605632 belong to UNVR in 2016 and maximum is at 8,0833936 recorded by LMSH in 2015. The mean value is at 2,794531 while standard deviation rested at 1,536530. The Indonesian manufacturing companies practiced sound Liquidity for more than 2, indicated a strong liquidity.

Non debt tax shield has minimum value of 0,008569 belong to KAEF in 2019 and maximum value of 0,056251 set by ARNA in 2017. The mean value is at 0,030777 while the standard deviation is at 0,014504. Depreciation expense the Indonesian manufacturing companies set around 3% proportion from total asset, quite small.

4.2 Panel Data Regression Model Estimation.

The result of regression model run using E-Views are presented in table 3, 4, and 5 for Common Effect, Fixed Effect, and Random Effect model respectively.

**Table 3.** Common Effect Model

Dependent Variable: FIRMPER  
Method: Panel Least Squares  
Date: 09/06/20 Time: 11:53  
Sample: 2014 2019  
Periods included: 6  
Cross-sections included: 18  
Total panel (balanced) observations: 108

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.180478	2.106542	0.560387	0.5765
ROE	7.434896	0.884858	8.402360	0.0000
LEV	0.296266	2.645331	0.11996	0.9110
EPS	-0.000317	0.000221	-1.433198	0.1549
GROWTH	-4.717642	1.545784	-3.051942	0.0029
LIQUID	-0.114273	0.318526	-0.358756	0.7205
NDTS	23.96401	21.17371	1.131781	0.2604
Root MSE	2.892663	R-squared		0.482287
Mean dependent var	2.670648	Adjusted R-squared		0.451531
S.D. dependent var	4.038994	S.E. of regression		2.991225
Akaike info criterion	5.091862	Sum squared resid		903.6901
Schwarz criterion	5.265704	Log likelihood		-267.9605
Hannan-Quinn criter.	5.162348	F-statistic		15.68144
Durbin-Watson stat	1.110397	Prob(F-statistic)		0.000000

Source: 11,0 version E-views Output

**Table 4.** Fixed Effect Model

Dependent Variable: FIRMPER  
Method: Panel Least Squares  
Date: 09/06/20 Time: 11:56  
Sample: 2014 2019  
Periods included: 6  
Cross-sections included: 18  
Total panel (balanced) observations: 108

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.135548	1.101558	2.846467	0.0056
ROE	-0.620453	0.452912	-1.369919	0.1744
LEV	-0.669489	1.539013	-0.435012	0.6647
EPS	-7.87E-05	0.000124	-0.635778	0.5266
GROWTH	0.270485	0.685573	0.394539	0.6942
LIQUID	0.037544	0.142939	0.262656	0.7935
NDTS	-4.926538	23.61279	-0.208639	0.8352

Effects Specification

Cross-section fixed (dummy variables)			
Root MSE	0.886732	R-squared	0.951350
Mean dependent var	2.670648	Adjusted R-squared	0.938030
S.D. dependent var	4.038994	S.E. of regression	1.005460
Akaike info criterion	3.041897	Sum squared resid	84.91978
Schwarz criterion	3.637927	Log likelihood	-140.2625
Hannan-Quinn criter.	3.283566	F-statistic	71.41892
Durbin-Watson stat	2.104966	Prob(F-statistic)	0.000000

Source: 11,0 version E-views Output

**Table 5.** Random Effect Model

Dependent Variable: FIRMPER  
Method: Panel EGLS (Cross-section random effects)  
Date: 09/06/20 Time: 11:58  
Sample: 2014 2019  
Periods included: 6  
Cross-sections included: 18  
Total panel (balanced) observations: 108  
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.534560	1.055859	2.400473	0.0182
ROE	0.646303	0.431034	1.499426	0.1369
LEV	0.424215	1.376836	0.308109	0.7586
EPS	-7.51E-05	0.000115	-0.650404	0.5169
GROWTH	-0.578079	0.638824	-0.904911	0.3677
LIQUID	-0.014732	0.138212	-0.106586	0.9153
NDTS	-0.434085	17.34505	-0.025026	0.9801
Effects Specification				
			S.D.	Rho
Cross-section random			1.423357	0.6671
Idiosyncratic random			1.005460	0.3329
Weighted Statistics				
Root MSE	1.403953	R-squared		0.016973
Mean dependent var	0.740022	Adjusted R-squared		-0.041424
S.D. dependent var	1.422623	S.E. of regression		1.451789
Sum squared resid	212.8769	F-statistic		0.290651
Durbin-Watson stat	0.922736	Prob(F-statistic)		0.940156
Unweighted Statistics				
R-squared	0.088299	Mean dependent var		2.670648
Sum squared resid	1591.412	Durbin-Watson stat		0.123431

**Source:** 11,0 version E-views Output

#### 4.3 Selection of Panel Data Regression Model

##### 4.3.1 Chow Test (Fixed Effect Test)

Chow Test selects model by comparing common and fixed effect model for testing the hypotheses as follows:

H<sub>0</sub>: Common Effect Model

H<sub>1</sub>: Fixed Effect Model

Under the condition H<sub>0</sub> will be rejected if P-value < α (α = 5%) and accepted if P-value > 0.05 and the result appears in table 6.

Based on the result of Chow Test, it is shown that Cross Section probability of 0,0000 < 0,05 thus the model selected is Fixed Effect Model

##### 4.3.2 Hausman Test (Random Effect Test)

Hausman Test selects models by comparing Fixed Effect and Random Effect Model for preferable model.

H<sub>0</sub>: Random Effect Model

H<sub>1</sub>: Fixed Effect Model

Under condition if P-value < 0,05, H<sub>0</sub> rejected and if P-value > 0,05, H<sub>0</sub> accepted. The result of Hausman Test shown on following table.

Based on Hausman Test result it is revealed that cross-section F probability of  $0.0000 < 0,05$ . Thus, the selected model is Fixed Effect model and it is not necessary to execute Lagrange Multiplier Test caused Chow and Hausman Test produce the same result. Lagrange Multiplier Test is conducted to determine the preferable method between the common effect or random effect, through Chow and Hausman test the result is Fixed Effect is the better model than common and random effect model.

#### 4.4 Classical Assumption Test

In fulfilling the assumption of BLUE (Best Linear Unbiased Estimation) minimal classical assumption test that must be executed is Multicollinearity, Heteroscedasticity and Autocorrelation test (Ekananda, M, 2016).

##### 4.4.1 Multicollinearity Test

Table 6 shows the result of multicollinearity test.

**Table 6.** Multicollinearity Test Result

	ROE	LEV	EPS	GROWTH	LIQUID	NDTS
ROE	1	0.39279097...	0.26091592...	0.27002719...	-0.3518667...	-0.0929266...
LEV	0.39279097...	1	-0.0733824...	0.11038599...	-0.7883882...	-0.0695304...
EPS	0.26091592...	-0.0733824...	1	0.01009858...	0.02284661...	-0.0762982...
GROWTH	0.27002719...	0.11038599...	0.01009858...	1	-0.1005203...	-0.1921020...
LIQUID	-0.3518667...	-0.7883882...	0.02284661...	-0.1005203...	1	-0.0997276...
NDTS	-0.0929266...	-0.0695304...	-0.0762982...	-0.1921020...	-0.0997276...	1

**Source:** 11,0 version E-views Output

From table 6. seen that all coefficient correlation between variables  $< 0.80$ , therefore regression model free from multicollinearity problem.

##### 4.4.2 Heteroscedasticity Test

Common Effect and Fixed effect are suspected to incur heteroscedasticity problem. This is observable after comparing the model with and without a weight (Lela, 2017). The result concluded that Fixed Effect model is preferable after identifying heteroscedasticity issue. The following are information on fixed Effect with and without weight is presented table 7 and 8.

**Table. 7.** Unweighted Fixed Effect Model

Dependent Variable: FIRMPER  
Method: Panel Least Squares  
Date: 09/06/20 Time: 11:56  
Sample: 2014 2019  
Periods included: 6  
Cross-sections included: 18  
Total panel (balanced) observations: 108

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.135548	1.101558	2.846467	0.0056
ROE	-0.620453	0.452912	-1.369919	0.1744
LEV	-0.669489	1.539013	-0.435012	0.6647
EPS	-7.87E-05	0.000124	-0.635778	0.5266
GROWTH	0.270485	0.685573	0.394539	0.6942
LIQUID	0.037544	0.142939	0.262656	0.7935
NDTS	-4.926538	23.61279	-0.208639	0.8352



Effects Specification			
Cross-section fixed (dummy variables)			
Root MSE	0.886732	R-squared	0.951350
Mean dependent var	2.670648	Adjusted R-squared	0.938030
S.D. dependent var	4.038994	S.E. of regression	1.005460
Akaike info criterion	3.041897	Sum squared resid	84.91978
Schwarz criterion	3.637927	Log likelihood	-140.2625
Hannan-Quinn criter.	3.283566	F-statistic	71.41892
Durbin-Watson stat	2.104966	Prob(F-statistic)	0.000000

Source: 11,0 version E-views Output

Table 8. Weighted Fixed Effect Model)

Dependent Variable: FIRMPER  
Method: Panel EGLS (Cross-section weights)  
Date: 09/06/20 Time: 14:40  
Sample: 2014 2019  
Periods included: 6  
Cross-sections included: 18  
Total panel (balanced) observations: 108  
Linear estimation after one-step weighting matrix

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.390618	0.293832	11.53930	0.0000
ROE	-0.267569	0.313245	-0.854185	0.3954
LEV	-1.071128	0.454776	-2.355287	0.0208
EPS	3.62E-05	9.65E-05	0.375420	0.7083
GROWTH	-0.087669	0.154519	-0.567368	0.5720
LIQUID	-0.007906	0.023325	-0.338937	0.7355
NDTS	-7.957639	5.732597	-1.388139	0.1688

Effects Specification			
Cross-section fixed (dummy variables)			
Weighted Statistics			
Root MSE	0.815265	R-squared	0.923098
Mean dependent var	3.201408	Adjusted R-squared	0.902042
S.D. dependent var	1.744763	S.E. of regression	0.924424
Sum squared resid	71.78303	F-statistic	43.83928
Durbin-Watson stat	1.689085	Prob(F-statistic)	0.000000
Unweighted Statistics			
R-squared	0.950113	Mean dependent var	2.670648
Sum squared resid	87.07974	Durbin-Watson stat	2.149377

Source: 11,0 version E-views Output

In finding a preferable model, the comparison of two models seen on table 9 below.

Table 9. The Comparison of Unweighted and Weighted Fixed Effect Model

Parameter	Unweighted Fixed Effect Model	Weighted Fixed Effect Model
Statistis t probability	No variables < 0.05	1 variable < 0.05
R-Squared	0.951350	0.923098
F-Statistic Probability	0.0000	0.0000

Source: processed Data, 2020

The significant difference between two models is on t statistics probability, where weighted fixed effect model is better than unweighted one. Therefore, the final model selected is weighted fixed effect Model exhibited on table 8.

#### 4.4.3 Autocorrelation Test

Autocorrelation test performed to identify the presence of correlation between observation, whether in the form of time series or cross section. As panel data is characterized by time series and cross section, autocorrelation issue is ignored for such data type. (Ekananda, M, 2016).

#### 4.5 Hypotheses Test

Model selection test concluded that fixed effect model is preferable model. Furthermore, heteroscedasticity test stated that weighted fixed effect model is better than unweighted version. Therefore, hypotheses test is based on weighted fixed effect model as presented in table 8.

##### 4.5.1 The Determination Coefficient (Adjusted R<sup>2</sup>)

As shown in Table 8, the Adjusted R<sup>2</sup> value of 0,902042 would mean that all independent variables, namely Return on Equity (ROE), Leverage, Earning per Share (EPS), Growth, Liquidity and Non Debt Tax Shield, are able to describe Firm Performance amounting to 90,20%. The Adjusted R<sup>2</sup> value of 90,20% indicated that the effect of all independent variables on Firm Performance is strong because > 0.50.

##### 4.5.2 The F Statistics Test (simultaneously)

As F-value sit at 43,83928 with probability of 0,000000 < 0,05, it can be concluded that all independent variables, which are Return on Equity (ROE), Leverage, Earning per Share (EPS), Growth, Liquidity and Non Debt Tax Shield, affect Firm Performance collectively as demonstrated in panel data regression.

##### 4.5.3 The T-test (partial)

It is found that only Leverage negatively affect Firm Performance since the probability of 0,0208 < 0,05. The other five variables, which are ROE (0,3954), EPS (0,7083), Growth (0,5720), Liquid (0,7355) and NDTs (0,1688), has no significant affect to firm performance.

##### 4.5.4 Multiple linear regression analysis

Based on table 8. the regression equation can be formed as follows:

Firm Performance (Y) = 3,390618 - 0.267569 (ROE) - 1.071128 (Leverage) + 3.62E-05 (EPS) - 0.087669 (Growth) - 0.007906 (Liquidity) - 7.957639 (Non-Debt Tax Shield)

The equation above can be explained as follows:

The constant value of 3,390618 shows that, when Return on Equity (ROE), Leverage, Earnings per Share (EPS), Growth, Liquidity and Non- Debt Tax Shield experience no change, then, the value of firm performance is 3,390618.

ROE's coefficient is negative at 0.267569. This means that when other independent variables is constant, any increase in ROE by 1 unit will decrease firm performance by 0.267569 and vice versa.

Leverage's coefficient is negative at -1.071128. This implies that when other independent variables is constant, any increase in leverage by 1 unit will decrease firm performance by 1.071128 and vice versa.

The regression's coefficient value of EPS is at  $+3.62E-05$ . This means that any increase in EPS by 1 unit will increase firm performance by  $3.62E-05$ , given that other independent variables is assumed to be constant and vice versa.

The growth's coefficient is at  $-0.087669$ . This implies that when other independent variables assumed constant, any increase of growth by 1 unit will decrease firm performance by  $0.087669$  and vice versa.

The regression coefficient of Liquidity is at  $0.007906$ . This means that any increase in Liquidity by 1 unit will decrease firm performance by  $0.007906$ , given that other independent variables assumed constant.

The NDTs coefficient is at  $-7.957639$ . This implies that when other independent variables assumed constant, any increase of NDTs by 1 unit will decrease firm performance by  $7.957639$  and vice versa.

## 5. Discussion

### 5.1 The Effect of Return on Equity on Firm Performance.

The result of statistical test concludes that ROE does not affect firm performance. The possible explanation is that from measurement side, ROE calculated as a proportion of net income to equity, while firm performance proxied with Tobin's Q formula calculated as the proportion of market value of outstanding share to total asset. Therefore, the effect of ROE is indirect through the fluctuation of total asset as result of net income fluctuation. In other word, net income fluctuation of manufacturing firm listed in IDX between 2014 to 2019 is not strong enough to push firm performance to change. That is, ROE does not significantly affect firm performance

### 5.2 The Effect of Leverage on Firm Performance.

The test shows that leverage negatively and significantly affect firm performance. It is in line with trade off and Pecking Order theory, which state that at a certain point leverage affect negatively and in other point change to positive affect. When leverage produces net income in the form of sufficient asset fluctuation to push firm performance to change, leverage affects firm performance as suggested by Al Azam (2014), Wydia *et al.* (2015) and Jafari (2015).

### 5.3 The Effect of EPS on Firm Performance

The result shows that EPS does not significantly affect firm performance, which is in contrast to concept in finance that advise that income affects firm's performance. The possible explanation on this comes through its measurement, where EPS calculated as a proportion of net income to outstanding share, while Firm Performance is measured with Tobin's Q formula, calculated as proportion of outstanding share market value to total asset. From this view, there are three factors affecting firm performance, namely are net income, share market price and total asset. On the other hand, share price is external factor precepted as given factor. Therefore, EPS will affect firm performance only if net income is generated from the efficient operation in using of total asset. In other word, EPS does not affect firm performance because it is inefficient in using asset to obtain income.

### 5.4 The Effect of Growth on Firm Performance

Statistical test result shows that growth does not significantly affect firm performance. The condition that drives growth does not affect firm performance because growth is related to change in total asset that not necessarily relate and influence fluctuation of firm performance.

### 5.5 The Effect of Liquidity on Firm Performance

Result shows that liquidity does not significantly affect firm performance. The reasonable explanation is that liquidity as a proxy of financial sound does not always perceive to be a good news for investor. Instead, market price becomes relatively stable. Therefore, liquidity does not affect firm performance.

### 5.6 The Effect of Non-Debt Tax Shield (NDTS) on Firm Performance.

The result of statistical test suggests that NDTS does not affect firm performance. NDTS is calculated as a proportion of depreciation expense to total asset, while firm performance is a proportion of outstanding share market price to total asset. Thus, the driving factor is on depreciation expense and share price. Most of depreciation expense of observed firms are relatively stable. This made NDTS to be unrelated to Firm Performance.

## 6. Conclusion and Suggestion

Simultaneously, all independent variables represented by ROE, Leverage, EPS, Growth, Liquidity and Non-Debt Tax Shield (NDTS) strongly affect Firm Performance, but from these variables partially, only Leverage has a negative significant effect on Firm Performance. This study implies that all firm management is suggested to consider ROE, Leverage, EPS, Growth, Liquidity and Non-Debt Tax Shield (NDTS) in their strategy planning of performance achievement.

Considering that all independent variables, namely ROE, Leverage, EPS, Growth, Liquidity and Non-Debt Tax Shield (NDTS) strongly affect Firm Performance, even in partial manner, thus, it is only leverage that has negative significant effect on firm performance. Therefore, it is suggested to further researcher to re-observe the effect of the rest variables to Firm Performance to find a better result that correspond with established financial concept by adding the long of time in period.

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