

THE EFFECT OF JET FUEL PRICE AND MACROECONOMICS VARIABLES ON PROFITABILITY OF AIRLINE INDUSTRY IN ASIA (Study at Airline Companies in Indonesia, India, and China Period 2006-2015)

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ABSTRAK

Penelitian ini bertujuan untuk menjelaskan pengaruh harga avtur dan variabel ekonomi makro yang ditunjukkan dengan kurs, PDB, dan inflasi terhadap profitabilitas yang ditunjukkan dengan net profit margin (NPM) industri penerbangan di Asia periode tahun 2006-2015. Sampel dari penelitian yaitu maskapai penerbangan plat merah di Indonesia, India, dan Cina. Penelitian ini menggunakan jenis penelitian penjelasan dengan pendekatan kuantitatif dan analisis regresi linear berganda. Hasil penelitian ini menunjukkan bahwa: Harga Avtur, Kurs, PDB, dan Inflasi berpengaruh signifikan terhadap NPM semua sampel secara simultan; Harga Avtur berpengaruh signifikan negatif terhadap NPM PT. Garuda Indonesia, Tbk. secara parsial. Sebaliknya, Harga Avtur tidak berpengaruh signifikan terhadap NPM Air India, Ltd. dan Air China, Ltd. secara parsial; Kurs berpengaruh signifikan negatif terhadap NPM Air India, Ltd. dan Air China, Ltd. secara parsial. Sebaliknya Kurs tidak berpengaruh signifikan terhadap NPM PT. Garuda Indonesia, Tbk. secara parsial; PDB berpengaruh signifikan positif terhadap NPM semua sampel secara parsial; dan Inflasi berpengaruh signifikan negatif terhadap NPM Air India, Ltd. dan Air China, Ltd. secara parsial. Sebaliknya, Inflasi berpengaruh signifikan positif NPM PT. Garuda Indonesia, Tbk. secara parsial.

Kata Kunci: *Harga Avtur, Ekonomi Makro, Nilai Tukar (Kurs), PDB, Inflasi, Profitabilitas, Net Profit Margin*

ABSTRACT

This research is conducted to examine the effect of jet fuel price and macroeconomic variables (exchange rate, GDP, and inflation) on profitability represented by net profit margin (NPM) of airline industry in Asia period 2006-2015. The samples of this research are flag carriers of Indonesia, India, and China. This research used explanatory research type with quantitative approach and multiple linear regression analysis. The results of this research indicated that; Jet Fuel Price, Exchange Rate, GDP, and Inflation have significant effect on NPM of all airline companies simultaneously; Jet Fuel Price has significant negative effect on NPM of PT. Garuda Indonesia, Tbk. partially. In contrast, Jet Fuel Price has no significant effect on NPM of Air India, Ltd. and Air China, Ltd. partially; Exchange Rate has significant negative effect on NPM of Air India, Ltd. and Air China, Ltd. partially, In contrast, Exchange Rate has no significant effect on NPM of PT. Garuda Indonesia, Tbk. partially; GDP has significant positive effect on NPM of all airline companies partially; and Inflation has significant negative effect on NPM of Air India, Ltd. and Air China, Ltd. partially. In contrast, Inflation has significant positive effect on NPM of PT. Garuda Indonesia, Tbk. partially.

Key words: *Jet Fuel Price, Macroeconomic, Exchange Rate, GDP, Inflation, Profitability, Net Profit Margin*

INTRODUCTION

Airline industry has always been considered as a very special industry in the international context. It facilitates world trade, global economic and social growth, and international and domestic tourism. “Forecasts suggest that, in 2032, there will be over 6.5 billion passengers and aviation will support 103 million jobs and \$5.8 trillion in economic activity”, ATAG (2014:6). “In 2015, the industry created \$35.3 billion net, after-tax profit. However that industry’s \$35.3 billion profit was still only represented by \$9.89 of profit per passenger. This was a slim margin compared with other industries”, IATA (2016:13).

According to Berritella, La Franca, and Zito (2009:249), “the airline industry is a service industry with a low profitability because its labor, capital, and technology intensive. It is also impacted by external environmental changes as well as internal operations”. Jet fuel becomes a major spending of commercial airlines’ operational costs. Jet fuel prices have significantly been fluctuating during the past decade (*see figure 1*). “Jet fuel was accounted for averagely 27% of an airline’s costs in 2015”, IATA (2016:12). Bureau of Transportation Statistics (2012) found that when fuel price increases over the past decade followed with reduced profits and, in many cases, operating losses among carriers. Thus, the airline industry is urged to minimize its operating costs while improving profitability in rapidly changing environment.

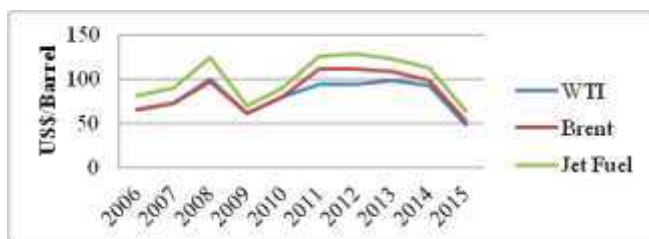


Figure 1. Crude Oil (WTI and Brent) and Jet Fuel Spot Price (U.S. Dollars per Barrel)

Source: www.eia.gov, processed (2017).

Corporate whose business involves in international trade, including airline industry, are inevitably exposed to foreign exchange risk. “Non US airline companies could be disturbed by the strong appreciation of the US dollar. A strengthened dollar can negatively affect costs denominated in US dollars”, IATA (2015:11). Most carriers are subject to both costs and revenues in a number of currencies. Conversion into a different currency is demanded and however forms

the basis of an airline’s foreign exchange risk. For an airline with international operations, the exchange rate risk appears in the need to translate cash flows into other currencies and the uncertainty on future exchange rate. Exchange rate fluctuations can impact airline finances, both daily operating activities and balance sheet evaluations.

Other than those, Gross Domestic Product (GDP) and inflation impact personal finance, job growth, and investments in which affects the profitability of firms in that country. Kanwal and Nadeem (2013) found there are positive relation between GDP and profitability, and negative relation between inflation and profitability. According to International Monetary Fund (www.imf.org, accessed on 20 May 2017),

“GDP indicates the market value of final goods and services that are consumed by the final user and manufactured in a country in a specific period of time. Inflation is the rate of increase in prices over a specific period of time. Inflation is typically a broad measure, such as the overall increase in prices or the increase in the living cost in a country”.

Indonesia, India, and China were contributing in the global aviation industry in 2015. Those three countries were the top three of top 10 increasing passengers in 2015. The center of global aviation gravity continued to shift eastward in 2015, with 7 of the top 10 increasing origin-destination (O-D) passenger markets located in Asia (*see figure 2*). “China’s domestic air passenger market created the biggest increase in journey numbers in 2015, with 36 million more passenger journeys made. This increase was more than in the next two largest-gaining markets combined: domestic Indonesia and domestic India”, IATA, (2016:11).

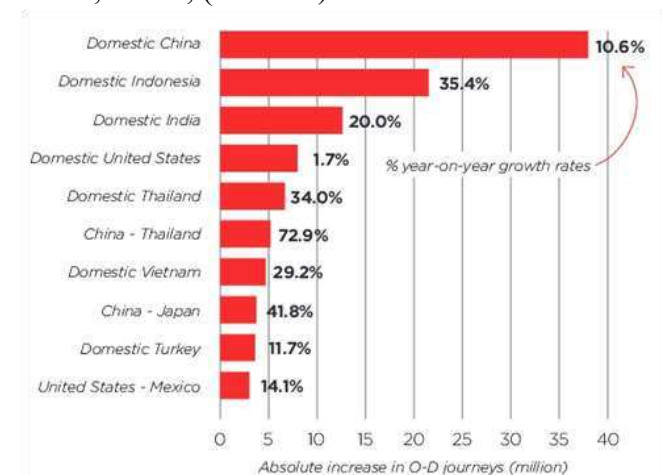


Figure 2. Top 10 Increasing Origin-Destination Markets in 2015.

Source: IATA, 2016.

Firms are continuously concerned with the level of their profitability because their performance is highly dependent on their profitability concerning on the external factors that rapidly change. In addition, financial analysis includes profitability ratio as one of the main ratios to analyze the performance of a firm. Therefore, both managers and stakeholders are concerned about the measures of profitability of a firm.

”Net profit margin is one of the profitability ratios. It shows percentage of revenue remaining after all operating expenses, interest, taxes and preferred stock dividends (but not common stock dividends) have been deducted from a company's total revenue.”, <http://www.investinganswers.com> (accessed on 16 July 2017).

This research studies about the effect of jet fuel price and macroeconomics variables on profitability of airline industry (represented by NPM) in Asia. As jet fuel price has had an unpredictable fluctuating movement in these years, and the global economic growth is slowing down in recent years, thus can be important objects to study further. Moreover there are still small number of researches that investigate the relations between jet fuel price and profitability, especially in air transport sector. Based on those phenomena, the researcher is interested to write a research entitled “The Effect of Jet Fuel Price and Macroeconomics Variables on Profitability of Airline Industries in Asia (Study at Airline Companies in Indonesia, India, and China Period 2006-2015)”.

LITERATURE REVIEW

Jet Fuel Price

Oil is the most important source of energy and is therefore critical to economic growth. Its value is driven by demand for refined oil products, particularly in the transportation sector. One of the oil products is jet fuel. It accounts for such a large spending of aviation costs in which managing price increases and price volatility is an ongoing challenge. Davidson et al. (2014:19-20) stated that,

“jet fuel price volatility and the long-term trend of price increases are a business challenge for the entire aviation industry, affecting operations of both airports and airlines. Jet fuel price volatility has demanded airlines to conduct financial risk management measures, such as jet fuel hedging. When fuel prices are high, airlines face compressed operating margins with which to cover both operating costs and fixed costs”.

Macroeconomics Variable

Macroeconomics

According to Mazumdar (2011:6), “macroeconomics is that branch of economics which is concerned with the economic magnitudes relating to the economic system as a whole, rather than to the microeconomic units like individuals or firms. It has, therefore, been called aggregative economics”. In the picturesque language of Kenneth Boulding, Macroeconomics deals not with individual income but with national income, not with individual prices but with the price level, not with individual outputs but with national output. According to Jochumzen (2010:53), there are several variables of macroeconomics; among them are exchange rate, GDP, and inflation.

Exchange Rate

The exchange rate is defined as the price of one unit of currency in terms of another currency. If one Euro costs 1.5 USD then 1 USD costs $1/1.5 = 0.667$ Euro. If the exchange rate is stated in terms of the Euro (for example, 1.5 USD/Euro) then the Euro is called as the base currency or the unit currency (Jochumzen, 2010:15).

Gross Domestic Product

Gross Domestic Product (GDP) is defined as the market value of all finished goods and services produced in a country during a certain specific period of time (Jochumzen, 2010:18). Real GDP growth is defined as the percentage change in real GDP. The real growth tells us how much the economy has grown during a specific period when the effect of inflation is eliminated (Jochumzen, 2010:18).

Inflation

Inflation is understood as a persistent, ongoing rise on set of prices. An increase in prices for one or two goods cannot be described as inflation unless that increase spreads to (or leads to escalating prices for) other goods. The reverse of inflation is deflation (www.bi.go.id, accessed on 20 May 2017).

The indicator that is commonly used to measure the level of inflation is the Consumer Price Index (CPI). Changes in the CPI over time are indications of price movements for packages of goods and services consumed by the public (www.bi.go.id, accessed on 20 May 2017). The Consumer Price Index (CPI) is a measure of the average change over time in the prices paid by urban consumers for a market basket of consumer

goods and services. (www.bls.gov, accessed on 20 May 2017).

Profitability

Profitability is the ability of company to generate profit. Profitability focuses on a company's sources and levels of profits and involves identifying and measuring the impact of various profitability drivers. Besides that, it also includes evaluation of the two major sources of profitability margins and capital utilization. Profitability analysis also focuses on reasons for changes in the profitability and sustainability of earnings (Subramanyam & Wild, 2009:13).

Net Profit Margin (NPM) is one of the indicators of profitability. It shows how much each money collected by company as revenue translates into profit. The formula of NPM is as follows:

$$\text{Net Profit Margin} = \frac{\text{Net Profit}}{\text{Revenue}}$$

Source: www.financeformulas.net, accessed on 19 June 2017.

The Relationship between Jet Fuel Price (X₁) and Profitability (Y)

Oil is the main component in the production of jet fuel. The price of oil and the price of jet fuel are positively correlated. Some studies indicated that oil price has a positive effect on profitability of non transport industries, such as Poghosyan and Heiko (2009), Wattanatorn and Kanchanapoom (2012), and Basha (2014). However, practically jet fuel is a major spending of commercial airlines' operational costs. ICAO (2008) found that any increase in the cost of oil can have dangerous effects for the airline industry. Therefore, jet fuel price has a negative effect on profitability of airline industry.

The Relationship between Exchange Rate (X₂) and Profitability (Y)

The exchange rate will affect the economy of a country if it is appreciated and depreciated. This condition is called exchange rate fluctuation that indirectly can influence the financial performance (as for example, represented by profitability) of companies in a country. Moreover companies whose business involves in international trade, including airline industry, are exposed to this fluctuation. The appreciated US Dollar to local currency will affect negatively on profitability, *vice versa*. Some studies that have investigated this relation, such as Silvente and Walker (2007), Lestari and Sugiharta (2007),

Naomi (2009), and Rachmawati (2012), indicated that exchange rate has negative effect on profitability.

The Relationship between GDP (X₃) and Profitability (Y)

The economic growth, which is represented by GDP, of a country relates to the citizens' welfares of that country. Favorable conditions in an economy will positively impact the level of financial transactions in that country. Some studies indicated that GDP has positive effect on profitability, such as Ali *et al.* (2011) and Kanwal and Nadeem (2013).

The Relationship between Inflation (X₄) and Profitability (Y)

Inflation is a tendency of broad of prices to rise in general and continuously. This will affect the consumption level and transaction level of society. Some studies indicated that inflation has negative effect on profitability, such as Rachmawati (2012) and Kanwal and Nadeem (2013).

Hypothesis

- H₁: Jet Fuel Price, Exchange Rate, GDP, and Inflation have significant effect on Net Profit Margin simultaneously.
- H₂: Jet Fuel Price has significant effect on Net Profit Margin partially.
- H₃: Exchange Rate has significant effect on Net Profit Margin partially.
- H₄: GDP has significant effect on Net Profit Margin partially.
- H₅: Inflation has significant effect on Net Profit Margin partially.

RESEARCH METHOD

The research type used in this research is explanatory with quantitative approach. The type of data is the secondary data from official websites of PT. Garuda Indonesia, Tbk. (Indonesia), Air India, Ltd. (India), Air China, Ltd. (China), World Bank, and U.S. Energy Information Administration. The data is annual data period 2006-2015. Multiple linear regression analysis is used in this research. The formula of multiple linear regressions is as follows:

$$Y = \alpha + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + e$$

Description:

- Y : NPM
- α : Constant
- b : Regression Coefficient
- X1 : Jet Fuel Price Period t
- X2 : Exchange Rate Period t
- X3 : GDP Growth Period t
- X4 : Inflation Rate Period t
- e : Residual Factor

DISCUSSION AND RESULT

Multiple Linear Regression Analysis

Multiple linear regression analysis is used in this research to analyze how significant the effect of independent variables which are Jet Fuel Price (X_1), Exchange Rate (X_2), GDP (X_3), and Inflation (X_4) on dependent variable which is Net Profit Margin (Y) of each company in Indonesia, India, and China. Regression model is used to analyze the relationship and the direction between variables. The regression model is as follows:

Table 1. Regression Coefficient

No	Company	Regression Model
1	PT. Garuda Indonesia, Tbk.	$Y = -61.849 - 0.219X_1 + 0.490X_2 + 0.715X_3 + 0.565X_4 + e$
2	Air India, Ltd.	$Y = 17.318 + 0.775X_1 - 0.236X_2 + 0.549X_3 - 0.209X_4 + e$
3	Air China, Ltd.	$Y = 25.544 - 0.492X_1 - 0.629X_2 + 0.122X_3 - 0.479X_4 + e$

Source: EViews Output, processed 2017

The model is explained as follows:

1. PT. Garuda Indonesia, Tbk.

The constant -61.849 means that if the value of Jet Fuel Price, Exchange Rate, GDP, and Inflation are 0, NPM is -61.849 units. The regression coefficient of Jet Fuel Price (X_1) -0.219 means that if Jet Fuel Price increases one unit, NPM will decrease 0.219 units, with assumption *ceteris paribus*. The regression coefficient of Exchange Rate (X_2) 0.490 means that if Exchange Rate increases one unit, NPM will increase 0.490 units, with assumption *ceteris paribus*. The regression coefficient of GDP 0.715 means that if GDP (X_3) increases one unit, NPM will increase 0.715 units, with the assumption *ceteris paribus*. The regression coefficient of Inflation (X_4) 0.565 means that if Inflation increases one unit, NPM will increase 0.565 units, with the assumption *ceteris paribus*.

2. Air India, Ltd.

The constant 17.318 means that if the value of Jet Fuel Price, Exchange Rate, GDP, and Inflation are 0, NPM is 17.318 units. The regression coefficient of Jet Fuel Price (X_1) 0.775 means that if Jet Fuel Price increases one unit, NPM will increase 0.775 units, with assumption *ceteris paribus*. The regression coefficient of Exchange Rate (X_2) -0.236 means that if Exchange Rate increases one unit, NPM will decrease 0.236 units, with assumption *ceteris paribus*. The regression coefficient of GDP (X_3) 0.549 means that if GDP increases one unit, NPM will increase 0.549 units, with the assumption *ceteris paribus*. The regression coefficient of Inflation (X_4) -0.209 means that if Inflation increases one unit, NPM will decrease 0.209 units, with the assumption *ceteris paribus*.

3. Air China, Ltd.

The constant 25.544 means that if the value of Jet Fuel Price, Exchange Rate, GDP, and Inflation are 0, NPM is 25.544 units. The regression coefficient of Jet Fuel Price (X_1) -0.492 means that if Jet Fuel Price increases one unit, NPM will decrease 0.492 units, with assumption *ceteris paribus*. The regression coefficient of Exchange Rate (X_2) -0.629 means that if Exchange Rate increases one unit, NPM will decrease 0.629 units, with assumption *ceteris paribus*. The regression coefficient of GDP (X_3) 0.122 means that if GDP increases one unit, NPM will increase 0.122 units, with the assumption *ceteris paribus*. The regression coefficient of Inflation (X_4) -0.479 means that if Inflation increases one unit, NPM will decrease 0.479 units, with the assumption *ceteris paribus*.

F Test and Determination Coefficient Analysis

Table 2. F Test and Determination Coefficient

No	Company	F	Sig	R Squared
1	PT. Garuda Indonesia, Tbk.	11.377	0.010	0.901
2	Air India, Ltd.	10.939	0.011	0.8975
3	Air China, Ltd.	5.231	0.049	0.8071

Source: EViews Output, processed 2017

1. PT. Garuda Indonesia, Tbk.

Based on table 2, F is greater than F table (11.377 > 5.19) and P value is less than significance level (0.010 < 0.05). Based on this comparison, H0 is rejected and H1 is accepted. It means that Jet Fuel Price, Exchange Rate, GDP, and Inflation have significant effect on NPM of PT. Garuda Indonesia, Tbk. simultaneously and could explain their effects on NPM of PT. Garuda Indonesia, Tbk. as 90.1%

2. Air India, Ltd.

Based on table 2, F is greater than F table (10.939 > 5.19) and P value is less than significance level (0.011 < 0.05). Based on this comparison, H0 is rejected and H1 is accepted. It means that Jet Fuel Price, Exchange Rate, GDP, and Inflation have significant effect on NPM of Air India, Ltd. simultaneously and could explain their effects on NPM of Air India, Ltd. as 89.75%.

3. Air China, Ltd.

Based on table 2, F is greater than F table (5.231 > 5.19) and P value is less than significance level (0.049 < 0.05). Based on this comparison, H0 is rejected and H1 is accepted. It means that Jet Fuel Price, Exchange Rate, GDP, and Inflation have significant effect on NPM of Air China, Ltd. simultaneously and could explain their effects on NPM of Air China, Ltd. as 80.71%.

accepted. It means that Jet Fuel Price has significant negative effect on NPM partially. Exchange Rate (X₂) has t which is less than t table (1.811 < 2.571) and P value which is greater than significance level (0.129 > 0.05). Therefore, H0 is accepted and H3 is rejected. It means that Exchange Rate has no significant positive effect on NPM partially. GDP (X₃) has t which is greater than t table (6.573 > 2.571) and P value which is less than significance level (0.001 < 0.05). Therefore, H0 is rejected and H4 is accepted. It means that GDP has significant positive effect on NPM partially. Inflation has t which is greater than t table (2.619 > 2.571) and P value which is less than significance level (0.047 < 0.05). Therefore, H0 is rejected and H5 is accepted. It means that Inflation has significant positive effect on NPM partially.

2. Air India, Ltd.

Jet Fuel Price (X₁) has t which is less than t table (0.714 < 2.571) and P value which is greater than significance level (0.507 > 0.05). Therefore, H0 is accepted and H2 is rejected. It means that Jet Fuel Price has no significant positive effect on NPM partially. Exchange Rate (X₂) has t which is greater than t table (-2.854 > 2.571) and P value which is less than significance level (0.036 < 0.05). Therefore, H0 is rejected and H3 is accepted. It means that Exchange Rate has significant negative effect on NPM partially. GDP (X₃) has t which is greater than t table (4.175 > 2.571) and P value which is less than significance level (0.009 < 0.05). Therefore, H0 is rejected and H4 is accepted. It means that GDP has significant positive effect on NPM partially. Inflation (X₄) has t which is greater than t table (-2.679 > 2.571) and P value which is less than significance level (0.044 < 0.05). Therefore, H0 is rejected and H5 is accepted. It means that Inflation has significant negative effect on NPM partially.

3. Air China, Ltd.

Jet Fuel Price (X₁) has t which is less than t table (-0.270 < 2.571) and P value which is greater than significance level (0.798 > 0.05). Therefore, H0 is accepted and H2 is rejected. It means that Jet Fuel Price has no significant negative effect on NPM partially. Exchange Rate (X₂) has t which is

t Test

Table 3. t Test

No	Company	Variable	t	Sig
1	PT. Garuda Indonesia, Tbk.	X ₁	-2.587	0.049
		X ₂	1.811	0.129
		X ₃	6.573	0.001
		X ₄	2.619	0.047
2	Air India, Ltd.	X ₁	0.714	0.507
		X ₂	-2.854	0.036
		X ₃	4.175	0.009
		X ₄	-2.679	0.044
3	Air China, Ltd.	X ₁	-0.270	0.798
		X ₂	-2.689	0.043
		X ₃	3.490	0.018
		X ₄	-2.788	0.039

Source: EViews Output, processed 2017

1. PT. Garuda Indonesia

Jet Fuel Price (X₁) has t which is greater than t table (-2.587 > 2.571) and P value which is less than significance level (0.049 < 0.05). Therefore, H0 is rejected and H2 is

greater than t table ($-2.689 > 2.571$) and P value which is less than significance level ($0.043 < 0.05$). Therefore, H0 is rejected and H3 is accepted. It means that Exchange Rate has significant negative effect on NPM partially. GDP (X_3) has t which is greater than t table ($3.490 > 2.571$) and P value which is less than significance level ($0.018 < 0.05$). Therefore, H0 is rejected and H4 is accepted. It means that GDP has significant positive effect on NPM partially. Inflation (X_4) has t which is greater than t table ($-2.788 > 2.571$) and P value which is less than significance level ($0.039 < 0.05$). Therefore, H0 is rejected and H5 is accepted. It means that Inflation has significant negative effect on NPM partially.

Interpretation of Research Result

Based on statistical analysis, Jet Fuel Price, Exchange Rate, GDP, and Inflation have significant effect on NPM simultaneously. F-tests of NPM of PT. Garuda Indonesia, Tbk., Air India Ltd., and Air China, Ltd. show that F values are greater than F table (5.19) for 11.38, 10.94, and 5.23 respectively and P values are less than significance level (0.05) for 0.01, 0.01, and 0.049 respectively. This result is supported by the basic theory of Berritella, La Franca, and Zito (2009) which stated that air transport industry is affected by external environmental changes as well as internal operations.

Based on statistical analysis, Jet Fuel Price has significant negative effect on NPM of PT. Garuda Indonesia, Tbk. partially. In contrast, Jet Fuel Price has no significant effect on NPM of Air India, Ltd. and Air China, Ltd. partially. These results can be explained by the basic theory of IATA (2016) which stated that fluctuating movement of jet fuel price is not felt evenly across airlines and regions globally. This is because of different hedging practices in the industry.

Based on statistical analysis, Exchange Rate has significant negative effect on NPM of Air India, Ltd. and Air China, Ltd. partially. This significant result is aligned with Silvente and Walker (2007) and Naomi (2009). Exchange rate fluctuations can impact airline finances, in both operating activities and balance sheet evaluations. The airline with international operations needs to exchange cash flows into different currencies, and is subject to the uncertainty on future exchange rate. In contrast, Exchange Rate has no significant effect on NPM of PT. Garuda Indonesia, Tbk.

partially. This result is supported by Oroh, Saerang, and Pontoh (2016).

Based on statistical analysis, GDP has significant positive effect on NPM partially. This research results indicated that GDP acted as factor which could explain the change of NPM of PT. Garuda Indonesia, Tbk., Air China, Ltd., and Air India, Ltd. partially. These results are aligned with Kanwal and Nadeem (2013) and Zakariah et al. (2014). GDP is used as a measurement of country's economic progress. If GDP is rising, the economy is in good shape.

Based on statistical analysis, Inflation has significant negative effect on NPM of Air India, Ltd. and Air China, Ltd. partially. This negative relation is explained and supported by Kanwal and Nadeem (2013) and Zakariah et al. (2014). When there is inflation, most prices are rising and the value of the money gets reduced. This reduction in the value of money directly affects the purchasing power. In contrast, Inflation has significant positive PT. Garuda Indonesia, Tbk. partially. The positive relation is explained by thebalance.com (accessed on 3 August 2017), "inflation in between 3-10 percent a year, people start to buy more than they need, just to avoid tomorrow's much higher prices. This drives demand even further."

CONCLUSION AND RECOMMENDATION

Conclusion

1. Based on F test and P value, Jet Fuel Price, Exchange Rate, GDP, and Inflation have significant effect on NPM simultaneously. This research result showed that Jet Fuel Price, Exchange Rate, GDP, and Inflation acted as factors which could explain the change of NPM of PT. Garuda Indonesia, Tbk., Air India, Ltd., and Air China, Ltd. simultaneously.
2. Based on t test and P value, Jet Fuel Price has significant negative effect on NPM of PT. Garuda Indonesia, Tbk. partially. In contrast, Jet Fuel has no significant effect on NPM of Air India, Ltd., and Air China, Ltd. partially. This research result showed that Jet Fuel Price acted as factor which could explain the change of NPM of PT. Garuda Indonesia, Tbk. partially.
3. Based on t test and P value, Exchange Rate has significant negative effect on NPM of Air India, Ltd. and Air China, Ltd. partially. In contrast, Exchange Rate has no significant effect on NPM of PT. Garuda Indonesia, Tbk. partially. This research result showed that Exchange Rate acted as

- factor which could explain the change of NPM of Air India, Ltd. and Air China, Ltd. partially.
4. Based on t test and P value, GDP has significant positive effect on NPM partially. This research result showed that GDP acted as factor which could explain the change of NPM of PT. Garuda Indonesia, Tbk., Air India, Ltd., and Air China, Ltd. partially.
 5. Based on t test and P value, Inflation has significant negative effect on NPM of Air India, Ltd. and Air China, Ltd. partially. In contrast, Inflation has significant positive effect on NPM of PT. Garuda Indonesia, Tbk. partially. This research result showed that Inflation acted as factor which could explain the change of NPM of PT. Garuda Indonesia, Tbk., Air India, Ltd., and Air China, Ltd. partially.

Recommendation

1. For Airline Companies
 - a. PT. Garuda Indonesia, Tbk., Air China, Ltd., and Air China, Ltd. are recommended to evaluate the practice of hedging on jet fuel price since that price fluctuation cannot be correctly predicted.
 - b. PT. Garuda Indonesia, Tbk., Air China, Ltd., and Air China, Ltd. are recommended to do the acquisition of the newest technology of aircraft that is fuel efficient to save operating cost.
 - c. PT. Garuda Indonesia, Tbk. and Air India, Ltd., and Air China, Ltd. are recommended to periodically evaluate their international operations on international routes since the exchange rate risk appear on that level of operations.
 - d. PT. Garuda Indonesia, Tbk., Air India, Ltd., and Air China, Ltd. are recommended to evaluate the pricing of air ticket price considering the condition of GDP and inflation rate of each country.
2. For Further Researcher
 - a. The researcher recommends the further researcher to use other macroeconomic variables and industry variables related to costs since the airline industry is accounted for high operating costs and is affected by environmental changes.

- b. The researcher recommends the further researcher to use hedging as control variable to understand more deeply about the effectiveness of hedging on jet fuel price.
- c. The researcher recommends the further researcher to conduct research about the effect of jet fuel price and macroeconomic variables on profitability by using qualitative approach to understand more deeply about problem in the airline industry.

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