The Economics and Finance Letters
2019 Vol. 6, No.1, pp.78-91
ISSN(e): 2312-430X
ISSN(p): 2312-6310
DOI: 10.18488/journal.29.2019.61.78.91

PROFITABILITY BEHAVIOR OF PLASTIC INDUSTRIES IN INDONESIA

Erwin Mangaratua Pardosi[1+]
Bambang Mulyana[2]

[1,2]*Postgraduate Program, Mercu Buana University, Indonesia.*
[1]*Email: erwinpardosi@gmail.com*
[2]*Email: bambang_mulyana@mercubuana.ac.id*

(+ Corresponding author)

Article History
Received: 22 January 2019
Revised: 5 March 2019
Accepted: 12 April 2019
Published: 3 June 2019

Keywords
Profitability
Financial behavior
Internal influence
External influence
Financial ratios.

JEL Classification:
C23; G00; L65.

ABSTRACT

This study aims to analyze the effects on the profitability (net profit margin, return on assets and return on equity) of plastic companies by internal influences (current ratio, debt to equity ratio and total asset turnover) and external influences (exchange rate, petroleum price and inflation). The object of the research is the plastic industries registered in the Indonesian stock exchange with a total of 9 industries and in the period 2012 - 2017. The methodology used is descriptive quantitative research and causality with purposive sampling technique and panel data regression analysis. The results of this study indicate that the current ratio has a partially positive effect, particularly significant in terms of net profit margin. Current ratio and total asset turnover also have a partially positive effect, with significant return on assets. Debt to equity ratio partially has a partially negative effect, but a significant return on equity.

Contribution/Originality: This study is one of very few that has investigated the causal relationship between internal and external influences on profitability. Consequently, it highlights the importance of identifying financial ratios and macroeconomics with a view to increasing profitability.

1. INTRODUCTION

The manufacturing industry in Indonesia has been in positive growth over the last year. According to data from the Central Statistics Agency (BPS), production growth of large and medium manufacturing industries was 5.51 percent annually (year on year / y-o-y) in the third quarter of 2017. According to the Minister for Industry, Indonesia is now ranked 9th in the world for manufacturing industry (kompas.com-13 / 06.2017). In 2018, the manufacturing industry is expected to play a major role in Indonesia's overall economic growth. A study conducted by a team of Mandiri Group economists from PT Bank Mandiri (Persero) estimated that the economy would grow by 5.3 percent in 2018 (detikfinance-07/02/2018).

There is considerable potential for development in the Indonesian plastics industry in Indonesia. It is a vital sector with upstream, intermediate, and downstream scope that is needed by many other industries, and has also a diverse product range. The number of companies in the plastics industry is currently 925, employing 37,327 workers, and producing 4.68 million tons of products. National demand has increased by five percent to 4.6 million tons in the last five years[1]. As it develops, the plastics industry faces various challenges, including supply and demand for raw materials such as polyethylene and polypropylene. In 2014, domestic demand was 1.42 million tons

[1] http://www.kemenperin.go.id/artikel/18225/Pengembangan-Industri-Plastik-dan-Karet-Hilir-Prospektif

of polyethylene and 1.51 million tons of polypropylene, with domestic supply 703,000 tons and 656,000 tons respectively. To meet these needs, the domestic plastic raw materials industry will expand by increasing installed production capacity so that by 2019 the demand for plastic raw materials can be met from within the country (Ansori, 2016). Many upstream petrochemical industries in Indonesia do not have oil refineries that produce plastics raw material. This limited processing capacity necessitates the importation of 1.6 million tons of naphtha raw materials and 33 million barrels of condensate annually (Indonesian Ministry of Industry, 2018).

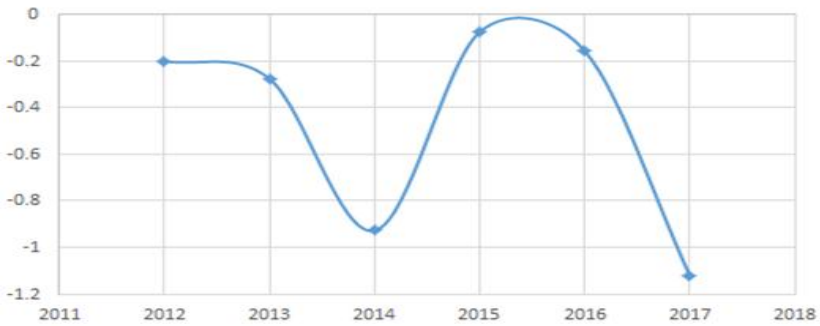

Figure-1. NPM Plastics industry in Indonesia for the period 2012-2017.
Source: Financial Report each Industries that listed in BEI.

Figure 1 shows fluctuations in the average NPM of nine plastics manufacturers.

Figure-2. ROA Plastics industry in Indonesia for the period 2012-2017.
Source: Financial Report each Industries that listed in BEI.

Figure 2 shows the average ROA of nine plastics manufacturers to be on the rise.

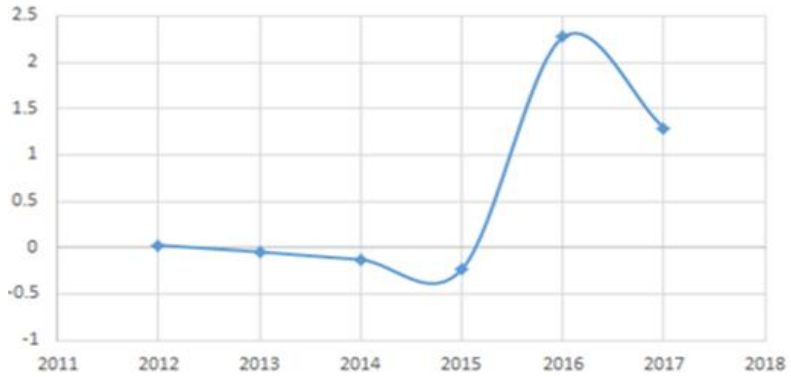

Figure-3. ROE Plastics industry in Indonesia for the period 2012-2017.
Source: Financial Report each Industry that listed in BEI.

Figure 3 shows fluctuations in the average ROE of nine plastics manufacturers.

Based on Figures 1, 2 and 3, it can be concluded that the behavior of the NPM, ROA and ROE ratios in the plastics industry of Indonesia varies. It is therefore necessary to determine what causes these variations. As indicated, industrial performance is affected by external and internal factors. Internal factors are variables that have a direct relationship with management. External factors do not have a direct relationship with management, but have an indirect effect on the economy which, in turn, impacts on the performance of industrial organizations.

2. LITERATURE REVIEW

Profitability ratio measures a company's ability to make profits, as well as the effectiveness of its management. (Crawford and Davies, 2014). According to De Marzo and Berk (2014) Net profit margin is the ratio between net income (sales after deducting all expenses, including taxes) and sales. The higher the net profit margin, the better the company's performance. Return on assets is a measure of profitability on total assets by comparing the profit after tax to average total assets. According Syahyunan (2015) return on assets shows the company's ability to generate profits from assets.

Crawford and Davies (2014) measures the return to the owners on the book value of their investment in a company. The return is measured as the residual profit after all expenses and charges have been made, and after corporate income tax has been deducted. The equity comprises share capital, retained earnings and reserves. Current ratio is generally used to measure management's ability to pay all short-term debts. The greater the comparison between current assets and short-term liabilities, the greater the ability of the company to cover or pay for all its short-term obligations. The level of current ratio shows that the results of 200% or 2.00 have been satisfying for the company in general, and this ratio level is used as a starting point in the conduct of research (Munawir, 2014). According to De Marzo and Berk (2014) the ratio used to show the effectiveness of company management in utilizing its assets to generate income or profits is shown through total asset turnover (TATO). The greater the ratio the better, because the results of these calculations show that assets owned by the company can be turned over faster resulting in the faster earning of profits.

Debt to equity ratio is used to measure a company's ability to cover part or all of its debts both long-term and short-term with funds originating from total capital compared to the amount of the company's debt (Sutrisno, 2009). A higher the debt to equity ratio shows greater total debt to total equity. It will also indicate a greater dependence of the company on external parties, so increasing the company's the risk. This will impact negatively on stock prices and diminish profits (Sawir, 2009). According to Kettering (2009) in the global economy all companies have risks flowing from exchange rate fluctuations. Uremadu *et al.* (2017) put forward the "purchasing power parity hypothesis" which states that "the rate of exchange between two currencies depends on their relative purchasing power in the countries, in which they circulate, making allowance for cost of transaction and the effects of import duties or purchase taxes". The differences in the purchasing power of foreign and domestic currencies create pressure on the "naira" which is the weaker of the two currencies. Mok (2005) asserted that the relationship between the stock price and the exchange rate was insignificant.

Fluctuations in the price of crude oil in the international market follow the generally accepted principles of the market economy, where the prevailing price level is fundamentally determined by the demand and supply mechanism (Nizar, 2012). On the demand side, the behavior of oil prices is strongly influenced by the growth of the world economy. From the supply side, fluctuations in world crude oil prices are strongly influenced by the availability or supply of oil by producer countries (Kesicki, 2010).

Inflation is an increase in the general price level (Samuelson and William, 2010). Higher inflation will decrease a company's profitability. Such a decline may negatively influence stock market traders and result in a decrease in the company's stock price (Widjojo in Prihantini (2009)). According to Hooker (2004) the inflation rate significantly affects stock prices. Tandel (2015) argues that there was no significant difference in Composite Current ratios, Net profit margin Ratios and Debt Equity Ratio in the Indian plastics industry between 2001 and 2010. Palanivel (2017)

concluded that there is a significant cubic trend equations forecast for the EVA, MVA, SVA and Net Sales of plastics companies in India. Nurhanifah (2017) stated that current ratio and crude oil price have a negative but not significant effect on the profitability of the Indonesian plastics industry. Total asset turn-over has a positive but not significant effect on the profitability of the Indonesian plastics industry, with debt to equity ratio having a negative and significant effect.

Having consideration of these phenomena, the authors proposed the undertaking of research to determine profitability behaviors in the Indonesian plastics industry. The framework of the study can be seen in Figure 4 below.

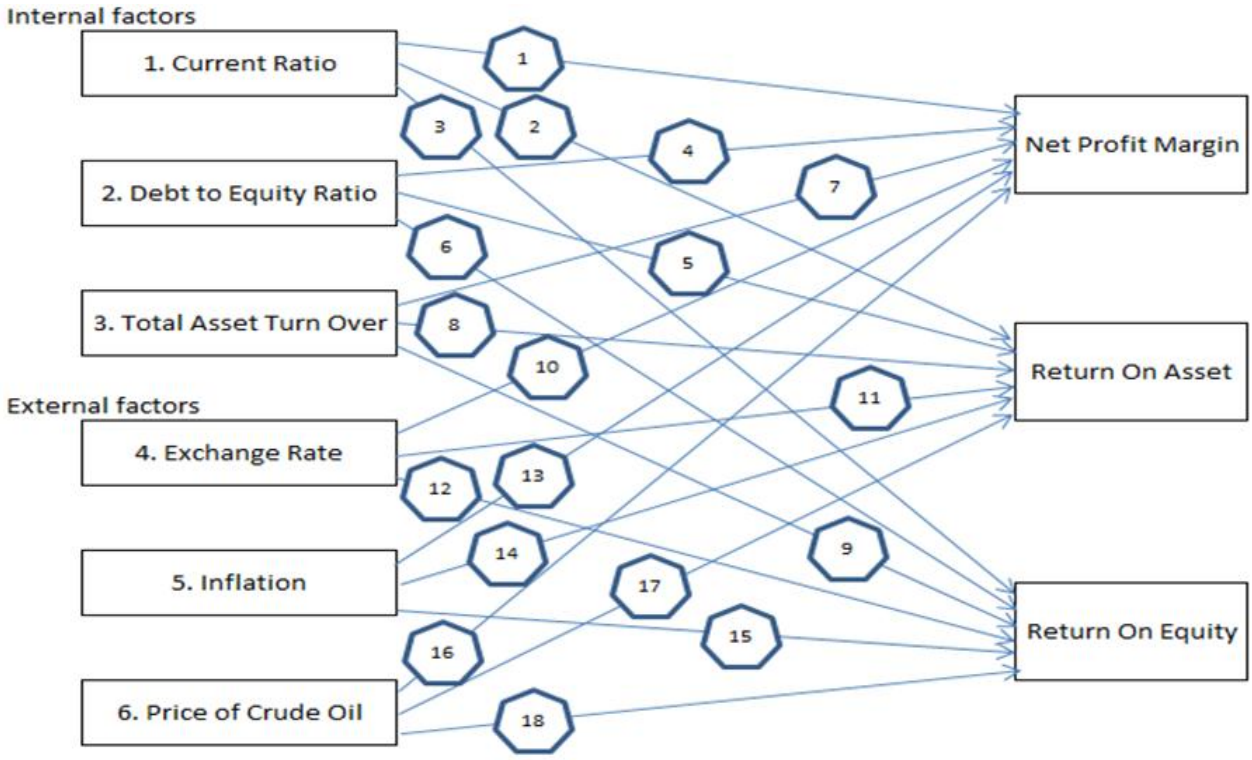

Figure-4. Framework.

Source: Developed by authors from previous studies.

Based on the above framework, the proposed hypothesis is as follows

1. H1 : Current ratio has a positive effect on net profit margin
2. H2 : Current ratio has a positive effect on return on asset
3. H3 : Current ratio has a positive effect on return on equity
4. H4 : Debt to equity ratio has a negative effect on net profit margin
5. H5 : Debt to equity ratio has a negative effect on return on asset
6. H6 : Debt to equity ratio has a negative effect on return on equity
7. H7 : Total asset turn-over has a positive effect on net profit margin
8. H8 : Total asset turn-over has a positive effect on return on asset
9. H9 : Total asset turn-over has a positive effect on return on equity
10. H10 : Exchange rate has a negative effect on net profit margin
11. H11 : Exchange rate has a negative effect on return on asset
12. H12 : Exchange rate has a negative effect on return on equity
13. H13 : Inflation has a negative effect on net profit margin
14. H14 : Inflation has a negative effect on return on asset
15. H15 : Inflation has a negative effect on Return on equity

16. H16 : Crude oil price has a negative effect on net profit margin
17. H17 : Crude oil price has a negative effect on return on asset
18. H18 : Crude oil price has a negative effect on return on equity

3. RESEARCH METHODOLOGY

The design used was descriptive quantitative research and causality. Causality research aims to analyze the influence of independent variables: internal factors (CR, TATO, DER); and external factors (world oil prices, inflation, rupiah exchange rate); on the dependent variable profitability (NPM, ROA, ROE).

The population of this study comprises all 14 companies in the Plastic and Packaging Sub-Sector listed on the Indonesia Stock Exchange as of December 31, 2017. The selection of the research sample was in accord with the purposive sampling method, namely those nine companies in the Plastic and Packaging Sub Sector listed on the Indonesia Stock Exchange as of December 31, 2017 which posted profits in their published Financial Reports from 2012 to 2017.

The data used in this research is secondary data including world oil prices, inflation, exchange rate and economic growth published on the Bank Indonesia website for the period 2012 to 2017. For variable current ratio, debt to equity ratio, and total sales turnover used panel data obtained from the financial statements of the plastics industry from 2012 to 2017. Data collection was undertaken by downloading materials from the internet. Data on world oil prices, the rupiah exchange rate, inflation and economic growth during the period 2012 to 2017 were obtained from the official website of the Bank Indonesia. Data current ratio, debt to equity ratio, and total sales turnover were obtained from the financial statements of companies in the plastics industry from 2012 to 2017.

The data were analyzed using the regression analysis model panel data and the statistical software package Eviews, version 10. The software determines the influence of independent variables (oil price, inflation, exchange rate, economic growth in Indonesia, DER, CR, and tattoos). Descriptive statistical analysis is carried out first, followed by panel data regression analysis.

According to Widarjono (2013) descriptive statistics are used to provide an overview of the following values:

1. Mean, is the sum of all numbers in the data divided by the amount of data available; and
2. Median, is the middle number obtained when the numbers in the data are arranged based on the highest and lowest numbers.

Inferential statistics are statistics used to generalize sample data to the population. This study uses panel data regression because the purpose of this study is to analyze what factors affect the profitability of the plastics industry between companies in the same industry (cross section) and over time (time series).

The Panel data equation model uses a combination of cross section data and time series data is as follows:

$$Yit = \alpha + \beta 1X1it + \beta 2X2it + \ldots + \beta nXnit + eit$$

Yit = Dependent variable
Xit = Independent variable
i = cross section -i
t = time series -t

There are three panel data regression models: the common effect; fixed effect; and random effect, all using Eviews 10 software. To choose the best model of the three models, three tests can be carried out: The Chow Test to choose the best model from among common effects with fixed effects; the Hausman Test to choose the best model between fixed effects with random effects; and the Langrange Multiplier Test to choose the best model among common effects with random effects.

Multicollinearity is a situation where there is a perfect or close linear relationship between independent variables in the regression model. The way to find out whether or not there are symptoms of multicollinearity is by

obtaining the value of the Variance Inflation Factor (VIF). If the VIF is less than 10, then multicollinearity is not stated (Widarjono, 2013). Heteroscedasticity is a condition in which there is an inequality of variants from residuals for all observations in the regression model. In detecting the presence or absence of heteroscedasticity problems in the study, the Breusch-Pagan-Godfrey Test was used to regress the absolute value with the independent variable. The conditions used, if the value of the chi square probability is greater than five percent, means that there is no heteroscedasticity in the model.

Panel data regression modeling results can be tested for accuracy through:

1. The value of the coefficient of determination reflects how much variation in the dependent variable can be explained by the independent variable. If the value of the coefficient of determination is equal to 0, it means that the variation of the dependent variable cannot be explained by the independent variables at all. If the value of the coefficient of determination is equal to 1, it means that the variation of the dependent variable can be explained by the independent variables.
2. Significance tests or t-tests are used to test the regression coefficients individually. Significance tests performed on independent variables can be seen from the probability value. Research that uses a significance level of 95 percent ($\alpha = 5\%$), then the independent variable that has a probability <0.05 means significant effect while the variable that has a probability> 0.05 means that it is not significant.

4. RESULTS AND DISCUSSION

Descriptive statistics are used to show data characteristics of the variables tested. Descriptive statistical results are shown in Table 1.

Table-1. Descriptive statistics.

No	Variable	Mean	Median	Maximum	Minimum	Standard Deviations
1	NPM	-0.2118	0.0163	9.3532	-26.4727	2.2029
2	ROA	0.0125	0.0079	0.1577	-0.1325	0.0431
3	ROE	0.0172	0.0161	2.0343	-2.3714	0.2846
4	CR	1.5737	1.1888	6.5022	0.0166	1.2018
5	TATO	0.6665	0.5579	2.4266	0.0018	0.4763
6	DER	-0.3272	0.8662	31.7370	-225.0448	16.3716
7	Exchange rate	12178	12782	14730	9226	1631
8	Crude oil price	71	59	105	37	24
9	Inflation	0.0523	0.0449	0.0840	0.0302	0.0176

Source: Eviews 10 Data Processing Result.

Net profit margin of the plastic industries in Indonesia in the period 2012 to 2017 was above average. The plastic industries in Indonesia posted a loss at the level of 2.2 per cent deviation. The return on asset of the plastics industry in Indonesia was below average. Generally, return on assets was positive in the period 2012 to 2017 with 0.04 per cent deviation.

Return on equity in the plastics industry in Indonesia was below average. Generally, return on equity was positive in the period 2012 to 2017 with 0.28 per cent deviation. The plastics industry in Indonesia in the 2012 to 2017 period was in a less liquid condition. It was able to pay short-term liabilities with existing assets and current ratio deviations of 1.2 per cent. The management of the plastics industry in Indonesia for the 2012 to 2017 period was less effective because of the use of more assets than sales. The turn over total asset deviation was 0.47per cent. The condition of the plastics industry in Indonesia for the 2012 to 2017 period was not solvent, with equity is not sufficient to pay all existing obligations. Debt to equity ratio deviation was 16.37 percent.

Between 2012 to 2017 the rupiah weakened against the US dollar because of external factors which slowed economic growth in Indonesia. World crude oil prices from 2012 to 2017 fluctuated because of the high supply of crude oil production due to global demand, and geopolitical issues in the Middle East. Inflation in Indonesia has

fluctuated. An increase in inflation was triggered by increases in subsidized fuel prices and food prices, while the application of economic policies caused inflation to be suppressed.

4.1 Data Analysis of Equation 1

Chow Test Results using software Eviews 10 obtained a probability value of 0.0234, smaller than 0.05. It can be concluded, therefore, that the fixed effect model is better than the common effect model. By contrast, the Hausman Test found an invalid cross section variance error. In consequence, it was concluded that the fixed effect model was better than the random effects model. From the results of the two tests, the best model chosen is the fixed effect.

The results of the multicollinearity test using Eviews 10 software obtained each VIF value variable less than 10, so it can be concluded that there were no multicollinearity problems with the data. The results of heteroscedasticity test using software Eviews 10 obtained the value of chi square probability of 0.1448 bigger than 0.05, so that it can be concluded that there is no problem of heteroscedasticity. Based on the results of the best regression model selection test, the fixed effect model was chosen with the result from Eviews 10 data processing are presented in Table 2.

Table-2. Regression Model Equation 1.

Variable	Coefficient	t-statistic	Prob.	Remark
C	-2.2021	-0.8710	0.3848	
CR	1.0220	3.4186	0.0008	Significant
TATO	0.5936	1.4712	0.1428	Not Significant
DER	0.0069	0.7461	0.4565	Not Significant
Exchange rate	-4.56E-05	-0.2818	0.7784	Not Significant
Crude oil price	0.0057	0.4938	0.6220	Not Significant
Inflation	2.6264	0.2686	0.7885	Not Significant
Adjusted R-squared = 0.0803				

Source: Eviews 10 Data Processing Result.

From Table 2, the regression equation can be described as follows:

NPM = -2.2021 + 1.0020 CR + 0.5936 TATO + 0.0069 DER – 0.00004 EXCHANGE RATE + 0.0057 PRICE OF CRUDE OIL + 2.6264 INFLATION

R^2 = 0.0803

From the fixed effect model, the adjusted R-Square value is 0.0803, which means 8.03 per cent of the independent variables examined together have an influence on the Net profit margin of the plastics industry in Indonesia, while the remaining 91.97 per cent is influenced by other factors not examined in this study.

The significance test results are as follows:

1. The current ratio variable has a probability value of 0.0008 smaller than 0.05 with a coefficient of 1.0220. This means that the Current ratio variable has a partial positive and significant effect on NPM. This result is in line with the H1 Hypothesis. The result of this research is in accord with the results of Kadir and Phang (2012), namely that current ratio has a positive influence on NPM and is significant. This result is not in line with Lokollo and Syafruddin (2011) who posited that there is a significant negative influence of current ratio to profitability.
2. The total asset turn over variable has a probability value of 0.1428 greater than 0.05 with the coefficient of 0.5936. This means that the Total Asset Turn-over variable partially has a positive but not significant effect on Net profit margin. This result is in line with H7 hypothesis. This result is also in line with Syafitri (2015) that the efficiency of asset utilization has a positive effect but not significant to the profitability of the company.

3. The debt to equity ratio variable has a probability value of 0.4565 less than 0.05 with a coefficient of 0.0069, this means that the Debt to equity ratio variable partially positively but not significant to Net profit margin. This result does not correspond to H4 hypothesis. The results are in line with research by Garcia *et al.* (2009) where Debt to equity ratio has a positive and significant effect. The results of this study differ from the research of Kadir and Phang (2012) where capital structure has a significant negative effect on profitability.
4. The variable exchange rate has a probability value of 0.7784 bigger than 0.05 with coefficient of -0.0000456, this means that a variable exchange rate has a partially negative influence but is not significant to net profit margin. The results of this study are consistent with H10 hypothesis. The result is in line with the research of Dwijayanthy and Prima (2009) which concludes the exchange rate has a significant negative effect on bank profitability.
5. Variable crude oil price has probability value 0.6220 bigger than 0.05 with coefficient 0.0057. This means that variable crude oil price has a partial positive effect but is not significant to Net profit margin. This result is contrary to the H16 hypothesis. The results of the study are not in line with Triyanto (2016) where the decline in world crude oil prices results in poor performance of the company.
6. Inflation variable has a probability value of 0.7885 greater than 0.05 with coefficient of 2.6264, this means that inflation variable has a partial positive effect but not is significant to net profit margin. The results of this study are not in line with the H13 hypothesis. The results of this study are not in line with the study of Dwijayanthy and Prima (2009) which concludes that inflation has a significant, negative effect on profitability.

4.2 Data Analysis of Equation 2

Chow Test Results using software Eviews 10 obtained probability value 0.0000 smaller than 0.05 so it can be concluded that the fixed effect model is better than the common effect model. The Hausman Test found an invalid cross section variance error, so it was concluded that the fixed effect model was better than the random effect. From the results of the two tests, the best model chosen is the fixed effect. The results of the multicollinearity test using Eviews 10 software obtained each VIF value variable less than 10 so it can be concluded that there were no multicollinearity problems with the data. The results of heteroscedasticity test using software Eviews 10 obtained the value of chi square probability of 0.3082 bigger than 0.05, so that it can be concluded that there is no problem of heteroscedasticity. Based on the results of the best regression model selection test, the fixed effect model was chosen. The results from Eviews 10 data processing are presented in Table 3.

Table-3. Regression Model Equation 2.

Variable	Coefficient	t-statistic	Prob.	Remark
C	0.0099	0.2973	0.7665	
CR	0.0090	2.2702	0.0243	Significant
TATO	0.0227	4.2569	0.0000	Significant
DER	-0.0002	-1.3208	0.1881	Not Significant
Exchange rate	-2.52E-06	-1.1783	0.2401	Not Significant
Crude oil price	0.0001	0.9414	0.3476	Not Significant
Inflation	-0.1182	-0.9145	0.3615	Not Significant
Adjusted R-squared = 0.5806				

Source: Eviews 10 Data Processing Result.

From Table 3, the regression equation can be described as follows:

ROA = 0.0099 + 0.0089CR + 0.0227TATO - 0.0002DER – 0.000002KURS + 0.0001HM - 0.1182INFLASI

R^2 = 0.5806

From the fixed effect model, the adjusted R-Square value is 0.5806, which means 58.06 per cent of the independent variables examined together have an influence on the net profit margin of the plastics industry in Indonesia, while the remaining 41.94 per cent is influenced by other factors not examined in this study.

The significance test results are as follows:

1. Variable current ratio has probability value 0.0243 smaller than 0.05 with coefficient 0.0090. This means that current ratio has a partially positive and significant effect on return on asset. These results are in line with the H2 Hypothesis, and with the results Murtizanah and Kirwani (2013) that the current ratio has a positive and significant effect on return on asset. The result of this study is contrary to Lokollo and Syafruddin (2011) which states that there is a significant negative influence of current ratio on profitability.
2. Total asset turn-over variable has a probability value 0.0000 smaller than 0.05 with a coefficient of 0.0227. This means that the total asset turn-over variable has a partial positive and significant effect on return on asset. These results are in line with H8 hypothesis. This result is also in line with the research of Nur Anita and Erawati (2013) and Muritala (2012) that the total asset turn-over has a positive effect but is not significant to profitability.
3. Debt to equity ratio variable has a probability value of 0.1881 greater than 0.05 with a coefficient of -0.0002. This means that the debt to equity ratio variable has partial negative but not significantly effect on return on asset. These results are in line with H5 hypothesis. The results are also in line with the study by Khan *et al.* (2016); Saeed and Badar (2013) which concluded that debt to equity ratio had a negative and significant effect. The results of this study differ from Garcia *et al.* (2009) which concludes that capital structure has a significant effect on profitability with positive relationships.
4. Exchange rate variable has a probability value of 0.2401 greater than 0.05 with the coefficient of -0.00000252, so it can be interpreted that the variable exchange rate has a partial negative effect but is not significant to return on asset. The results of this study are in line with H11 hypothesis. The results of this study are in line with research submitted by Dwijayanthy and Prima (2009).
5. Crude oil price variable has probability value 0.3476 more than 0.05 with coefficient 0.0001, so it can be interpreted that variable crude oil price has a partial positive effect but is not significant to return on asset. This result is contrary to the H17 hypothesis. This result is in line to the research conducted by McSweeney and Worthington (2008) on nine industries. The energy industry produces a significant positive relationship with rising oil prices, while the banking, retail and transport industries show significant negative effects on oil prices.
6. Inflation variables have a probability value of 0.3615 greater than 0.05 with a coefficient of -0.1182, so it can be interpreted that inflation variable has a partial negative effect but is not significant to return on asset. The results of this study are in line with the H14 hypothesis. The results of the study were in line with the research of Ali *et al.* (2011) that inflation impacts negatively and significantly on profitability. The results of this study also differ from the research of Ridhwan (2016) which found that inflation has a positive effect but is not significant to profitability.

4.3 Data Analysis of Equation 3

Chow Test Results using software Eviews 10 obtained probability value 0.0427 smaller than 0.05, so it can be concluded that fixed effect model is better than the common effect model. The Hausman Test found an invalid cross section variance error, so it was concluded that the fixed effect model was better than random effect. From the results of the two tests, the best model chosen is the fixed effect model.

The results of the multicollinearity test using Eviews 10 software obtained each VIF value variable less than 10, so it can be concluded that there were no multicollinearity problems with the data. The results of heteroscedasticity test using software Eviews 10 obtained the value of chi square probability of 0.1443 bigger than

0.05, so that it can be concluded that there is no problem of heteroscedasticity. Based on the results of the best regression model selection test, the fixed effect model was chosen. The results from Eviews 10 data processing are presented in Table 4.

Table-4. Regression Model Equation 3.

Variable	Coefficient	t-statistic	Prob.	Remark
C	-0.0319	-0.1317	0.8954	
CR	-0.0056	-0.1966	0.8443	Not Significant
TATO	0.0122	0.3196	0.7496	Not Significant
DER	-0.0127	-14.2523	0.0000	Significant
Exchange rate	-3.79E-06	-0.2442	0.8073	Not Significant
Crude oil price	0.0010	0.9343	0.3513	Not Significant
Inflation	0.3445	0.3675	0.7136	Not Significant
Adjusted R-squared = 0.4939				

Source: Eviews 10 Data Processing Result.

From Table 4, the regression equation can be described as follows:

ROE = -0.0319 - 0.0056CR + 0.0124TATO - 0.0126DER – 0.000004KURS + 0.0010HM + 0.3445INFLASI

R^2 = 0.4939

From the fixed effect model, the adjusted R-Square value is 0.4939, which means 49.39 percent of the independent variables examined together have an influence on the net profit margin of the plastics industry in Indonesia, while the remaining 50.61 percent is influenced by other factors not examined in this study.

The significance test results are as follows:

1. Current ratio variable has probability value 0.8443 greater than 0.05 with coefficient -0.0056, so it can be interpreted current ratio variable has a partial negative effect but is not significant to return on equity. This result is not in line with the H3 Hypothesis. The results are not in line with those of Khidmat and Rehman (2014) who found that current ratio has a positive and significant effect on return on equity. The results are in line with Bolek and Wolski (2012) who state that there is a significant negative influence of current ratio to profitability.
2. The total asset turn-over variable has a probability of 0.7496 greater than 0.05 with a coefficient of 0.0122, so it can be interpreted the total asset turn-over variable is partially positively but not significant to return on equity. This result is in line with H9 hypothesis. This result is also in accordance with Ashok (2012) who found that the total asset turnover has a positive effect but not is significant to the profitability of the company.
3. The Debt to equity ratio variable has a probability value 0.0000 less than 0.05 with the coefficient -0.0127, so it can be interpreted the debt to equity ratio variable has a partial negative and significant effect on return on equity. These results are in line with the H6 hypothesis. The results are also in line with research by Nadeem *et al.* (2015) and Nirajini and Priya (2013) who concluded that debt to equity ratio had a negative and significant effect.
4. Variable exchange rate has a probability value of 0.8073 greater than 0.05 with coefficient of -0.00000379, so it can be interpreted as having a partially negative but not significant effect on return on equity. The results of this study are in line with the H12 hypothesis. However, they are inconsistent with Mwanza (2014) who argues that there is no influence on the exchange rate against the probability.
5. Variable crude oil price has probability value 0.3513 bigger than 0.05 with coefficient 0.0010, so can be interpreted that variable crude oil price has a partial positive effect but is not significant to return on

equity. This result is contrary to H18 hypothesis. The results also fit with the study of Xu and Xie (2015) that the price of oil has a positive effect on profit.

6. Inflation variable has a probability value of 0.7136 greater than 0.05 with coefficient of 0.3445, so it can be interpreted that the inflation variable has a partial positive effect but is not significant to return on equity. The results of this study are in line with H15 hypothesis. This results are also in line with Ridhwan (2016) who found that inflation has a positive and significant effect on profit. However, the results differ from the Osamwonyi and Michael (2014) who found that inflation has negative but not significant effect on profit.

Behavior profitability of the plastics industry in Indonesia through this study can be summarized as follows:

1. The current ratio variable has the biggest influence on the net profit margin dependent variable compared to the other probability ratio with the coefficient of 1.0020. CR has a positive and significant effect on NPM. The average current ratio of Indonesia's plastics industry between 2012 and 2017 was less than two which can be interpreted as indicating a less liquid condition leading to constrained operational activities on account of obligations due.
2. The total asset turnover variable has the biggest influence on the net profit margin dependent variable compared to the other probability ratio with the coefficient of 0.5936. TATO has a positive but insignificant influence on NPM. Fast asset turnover from material purchase cycles followed by processed production and sales of manufactured goods will generate more profit.
3. Variable debt to equity ratio has the greatest influence on the dependent variable return on equity ratio compared with other probability with the coefficient of 0.0126. DER has a negative and significant effect on ROE. Equity of the plastics industry in Indonesia between 2012 and 2017 increased because of accumulated profit. Capital increase in debt making industry have ability to conduct operational activities to earn profit.
4. A variable exchange rate has the biggest influence on the dependent variable of net profit margin compared to other probability ratios with the coefficient 0.00004. The exchange rate has negative and insignificant influence on NPM. An increase in the exchange rate will cause the costs of companies reliant on imports of raw materials to rise
5. A variable crude oil price has the biggest influence on the dependent variable of net profit margin compared to other probability ratios with the coefficient 0.0057. Crude oil prices have a positive and insignificant effect on NPM. The increase in crude oil prices is due to the increase in global demand which can be interpreted as a favorable indication of the condition of the global economy. An improved global economy will encourage the growth of investment in industrial companies so that the performance and profits of industry will increase.
6. The inflation variable has the biggest influence on the net profit margin dependent variable compared to the other probability ratios with the coefficient 2.6264. Inflation has a positive but insignificant effect on NPM. Low inflation does not affect purchasing power, while rising direct inflation results in higher prices for goods. It follows that the effects of a low inflation environment will increase companies' profits, especially in the plastics industry where there are greater packaging requirements for the industry's products. Their consumption rate is likely to be the same despite rising prices due to low inflation

5. CONCLUSIONS AND SUGGESTIONS

The following conclusions are drawn from this study:

1. Current ratio has a positive and significant effect on net profit margin. Total asset turn-over, debt to equity ratio, crude oil price and inflation have positive but not significant impact on net profit margin. The exchange rate has a negative, but not significant effect on net profit margin

2. Current ratio and Total Asset Turn-over have a positive and significant effect on return on assets. Debt to equity ratio, exchange rate and inflation negatively but not significantly impact on return on asset. Crude oil price has a positive but not significant on return on asset
3. Debt to equity ratio has a negative and significant effect on return on equity. Current ratio and exchange rate negatively, but not significantly, impacts on return on equity. Total asset turnover, oil price, and inflation have positive but not significant on return on equity.

Based on the findings of this study, the authors suggest:

1. Companies in the Indonesian plastics industry are encouraged to use this research to improve their financial management. If current micro ratio variables have a positive and significant impact on net profit margin and return on asset, then the total asset turnover variable should also have a positive and significant effect on return on asset. At the same time, the variable debt to equity ratio has a significant, negative effect on return on equity.
2. Further research in this area could potentially examine other free variables such as sales growth and interest rates.
3. Entrepreneurs who wish to invest in the Indonesian plastics industry should choose companies that have current ratio and total asset turnover which is high, and debt to equity ratio is low. This research has determined that CR and TATO have positive and significant influence, and DER has negative and significant influence.
4. The Indonesian government should make economic policies to protect the plastics industry in Indonesia with a view to achieving growth targets for the economy.

Funding: This study received no specific financial support.
Competing Interests: The authors declare that they have no competing interests.
Contributors/Acknowledgement: Both authors contributed equally to the conception and design of the study.

REFERENCES

Ali, K., F.A. Muhammad and Z.A. Hafiz, 2011. Bank specific and macroeconomic indicators of profitability-empirical evidence from the commercial banks of Pakistan. International Journal of Business and Social Science, 2(6): 235-242.

Ansori, M., 2016. Prospective plastic and Downstream Rubber industry in Indonesia. Available from http://www.neraca.co.id/ article / 74890 / plastic-and-rubber-downstream-prospective-in-indonesia industry [Accessed April 30th, 2018].

Ashok, K.M., 2012. Regional differences in agricultural profitability, government payments, and farmland values, implications of DuPont expansion. Agricultural Finance Review, 69(1): 63-65.

Bolek, M. and R. Wolski, 2012. Profitability or liquidity: Influencing the market value. The case of Poland. International Journal of Economics and Finance, 4(9): 182-190.Available at: https://doi.org/10.5539/ijef.v4n9p182.

Crawford, I. and T. Davies, 2014. Corporate finance and financial strategy. 1st Edn., Harlow: Pearson.

De Marzo, P. and J. Berk, 2014. Corporate finance. 3rd Edn., Boston: Pearson.

Dwijayanthy, F. and N. Prima, 2009. Analysis of inflation inflation, BI rate, and currency convertion to bank profitability period 2003-2007 [English: Analysis of Effect of Inflation, BI Rate, and Exchange Rate on Bank Profitability (Period 2003-2007)]. Journal Karisma, 3(2): 87-98.

Garcia, J.M., G. Beatrice and P. Fernando, 2009. Accounting conservatism and firm investment efficiency. Journal of Accounting and Economics, 61(1): 221-238.Available at: https://doi.org/10.1016/j.jacceco.2015.07.003.

Hooker, M.A., 2004. Macroeconomic factors and emerging market equity returns: A bayesian model selection approach. Emerging Markets Review, 5(4): 379-387.Available at: https://doi.org/10.1016/j.ememar.2004.09.001.

Indonesian Ministry of Industry, 2018. Limited plastic industry production capacity. Available from http://kemenperin.go.id/article/7336/Industrial-Plastic-Limited-Capacity-Production [Accessed April 30th, 2018].

Kadir, A. and S.B. Phang, 2012. Factor analysis that affects the net profit margin of manufacturing companies listed on the Indonesia stock exchange. Journal of Management and Accounting, 13(1): 1-16.

Kesicki, F., 2010. The third oil price surge–what's different this time? Energy Policy, 38(3): 1596-1606.Available at: https://doi.org/10.1016/j.enpol.2009.11.044.

Kettering, R., 2009. The effect of international currencies upon US stock prices. Journal of Business Research, 8(2): 87-94.

Khan, M.N., F.A.K. Sherwani, F.I. Afshan and G. Kabbir, 2016. Impact of capital structure and dividend payout policy on firm's financial performance: Evidence from manufacturing sector of Pakistan. American Journal of Business and Society, 2(1): 29-35.

Khidmat, W. and M. Rehman, 2014. Impact of liquidity and solvency on profitability chemical sector of Pakistan. Economics Management Innovation, 6(3): 34-67.

Lokollo, A. and M. Syafruddin, 2011. Effect of working capital management and financial ratios on profitability in manufacturing industries listed on the Indonesia stock exchange (BEI) in 2011. Diponegoro Journal of Accounting, 2(2): 51.

McSweeney, E.J. and A.C. Worthington, 2008. A comparative analysis of oil as a risk factor in Australian industry stock returns, 1980-2006. Studies in Economics and Finance, 25(2): 131-145.Available at: https://doi.org/10.1108/10867370810879447.

Mok, H., 2005. Causality of interest rate, exchange rate and stock price at stock market open and close in Hong Kong. Asia Pasific Journal of Management, 10(2): 123-129.

Munawir, 2014. Analysis of financial statements. 15th Edn., Yogyakarta: Liberty.

Muritala, T.A., 2012. An empirical analysis of capital structure on firms' performance in Nigeria. International Journal of Advances in Management and Economics, 1(5): 116-124.

Murtizanah, D.I. and Kirwani, 2013. Analysis of the effect of liquidity ratios and activity ratios on profitability of KPRI Makmur Krian. E-Journal of Surabaya State University, 1(3): 45-51.

Mwanza, C.N., 2014. The effect of foreign exchange rates on the performance of the Nairobi securities exchange. Thesis. University of Nairobi.

Nadeem, M., R. Ahmad, A. Ahmed, N. Ahmad, R.B. Syeda and U.R. Khalil, 2015. The effect of leverage on financial health of the firms: A study from cement industry of Pakistan. Industrial Engineering Letters, 5(5): 34-37.

Nirajini, A. and K. Priya, 2013. Impact of capital structure on financial performance of the listed trading companies in Sri Lanka. International Journal of Scientific and Research Publications, 3(5): 1-9.

Nizar, M.A., 2012. Impact of fluctuations in world oil prices on the Indonesian economy. Trade Research Scientific Bulletin, 6(2): 189-210.

Nur Anita, C.P. and T. Erawati, 2013. Effect of current ratio, total assets turn-over, and net profit margin on return on assest. Accounting Journal, 1(2): 31.

Nurhanifah, 2017. Effect of macro and micro economy on the profitability of the plastic industry in Indonesia. Master of Management Program, Faculty of Economics and Business, Mercu Buana University. Jakarta.

Osamwonyi, I.O. and C.I. Michael, 2014. The impact of macroeconomic variables on the profitability of banks in Nigeria. European Journal of Accounting Auditing and Finance Research, 2(10): 85-95.

Palanivel, E., 2017. A study on the financial performance of select plastic companies in India with special reference to EVA, MVA and SVA. International Journal of Innovative Research in Science, Engineering and Technology, 6(7): 12799-12800.

Prihantini, R., 2009. Analysis of the influence of inflation, exchange rate, ROA, DER, and CR on stock returns (Case Study of Real Estate and Property Industrial Stocks Listed on the Indonesia Stock Exchange 2003-2006). Thesis Master of Management at Diponegoro University. Semarang.

Ridhwan, 2016. Analysis of the effect of interest rates and inflation on the profitability of PT Bank Syariah Mandiri Indonesia. Jambi University Research Journal Humanities Series, 18(2): 01-11.

Saeed, R.B.A. and R. Badar, 2013. Impact of capital structure on performance empirical evidence from sugar sector of Pakistan. European Journal of Business and Management, 5(5): 78-86.

Samuelson, P. and N. William, 2010. Economics. 19th Edn., New York: McGraw-Hill.

Sawir, A., 2009. Financial performance analysis theory and corporate financial planning. Jakarta: Gramedia Public Library.

Sutrisno, 2009. Financial management: Theory, concept and application. 7th Edn., Yogyakarta: Ekonisia.

Syafitri, L., 2015. Effect of inventory turnover and total asset turnover on profitability on CV. Kenanga Bay Ogan Ilir. In the Business Journal of Entrepreneurship and Entrepreneurship Forum STIE MDP, 4(2): 74-83.

Syahyunan, 2015. Financial management 1. 3rd Edn., Medan: USU Press.

Tandel, H., 2015. Analysis of financial performance of plastic industry of Gujarat (India) during 2001-2010. International Journal of Management and Commerce Innovations, 2(2): 27-43.

Triyanto, 2016. Impact of oil prices on the performance of PT Energi Mega Persada Tbk. Yogyakarta: S2 Management at Gadjah Mada University.

Uremadu, S.O., O. Odili and O. Florence, 2017. The effects of exchange rate variability on trade flows in Nigeria: A cointegration analysis. Quarterly Journal of Econometrics Research, 3(2): 12-51.Available at: https://doi.org/10.18488/journal.88.2017.32.12.51.

Widarjono, A., 2013. Econometrics: Introduction and application. 4th Edn., Yogyakarta: UPP STIM YKPN.

Xu, C. and B. Xie, 2015. The impact of oil price on bank profitability in Canada. Thesis. Simon Fraser University. Kanada.