

A Study on the Linking the Supply Chain Management to Value of Manufacturing Companies Listed in Indonesia Stock Exchange

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Abstract-With the advancement of information and communication technologies, supply chain integration has been considered a strategic tool for firms to improve their competitiveness. The supply chain integration within processes and between organizations has enhanced value creation. The purpose of this study was to determine the effect of profitability ratios, capital structure, exchange rates, interest rates, inflation on the value of manufacturing companies listed on the Indonesia stock exchange in 2008-2017 based on the supply chain management. The analysis technique used multiple regression analysis of panel data. The results showed that profitability ratios, capital structure, exchange rates, interest rates, inflation affect the value of manufacturing companies. The findings are that inflation is the most determining variable in influencing the value of manufacturing companies. The value of manufacturing companies in Indonesia is still influenced by factors such as profitability ratios, capital structure, supply chain strategy and macroeconomics.

Keywords, Firm Value, Manufacturing Companies, Inflation, Supply Chain Management

1. Introduction

The effects of globalization and fiercer competition have forced firms to focus their attention on entire supply chain integration (end-to-end) rather than on effectiveness and efficiency of separate business functions within their own premises. Firms both in developed and developing countries are trying to integrate more in their production activities such as sourcing, manufacturing, and delivery processes. The manufacturing industry has an important role in Indonesia economy, where the growth of Indonesia company that increased for the 1990-2009 period is followed as well by the increase in manufacturing industry. In 1990, the manufacturing industry contributed to 19% of GDP and in 2007 had increased to 25% of GDP. The manufacturing company is an industrial sector with most numbers in Indonesia Stock Exchange, which means that the existence of manufacturing company in stock exchange can be deemed as a significant determinant towards the dynamics of stock trades in stock exchange. The growth of manufacturing industry is related

to the role of manufacturing company.

In 2008, prior to the crisis, the export of manufacturing for certain products such as garment, footwear, and auto parts sharply increased. Indonesia itself suffered a significant macroeconomy shock at the end of 2008. The GDP growth suffered in 4.4% rate for the first quarter of 2009, however, Indonesia did not suffer a decline in economy growth as other countries such as South Korea, Malaysia, and Thailand. That was due to the fact that the export of Indonesia was the lowest compared to all economy giants in South East Asia, while the global crisis will affect the countries with high proportion of export [1-11].

In general, global crisis is not the determinant for the economy in Indonesia. In export and import, however, there was a significant change. In other words, the manufacturing industry suffered the most from global crisis affecting Indonesia that affected also the manufacturing companies whose business performance was dependant to export and import [12-15].

The global crisis in 2008 led the capital flow to move from developed countries to the countries with emerging market, such as Indonesia, by targeting the company with good performance, which was in Indonesia, was a manufacturing company, contextually. Meanwhile in developed countries, such as China, United States and European Union, the firm value was more determined by good governance factors [13].

The global crisis in 2008 was one of the new obstacles in a way to the recovery of manufacturing sector in Indonesia, aside of the Asia crisis at the end of 1990s, however, [11] stated that the production of mid-scaled and high-scaled manufacturing companies grew for 5.6%, annually. Some of the increases of manufacturing output occurred due to the increase in the flow of direct foreign investment. At the beginning of global crisis, the income flow of net direct foreign investment suffered for almost a half from US\$9,3 billion in 2008 to US\$4,9 billion in 2009.

The economic crisis affecting a country will affect the company in stock market [3]. Meanwhile, [1] pointed out that the interest rates, inflation, and exchange rates, or the

fundamental factors of macroeconomic significantly affect the firm exchange rates. Several studies use macroeconomic factors to understand the determinants towards the firm value [1] such as exchange rates, currency, BI Rate, inflation, and economic growth. Meanwhile, the internal factors used as a determinant of firm value are profitability [5] and capital structures [8]. Each company interacting with the stock market, holds a stake towards the ability to sustain the performance. Therefore, this study aims to determine the effect of profitability, capital structure, exchange rates, interest rates, inflation on the value of manufacturing companies.

2. Literature Review

2.1. Profitability

Profitability shows the ability of a company to gain profit in certain period. The rentability of a company is measured by the company successes and abilities to use the assets productively. Therefore, the rentability of a company can be identified by comparing the profit gained in a certain period and the number of assets or the capital of the company.

2.2. Capital Structure

Capital structure is a permanent spending reflecting the balance between the long-term debt and equity. A good and optimal capital structure is the one that can minimize the cost and balance the risk and the rate of return. Capital structure is a mix of long-term debt-funding and equity. Capital structure is the company's way in forming the right-side of balance sheet consisting of structure and debt.

2.3. Exchange Rates

Exchange rates is a value of a currency towards other currencies. An increase in exchange rates of domestic currency is called appreciation towards foreign currency. A decrease in exchange rates of domestic currency is called depreciation towards foreign currency.

2.4. BI Rate

Interest rate is a payment done for the money use. Interest rate is the number of interest paid in per time unit. In other words, people should pay opportunity to borrow money.

2.5. Inflation

Inflation is a trend of the price to increase comprehensively and continuously. The price increase for one or two goods is not called as an inflation, except, the increase expands and lead to an increase in the majority of other goods' prices, namely prices of food, prepared food, beverages, cigarette and tobacco, clothing, health, education, recreation and sport, transportation, communication, and financial service.

2.6. Supply chain management

Supply chain integration is becoming one of the academic areas of interests for research and practical applications. In other words, firms have started to question how they can integrate and improve their material and

information flow activities and processes inside the organizations and with their supply chain partners. In order to fully benefit and implement supply chain management concepts, it is important for the firms to integrate efficiently with their suppliers, customers, warehouses, and other intermediate value-adding partners.

3. Methodology

The method used in this study is explanatory research. The method is aimed to describe the causal relationship of studied variables with hypothesis testing [9]. This study is descriptive and verificative in nature. Based on the data source, the study uses secondary data. The data used in this study is secondary data for the 2008-2017 period in form of panel data available in Indonesia Stock Exchange. The type of the data in this study is quantitative. The variables used in this study are profitability (NPM, ROA, ROE, EPS), capital structure (DER), exchange rate, interest rate (BI rate), and inflation as independent variables, and firm value as dependent variable.

Table 1. Operational Variables

Variable(s)	Indicator(s)	Measurement	Scale
Firm Value	Tobin's Q	Tobin's Q = (MVE + DEBT)/TA MVE = P x Qshares DEBT = (CL-CA)+INV+ LTL	Ratio
Profitability Ratio	Return on Assets (ROA)	ROA = $\frac{\text{Net Income}}{\text{Total Asset}} \times 100\%$	Ratio
	Return on Equity (ROE)	ROE = $\frac{\text{Earning After Interest and Equity}}{\text{Equity}}$	Ratio
	Net Profit Margin (NPM)	NPM = $\frac{\text{Net Profit}}{\text{Net Sales}} \times 100\%$	Ratio
	Earning per Share (EPS)	EPS = $\frac{\text{Earning After Tax}}{\text{Listed Shares}}$	Ratio
Capital Structure	Debt to Equity Ratio (DER)	DER = $\frac{\text{Total Liabilities}}{\text{Total Equity}}$	Ratio
Exchange Rate	Exchange rates is a value of a currency towards other currencies	Foreign exchange rate	Ratio
Interest Rate	Interest rate is a payment done for the use of a money, paid in per time unit	BI rate	Ratio
Inflation	The trend of prices that increases comprehensively and continuously	Inflation rate	Ratio

Source: created by authors

The multiple regression analysis is used to identify the extent of effect of profitability ratio (ROA, ROE, NPM, and EPS), capital structure (DER), exchange rate, interest rate, and inflation variables towards the firm value of manufacturing company. The equation of multiple regression used is as follow:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + e$$

Where,

Y : firm value

X_1 : ROA

X_2 : ROE

X_3 : NPM

X_4 : EPS

X_5 : capital structure

X_6 : exchange rates

X_7 : interest rates

X_8 : inflation

a : constant

$b_1, b_2, b_3, b_4, b_5, b_6, b_7, b_8$, regression coefficient

e : error term

The F-test is used to test whether simultaneously, the independent variables affect the dependent variable with confidence rate of 95 % ($\alpha = 0,05$). Partial test (t-test) is conducted with the aim to test partially between the independent variables and dependent variable with the assumption that other variables are deemed constant with the confidence rate of 95 % ($\alpha = 0,05$). R-square is used to identify to what extent is the ability of profitability ratio, capital structure, exchange rate, interest rate, and inflation variables in describing the firm value variable. To facilitate the author in calculating the figure, Eviews 9.0 program is used.

4. Result

It is essential to give incentive to your supply-chain organization to work in ways that deliver the most value for your business while protecting against its biggest risks. Based on the Table 2, it is obtained that the value of Prob (F-statistic) is 82.48273. Due to the fact that the value of Prob. (F-statistic) $< \alpha$ (5%) or $0.000000 < 0,05$, so H_0 is rejected, which means that profitability ratio (ROA, ROE, NPM, EPS), capital structure (DER), exchange rate, interest rate, and inflation affect simultaneously the firm value of manufacturing companies listed in Indonesia Stock Exchange for 2008-2017 period. It means that the value of R^2 determinant coefficient is 0.387957 or 38,80%. Determinant coefficient (R^2) is used to measure to what extent is the ability of the model to describe the variation of independent variables. This shows that the profitability ratio (ROA, ROE, NPM, EPS), capital structure (DER), exchange rate, interest rate, and inflation are able to describe the firm value of manufacturing companies listed in Indonesia Stock Exchange for 2008-2017 period with 38.80% while the rest 61.20% is described by other variables outside the study.

Table 2. Simultaneous Effect

Item	Result
R-squared	0.387957
Adjusted R-squared	0.383254
S.E. of regression	1.871878
F-statistic	82.48273
Prob(F-statistic)	0.000000

Source: processing results by authors

Based on the Table 3, Thep-value of profitability ratio (ROA) variableis 0.0001.By using the alpha5%, hence the p-valueis lower than 0.05 or $0.0001 < 0,05$, which means that H_0 is rejected, meaning that the Profitability Ratio (ROA) partially affects the firm value of manufacturing companies listed in IndonesiaStock Exchange for 2008-2017 period. The p-value of profitability ratio (ROE)variable is 0.0000. By using the alpha5%, hence the p-valueis lower than 0.05 or $0.0000 < 0,05$, which means that H_0 is rejected, meaning that the profitability ratio (ROE) partially affects the firm value of manufacturing companies listed in Stock Exchange for 2008-2017 period. The p-value of profitability ratio (NPM) variable is 0.0000. By using the alpha5%, hence p-valueis lower than 0.05 or $0.0000 < 0,05$, which means that the H_0 is rejected, meaning that the profitability ratio (NPM) partially affects the firm value of manufacturing companies listed in Indonesia Stock Exchange for 2008-2017 period.

Table 3. Partial Effect

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.957719	2.268065	-2.626785	0.0087
ROA?	0.949480	0.243265	3.903063	0.0001
ROE?	0.981579	0.088971	11.03251	0.0000
NPM?	0.996243	0.076852	12.96316	0.0000
EPS?	0.920598	0.267077	3.446945	0.0006
DER?	0.981949	0.054765	17.93037	0.0000
KURS?	0.910491	0.315988	2.881413	0.0040
RATE?	0.433330	6.368736	0.068040	0.9458
INF?	1.049645	0.468451	2.240673	0.0253

Source: processing results by authors

The p-value of profitability ratio (EPS) variable is 0.0006. By using the alpha5%, hence the p-value is lower than 0.05 or $0.0006 < 0,05$, which means that H_0 is rejected, meaning that the profitability ratio (EPS) partially affects the firm value of manufacturing companies listed in IndonesiaStock Exchange for 2008-2017 period. The p-value capital structure (DER) variable is 0.0000. By using the alpha5%, hence the p-value is lower than 0.05 or $0.0000 < 0,05$, which means that H_0 is rejected, meaning that the capital structure (DER) partially affects the firm value of manufacturing companies listed in Stock Exchange for 2008-2017 period. The p-value of Exchange Rate is 0.0040. By using the alpha5%, hence the p-value is lower than 0.05 or $0.0040 < 0,05$, which means that H_0 is rejected, meaning that the exchange rate partially affects the firm value of manufacturing companies listed in IndonesiaStock Exchange for 2008-2017 period. The p-value of Interest Rates (BI rate)variable is 0.9458. By using the alpha5%, hence the p-value is higher than 0.05 or $0.9458 > 0,05$, which means that H_0 is rejected, meaning that the Interest Rate (BI Rate) partially affects the firm value of manufacturing

companies listed in Indonesia Stock Exchange for 2008-2017 period. The p-value of Inflation variable is 0.0253. By using the alpha 5%, hence the p-value is lower than 0.05 or $0.0253 < 0.05$, which means that H_0 is rejected, meaning that Inflation partially affects the firm value of manufacturing companies listed in Indonesia Stock Exchange for 2008-2017 period.

5. Discussion

Based on the analysis result, it is identified that the Profitability Ratio for ROA positively affects the firm value measured by Tobins'Q ratio. Therefore, it can be understood that the higher the company's ability in gaining profit from investment activation, it will affect the increase in firm value, which can draw the investors due to the fact that they think that the company is profitable for investment.

Based on the analysis results, it is identified that the Profitability Ratio for ROE affects the firm value as measured by Tobins'Q ratio. Return on Equity (ROE) is a ratio in measuring the net profit after tax and equity. It means that the more efficient the equity use in a company; it can give a positive signal towards the investors in investment as there is an increase in the firm value of manufacturing company. This is supported as well by other studies, stating that the higher the ability of company in gaining profit, the higher the profitability of that company. Profitability that is measured by ROE, affects the firm value. The higher the ROE ratio, the higher the firm value [10].

Based on the analysis results, it is identified that the profitability ratio for NPM positively affects the firm value as measured by Tobins'Q ratio. It means that, the higher the ability of a company in gaining a net profit (after tax), it will affect the increase in firm value. Hence, the investors will see a positive signal for their investment decision for the manufacturing companies in Indonesia.

Based on the analysis results, it is identified that the Profitability Ratio for EPS positively affects the firm value as measured by Tobins'Q ratio. Earning per Share (EPS) is an important measurement used to measure the company performance. The higher the company's profit rate that can be shared to the shareholders, the higher the firm value. The investors will deem that the company is profitable, so it will widen the investment opportunity. EPS positively affect an increase in firm value. It can be understood, therefore, that the investors are getting drawn to invest their capital to the company because it is highly-profitable for them [16].

The Capital Structure for DER positively affects the firm value as measured by Tobins'Q ratio. Capital structure is a balance or comparison between the long-term debt and equity. The higher the debt ratio towards the equity, the higher the firm value. This can draw the investors to see that the company with a high ratio between debt and capital is potential. Even though as for [4] the debt addition will scale up the expected rate of return. A higher risk due to the higher debt tends to decrease the stock value, but increasing the expected rate of return will increase the stock value. In other words, the company is more reliable for the investor, hence it will increase the investors' willing for there is an increase in firm value due to the increase in DER.

Based on the analysis result, it is identified that the exchange rate positively affects the firm value as measured by Tobins'Q ratio. The exchange rate is an indicator of macroeconomics in Indonesia. So, when the exchange rates of Rupiah towards Dollar increases, or stronger, that will prove that the economy in Indonesia is getting better. In the result of a study about the firm value of manufacturing company, it is clear that the strengthening of Rupiah's exchange rate will increase the firm value [12].

Based on the analysis result, it is identified that the interest rate affects the firm value as measured by Tobins'Q ratio. High interest rate will affect the present value of company's cash flow, where the investment opportunities will not attract the investors anymore. This is caused by the fact that a high interest rate will increase the interest charge of the company. The increase in interest charge will decrease the profit gained by the company. With the decrease in profit gained by the company, the cash flow of the company will decrease as well. The decrease of cash flow received by the company leads to the decrease in cash flow received by the investors, too. This will lead the investors away from investments, causing the stock to suffer where it will decrease the firm value.

Based on the analysis result, it is identified that the Inflation positively affects the firm value as measure by Tobins'Q ratio. This is different with the findings from AGUSTINA & ARDIANSARI (2015) [2] pointing out that the increase in inflation rate decrease the firm value, instead. That is caused by the fact that this condition will affect the increase in production cost. A high production cost will cause an increase in goods price, where this will guide the purchasing ability of the people to the lower level and the real income will suffer as well.

Simultaneously, Profitability Ratio, Capital Structure, Exchange Rate, Interest Rate, and Inflation affect the firm value. The findings of this study is inflation has the most impact towards the firm value, followed by NPM, DER, ROE, ROA, EPS, exchange rate, and interest rate. This is an interesting fact to be focused on, where the in prior study [6], it was known that the investors will be more sensitive towards the emerging market countries with low inflation rate such as Indonesia, Bangladesh, Brazil, Bulgaria, Chile, China, Colombia, Czech Republic, Egypt, Ghana, Greece, Hungary, India.

Although Indonesia had inflation that exceeded the targeted level in certain years of the last decade, generally inflation were still under control. The strengthening of coordination between Central Bank of Indonesia and the government, among others through the formation of a inflation monitoring and control team at the central and regional levels, has been succeeded in controlling inflation at a range of targeted levels. This impact of controlled inflation causes the positive effect towards the firm value. This is caused by the fact that the investors are sure enough to invest even if there is an increase in inflation, for the Bank Indonesia assures that there is a control towards the inflation. Even if there are still several years where the inflation still above the threshold, Inflation still imposes the most significant impact towards the firm value. According to [7], Indonesia still has very promising investment opportunities, after China, United States and

India. Indonesia is one of the best host economies for multinational companies.

6. Conclusion and Recommendation

The results showed that profitability ratios, supply chain strategy, capital structure, exchange rates, interest rates, inflation affect the value of manufacturing companies listed on the Indonesian stock exchange in 2008-2017. The findings of this study are that inflation is the most determining variable in influencing the value of manufacturing companies. This happens because investors are still considering the inflation factor before investing in Indonesia. Although in general Bank Indonesia has been managed to control inflation, investors still pay attention to the big challenges in controlling inflation. Some of the major challenges still faced include inter-regional connectivity, availability of agricultural infrastructure and food distribution infrastructure. This factor has an impact on the value of the company. The value of manufacturing companies in Indonesia is still influenced by factors such as profitability ratios, capital structure, and macroeconomics. However, emerging market countries tend to be the same as developed countries (such as Jepang, South Korea, United States) and China, where company value is determined by corporate social responsibility, research and development, and innovation.

The result of the study can be used as supplementary material and reference for future studies in supply chain integration. In conducting the future studies as well, related to the study of firm value of manufacturing companies in Indonesia, it is suggested to include other variables such as firm value and dividend payout ratio to obtain the higher R-Square in explaining the value of manufacturing companies.

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