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Predicting Future Cash Flows Using Autoregressive Integrated Moving Average (ARIMA)

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ARIMA, future cash flows, operating cash flows, net income, stationarity.

ABSTRACT

This study aims to provide empirical evidence of the ability of operating cash flows to predict future cash flows, ability of net income to predict future cash flows and proves that net income is better at predicting future cash flows compared to operating cash flows. This study was tested using autoregressive integrated moving average analysis. The samples used in this study are tourism, hotel, and restaurant companies listed on the Indonesian Stock Exchange in 2018-2022. The sample in this study was selected using purposive sampling method with a total sample of 418 observations. Before forecasting, the stationarity of the data is seen through ACF and PACF plots and unit root test. The results showed that the operating cash flow data did not meet the assumption of stationarity, so the first differencing process was carried out so that the data obtained was stationary so that the best operating cash flow model for predicting future cash flows was the ARIMA model (3,1,0) and for net income data, it had fulfilled the stationarity assumption, so it was not the differencing process is carried out so that the best model of net income is in forecasting ARIMA's future cash flows (3,0,0).

INTRODUCTION

The performance of a company is reflected in one factor, namely financial reports. According to PSAK 1 of 2015, financial reports contain cash flow reports, changes in equity reports, income and loss and other comprehensive reports, financial position reports, and notes to financial reports. Company financial reports are reported by the company regularly. Based on the information presented by the company's financial reports, it can help users make decisions.

Based on PSAK 2, the cash flow statement is a part of the financial report that shows the inflow and outflow of cash and cash equivalents of an entity. Kieso et al., (2016) stated that a company's cash flow report can help provide information to investors, creditors and other parties in assessing the company's ability to generate future cash flows, distribute dividends and pay the company's debts.

Based on a statement from the Indonesian Issuers Association (AEI), more than fifty companies are experiencing cash flow difficulties caused by the Covid-19 pandemic. According to the executive director of AEI, there are several industrial sectors that have been most impacted by this pandemic. The company comes from the hotel, tourism and transportation industry sectors (Sidik,

2020). As experienced by the Aston Braga, Grandia and Fave Hotel hive square hotels in Bandung which had to close temporarily due to the Covid-19 pandemic (Sidik, 2020). A similar thing also happened in Badung Regency, Bali Province, according to records from the Department of Industry and Manpower (Disperinaker), as many as 532 companies in the tourism sector closed due to the Covid-19 pandemic (Darna, 2020). The Indonesian Hotel and Restaurant Association even reported that 1033 restaurant and hotel businesses in Indonesia were permanently closed due to the Covid-19 pandemic (Newswire, 2021), including 72 restaurants and hotels in the Special Region of Yogyakarta (Yan, 2021).

This phenomenon should be avoided if the company makes predictions about future conditions in order to provide direction for the company's business operations in the face of uncertainty. This uncertainty can affect the sustainability of the company's business in the future. For this reason, management needs information about the company's financial condition, both financial reports and company performance as an intermediary that can be used to predict the company in the future.

LITERATURE REVIEW

Signal Theory

Signal theory is often linked to research on future cash flows. Signal theory is a decision regarding how management views the company's prospects as a reference for investors (Bergh et al., 2014). Signals are defined as signs made by a company to external users of financial reports. This theory describes what companies must do in providing cues or signals to users of financial reports (Soleha, 2020). In accordance with the statement of Godfrey et al., (2010) regarding signal theory which is related to managers conveying signals and future targets through accounts in financial reports, regarding the high growth limits that managers want in the future.

Cash Flow

According to (Dharma, 2015) the cash flow report is a part of the financial report that describes the cash flow of a company as a result of operating, funding and investment activities during a certain period by comparing the initial and final balances.

Based on PSAK 2, it is stated that the use of cash flow reports is related to other financial reports, cash flow reports can describe information that makes it easier for report users to evaluate changes in the company's net assets, financial structure and competence to influence the amount and timing of cash flows in order to adjust to changes. and opportunities. Cash flow information is useful in assessing a company's ability to generate cash and cash equivalents and analogizing the present value of future cash flows. Sharing information about a company's cash flow is one of the objectives of financial reporting. The cash flow report has a deeper purpose, financial reports are expected to share information about the company's liquidity, the company's financial flexibility and the company's operational capabilities. Cash flow reports are useful because they can share information that can fulfill these objectives (Maruta, 2017).

Income

An income statement is a report that can be used to see the achievements and performance of a company in a certain period (Yuwana & Christiawan, 2014). An income statement is part of a company's financial statements in an accounting period that produces net income/net income or net loss, where this net income/loss is expressed in terms of the company's costs and income. According to Mahardini et al., (2020) explain that net income is the largest amount of all income compared to the total of all expenses after deducting income tax in a certain period which is presented in the income and loss statement. Whether a company's performance is good or not can be seen from its income statement.

Future Cash Flows

FASB, (2021) states that the purpose of financial reports is to provide information to help investors, creditors and other parties in assessing the amount, exact timing and uncertainty of net cash flows to the company. Carrying out financial statement analysis including forecasting future cash flows is one way that can be done to reduce cash flow uncertainty, therefore forecasting future cash flows is a fundamental thing in the field of accounting and finance, because a company's ability to generate cash flows can shows how much a company is worth.

According to Kieso et al., (2016) that lenders and investors use income and loss information to see the company's past performance and determine the basis for predicting future performance. In determining important trends that contain information on future performance, information from past performance is needed. In PSAK 2 it is stated that the possibility of information users in developing models to assess and compare the present value of future cash flows from other companies using the information provided in the cash flow statement if used in conjunction with other financial reports can be useful for assessing capabilities. companies in generating cash and cash equivalents (Yuwana & Christiawan, 2014). This statement implies that the information in a company's income and loss statement and cash flow can predict future cash flows.

METHODS

This type of research is quantitative descriptive research. This quantitative descriptive research manages data in the form of numbers, then provides views on the data (Sugiono, 2018). The population used in this research is tourism, hotel and restaurant industry companies listed on the Indonesia Stock Exchange in the 2018-2022 period. Samples were selected using the purposive sampling method, namely sampling is carried out by selecting subjects based on specific criteria with certain considerations that are considered to represent the population. The total sample used in this research was 22 tourism, hotel and restaurant companies listed on the Indonesia Stock Exchange for the 2018-2022 period. In addition, the analysis method used in this research includes Autoregressive Integrated Moving Average (ARIMA) using the EViews 12 application.

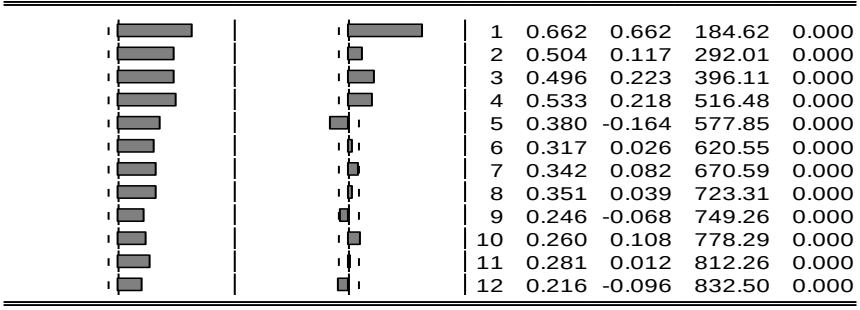
RESULTS

Predict Future Cash Flows with Operating Cash Flow Capabilities

The first stage before forecasting is to test the stationarity of the data by testing the autocorrelation function (ACF) and partial autocorrelation function (PACF). The ACF and PACF tests for all companies can be seen in Figure 1.

Figure 1. Correlogram ACF and PACF Operating Cash Flow

Date: 05/12/23 Time: 17:32
Sample: 2018Q1 2022Q3
Included observations: 418

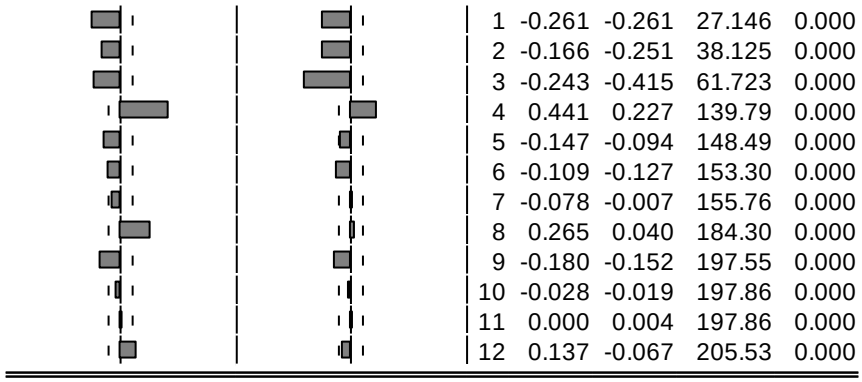


Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.662	0.662	184.62	0.000
		2	0.504	0.117	292.01	0.000
		3	0.496	0.223	396.11	0.000
		4	0.533	0.218	516.48	0.000
		5	0.380	-0.164	577.85	0.000
		6	0.317	0.026	620.55	0.000
		7	0.342	0.082	670.59	0.000
		8	0.351	0.039	723.31	0.000
		9	0.246	-0.068	749.26	0.000
		10	0.260	0.108	778.29	0.000
		11	0.281	0.012	812.26	0.000
		12	0.216	-0.096	832.50	0.000

It can be seen from Figure 1 that ACF decreases very slowly, and PACF after the first lag decreases quite far, but the values of ACF and PACF are close to zero. This shows an indication that operating cash flow data is not stationary at zero degree, so it can be concluded that operating cash flow data needs to be differentiated with a first difference.

Figure 2. Correlogram ACF and PACF Operating Cash Flow First Difference

Date: 05/13/23 Time: 07:16
Sample (adjusted): 2018Q2 2022Q3
Included observations: 396 after adjustments



Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.261	-0.261	27.146	0.000
		2	-0.166	-0.251	38.125	0.000
		3	-0.243	-0.415	61.723	0.000
		4	0.441	0.227	139.79	0.000
		5	-0.147	-0.094	148.49	0.000
		6	-0.109	-0.127	153.30	0.000
		7	-0.078	-0.007	155.76	0.000
		8	0.265	0.040	184.30	0.000
		9	-0.180	-0.152	197.55	0.000
		10	-0.028	-0.019	197.86	0.000
		11	0.000	0.004	197.86	0.000
		12	0.137	-0.067	205.53	0.000

In Figure 2, after making the first difference, you can see the correlogram showing that each lag is around the zero line, so this indicates that the operating cash flow data is stationary, so it can be concluded that the operating cash flow data is stationary at level one or the first difference.
Next, look at the unit root value. If the unit root probability value is less than 0.05 then it can be said that the data is stationary. For the unit root test for all companies can be seen in table 2. Based on the ADF and PACF flow plot tests operating cash for all company data is stationary at level one or first differencing, then the unit root test is carried out at the first differencing.

Table 2. Stationary Tests of Operating Cash Flows for All Companies

Panel unit root test: Summary
Series: D(X1)
Date: 05/13/23 Time: 07:33
Sample: 2018Q1 2022Q3
Exogenous variables: Individual effects
User-specified lags: 1
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-12.0565	0.0000	22	352
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-11.7568	0.0000	22	352
ADF - Fisher Chi-square	210.818	0.0000	22	352
PP - Fisher Chi-square	619.313	0.0000	22	374

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

It can be seen in table 2 that the results of the Levin, Lin & Chu unit root test show a probability value of 0.0000 < 0.05. Likewise, the ADF unit root test results have a probability value of 0.0000 < 0.05 so that the operating cash flow data series is stationary at level one which can be seen from the unit root test probability value being significantly less than 0.05, so it can be concluded that the flow data The operating cash of all companies is normally distributed or stationary at level one or after the first differentiation.
The second stage is to identify the tentative model that will be used to make forecasts. At this stage, we search for a suitable model using a trial and error system. The search for a suitable model for operating cash flows for all companies can be seen in table 3, table 4. and table 5.

Table 3. ARIMA Operating Cash Flows (1,1,0)

Dependent Variable: D(Y)
Method: Panel Least Squares
Date: 05/29/23 Time: 05:24
Sample (adjusted): 2018Q3 2022Q3
Periods included: 17
Cross-sections included: 22
Total panel (balanced) observations: 374
Convergence achieved after 5 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(X1)	0.069668	0.049045	1.420508	0.1563
C	-1.39E+09	2.29E+09	-0.608257	0.5434
AR(1)	-0.436808	0.043140	-10.12527	0.0000

R-squared	0.222005	Mean dependent var	-1.91E+09
Adjusted R-squared	0.217811	S.D. dependent var	7.18E+10
S.E. of regression	6.35E+10	Akaike info criterion	52.59475
Sum squared resid	1.50E+24	Schwarz criterion	52.62623
Log likelihood	-9832.218	Hannan-Quinn criter.	52.60725
F-statistic	52.93327	Durbin-Watson stat	2.539869
Prob(F-statistic)	0.000000		

Inverted AR Roots	-.44

Table 4. ARIMA Operating Cash Flows (2,1,0)

Dependent Variable: D(Y)
Method: Panel Least Squares
Date: 05/29/23 Time: 05:27
Sample (adjusted): 2018Q4 2022Q3
Periods included: 16
Cross-sections included: 22
Total panel (balanced) observations: 352
Convergence achieved after 4 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(X1)	0.122102	0.056606	2.157036	0.0317
C	-1.10E+09	3.57E+09	-0.308588	0.7578
AR(2)	-0.084328	0.049879	-1.690669	0.0918

R-squared	0.018067	Mean dependent var	-1.06E+09
Adjusted R-squared	0.012440	S.D. dependent var	7.31E+10
S.E. of regression	7.27E+10	Akaike info criterion	52.86509
Sum squared resid	1.84E+24	Schwarz criterion	52.89802
Log likelihood	-9301.255	Hannan-Quinn criter.	52.87819
F-statistic	3.210649	Durbin-Watson stat	3.089478
Prob(F-statistic)	0.041525		

Inverted AR Roots	-.00+.29i	-.00-.29i

Table 5. ARIMA Operating Cash Flows (3,1,0)

Dependent Variable: D(Y)
Method: Panel Least Squares
Date: 05/13/23 Time: 07:40
Sample (adjusted): 2019Q1 2022Q3
Periods included: 15
Cross-sections included: 22
Total panel (balanced) observations: 330
Convergence achieved after 5 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(X1)	0.186491	0.045179	4.127829	0.0000
C	-4.65E+09	6.14E+09	-0.756769	0.4497
AR(3)	0.402386	0.048311	8.329154	0.0000

R-squared	0.182000	Mean dependent var	-2.17E+09
Adjusted R-squared	0.176997	S.D. dependent var	7.32E+10
S.E. of regression	6.64E+10	Akaike info criterion	52.68512
Sum squared resid	1.44E+24	Schwarz criterion	52.71966
Log likelihood	-8690.046	Hannan-Quinn criter.	52.69890
F-statistic	36.37774	Durbin-Watson stat	2.886638
Prob(F-statistic)	0.000000		

Inverted AR Roots	.74	-.37+.64i	-.37-.64i

It can be seen in table 3 for the ARIMA (1,1,0) model that the probability value D(X1) is greater than 0.05, and in table 4. for the ARIMA (2,1,0) model the probability value AR(2) is also greater. greater than 0.05, while in table 5 for the ARIMA (3,1,0) model the value of probability D(X1) and probability AR(2) is less than 0.05 so that the best model obtained for the operating cash flow of the entire company is ARIMA (3,1,0). Based on table 3, the AR equation model is obtained:

Y = -4.65E+09 + 0.402386X1t-3

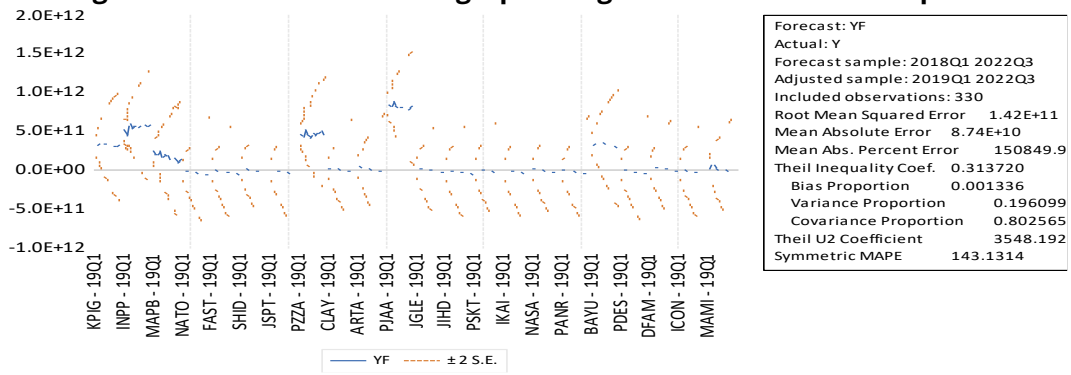
The best model for each company can be seen in table 6.

Table 6. Operating Cash Flow Forecasting Models for Each Company

No	Kode Perusahaan	MODEL	Konstanta	Adjusted R^2
1	KPIG	ARIMA(13,0,12)	-5.97E+10	0.674969
2	INPP	ARIMA(15,1,0)	6.73E+09	0.761678
3	MAPB	ARIMA(3,2,16)	6.48E+09	0.897072
4	NATO	ARIMA(17,0,10)	1.56E+09	0.987634
5	FAST	ARIMA(11,2,11)	10463780	0.931481
6	SHID	ARIMA(15,0,5)	-2.64E+09	0.859729
7	JSPT	ARIMA(16,2,0)	4540152	0.532441
8	PZZA	ARIMA(17,0,2)	1.48E+11	0.872326
9	CLAY	ARIMA(16,1,3)	1.34E+09	0.999996
10	ARTA	ARIMA(16,1,2)	-259E+08	0.993032
11	PJAA	ARIMA(16,1,1)	3.47E+10	0.937316
12	JGLE	ARIMA(14,1,7)	-3.28E+09	0.852950
13	JIHD	ARIMA(12,2,4)	2138589	0.890285
14	PSKT	ARIMA(13,2,4)	1.73E+08	-.877329
15	IKAI	ARIMA(16,1,14)	5098293	0.576315
16	NASA	ARIMA(15,1,4)	-98581297	0.996710
17	PANR	ARIMA(16,1,2)	-591769	0.999878
18	BAYU	ARIMA(16,1,0)	-1.66E+10	0.818096
19	PDES	ARIMA(8,1,2)	-3.15E+08	0.568985
20	DFAM	ARIMA(2,0,1)	5.53E+08	0.362674
21	ICON	ARIMA(16,1,4)	8.26E+08	0.999737
22	MAMI	ARIMA(14,1,9)	-4.19E+08	0.681896

The third stage is forecasting with the fit model obtained from the second stage. The forecasting graph for all companies can be seen in Figure 3.

Figure 3. Chart for Forecasting Operating Cash Flows for All Companies



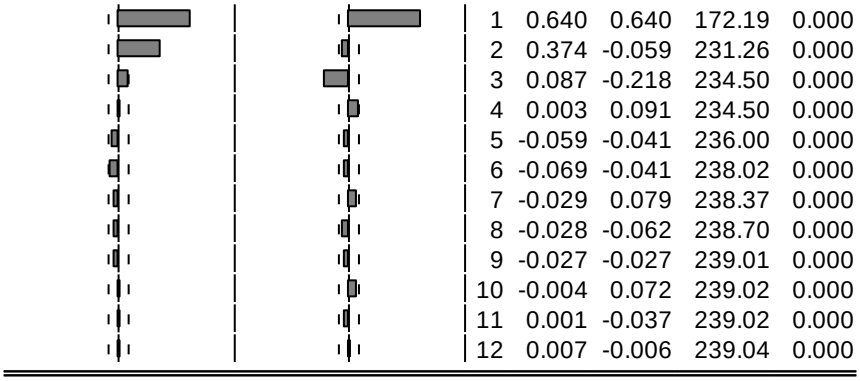
In the operating cash flow forecasting graph for all companies, it can be seen that the Mean Absolute Percentage Error (MAPE) value is 143.1314 for 22 companies so that the MAPE for each company is 6.506, so the percentage of forecast accuracy is 93.49% with a bias value of 0.001336 and the Theil Inequality Coefficient value is 0.313720 where according to Ariefianto, (2012) the value of Theil's Inequality Coefficient (THEIL) and the smaller the bias (closer to zero), the better the model's performance in projecting the dependent variable, so it can be concluded that the ARIMA model (3, 1.0) on operating cash flow is an excellent model.

Predict Future Cash Flows with Net Income Capability

The steps taken are the same as the previous operating cash flow predictions. The first stage before forecasting is to carry out the autocorrelation function (ACF) and partial autocorrelation function (PACF) tests. The ACF and PACF tests for all companies can be seen in Figure 4.

Figure 4. Correlogram ACF and PACF Net Income for All Companies

Date: 05/12/23 Time: 20:34
Sample: 2018Q1 2022Q3
Included observations: 418



Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.640	0.640	172.19	0.000
		2	0.374	-0.059	231.26	0.000
		3	0.087	-0.218	234.50	0.000
		4	0.003	0.091	234.50	0.000
		5	-0.059	-0.041	236.00	0.000
		6	-0.069	-0.041	238.02	0.000
		7	-0.029	0.079	238.37	0.000
		8	-0.028	-0.062	238.70	0.000
		9	-0.027	-0.027	239.01	0.000
		10	-0.004	0.072	239.02	0.000
		11	0.001	-0.037	239.02	0.000
		12	0.007	-0.006	239.04	0.000

It can be seen in Figure 4. that ACF lag 1 and lag 2 are significantly different from zero (outside the dotted line) but the other lags are not significant and PACF lag 1 and lag 3 are significantly different from zero (outside the dotted line) but The other lags are not significant, this shows that each lag is around the zero line, so this indicates that the operating cash flow data is stationary, so it can be concluded that the net income data is stationary at zero degree (level).

Next, look at the unit root value. If the unit root probability value is less than 0.05 then it can be said that the data is stationary. If the data is not stationary, then the first or second differencing will be carried out. For the unit root test for all companies, it can be seen in table 7.

Table 7. Stationary Tests of Net Income for All Companies

Panel unit root test: Summary
Series: X2
Date: 04/14/23 Time: 17:13
Sample: 2018Q1 2022Q3
Exogenous variables: Individual effects
User-specified lags: 1
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-4.87908	0.0000	22	374
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-3.58399	0.0002	22	374
ADF - Fisher Chi-square	75.9742	0.0020	22	374
PP - Fisher Chi-square	90.4789	0.0000	22	396

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

It can be seen in table 7 that the results of the Levin, Lin & Chu unit root test show a probability value of 0.0000 < 0.05. Likewise, the ADF unit root test results have a probability value of 0.0020 < 0.05 so that the net income data series is stationary at a degree (level) of zero as seen in the unit root test probability value which is significantly less than 0.05, so it can be concluded that Net income data is normally distributed at degree (level) zero and there is no need for first or second differencing

The second stage is to identify the tentative model that will be used to make forecasts. At this stage, we search for a suitable model using a trial and error system. The search for a suitable model for net income for all companies can be seen in table 8, table 9 and table 10.

Table 8. ARIMA Net Income (1,0,0)

Dependent Variable: Y
Method: Panel Least Squares
Date: 05/29/23 Time: 05:55
Sample (adjusted): 2018Q2 2022Q3
Periods included: 18
Cross-sections included: 22
Total panel (balanced) observations: 396
Convergence achieved after 5 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X2	0.068460	0.023885	2.866202	0.0044
C	1.05E+11	3.78E+10	2.782235	0.0057
AR(1)	0.904209	0.020757	43.56215	0.0000

R-squared	0.834024	Mean dependent var	1.06E+11
Adjusted R-squared	0.833179	S.D. dependent var	1.76E+11
S.E. of regression	7.21E+10	Akaike info criterion	52.84768
Sum squared resid	2.04E+24	Schwarz criterion	52.87784
Log likelihood	-10460.84	Hannan-Quinn criter.	52.85963
F-statistic	987.4039	Durbin-Watson stat	2.771736
Prob(F-statistic)	0.000000		

Inverted AR Roots	.90

Table 9. ARIMA Net Income (2,0,0)

Dependent Variable: Y
Method: Panel Least Squares
Date: 05/29/23 Time: 05:56
Sample (adjusted): 2018Q3 2022Q3
Periods included: 17
Cross-sections included: 22
Total panel (balanced) observations: 374
Convergence achieved after 5 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X2	0.064940	0.018536	3.503471	0.0005
C	9.11E+10	3.06E+10	2.980874	0.0031
AR(2)	0.876817	0.021313	41.13979	0.0000

R-squared	0.826104	Mean dependent var	1.04E+11
Adjusted R-squared	0.825167	S.D. dependent var	1.74E+11
S.E. of regression	7.26E+10	Akaike info criterion	52.86134
Sum squared resid	1.95E+24	Schwarz criterion	52.89282
Log likelihood	-9882.070	Hannan-Quinn criter.	52.87384
F-statistic	881.2321	Durbin-Watson stat	2.027554
Prob(F-statistic)	0.000000		

Inverted AR Roots	.94	-.94

Table 10. ARIMA Net Income (3,0,0)

Dependent Variable: Y
Method: Panel Least Squares
Date: 04/14/23 Time: 17:22
Sample (adjusted): 2018Q4 2022Q3
Periods included: 16
Cross-sections included: 22
Total panel (balanced) observations: 352
Convergence achieved after 5 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X2	0.064908	0.014487	4.480361	0.0000
C	8.14E+10	2.82E+10	2.884979	0.0042
AR(3)	0.870218	0.020380	42.70040	0.0000

R-squared	0.844710	Mean dependent var	1.04E+11
Adjusted R-squared	0.843820	S.D. dependent var	1.72E+11
S.E. of regression	6.81E+10	Akaike info criterion	52.73366
Sum squared resid	1.62E+24	Schwarz criterion	52.76659
Log likelihood	-9278.124	Hannan-Quinn criter.	52.74676
F-statistic	949.2030	Durbin-Watson stat	1.270090
Prob(F-statistic)	0.000000		

Inverted AR Roots	.95	-.48+.83i	-.48-.83i

It can be seen in table 8 for the ARIMA(1,0,0) model that the probability values of X2 and AR(1) are less than 0.05, in table 9 for the ARIMA(2,0,0) model the probability values of X2 and AR(2) less than 0.05, and in table 10 for the ARIMA(3,1,0) model the probability values of X1 and AR(3) are also less than 0.05, but for the probability values of X1 and AR(3) from the ARIMA(3) model ,0,0) is smaller than the probability values of greater than the ARIMA (1,0,0) and ARIMA(2,0,0) models, so the best model obtained for net income for the entire company is ARIMA (3,0,0). Based on table 11, the AR equation model is:

Y = 8.1400111503 + 0.870218X2t-3

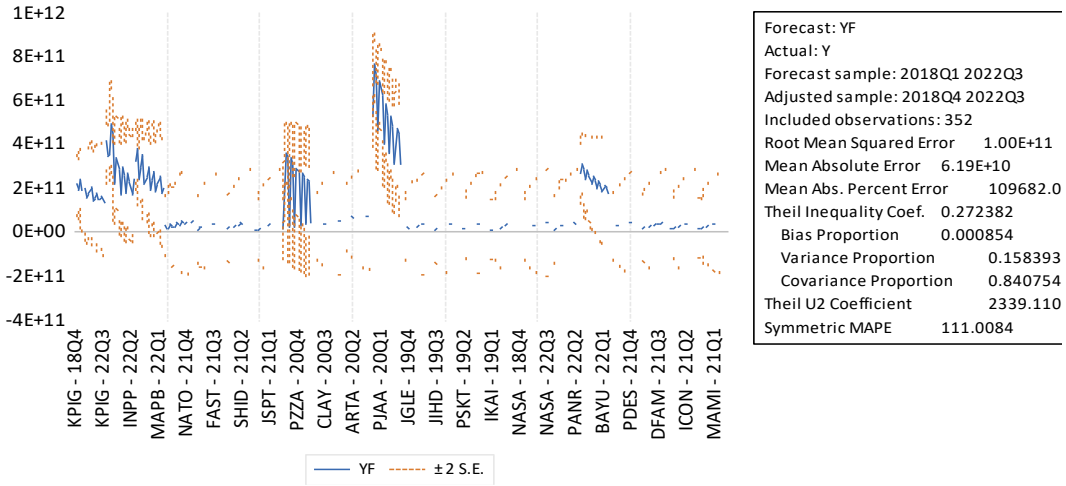
The best model for each company can be seen in table 11.

Table 11. Net Income Forecasting Models for Each Company

No	Kode Perusahaan	MODEL	Konstanta	Adjusted R^2
1	KPIG	ARIMA(16,0,1)	1.51E+11	0.769537
2	INPP	ARIMA(16,1,3)	-1.20E+10	0.999998
3	MAPB	ARIMA(12,1,0)	1.38E+10	0.547830
4	NATO	ARIMA(16,1,4)	2.91E+08	0.660520
5	FAST	ARIMA(12,1,5)	20834595	0.772319
6	SHID	ARIMA(3,1,13)	-1.54E+09	0.507762
7	JSPT	ARIMA(8,1,13)	-5343707	0.195405
8	PZZA	ARIMA(16,1,3)	7.22E+09	0.998094
9	CLAY	ARIMA(16,1,4)	-6.14E+08	0.947326
10	ARTA	ARIMA(12,1,1)	-3.02E+08	0.550128
11	PJAA	ARIMA(8,1,4)	-6.24E+09	0.821029
12	JGLE	ARIMA(3,1,1)	-2.04E+09	0.589330
13	JIHD	ARIMA(6,1,7)	16080725	0.827708
14	PSKT	ARIMA(15,0,8)	-1.17E+10	0.892234
15	IKAI	ARIMA(15,1,3)	-5882254	0.561586
16	NASA	ARIMA(6,1,11)	4.91E+09	0.975756
17	PANR	ARIMA(14,2,10)	2649297	0.838157
18	BAYU	ARIMA(15,2,3)	1.83E+08	0.991072
19	PDES	ARIMA(16,1,15)	-7.45E+08	0.951125
20	DFAM	ARIMA(3,2,3)	-1.25E+08	0.553804
21	ICON	ARIMA(16,1,4)	8.34E+08	0.998605
22	MAMI	ARIMA(12,1,3)	-1.23E+09	0.493122

The third stage is forecasting with the fit model obtained from the second stage. The forecasting graph for the entire company can be seen in Figure 5.

Figure 5. Net Income Forecasting Graph for All Companies



In the net income forecasting graph for all companies, you can see the Mean Absolute Percentage Error (MAPE) value of 111.0084 for 22 companies so that the MAPE for each company is 5.0458, so the percentage of forecast accuracy is 94.95% with a bias value of 0 .000854 and the Theil Inequality Coefficient value is 0.272382 where according to Ariefianto, (2012) the value of Theil's Inequality Coefficient (THEIL) and the smaller the bias (closer to zero), the better the model's performance in projecting the dependent variable, so it can be concluded that the ARIMA model (3 ,0,0) on net income is a very good model.

DISCUSSION

The Ability of Operating Cash Flows in Predicting Future Cash Flows

The research results show that operating cash flows are capable of predicting future cash flows, meaning that the information contained in operating cash flows has an influence or connection to future cash flows. Not only is it able to predict future cash flows, operating cash flows even have a fairly high level of accuracy in predicting future cash flows, in this research the best model obtained for operating cash flows is ARIMA (3,1,0) or AR (3) with a MAPE of 5.0282, and a forecast accuracy percentage of 93.49%. This can help companies predict future cash flows and can be used as a reference to reduce uncertainty in future cash flows, so that predicting future cash flows using operating cash flow capabilities can help companies make decisions to anticipate a decrease in cash flows company, and than company can allocate company cash optimally. Not only can it be used by companies, investors can also use the ARIMA method to predict future cash flows before investing in a company, so that investors know which companies have good future cash flow prospects and can pay dividends to their investors.

In accordance with the statement contained in the FASB, (2021) that the information contained in financial reports such as operating cash flows can help users of financial reports, including estimating the company's ability to generate cash flows in the future. This is supported by signal theory which is related to managers conveying signals and future targets through accounts in financial reports, regarding the high growth limits that managers want in the future.

The results of this research are in line with research conducted by Wirajaya, (2015) Junaidi, (2016), Widyawati & Sukartha, (2016), and Yulianti et al., (2017) regarding the ability of operating cash flows to predict future cash flows, which shows that operating cash flows have the ability to predict future cash flows.

The Ability of Net Income in Predicting Future Cash Flows

The research results show that net income is able to predict future cash flows, meaning that the information contained in net income has an influence or connection to future cash flows. Net income is the greater of all income compared to the total of all expenses after deducting income tax in a certain period which is presented in the income and loss statement. Whether a company's performance is good or not can be seen from the income and loss report, especially in the net income section. If a company has a high net income, the cash flow generated will also increase, because net income is one of the components that make up the cash flow report, making it possible for the company to distribute high dividends to investors. Investors and companies can use net income using the ARIMA method to predict future cash flows with a fairly high level of accuracy. In this research, the best model for net income is ARIMA (3,0,0) or AR (3) with a MAPE of 5.0458 and a forecast accuracy percentage of 94.95%.

The information contained in net income can certainly help companies predict future cash flows and can be used as a reference to reduce uncertainty in future cash flows, so that predicting future cash flows using net income capabilities can help companies make decisions. decisions to anticipate a decrease in company cash flow and the company can allocate company cash optimally.

In accordance with the opinion of Kieso et al., (2016) that net income can provide information regarding the difference between operating activity income and the company's non-operating activity income. Through net income in the financial statements, it can make it easier to filter future cash flows precisely and accurately because cash flow information through the current period's net income account can describe the continuation of cash flows in the future, which means that the current period's net income can show information about current cash flows and cash flows. expected future cash. This is supported by signal theory which is related to managers' protection of future signals and targets through accounts in financial reports, regarding the high growth limits that managers desire in the future.

The results of this research are in line with research conducted by Wirajaya, (2015), Widyawati & Sukartha, (2016), Lumbantoruan & Suaryana, (2018) and Sari Y. F dan Ratnasih C, (2022) which shows that net income has the ability to prediction of future cash flows.

Net Income is Better than Operating Cash Flow in Predicting Future Cash Flow

The results of the research show that net income is better than operating cash flow in predicting future cash flows, meaning that the information contained in net income is more representative than information on operating cash flows of future cash flows, this is because net income is part of cash flow report, where net cash flow is determined from operating activities by adding back or subtracting net income from items that have no influence on cash and accrual components contained in net income that can influence past, present and future cash flows front.

In this study, the value reflected in Adjusted R Squared net income is also greater than the Adjusted R Squared value of operating cash flow and the percentage of accuracy in forecasting net income is also higher compared to operating cash flow, so it can be said that the ability of net income is better in predicting future cash flows, but it cannot be denied that operating cash flow information can provide additional explanations for future cash flow predictions as evidenced by the research results above that operating cash flow and net income are able to predict future cash flows, so that companies and investors can use net income to get better forecasting results and operating cash flow as additional information in predicting future cash flows.

This statement is in accordance with the FASB, (2021) which states that accrual information contained in net income can provide better information for assessing past and future performance compared to the information provided by cash receipts and disbursements during the period, however Operating cash flow information also remains helpful in assessing an entity's ability to generate future cash flows. This is supported by signal theory which is related to managers conveying signals and future targets through accounts in financial reports, regarding the high growth limits that managers want in the future.

The results of this research are in line with research conducted by Khasanah, (2021), Rahmawati, (2008) and Kostia Ramon, (2013) which states that net income is better at predicting future cash flows than cash flow itself.

CONCLUSION

This research examines the ability of operating cash flow and net income to predict future cash flow in tourism, hotel and restaurant companies listed on the Indonesia Stock Exchange in 2018-2022 using the Autoregressive Integrated Moving Average (ARIMA) model. Based on the results of testing 3 hypotheses, it can be concluded as follows: Operating cash flow is able to predict future cash flows as indicated by a positive coefficient value of 0.186491 with a significance level of 0.000, The best model for operating cash flow is ARIMA (3,1,0) with MAPE 6.506, and a forecast accuracy percentage of 93.49%, et income is able to predict future cash flows as shown by a positive coefficient value of 0.064908 with a significance level of 0.0000, The best model for operating cash flow is ARIMA (3,0,0) or AR(3) with MAPE 5.0458 and a forecast accuracy percentage of 94.95%, Net income is better than operating cash flow in predicting future cash flows as shown by the adjusted R squared value of net income of 0.84382 while the adjusted R squared value of operating cash flow is 0.176997 so that net income is better in predicting future cash flows front.

LIMITATION

This research is not free from limitations, in this research there is a non-permanent earning period, namely when the Covid-19 pandemic occurred.

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