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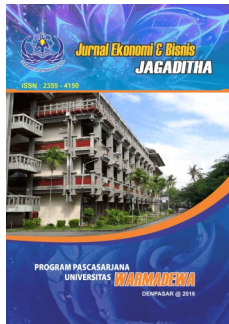
Free Cash Flow of Telecommunications Companies in Indonesia

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Free Cash Flow of Telecommunications Companies in Indonesia

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Abstract: The study aims to investigate the variables that affect the cash flow of telecommunications companies on the Indonesia Stock Exchange. This study uses annual data from 2016 to 2024 and a panel data model. The results of this study state that the Company's fundamental factors are represented by the Company's investment value and the oil price and interest rate variables, and the COVID-19 period significantly affect the Company's Net Cash Flow. The Company's management must manage these internal and external factors so that the Company's net cash flow is controlled.

Keywords: Net cash flow; telecommunications oil price; interest rate; covid-19

Introduction

Cash flow is an interesting topic for Company managers as well as stock analysts and other parties who like to research the Company's business. Cash flow is also a component in business that must be considered and also states the inflow and outflow of investments made. Cash inflow and cash outflow are expected to be balanced or equal. However, Company management wants cash inflow to be greater than cash outflow. Discussion of cash flow is a discussion of one period and does not state a position. Therefore, cash inflow is the main concern and then outflow. This cash inflow is expected to be very large compared to cash outflow. Cash inflow, for example, is the payment of sales in one period. The existence of another party paying interest on the investment made. There is a payment for inventory, but the increase in inventory becomes an outflow. The purchase of inventory becomes an outflow. Tax payments are also an outflow.

Free Cash Flow is very important for the company as Yeo (2018) stated, free cash flow is for deciding investments and dividends. Orput and Zang (2009) and Rukmansyah and Widyawati (2020) stated that free cash flow could be used to predict free cash flow in the future. Richardson (2006) discusses the Over-investment of free cash flow. Bhandari and Iyer (2013) investigated the use of cash flow as a predictive variable for bankruptcy. Lestasi et al. (2024) and Mulyawati et al. (2025) investigated the variables that affect cash flow on the Indonesia Stock Exchange. Jury (2012) describes cash flow and its forecasting. Fitranita et al. (2024) discuss the method of forecasting cash flow in the future. Dickison (2011) investigates Cash Flow Patterns as a Proxy for Firm Life Cycle. Livnat and Zarowin (1990) stated the incremental Information content of Cash-Flow Components. Liu et al. (2007) stated that Cash Flow is King in Valuations. Manurung (1998) and Khairunnisyah (2024) investigated the relationship between cash flow and stock returns. Murifal (2020) investigated Free Cash Flow

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Analysis as an Indicator for Investors in Measuring Company Financial Growth. Anggoro et al. (2024) conducted a study on the Company's operational cash flow. Lamont (1997) discussed investment and cash flow.

Based on the previous research, the determinant of cash flow is the financial ratio company called fundamental criteria. The fundamental value is net profit, depreciation, net working capital and investment. The variable was divided into total assets to make it suitable for research like Altman (1968) did research on Bankruptcy. This research wants to increase variables using external which are Oil Prices, interest and Economic Growth, which is this variable called macroeconomic Variables.

Oil prices as a macroeconomic variable have a significant impact on the Indonesian economy. Even company management often asks in which direction oil prices are moving. Qianqian (2011) stated that oil prices can affect every aspect of the national economy: production and consumption, costs and prices, trade and investment, all of which will be affected by fluctuations in oil prices, so high oil prices will also reduce national output. Research on macro variables that affect oil prices is very limited. Alomran and Alsubaiei (2022) discuss the uncertainty of oil prices on cash holdings, which are elements of free cash flow. Jensen and Meckling (1986) also stated that rising oil prices can increase the company's cash flow that must be provided. Khan et al. (2020) discuss the effect of oil price uncertainty on company value.

Interest rates and economic growth as macro variables used by the government to improve the economy are additional variables in this study. Even interest rates are also used to attract investment. Lamont (1997) discusses investment and cash flow. Research on interest rates and economic growth with cash flow is very limited. This study tries to include macro variables such as oil prices, Interest rates, and economic growth to influence cash flow.

Concept and Hypothesis

Cash Flow is an indicator for management in operating the Company to run well, and there is going concern. Cash Flow is also an indicator of Company performance (Manurung, 2025). No journal or book discusses the theory of cash flow, but the components of the flow are discussed in accounting, especially in financial reporting. Public accountants use the presentation of this cash flow as an addition and sweetener for the audit work of the report provided by the Company to public accountants. White et al. (2003) and Manurung (2024a) state that Cash Flow in the Company can be grouped as follows:

Operational Cash Flow (AKO)

Operational cash flow is a flow related to the Company's operations. Dividend receipts are considered as operating cash flow. In this case, the flow becomes positive if it increases the Company's cash and negative if it decreases the Company's cash.

Investment Cash Flow (AKI)

Investment cash flow is the Company's expenditure for investment and becomes positive if the Company sells assets owned.

Financing Cash Flow (AKP)

Financing flow is the financing carried out by the Company due to the large investment cash flow (AKI) compared to operating cash flow (AKO). The elements of financing cash flow are new loans, sales of shares to third parties. While the outflow from financing is dividend payments, debt payments, buybacks of Company shares that are included in treasury stock.

Furthermore, the normal operating cash flow is positive, and the normal investment cash flow is negative, so the two cash flows are added together, not subtracted. The result of the addition of operating cash flow (AKO) and investment cash flow (AKI) is called the free cash flow that will be carried out by the Company and can be called a surplus or deficit. A surplus free cash flow states that the operating cash flow is greater than the investment cash flow. A negative free cash flow states that the operating cash flow is smaller than the investment cash flow. Free cash flow is often also called free cash flow to the Company (Free cash flow to the firm).

Usually this cash flow can be done with two approaches, namely the direct method and the indirect method. Parties outside the company usually use the indirect method. The operating cash flow in the indirect method is:

AKO = Net Income + Depreciation + Working Capital Liabilities – Working Capital Assets

AKO = Net Income + Depreciation – (Working Capital Assets – Working Capital Liabilities)   (1)

Usually, the difference between working capital assets and working capital liabilities is assumed to be equal or zero. So many parties also use cash flow only as the result of adding net income with depreciation.

AKI = - ΔInvestment + Asset Sales   (2)

FCFF = Net Income + Depreciation – (Working Capital Assets – Working Capital Liabilities) – ΔInvestment + Asset Sales   (3)

Then, Financing Cash Flow can be calculated using the following formula:

AKP = Net Debt + Net Equity – Dividends   (4)

Net Debt = New Debt Proceeds – Debt Repayments

Net Equity = Share Issuance – Share Buybacks

It should be remembered that dividend receipts, interest receipts, and interest payments are in the operating cash flow. Dividend receipts are included in the operating cash flow, because this activity is considered as the Company's operations.

Furthermore, if the free cash flow (free cash flow to the firm) is added to the financing cash flow, it is known as the cash flow to the Equity (shareholder). So the equation for the flow to the equity becomes as follows:

FCFE = FCFF + AKP

FCFE = FCFF + Net Debt + Net Equity – Dividends   (5)

Based on equation (5), FCFE is influenced by the following variables:

Free Cash-flow to the Firm

Net Debt

Net Shares

Dividend

In making a model, it is better to divide equation (5) by total assets as done by Altman (1968) in his research on bankruptcy models. Furthermore, the action taken is to create a mathematical model of the research to obtain estimates of the variable coefficients and factors that influence the variables (Manurung, 2025).

Previous Research

Some academics have researched company cash flow as the dependent variable in some countries. Manurung (1998) investigated the relationship between cash flow and stock returns. This study used data periods in 1994 and 1995. The unit of analysis of this study was 30 companies with the highest market capitalization. This study concluded that the relationship between cash flow and stock returns was very weak. Mulyawati et.al (2025) studied determinant of Free Cash Flow in Indonesia Stock Exchange. The Unit analysis of this research is Company of Telecommunication and the Period of research from 2016 to 2023. The research found that Net Profit Margin significantly influences free cash flow. Lestari et al. (2024) explore the determinants of Free Cash Flow on the Indonesia Stock Exchange; this research used a manufacturing company as a unit analysis. The company is a member of the LQ-45 Index and the Research Period of 2018 - 2023. This Research found that Net profit and Depreciation does not affect on free cash flow. Anggoro et al. (2024) investigate the determinants of free cash flow in the Indonesia Stock Exchange. This research uses yearly data for the period of 2017 to 2022 and uses the Panel Data Model. This research found that Gross Margin (GPM), collection period for accounts receivable and depreciation negatively affect the cash flow of operations.

Lamont (1997) discusses investment and cash flow. His research uses data from the Annual Survey of Manufacturing from 1961-1985 and 26 companies in the oil business. He found that large decreases in cash flow and collateral value decrease investment. Griffin (1988) conducted a study on the cash flow hypothesis for oil companies. This study used data from 25 companies in the period 1979-85. The results of this study found that the good model is the hybrid free cash flow model, and the margins and cash flow affect the status of individual projects. Khaliq (2015) conducted a study on the transmission of oil shocks to economic performance, including the stock exchange. This research used monthly data over the period 2001M01-2013M08. An empirical analysis is carried out by utilizing the structural vector autoregressive (SVAR) framework. The empirical findings of IRFs suggest that oil price shock negatively affects industrial production, depreciates the real effective exchange rate, increases inflation and interest rate, and negatively affects asset price. Oil price is the most important source of disturbances in the Indonesian macroeconomy.

Method

This sub-section will explain the method used in this research. This Sub-section comprises Model Panel Data, Operational Variables and Sources of data.

Panel Data Model

This research uses a Model data Panel to estimate the relationship between some independent variables to determine Free Cash Flow as a dependent variable with Net Profit Margin (NPM), Depreciation (Dep), Net Working Capital (NWC), Investment (INV) as an internal factor or fundamental factor Company, Oil Price (OIL), Interest and Economic Growth as an external factor or macroeconomic Factor and also COVID-18 period. Model Data Panel is appropriate for small data, which is a short time series, and small companies as samples. Besides that, the model data panel also shows time and the cross-section as samples. Gujarati (2003), Wooldridge (2002), Greene (2008), Biorn (2017), Sul (2019) and Manurung (2024b) stated model data panel is as follows:

Pooled Data Model

The Pooled Data Model is a model that data combine all together, and the model is as follows:

$$Y_{i,t} = \beta_1 + \beta_2 X_{2i,t} + \beta_3 X_{3i,t} + \mu_{i,t}$$

(6)

$i = 1, 2, \ldots, k \; ; \quad t = 1, 2, \ldots, n$

X's are non-stochastic and $E(\mu_{it}) \sim N(0, \sigma^2)$

Fixed Effect Model

FEM is a model that μ_i and X's are assumed correlated.

$$Y_{i,t} = \beta_{1i} + \beta_2 X_{1i,t} + \beta_3 X_{2i,t} + \mu_{i,t} \tag{7}$$

$i = 1, 2, \ldots, k \; ; \quad t = 1, 2, \ldots, n$

Random Effect Model (REM)

REM is a model that ε_i and X's are assumed uncorrelated.

$$Y_{i,t} = \beta_{1i} + \beta_2 X_{1i,t} + \beta_3 X_{2i,t} + \mu_{i,t} \tag{8}$$

$$\beta_{1i} = \beta_1 + \varepsilon_i$$

$i = 1, 2, \ldots, k \; ; \; t = 1, 2, \ldots, n$

μ_i is a random error with a mean value of zero and variance of σ_ε^2.

Judge (1982), Wooldridge (2002), Biorn (2017), Sul (2019) and Manurung (2024b) stated that how we choose FEM or REM as follows:

When T (the number of time series data) is large and N (the number of cross-sectional units) is small, FEM may be preferable.

When N is large and T is small, if we strongly believe that the individual, or cross-sectional, units in our sample are not random drawings from a larger sample, FEM is appropriate. If the cross-sectional units in the sample are regarded as random drawings, the REM is appropriate.

When individual error component ε_i and one or more regressors are correlated, FEM is an unbiased estimator.

REM estimators are more efficient than FEM Estimators when N is large, and T is small and if the assumptions underlying REM hold.

Research Data

Unit Analysis for this research is a Telecommunication Company that is listed on the Indonesia Stock Exchange. There are 15 Telecommunication companies purposively using Telecommunication companies that have annual reports from 2016 to 2024. Data is collected from several sources. Data is mostly yearly for the period 2016 to 2024. Data on Free Cash Flow (FCF), Net Profit Margin (NPM), Depreciation (Dep), Net Working Capital (NWC), and Investment (INV) are collected from the company's annual report. Oil Price (OIL), Interest and Economic Growth data are collected from the Central Bank of Indonesia.

Result and Discussion

Results This sub-chapter Discussion will begin with Descriptive Statistics and continue with the causality of net cash flow (Free Cash Flow).

Descriptive Statistics

This sub-section will discuss the descriptive statistics of the research variables shown in Table 1 below. The Company's fundamental data is divided by total assets as done by Altman (1968) in his research on Bankruptcy.

Table 1. Descriptive Statistics of Research Variables

	FCF	NPM	NWC	DEP	Invest	Int	EC	Oil
Minimum	-1.0458	-8.33903	-2.49877	0.005225	-1.13344	0.035	-0.0207	-0.25323
Maximum	2.526549	2.030484	1.204021	2.869315	0.589561	0.06	0.0531	0.550082
Average	0.028767	-0.05824	0.079295	0.347304	0.029245	0.0497222	0.041456	0.10815
StdEv	0.260849	0.989735	0.335224	0.351741	0.169618	0.0097983	0.02378	0.287673
Skewness	6.529462	-5.60896	-3.33313	3.067855	-2.94836	-0.341755	-2.7964	0.35832
Kurtosis	69.97667	42.59069	28.96753	19.64915	19.75069	-1.482657	7.982427	-1.27385
Jarque Bera	24446.15	8889.639	3773.447	1652.916	1655.623	107.94732	294.5454	98.59187

Source: processed by researchers

In Table 1, there are 8 research variables consisting of 5 fundamental variables of the Company, such as Free Cash Flow, Net Profit Margin, Net Working capital, depreciation and investment and 3 external variables of the Company called macro variables.

The free cash flow variable has a minimum value of -1.0458, a maximum of 2.56 an average of 0.0288 and a standard deviation of 0.2608. These figures indicate that the data are very close together and generally approach the minimum data and the standard deviation is quite small. A negative number indicates that the cash flow is negative, which means that there is a deficit where the cash outflow is higher than the cash inflow.

The Net Profit Margin (PM) variable has a minimum value of 0.005, a maximum of 2.030 an average of -0.058 and a standard deviation of 0.990. These figures indicate that the data are very close together and generally approach the maximum data where the standard deviation is quite small. A negative number indicates that the profit generated is negative or a loss, which means that there is a loss in the company where expenses are higher than income.

The Net Working Capital (NWC) variable has a minimum value of -2.499, a maximum of 1.204 and, an average of 0.0793 and a standard deviation of 0.3352. These figures indicate that the data are very close and generally approach the maximum data where the standard deviation is quite small. Negative figures indicate that the working capital value in liabilities is higher than the working capital value in assets.

The Depreciation variable has a minimum value of 0.005, a maximum of 2.869 an ,average of 0.347, and a standard deviation of 0.3517. These figures indicate that the data are very close and generally approach the minimum data where the standard deviation is quite small. This depreciation figure is a flow recorded as an expenditure without depreciation expenditure and is prepared for subsequent investment to replace investments that have been used.

The Investment variable has a minimum value of -1.339, a maximum of 0.5896, an average of 0.0294 and a standard deviation of 0.196. The numbers indicate that the data are very close and generally close to the maximum data, where the standard deviation is quite small. Negative numbers indicate that the investment that occurs is quite small, but the sale of large assets is greater.

The Interest variable has a minimum value of 3.5%, a maximum of 6% an average of 4.97% and a standard deviation of 0.99%. These figures indicate that the data are very close

together and the maximum and minimum distances are balanced and the standard deviation is quite small compared to the previous ones.

The Economic Growth variable has a minimum value of -2.07%, a maximum of 5.5% and an average of 0.1081% and a standard deviation of 0.2378%. These figures indicate that the data are very close together, the maximum and minimum distances are balanced, and the standard deviation is quite small compared to the previous ones.

The Oil Price variable has a minimum value of US$ 45.15, a maximum of US$ 80.51 and an average of US$ 63.78 and a standard deviation of 0.287%. These figures indicate that the data are very close together, the maximum and minimum distances are balanced, and the standard deviation is ranked 3rd in macroeconomic data.

Correlation Coefficient

This description will discuss the correlation coefficient between variables, which can be seen in the following table below.

Table 2. Correlation Coefficient between Variables

	FCF	NPM	Dep	NWC	INV	OIL	INT	EC
FCF	1	-0.13742	-0.02646	0.1488	-0.1361868	-0.03629	0.04333592	0.0158923
NPM		1	0.124237	-0.31124*	0.19557*	-0.02712	0.04133072	-0.0231941
Dep			1	-0.15173	0.08037345	-0.08256	-0.05558314	-0,17605*
NWC				1	0.23813**	-0.02544	0.12808651	0.1121771
INV					1	0,002146	-0.07066857	-0.0132929
OIL						1	-0.47990***	0.28869***
INT							1	0.58577***
EC								1

Source: processed by researchers

In Table 2, it is clearly seen that the correlation coefficient calculated is 28 coefficients because the number of variables is 8 variables (Manurung, 2024b). The significant correlation coefficient is 28.57%. The correlation coefficient has a range of -0.4799 to 0.5857. This means that the correlation coefficient between variables is still a weak relationship and a medium relationship. The correlation coefficient between NPM and NWC is significant at the 10% level, and the relationship is medium strong. The correlation coefficient between NWC and INV is also significant at the 10% level and the relationship is weak. The relationship between Depreciation and economic growth is also significant at the 10% level, and the relationship is also very weak.

The relationship between NWC and Investment is significant at the 5% level and the relationship is also weak. The relationship between the oil price and interest rate variables is significant at a high level of 1%, and the relationship is at medium strength. The relationship between the oil price and economic growth variables is significant at the 1% level and the relationship is at weak strength. The relationship between interest rate variables and economic growth is significant at the 1% level, and the relationship is at a fairly strong-weak strength. The correlation coefficient of interest rates and economic growth is the highest correlation coefficient value. In this description, the correlation coefficient does not greatly interfere with the relationship between variables in the estimation model used, or its multicollinearity is quite small. The relationship between macro variables is very significant and has medium strength. This study supports Manurung's research (1998).

Causality

The discussion of the net cash flow variable is carried out with 2 models, namely the independent variable model, which is the Company's fundamental variable and can also be

called the Company's internal variable. The second model includes external variables or macro variables, namely oil prices, interest rates and economic growth. The first model is as follows:

$FCF_{i,t}$ = 0.02405 + 0.0025 $NPM_{i,t}$ – 0.04553 $NWC_{i,t}$ – 0.01528 $DEP_{i,t}$

(89.88%) (40.43%) (65.31%)

-0.15468 $INV_{i,t}$ + 0.05491 $COVID_{i,t}$ + $e_{i,t}$ (9)

(0.06%) (0%)

The numbers in brackets represent Probability.

R^2 = 60.04%

F = 9.933

Equation (9) shows that R2 is better known as the coefficient of determination and has a value of 60.04%. This means that the independent variables Net Profit Margin, Net Working Capital, Depreciation and investment and the Covid-19 period can together explain fluctuations in net cash flow as a dependent variable of 60.04% and the rest by variables outside the independent variables tested (Manurung, 2024b). The model that includes fundamental variables and the COVID-19 period is suitable for net cash flow research. These results were obtained by conducting a suitability test using the F test.

The investment variable, which is a fundamental or internal factor of the company, is included as an independent variable in this study. This variable significantly affects the net cash flow variable negatively at a significant level of 1%. If investment increases, net cash flow will decrease. The decrease in the cash flow variable is 0.15468 units if the investment variable increases by one unit. This result also provides input to management that the investment made by the Company greatly influences net cash flow. The Company's management must manage cash flow and also does not need to make useless investments to increase the Company's value. Management must manage and monitor investments because the amount of investment will also reduce the cash flow that has been prepared. This means that the Company must increase cash inflow to pay for cash outflows for investment.

The research period is from 2016 to 2024, whereas in this period, there is a COVID-19 period from 2020 to 2022, so it is necessary to include a representation of the COVID-19 variable, namely a dummy variable. This variable significantly positively affects the company's net cash flow at a significant level of 1%. This result means that the longer the COVID-19 period, the more cash flow increases. An increase in net cash flow of 0.05491 units if there is a one-unit increase in COVID-19.

Equation (9) also shows that the variables Net Profit Margin (NPM), Net Working Capital (NMC), and Depreciation do not significantly affect net cash flow at a significant level of 10%.

Next, a description will be carried out for the second model which includes macro variables or external variables that affect the Company's net cash flow. The net cash flow model is as follows:

$FCF_{i,t}$ = -0.18533 + 0.013771 $NPM_{i,t}$ – 0.06035 $NWC_{i,t}$ – 0.01822 $DEP_{i,t}$

(42.70%) (20.39%) (57.47%)

-0.205 $INV_{i,t}$ + 0.002095 $OILP_t$ + 1.87539 INT_t

(0.01%) (0.1%) (1.34%)

-0.3274 EC_t + 0.05606 $COVID_{i,t}$ + $e_{i,t}$ (10)

(40.32%)   (0.22%)

The numbers in brackets represent Probability.

R^2 = 73.65%

F = 13.839

In the equation, it can be seen that the determination coefficient value is 73.65% and is higher than the model without external variables. The addition of variables increases the determination coefficient (Manurung, 2024b). The equation model (10) is a suitable model for forecasting net cash flow in this study.

The investment variable, which is a fundamental or internal factor of the company, is included as an independent variable in this study. This variable significantly affects the net cash flow variable negatively at a significant level of 1%. If investment increases, net cash flow will decrease. The decrease in the cash flow variable is 0.15468 units if the investment variable increases by one unit. These results also provide input to management that the investments made by the Company greatly affect net cash flow. Company management must manage cash flow and also does not need to make useless investments to increase the value of the Company. Management must manage investments and monitor them because the amount of investment will also reduce the cash flow that has been prepared. This means that the Company must increase cash inflow to pay for cash outflows for investment.

External variables are also included as independent variables in this study. Oil prices, which are important variables in the Indonesian economy, are also independent variables. The oil price variable significantly positively affects the Company's net cash flow at a significant level of 1%. The company needs a larger net cash flow if the oil price increases. If the oil price in the market increases by one unit, the net cash flow increases by 0.002095 units.

The second external variable is included as a macro variable, namely the Interest Rate variable. Various parties often state the Interest Rate variable as a risky variable in an economy. This Interest Rate variable is significantly positive at a significant level of 5%, affecting the Company's net cash flow. An increase in the Interest Rate by one unit will increase the net cash flow by 1.8754 units. The increase in net cash flow is greater than the increase in the independent variable. Management must pay attention to the Interest Rate policy taken by the government. Management must pay attention to the direction of the Interest Rate and the amount of the Interest Rate that will be increased or decreased as well as the time the Interest Rate decrease or increase is carried out. This understanding by management will help the Company become a going-concern Company.

As previously explained, the research period is from 2016 to 2024, whereas in this period, there was a COVID-19 period from 2020 to 2022, so it is necessary to include a representation of the COVID-19 variable, namely a dummy variable. This variable significantly positively affects the company's net cash flow at a significant level of 1%. This result means that the longer the COVID-19 period, the more cash flow increases. An increase in net cash flow of 0.05606 units if there is a one-unit increase in COVID-19.

Equation (10) also shows that the variables Net Profit Margin (NPM), Net Working Capital (NMC), Depreciation and economic growth do not significantly affect the Company's net cash flow at a significant level of 10%.

This study is slightly different from previous studies on fundamental variables in cash flow. The difference is that only the investment value is significant in the study, while previous studies were very diverse. This means that the type of industry affects the results obtained because this industry is an industry that requires large funds so that this value affects it.

Conclusion

Based on the previous description, this study concludes as follows:

Company investment greatly affects the Company's net cash flow.

Oil prices affect the Company's net cash flow.

Interest rates affect the Company's net cash flow.

The COVID-19 period affects the Company's net cash flow.

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