
**THE EFFECT OF EXCHANGE RATE, INFLATION, INTEREST RATES, AND CRUDE OIL PRICE
ON FINANCIAL DISTRESS IN THE AIR TRANSPORTATION SUB-SECTOR LISTED
ON THE INDONESIA STOCK EXCHANGE OF THE PERIOD 2012-2021**

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ABSTRACT

The companies in the air transportation sub-sector experienced financial distress in multiple years between the period of 2012-2021 due to the global uncertainty and the existence of the COVID-19 pandemic. This study intends to ascertain the effect of the exchange rate, inflation, interest rates, and crude oil prices on financial distress in the air transportation sub-sector listed on the Indonesia Stock Exchange of the period 2012-2021. The method used is descriptive and verification analysis method with a quantitative approach. The sample technique in this study uses saturated sampling. The data collection technique used is literature study and documentation. Furthermore, multiple linear regression analysis is used in the data analysis method. The results of this study state that partially the exchange rate and oil prices have a negative and significant effect on financial distress. Meanwhile, inflation and interest rates have no effect on financial distress. The results of the study simultaneously exchange rates, inflation, interest rates, and oil prices together have a significant effect on financial distress with a correlation coefficient of 81.4% which indicates a very strong relationship between variables.

Keywords: Exchange Rate; Inflation; Interest Rates; Oil Prices; Financial distress.

INTRODUCTION

World economic growth dropped from 3.1% to 3.0%, due to low commodity prices and rising uncertainty in financial markets. shifts in global economic cycles and orders that took place throughout 2013 had an impact on these circumstances. These difficulties persisted until 2016. Moreover, global uncertainty had an impact on Indonesia's economic dynamics in 2018. Due to the trade war between the United States and China, the global economy's slowdown that began in 2018 has not yet been fully resolved. Another reason is the presence of the coronavirus (COVID-19). According to survey data from the Central Statistics Agency (BPS), 82.85% of the businesses impacted by COVID-19 reported decline in sales, while 14.6% of other businesses reported continue to make the same amount of profit as before (Tude et al., 2022). Compared to other industrial sectors, the transportation and warehousing industry saw the highest growth contraction, particularly in the second quarter of 2020 when growth was at negative 30.80%.

**Table 1. The contraction in the transportation sub-sector in Indonesia
affected by the COVID-19 pandemic**

Sub-sector	Contraction Rate
Air Freight	-53,80%
Rail Transportation	-45,5%
Ground Transportation	-17,65%
Sea Freight	-17,48%
River and crossing transportation	-12,20%

Source: Central Statistics Agency (BPS), 2022

According to table 1, the Central Statistics Agency (BPS) reported that in Indonesia, the growth rate of the Gross Domestic Product (GDP) in the transportation sector experienced the shallowest contraction of minus 15.04% throughout 2020, and that freight transportation by air was the most affected by COVID-19, with a contraction rate of up to minus 53.80%. <https://ekonomi.bisnis.com/read/20210205/98/1352771/bps-catat-kontraksisektor-transportasi-paling-parah-ini-kata-ekonom> (downloaded on October 18, 2022, at 22.17). The Indonesian government's implementation of measures including Large-Scale Social Restrictions, Enforcement of Restrictions on Community Activities, laws governing public transportation, and a prohibition on homecoming contributed to the high rate of contraction in air transportation. Any of these events affect the performance of the company's finances.

Table 2. Developments in exchange rates, inflation, interest rates, crude oil prices and operating profit (loss) for the period 2012-2021

Year	Exchange Rate (Rupiah)	Inflation (%)	Interest Rate (%)	Crude oil prices (usd)	Operating Profit (Loss)	
					GI (USD)	AA (Rupiah)
2012	9.358	4,3	5,75	109,2	110.842.573	63.591.218
2013	10.445	8,38	7,50	98	11.200.380	542.395.740
2014	11.876	8,36	7,75	92,9	-368.911.279	7.883.658.918
2015	13.785	3,35	7,50	48,4	77.974.161	-5.207.323.404
2016	13.385	3,02	4,75	43,5	9.364.858	877.483.697
2017	13.305	3,61	4,25	54	-213.389.678	-512.961.280.383
2018	14.246	3,13	6,00	71	-228.889.524	-907.024.833.708
2019	14.139	2,27	5,00	65	-44.567.515	-157.368.618.806
2020	14.525	1,68	3,75	41	-2.476.633,4	-2.754.589.873,6
2021	14.296	1,87	3,50	71	-4.174.004,8	-2.337.876.178,1

Sources: Bank Indonesia, Central Statistics Agency (BPS), Financial Report PT Garuda Indonesia Tbk and PT AirAsia Indonesia Tbk

The rupiah has weakened from 2013 to 2015 as a result of the significant unpredictability on the international financial markets, as seen in Table 1.1. In 2018, the rupiah depreciated again from the previous year, which was the result of global uncertainties. since the Indonesian economy was able to post growth of 5.02%, appreciated in 2019 by IDR 13,901. Due to the COVID-19 pandemic, the rupiah depreciated once again by IDR 14,105 in 2020 and IDR 14,296 in 2021. The inflation rate in 2013 was 8,38%, which was significantly higher than the previous year's rate of 4,3% and well beyond the government's goal range of $4,5\% \pm 1\%$. The high inflation rate of 8.36% remained in 2014. The increase in food and fuel subsidies has resulted in this condition. However, between 2015 and 2017, it was consistently within the range of $4,0 \pm 1\%$. Inflation in 2018 and 2019 was also kept within the target range of $3,5 \pm 1\%$, coming in at 3.13% in 2018 and 2.72% in 2019. From there, it tended to decline until 2020, coming in at 1.68%, and then slightly rise again in 2021 to 1.87% as a result of a rebound in consumer demand from the previous year. Throughout 2013–2015, interest rates ranged between 7.50% and 7.75% in response to rising inflation predictions. To support the economic recovery, interest rates were reduced in 2016–2017 to 4.75% and 4.25%, respectively. The Federal Funds Rate was raised in 2018, which caused the interest rate to rise by 6% from the previous year. From 2019 through 2021, however, the interest rate is expected to decline. In an effort to stimulate economic growth, the interest rate was reduced to 5% in 2019, then to 3.75% in 2020, and finally to the lowest level of 3.50% in 2021. From 2012 through 2021, tend to fluctuate in the price of crude oil. Every year from 2013 to 2016 it experienced decrease because to an excess of supplies and a drop in demand. Because to the discrepancy in supply and demand, it surged to USD 71 per barrel in 2018, a large rise from USD 54 per barrel the year before. It then reduced to USD 65 per barrel in 2019, dropped to USD 41 per barrel in 2020, and then increased once more to USD 71 per barrel in 2021.

Due to the impact of the weakening of the rupiah, expenses paid during expansion, and losses of subsidiaries, PT Garuda Indonesia Tbk reported a decrease in net profit of USD11.2 million in 2013 and a negative net profit in 2014. In opposed to PT AirAsia Indonesia Tbk, which recorded an increase in net profit between 2012 and 2014 as a result of the purchase of a subsidiary and efforts to reduce operational expenses. However, both PT Garuda Indonesia Tbk and PT AirAsia Indonesia Tbk only reported net profits until 2016. Each year from 2017 through 2021, the two companies had a net loss. PT AirAsia Indonesia Tbk reported a net loss of IDR 2,34 trillion in 2021, down 15,13% from IDR 2,75 trillion the year before. This is in contrast to the increase in the net loss experienced by PT Garuda Indonesia Tbk. Even though operational income fell by 61,14% to IDR 626 billion in 2021, this was because passenger income fell by 68,58%. PT AirAsia Indonesia Tbk recorded a significant increase in cargo and charter business by 23.23% in cargo and 229.86% in charter.

The influence of exchange rates, inflation, interest rates and oil prices on financial distress in previous research shows different results from each other. As in research by Rohiman & Damayanti (2019) and Hendrawan et al. (2022) stated that the exchange rate variable has a significant effect on financial distress. Meanwhile, Kholisoh & Dwiarti (2020) and Prasad et al. (2018) stated that the exchange rate variable has no effect on financial distress. Nurhidayah & Rizqiyah (2017) stated that inflation has a significant positive effect on financial distress. Pertiwi (2018) stated that inflation has a significant negative effect on financial distress. This is not in line with Priyatnasari & Hartono (2019) which shows that inflation has no effect on financial distress.

Furthermore, regarding the interest rate variable, Kriswanto (2019) shows that interest rates have a significant influence on financial distress. Wafi et al. (2021) shows that interest rates have a significant positive influence on financial distress. Meanwhile, the research results of Priyatnasari & Hartono (2019) and Indriyani & Nazar (2020)

state that the macroeconomic factor of interest rates has no effect on financial distress. On the oil price variable, Wafi et al. (2021) shows that world oil prices do not have a significant effect on financial distress. On the other hand, in Putra et al. research. (2021) shows that oil prices have a significant effect on bankruptcy risk.

METHOD

The method used in this research is descriptive and verification analysis method with a quantitative approach. The independent variables used in this study are exchange rate, inflation, interest rate, and crude oil price. The dependent variable is financial distress at PT Garuda Indonesia Tbk and PT AirAsia Indonesia Tbk for the 2012–2021 period. The population of this study consists of two companies from the air transportation sub-sector that are listed on the Indonesia Stock Exchange: PT Garuda Indonesia Tbk and PT AirAsia Tbk. With data on fluctuations in, exchange rates, inflation, interest rates, and crude oil prices for the years 2012 through 2021. The sampling method is saturated sampling. PT Garuda Indonesia Tbk and PT AirAsia Indonesia Tbk were selected as the sampled companies for the 2012–2021 period. There were 20 samples in total throughout the observation period of 2012–2021.

To determine how much currency rates, inflation, interest rates, and crude oil prices affect financial distress, the design of hypothesis testing is applied. The acquired information based on these variables is then analyzed with statistical software. Descriptive statistic analysis is used in this study, the classical assumption test aims to provide reliable and unbiased estimation findings (Ghozali, 2018). This test including normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test. The following are multiple linear regression analysis, correlation coefficient analysis, determination coefficient analysis, partial test (t-Test), and simultaneity test (F-Test).

RESULTS AND DISCUSSION

Table 3 shows the findings of a descriptive statistical test on 20 data throughout a five-year research period, from 2012 to 2021, that were collected from Bank Indonesia publications, the Central Statistics Agency (BPS), and corporate financial reports. Two companies in the aviation industry that are listed on the Indonesia Stock Exchange are the subject of this study for the years 2012 through 2021.

Table 3. Descriptive Statistic Analysis Result

	Descriptive Statistic				
	N	Minimum	Maximum	Mean	Std. Deviation
Exchange Rate	20	9358	14525	12937.00	1737.434
Inflation	20	1.68	8.38	4.0420	2.34220
Interest Rate	20	3.50	7.75	5.5750	1.54771
Oil Price	20	41	109	69.44	23.210
Financial Distress	20	-14.99	4.37	-1.4745	5.99462
Valid N (listwise)	20				

Source: Data processed, 2022

Based on the results of the descriptive statistical test in table 4.2 above, it is evident that the variables Exchange Rate, Inflation, Interest Rates, and Crude Oil Prices all have standard deviation values that are lower than the mean, with the mean for each of these variables being respectively 1,737.434 and 12,937.00; 2.34220 and 4.0420; 1.54771 and 5.5750; and 23.210 and 69.44. This indicates that there is a heterogeneous distribution of data for the variables Exchange Rate, Inflation, Interest Rates, and Crude Oil Prices. The Financial Distress variable, on the other hand, has a homogenous distribution of data because the standard deviation value is higher than the mean, which is equal to 5.99462 and -1.4745.

The normality test used in this study is the one sample Kolmogorov-Smirnov statistical test (1-Sample K-S). Financial distress has a significant value (Asymp. Sig. (2-tailed)) of 0.200 > 0.05 for the variable exchange rate, inflation, interest rates, and crude oil prices. That is, the data are normally distributed according to the findings of the one sample Kolmogorov-Smirnov.

Examining the tolerance value and variance inflation factor will reveal any multicollinearity in the regression model (VIF). There is no multicollinearity if the VIF value < 10 and the tolerance > 0.1. The results of the multicollinearity test show that the tolerance value of each independent variable is greater than 0.1. At an exchange rate of 0.273 > 0.1; inflation of 0.248 > 0.1; interest rate of 0.378 > 0.2; and crude oil price of 0.286 > 0.1. Likewise, the VIF value of the four independent variables shows a VIF value < 10. The exchange rate has a value of 3.663 < 10; inflation of 4.026 < 10; interest rate of 2.648 < 10; and crude oil price of 3.493 < 10. Due to the study's compliance with the conditions, which required that all variables had Tolerance values > 0.1 and VIF < 10, multicollinearity did not exist.

Heteroscedasticity test can use the scatterplot graphical method between standardized predict value (ZPRED) and studentized residual (SRESID). The results of the scatterplot graph with the dots spreading randomly above and below zero on the Y-axis and does not show a regular pattern (wavy, widened and narrowed), meaning that there is no heteroscedasticity problem in this regression model.

The autocorrelation test used is the run test (Runs-test), it shows the value of Asymp. Sig. (2-tailed) of 0.818 using a degree (α) of 0.05, meaning $0.818 > 0.05$, it can be concluded that there is no autocorrelation in this regression model.

These are the results of multiple linear regression analysis which can be seen in table 4:

Table 4. Multiple Linear Regression Analysis

		Coefficients ^a				
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	50.408	17.398		2.897	.011
	Exchange Rate	-.004	.001	-1.056	-3.677	.002
	Inflation	-.144	.771	-.056	-.186	.855
	Interest Rate	1.989	.946	.513	2.102	.053
	Oil Prices	-.219	.072	-.849	-3.028	.008

a. Dependent Variable: Financial Distress

Source: Data processed, 2022

Based on the results of multiple linear regression analysis from the result of data processed above, the multiple linear regression equation can be presented as follows:

$$Y = 50,408 - 0,004X_1 - 0,144X_2 + 1,989X_3 - 0,219X_4 + e \dots\dots\dots(1)$$

From the above equation can be explained as follows:

- 1) The constant value is 50.408, the constant value is positive. If the variable exchange rate, inflation, interest rates and crude oil prices are 0 then the variable Y (Financial distress) is worth 50.408.
- 2) The value of the exchange rate regression coefficient is -0.004. This value means that there is a negative effect between the Exchange Rate and Financial distress. If the exchange rate increases by 1%, financial distress will decrease by 0.004.
- 3) Inflation regression coefficient value of -0.144. This value means that there is a negative influence between inflation and financial distress. If inflation increases by 1%, financial distress will decrease by 0.144.
- 4) The interest rate regression coefficient is 1.989. This value means that there is a positive influence between interest rates and financial distress. If interest rates increase by 1%, financial distress will increase by 1.989.
- 5) The value of the regression coefficient for crude oil prices is -0.219. This value means that there is a negative influence between crude oil prices and financial distress. If crude oil prices increase by 1%, financial distress will decrease by 0.219.

The following is the result of the correlation coefficient analysis in Table 5:

Table 5. Correlation Coefficient Analysis

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.814 ^a	.662	.572	3.92269	.725

a. Predictors: (Constant), Oil Price, Interest Rate, Exchange Rate, Inflation

b. Dependent Variable: Financial Distress

Source: Data processed, 2022

According to Table 5, there is a correlation between exchange rates, inflation, interest rates, and crude oil prices and financial distress, with a correlation coefficient of 0.814. These numbers are in the range of 0.80 to 1.000, which shows a very significant correlation (Sugiyono, 2018: 274). The analysis findings for the coefficient of determination (R^2) of 66.2%, are presented. This indicates that the variables of exchange rates, inflation, interest rates, and crude oil prices contribute for 66.2% of the probability that a company will experience financial distress. While the remaining 33.8% is influenced by other variables outside of this study.

Based on Table 4, the partial test (t test) outcomes can be seen with the following interpretation:

- 1) Exchange Rate variable shows the significant $< \alpha$ ($0.002 < 0.05$) and the value of -t count $< -t$ table ($-3.677 < -2.13145$). H_0 is rejected and H_a is accepted, it implies the Exchange Rate (X_1) has a negative and significant effect on Financial distress (Y).

- 2) Inflation variable shows the significant value $> \alpha$ ($0.855 > 0.05$) and $-t$ count $> -t$ table ($-0.186 > -2.13145$). H_0 is accepted and H_a is rejected, it implies inflation (X_2) has no effect and not significant on Financial distress (Y).
- 3) Interest Rate variable shows the significant value $> \alpha$ ($0.053 > 0.05$) and t count $< t$ table ($2.102 < 2.13145$). H_0 is accepted and H_a is rejected, it implies interest rate (X_3) has no effect and is not significant on Financial distress (Y).
- 4) Crude oil price variable shows significant $< \alpha$ ($0.008 < 0.05$) and $-t$ count $< -t$ table ($-3.028 < -2.13145$). H_0 is rejected and H_a is accepted, it implies crude oil prices (X_4) have a negative and significant effect on financial distress (Y).

Table 6. Simultaneity Test (F-Test) Result

		ANOVA ^a					
Model		Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	451.963	4	112.991	7.343	.002 ^b	
	Residual	230.812	15	15.387			
	Total	682.775	19				

a. Dependent Variable: Financial Distress
b. Predictors: (Constant), Oil Price, Interest Rate, Exchange Rate, Inflation

Source: Data processed, 2022

Based on table 6, the simultaneous test findings for interest rates, inflation, exchange rates, and crude oil prices had a F count $7.343 > F$ table 3.007 and a significance value of 0.002 lower than 5% . The study's findings indicate that financial distress is significantly influenced by the currency rate, inflation, interest rates, and crude oil prices.

Based on the result of the hypothesis test above, the explanation of the research findings is as follows, exchange rate has a negative and significant effect on Financial distress. It implies, the financial distress of airline companies was impacted by fluctuations in the rupiah exchange rate, which even had a tendency to weaken or depreciate. Because PT Garuda Indonesia Tbk and PT AirAsia Indonesia Tbk operate in US dollars, the business faces a large rise in operating expenses when the rupiah weakens. The company has implemented methods like hedging exchange rates and negotiating over aircraft expenses. Also, from 2012 to 2019, there was an annual growth in the number of international visitors, which might raise the company's earnings before the COVID-19 pandemic. This study is in line with Rohiman & Damayanti (2019), Hendrawan et al. (2022) and Wafi et al. (2021) which states that the exchange rate has a significant effect on financial distress.

Inflation has no effect and is not significant on Financial distress. It caused by the inflation rate, which ranged from 1.68% to 8.38% between 2012 and 2021 and tended to be low below 10% . According to the data, Kholisoh & Dwiarti (2020) state that inflation below 10% is mild inflation. Both PT Garuda Indonesia Tbk and PT AirAsia Tbk constantly monitor ticket prices and adjust them to adapt changes in supply and demand, particularly for domestic flights. So, there's a small chance of financial distress due to the low inflation rate and the company's strategy being implemented. This study is in line with Hendrawan et al. (2022), Kholisoh & Dwiarti (2020), Priyatnasari & Hartono (2019), Wafi et al. (2021) and Kriswanto (2019) which state that inflation has no effect on financial distress.

Interest rate has no effect and is not significant on Financial distress. It caused by the 3.5% – 7.75% range of interest rates in 2012–2021, which are considered as stable. PT Garuda Indonesia Tbk and PT AirAsia Tbk in particular shown more stable conditions from 2012 to 2019, however in this case, the two companies took steps to restructure trade debts by turning it into long-term business debt with associated companies. The result of this study is in line with research conducted by Hendrawan et al. (2022), Kholisoh & Dwiarti (2020), Rohiman & Damayanti (2019), Indriyani & Nazar (2020) and Priyatnasari & Hartono (2019) which state that interest rates have no effect on financial distress.

Crude oil prices have a negative and significant effect on financial distress. The majority of the company's operating costs are allocated to aviation fuel. Thus, the operating profit of the company will be negatively affected. In this situation, the corporation stressed the amount of aviation fuel utilized and adjusted the kind of aircraft in line with the airport's and route's conditions, even though the period of time between 2012 and 2019 tend to have stable conditions. This research is in line with the results of Putra et al. (2021) which states that crude oil prices affect financial distress. The results of this study conclude that the exchange rate, inflation, interest rates and crude oil prices simultaneously have a significant effect on financial distress.

The airline is one of the companies that is vulnerable to macroeconomic issues since they can affect the company's financial performance, including exchange rates, inflation, interest rates, and crude oil prices. This is proven by the company's operating profit, which is decreasing or even negative from year to year. This was the result of the period's global uncertainty and the implementation of government policies to prevent the COVID-19 virus from spreading and having a multiplier effect on business performance.

CONCLUSION

Throughout the 2012–2021 period, the the growth of exchange rates, inflation, interest rates, oil prices, and financial distress fluctuated and tended to decrease. because of the COVID-19 pandemic, the policies put in place by the government and Bank Indonesia, and global uncertainty. Results from a partial test (t-test) indicate that Exchange rate has a negative and significant effect on Financial Distress, Crude oil prices has a negative and significant effect on Financial Distress, Inflation has no and no significant effect on Financial Distress, and Interest rates has no significant effect on Financial Distress. Exchange rates, inflation, interest rates, and crude oil prices all have a significant impact on financial distress simultaneously.

According to findings from studies done on the effect of exchange rates, inflation, interest rates, and crude oil prices on financial distress in the air transportation subsector, which is listed on the Indonesia Stock Exchange during the 2012–2021 period, the suggestions for companies, they should pay close attention on fluctuations in exchange rates and crude oil prices, and they should continue to use hedging to reduce the risk of unexpected price changes. Furthermore, reducing operational expenses for leasing, aircraft maintenance, and aviation fuel by employing aircraft effectively and efficiently. For investors, should perform a fundamental research before investing in a company, especially those in the air transportation subsector, starting with macroeconomic, industry, and company indicators. An overview of the future benefits will be presented, and it will be useful to know the company's health status. For researchers, it is advised that use alternative macroeconomic factors. Additionally, it is preferable to use financial distress prediction models other than the Altman Z-Score, such as Zmijewski, Springate, or Grover, and to conduct studies on industries or sub-sectors other than the air transportation subsector. And For government, should work to strengthen the currency by growing exports relative to imports to create a surplus in Indonesia's Balance of Payments (BOP) and by adopting monetary policy by raising interest rates to spur inflows of foreign capital. Continue using a pricing strategy to balance the supply and demand for aviation fuel in addition to global oil prices so that air transportation businesses can continue to conduct their daily operations.

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